- 0930 0021 -

CANDELARIA
(195)
Item 22

Memo-

FROM THE DESK OF

NORAH M. MINOR
CHIEF DEPUTY
RECORDER AND AUDITOR
ESMERALDA COUNTY, NEVADA

In reply to your letter, I have checked our taxroll and find the following land assessed to Elton & Jewel Parsons:

SE¼ of NW¼	Sec. 17, T2N, R37E	
SW¼ of NE¼	Sec. 17, T2N, R37E	
NW¼ of SE¼	Sec. 17, T2N, R37E	120 ACRES

NE¼ of SE¼	Sec. 7, T2N, R37E)	Formerly known
N½ of SE¼ of SE¼	Sec. 7, T2N, R37E)	as
S½ of SE¼ of SE¼	Sec. 7, T2N, R37E)	Coaldale
	)	Townsite
		80 ACRES

I hope that this will be of help to you.

Goldfield, Nevada
November 28, 1977

Joel B Dow
Chedd
"
Williams
Lot 3

Mr. Hugh Shamberger
65 Lonesome Polecat Lane
Carson City, Nevada 89701

Dear Hugh:

I'm a little slow with this, but Thanksgiving weekend was busy and I didn't get to the Courthouse until today to look into Dr. Frances E. Williams.

On April 15, 1904 the following Deed was recorded:

Dr. Frances E. Williams et al
to
Joel B. Dow

1/4th interest in Valley View Placer No. 1, located by James W. Chedd, Mattie Chedd and Frances E. Williams and recorded in Book J, page 277 October 28, 1903; also the Valley View Placer No. 2, No. 3 - same locators; also the Frances No. 5 and 6 located Nov. 11, 1903 Book J, page 294-6; also the Williams, Mayflower, August, Frances No. 2, Frances Group No. 4, James, Frances Fraction, Frances Group No. 1, Bonanza, Chedd No. 1....all in 1903.

The location of the Chedd No. 1 and most of the others was four miles north of Rabbit Springs and 2 miles east of Grandpah mine. (A long way off from the productive area)

The Deed was signed by Dr. Frances E. Williams and Chas. P. Williams by Dr. Frances E. Williams his attorney in fact. The deed was notarized in San Francisco, Ca. by A. J. Henry, Notary Public, 638 Market St. and the Deed was recorded at the request of Wells Fargo and Co. on April 7, 1904 at 12 MM. J. G. Atcheson, County Recorder.

Then another Deed was found from Dr. Frances E. Williams etal to John E. Lutz for ¼ (one fourth) interest in the "Bonanza" located claim which was also notarized in San Francisco.

On the 9th of April, 1904 Dr. Frances E. Williams et al deeded to the St. Frances Goldfield Mining Co. (which was incorporated in Washington, D. C.) the following claims-- Valley View Placer No. 1, 2, 3; the Frances No. 5-6, Williams, Mayflower, August, Frances No. 2, 3, 4; James, Frances Fraction, Frances Group No. 1, Bonanza, Chedd No. 1. Signed by Dr. Frances E. Williams as attorney in fact for Chas. P. Williams as well as in her own right, also recorded at request of Wells Fargo.

In 1904 I found where Dr. Frances Williams et al filed a Proof of Labor on the Eureka in Lone Mountain district (near Tonopah) Book A, page 162.

In 1907 on January 5th she filed Proof of Labor on the Orejuno, Gibson Girl, Louis and Royal Flush and Ding Bat Flossie in Gold Mountain (in the Goldpoint, Hornsilver district) Book A, p, 264. If this is the Royal Flush referred to in the article, it was no "Lost Breyfogle".

I could not find anything about her supposed claims in Coaldale. I remember Martin telling about some Company that was trying to promote a coal mine over near Coaldale, but the coal was no good as it wouldn't burn! A Coaldale Townsite was established as follows:

Section 7 NE¼ of SE¼ Twp. 2 N, Range 37 E
N½ of SE¼ of SE¼
S½ of SE¼ of SE¼

The Elton Parsons who own the Coaldale Inn are the owners of the Coaldale townsite now. The original Coaldale bar was about a mile north and when it burned down they built the Coaldale Inn at its present location. A man named Carl Riek used to have the original Coaldale Bar and Jewell Haas came along and tended bar for him...he died and left her the place. She left her husband, Mr. Haas, then married Dave Turner, divorced him and married Elton Parsons. (Maybe you read about the 14 year old boy being shot and killed by Elton Parsons about 15 years ago).

I am afraid the whole story about Dr. Williams is just a promotional thing. She certainly wasn't the first woman in Goldfield. The first discovery was made by Stimler and Marsh in 1902 and that was on the Sandstorm. After that discovery, everybody and his brother located the whole area around the present town of Goldfield. From the books in the Recorder's office, she was just one of a great many promoters and the claims she had were only located claims. The only name I can recall that was ever Patented was the August. It would take quite a lot of time to get a comprehensive picture of her activities. Maybe she did most of her "mining" in San Francisco!

I looked in the Goldfield City Directory of 1907-1908 and could not find her name at all or the name of the Companies mentioned. Also looked at the Annual Edition of the Goldfield News of 1907 which has all the prominent people with biographical sketches of them, but no mention of Dr. Williams.

When you come down to Goldfield, maybe you can search the records more carefully amd find more about her!

Good luck with your book.

Sincerely,

Ruth

Goldfield Daily Trib
Mar 25 09
p1 [illegible]

Mary Wagner

MEETING OF THE COUNTY BOARD OF EQUALIZATION HELD ON JANUARY 5TH., 1977.

AFFIDAVITS OF LABOR RELATIVE TO PATENTED MINING CLAIMS 1976-1977 ASSESSMENT ROLL:

ROLL NO.	ASSESSED TO	VALUATION	TOTAL
2456	ARGENTUM CONSOLIDATED MINES, INC.		
	Affidavit of Labor received from Occidental Minerals Corporation reviewed by the Board.		
	Leo	$500.00	
	Secretary Patented Mining Claims, situate in the Columbus (Candelaria) Mining District, Mineral County, Nevada.	$500.00	$1,000.00

A Motion was made by Member Scott, seconded by Member Humphrey and unanimously carried by the Board that Affidavit of Labor is approved and accepted and that the owners thereof are granted relief from taxation on the 1976-1977 Assessment Roll.

2468 THOMAS E. CONGDON

Affidavit of Labor received from Occidental Minerals Corporation considered by the Board.

	Western Belle	$500.00	
	Morning Star	$500.00	
	Caesar	$500.00	
	Belle East Extension	$500.00	
	Belle East Extension No. 1	$500.00	
	Belle East Extension Fraction	$500.00	
	Rescue Noble Extension	$500.00	
	Northern Belle	$500.00	
	Noble	$500.00	
Patent #34628	Jebson	$500.00	
	Chief of the Hills	$500.00	
	First Easterly Extension of Northern Belle	$500.00	
Patent #34627	Triangle	$500.00	
	General Thomas No. 1	$500.00	
	General Thomas No. 2	$500.00	
	General Thomas No. 3	$500.00	
Patent #34626	Rescue	$500.00	
Patent #33722	Geraldine	$500.00	
Patent #33722	Edina	$500.00	
Patent #33722	Consuelo	$500.00	
	Northern Belle No. 2	$500.00	
	Grand	$500.00	
	Commodore	$500.00	
	Commodore No. 2	$500.00	
Patent #33722	Laconia	$500.00	
Patent #34626	Bar	$500.00	
	Lent	$500.00	
Patent #33722	Melantius Patented Mining Claims, situate in the Columbus (Candelaria) Mining District, Mineral County, Nevada	$500.00	$14,000.00

A Motion was made by Member Scott, seconded by Member Humphrey and unanimously carried by the Board that Affidavit of Labor is approved and accepted and that the owners thereof are granted relief from taxation on the 1976-1977 Assessment Roll.

Owner of above checked patented mining claims is:
Thomas E. Congdon
1010 Denver Center Building
Denver, Colorado 80201

State of New York
County of New York

Wm. H. Barnard and Frederick C. Hunter, being duly sworn, depose and say that they are respectively President and Secretary of the Candelaria Mines Company

a corporation organized under the laws of Nevada

and that the following is a full, true and correct statement of facts required by Section 85 of the Corporation Law of the State of Nevada, as follows, to wit:

NAME OF DIRECTOR.	Date of Election.	Term of Office.	Character of Business.	Postoffice Address (street and number, if any).
W. H. Barnard, President	June [illegible], 1913	Until successors elected	Treasurer International Salt Co. of New York	2 Rector St. New York
Frederick C. Hunter, Secretary	Jan [illegible], 1913		Attorney at law	80 Maiden Lane New York
J. W. [illegible], Treasurer	March [illegible], 1913		Treasurer N.Y. Transportation Co. of New York	2 Rector Street New York Care International Salt Co.
F. R. [illegible]	[illegible]		Transportation business	Clay Peters Bldg. Reno, Nev.
J. C. Peebles	[illegible]		Manager Nevada Ore Purchasing Co.	Reno Natl Bank Bldg Reno, Nev.

Furthermore that CHENEY, DOWNER, PRICE & HAWKINS of No. 139 N. Virginia Street, Reno, Washoe County, Nevada, is the duly and regularly authorized Agent for said Corporation upon whom process can be served.

Wm. H. Barnard
President.

Frederick C. Hunter
Secretary.

Subscribed and sworn to before me this 25th day of [illegible], 19[illegible].

[illegible] Dills
Notary Public.

NOTARY PUBLIC, KINGS CO. N.Y.
CERTIFICATE FILED IN N.Y. CO. 150
N.Y. CO. REG. No. 10136
KINGS CO. REG. No. 157

COLUMBUS MINING DISTRICT (see Candelaria)(1)

Esmeralda County and Mineral

SUR. NO.	NAME OF CLAIMS	OFF. NO.	LOCATION TOWNSHIP SECS.	RANGE	PAT.
37	Socrates	1189	7,18 — 3 N.,	36 E.	Pat.
38	Pacific Borax, Salt, & Soda Co's Consolidated Placer Claim	1190	9, 10, 11, 15, 16, 17 — "	"	no.
37	Green Nick	1191	2,3 and 3 N.,	35 E.	Pat.
38	Mt Potosi No. 1	1192	5 — "	"	Pat.
38	Mountain Girl	1193	3, 4 — "	"	no.
39	Facto	1194	4 — "	"	no
40	Potosi Quartz Lode No. 1	1195	5 — "	"	Pat.
41	Bismark	1196	5 — "	"	Pat.
42	Silver Quartz	1197	3 — "	"	Pat.
43	Lightning Quartz	1198	3 — "	"	Pat.
41 & 44	Southern Belle No. 2	1199	4,33 — " & 4 N	"	no
45	Peru Quartz	1200	3, 4 — "	"	Pat.
46	Mount Diablo Quartz	1201	3, 4 — "	"	Pat.
47	Dinero Quartz	1202	3, 4 — "	"	Pat.
48	Trump Quartz	1203	3 — "	"	Pat.
42 & 49	Commodore (see Sur #1900)	1204	4, 33 — " & 4 N	"	no
43 & 50	Commodore No. 2	1205	4, 33 — " & 4 N	"	Pat.
51	Laughrea	1206	3, 4 — "	"	no
52	Red Bank	1207	3 — "	"	Pat.
51 & 53	Hecla	1208	4,5,32,33 — " & 4 N	"	Pat.
54	Great Eastern	1209	4 — "	"	no
55	Green Linnet	1210	4 — "	"	no
56	Raker	1211	4 — "	"	no
52 & 57	Newark	1212	4, 33 — " & 4 N	"	no
[illegible]	Secretary	1213	4 — "	"	Pat.
59	Leo	1214	4 — "	"	Pat.

(2)

COLUMBUS MINING DISTRICT

SUR. NO.	NAME OF CLAIMS	OFF. NO.	SECS.	TP.	RG.	PAT.
60	Mountain Queen	1215	4	3 N.,	35 E.	no
61	Mount Castle	1216	4	"	"	no
37	Northern Bell	1217	33	4 N.,	"	Pat.
39 (see 58)	General Thomas Lode No. 3	1218 (Withdrawn)	33	4	35	"
40	Chief of the Hill	1219	33	"	"	Pat.
44	Chief of Columbus	1220	32	"	"	no
45	Lander	1221	33	"	"	no
47	General Thomas Lode No. 1	1222	4, 33	3, 4 N.,	"	no
48	General Thomas Lode No. 2	1223	33	4 N.,	"	no
49	George Washington	1224	32	"	"	Pat.
50	Good Faith	1225	32, 33	"	"	Pat.
57 & 62	First E. Extension of Northern Belle	1226	33	"	"	Pat.
58	General Thomas No. 3	1227	33	"	"	Pat.
1701	Mount Diablo Consolidated	1701	3, 4	3 N.,	35	Pat.
1702	Rex Consolidated	1702	3, 4	"	"	Pat.
1886	Northern Belle No. 2		33	4 N.,	35	Pat.
"	Melantius		"	"	"	"
"	Laconia		"	"	"	"
"	Geraldine		"	"	"	"
"	Edina		"	"	"	"
"	Consuelo		"	"	"	"
1887	Western Belle		33	"	"	Pat.
"	Grand		"	"	"	"
"	Morning Star		"	"	"	"
1888	Noble Mine		33, 34	4 N.,	"	Pat.
"	Lent		3, 4	3 N.,	"	"

COLUMBUS MINING DISTRICT Fred O'Ferral (3)

(ESMERALDA COUNTY)

SUR. NO.	NAME OF CLAIMS	SECS.	TP.	RG.	PAT.	
1889	Bar	33	4 N.,	35 E.	Pat.	37
"	Rescue	"	"	"	"	38
1890	Triangle	"	"	"	Pat.	39
1891	Jebsen	"	"	"	Pat.	40
1900	Commodore (note: this is amed. surv of lot nos. 42+49)	33,4	3,4N.,	"	Pat.	41
1901 (Lot 47)	Gen Thomas Lode No. 1	33	4	"	Pat.	42
" (" 48)	Gen Thomas No. 2	"	"	"	"	43
3629	Humboldt No. 2 Ser. cc 04282	Aprox sec. 20	Unsurveyed 4 N.,	36 E.	Pat.	
"	Humboldt	"	"		"	
"	North Star	"	"		"	5
"	Windy Ridge	"	"		"	
"	Sixteen to One	"	"		"	
4520	Caesar	33	4 N.,	35 E.	Pat.	44
4521	Columbus	33	4 N.,	35 E.	Pat.	45
4522	Atlantic	4	3 N.,	"	"	46
"	Original	"	"	"	"	47
4604	Petrel	3,33,34	3-4 N.,	35 E.	Pat.	48
4702	Belle East Extension	33,34	4 N.,	35 E.	Pat.	49
"	Belle East Extension No. 1	"	"	"	"	50
"	Belle East Extension Fraction	"	"	"	"	51
"	Rescue Noble Extension	"	"	"	"	52

16 33 49

56

BLACK MOUNTAIN MINING DISTRICT

(Mineral County)

SUR. NO.	NAME OF CLAIMS	OFF. NO.	SEC.	TP.	RG.	PAT.
37	Combination	1128	~~18~~	~~5N.,~~	~~33E.~~	~~no~~
38	San Francisco Bell	1129	13,24	5 N.,	32E.	Pat.
4263	Marietta		31,32	"	"	Pat.
"	Marietta No. 2		32	5 N	33 E	"
4453	Murceid		20	5 N.,	33 E.	Pat.
"	Murceid No. 1		"	"	"	"
"	Murceid No. 2		"	"	"	"
"	Murceid No. 3		"	"	"	"
4461	Glengary No. 7		31,32	"	"	Pat.
"	Glengary No. 6		32	"	"	"
"	Glengary No. 11		32	"	"	"
"	Marietta No. 4		32	"	"	"
4462	Glengary No. 4	Secs.	30,31,32	"	"	Pat.
"	Glengary No. 3		32, 30,31,29	"	"	"
"	Glengary No. 12		29,32	"	"	"
"	Glengary No. 13		29,32	"	"	"
"	Glengary No. 14		30,29	"	"	"
"	Glengary No. 2		30,29	"	"	"
"	Glengary No. 1		30	"	"	"
4483	Enterprice		Sec.25,30	"	33,34E	Pat.
"	Gray Horse		25	"	33 E	"
"	Shoemaker Extension		25	"	33 E	"
4852	Marietta No. 5 lode		30&31	T. 5 N.,	R. 33 E.	
4854	Loyola		32	"	"	
	Royal		29,32	"	"	
	Green Mountain		29,32	"	"	
	Glengary No. 10		29,30	"	"	

Preliminary Report
Explorations in Nevada & Colorado
War Dept
1871

We now proceeded to the La Libertad, which is the most southern mine of the district. The entrance to the mine is an incline at an angle of 43°, altitude 5,710 feet, to a depth of 500 feet. At 400 feet we came to moist earth, and at a depth of 460 or 475 feet to water, which fills the bottom of the mine. Here we came to a drift running northwest to a distance of 50 feet. The quantity of ore taken out is about 300 tons. Cost of mining, $25 per ton; cost of shipping, $25 per ton; cost of working, $25 per ton. The amount derived since opening, about $100,000, which is not quite equal to the sum expended.

1st Lt. Geo. M. Wheeler
1871

MONTEZUMA DISTRICT, NEVADA.*

(Camp in Big Smoky Valley, July 7, 1871.)

We left camp soon after sunrise for Montezuma, which was but eight miles southwest, on the northern slope of Mount Nagle, in a small ravine. In the valley we were just leaving was a salt-marsh, which is separated from the Silver Peak salt-marsh by a low divide of volcanic rocks, a continuation of Lone Mountain, with these mountains surrounding Montezuma. This district was discovered May 18, 1857, and was organized on May 24, 1867. The district has been worked constantly since that time. The recorder is Matthew Plunket. The nearest post-office is Silver Peak. The general course of the mining and other ledges is east 35° north and west 35° south. Incline of strata, 48°. The High Bridge mine follows down between two strata of metamorphic limestone, in which was embolite, (chloro-bromide of silver,) to a depth of 85 feet. Value, from $68 to $200 per ton. Altitude of opening, 6,950 feet. South of the town of Montezuma (which consists of six houses, two taverns, and a store, besides one dwelling-house, and a mill) lie the mines on the hill-side. The Savage mine, the most important in the place, has a tunnel of 80 feet depth to a silver-bearing vein, whose dip is at an angle of 40°.

The altitude of mouth of tunnel is 7,010 feet, (aneroid barometer 57.) The ores are embolite, sulphurets, malachite, azurite, (scarce,) selenite, chabazite, and a few of the rare zeolites. The principal mines are the Crocket, Mountain Queen, Brewster, and Osceola. The other mines of importance are the Hubbard, Norfolk, Southern, Light, Burchard, &c. There are about fifty claims in the district, nine of which have been worked at different times. The timber is abundant all over the mountains, but water is taken from wells. There is a 10-stamp mill erected at the camp, (dry stamp,) with a reverberatory furnace. This is also deserted at present. There are a few Indians living in the mountains. They appear to be at peace with all, and are often hired to carry water, wood, and do other work around the mines. Most miners get from $75 to $100 per month, with board. There has been expended in the development of the Crocket, $2,500; Mountain Queen, $8,000; Brewster, $3,000; and Osceola, $2,500. The ores are worked at Benton and Columbus.

BLIND SPRING DISTRICT, CALIFORNIA.*

This district was organized in the autumn of 1864. Distance from Reno one hundred and eighty-five miles, and Wadsworth one hundred and sixty-five miles. The mountain and ledges run north and south. There is one fissure-vein called the Comanche. This has not been sufficiently developed to give entire proof as such. No wood found here, and water occurs only in the valleys, from four to six miles away. The ores are antimoniates of lead and silver, and are extremely rich in silver. The yield for 1871 was $60,000. Cost of mining is $10 per ton; cost of milling and chloridizing, $15 per ton; labor per diem, $4; labor per month, $60, with board.

In the district near Benton is one 4-stamp mill, built at a cost of $4,000. It is run by water-power. This mill can work one and a half tons per day, (of ore.) The principal mines are the Comanche, Rockingham, Diana, and Silver Sprout, also the Wilson Claim, and Cornucopia. Costs of developing the claims are as follows: Comanche, $15,000; Rockingham, $12,000; Diana, $40,000; Wilson Claim, $7,000; Cornucopia, $60,000—not worked now; Silver Sprout $2,000; Kearsarge, $15,000.

Late advices show a great change in the character of the ores in the Rockingham mine. At the time of visiting this place the water-level had not yet been reached, and the antimoniates of silver abounded exclusively. But upon reaching the water-level, at a depth of about 350 feet, the antimoniates were gradually replaced by the sulphurets, pyrites frequently occurring.

Partzwick has about ten buildings, of which one is a livery-stable, one store, and one liquor store and hotel; number of inhabitants about forty. They are erecting at the northern end of the village a 10-stamp mill, with a Stedefeldt furnace, with capacity of working 15 tons of ore per day.

Benton is situated about a half mile south of Partzwick, and has—houses, 12; inhabitants, 55; blacksmith's shop, 1; hotel, 1; stores, 2; saloons, 2; livery-stable, 1; school-house, 1; Wells, Fargo & Co.'s office; post-office. Also 1 arrastra mill, (water-power).

* From notes furnished by Dr. W. J. Hoffman.

ALIDA DISTRICT, NEVADA.*

Alida Valley is from one to two miles broad, by about six miles in length. At the extreme eastern part is located the spring, from which issues a fine stream of water. At the summit we just crossed we found a large vein of malachite and black oxide of copper croppings. The ravines on both sides of the mountain are covered with cedars and pines in abundance, and on the northern side of the mountain we saw two springs of good water. Alida Valley is covered with good grass, and the watercourse is fringed with a dense undergrowth of willows. Here a man named Scott was working a claim which he had discovered. The ore was stromeyerite, with malachite, cuprite, and a little hematite.

GOLD MOUNTAIN DISTRICT, NEVADA.*

We followed a trail up a wash, which took us just to the east of Mount Magruder, then down a gentle slope, and across a barren desert. Finally, after crossing two ranges of mountains, we came to another sand desert. Up the opposite side of this we came to Camp Gold Mountain, which is situated on the northern slope of Gold Mountain. The well at Gold Mountain Camp furnishes just sufficient water for the three men and four animals that are kept there. The district was formed in 1865. The nearest place for mail and freight-shipping is at Silver Peak. The nearest railroad station is Battle Mountain. Wood is abundant, and water can only be obtained on the northern slope of the mountain by sinking wells. On the southern slope, in a ravine, is East Spring, of alkaline water. The chief ore is gold, and for the purpose of reducing this an arrastra has been erected, and gold is obtained by means of amalgamation. Cost of mining the ore is about $10 per ton. Barley is worth 10 cents per pound, and hay is worth $50 per ton. There is sufficient grass on the mountain-slopes to furnish all pasture necessary for the animals. The amount realized for one month's work is $400, and two hundred pounds of rock is generally worked per day: The chief mines are the Evening Star, State Line, Nova Zembla, Kohinoor, Golden Eagle, Bamboo, Boomerang, Little Bell, Huburmac, and Borneo. The total number of locations is about forty. The amount expended since 1865 is about $7,000. There are but two men working at present, but at one time there were twenty employed. A 10-stamp mill would cost in this place $10,000 or $15,000. Many of the mines are situated on the slopes of the smaller mountains, which generally run east and west. Much gold is taken out of the summit of one mountain of syenite. The gold occurs in quartz, jasper, and malachite; specimens of the latter are unique. Argentiferous selenite, of excellent quality, occurs in abundance four miles south of camp. The State Line ledge, lying five miles to the northwest, is 3,000 feet in length, and 20 feet thick, yielding $20 per ton. The ledge runs northwest and southeast.

PALMETTO DISTRICT, NEVADA.*

This district was formed on April 9, 1866. Nearest place of communication is Silver Peak. The nearest railroad staion is Wadsworth. The ledges run north-northwest and south-southeast, and dip at an angle of 45° northeast. Abundance of timber, and several springs of water, and small streams two miles east. The number of tons of ore taken from the mines is about 500. Cost of mining ore is $12 per ton; cost of milling and roasting, $35 per ton; cost of chloridizing, $15 per ton; labor per day, mining, $4; labor per day, milling, $4; cost of barley, per pound, 5 cents; cost of hay, per ton, $50. There is one 10-stamp mill here, which cost $90,000.

The principal mines.—On the western slope of the range are the New York, Champion, Kentucky, and Virginia, supposed to be the same vein.

Those on the east are the Tennessee, Palmetto, Carolina, and Louisiana. The amount expended in these mines is $75,000, and bullion obtained about $200,000. A 10-stamp mill at present would cost about $36,000. The valley contains large quantities of grass, and is generally on limestone and sandy soil. Farther to the west are large quantities of porphyritic granite, containing fine crystallizations of orthoclase.

GREEN MOUNTAIN DISTRICT, NEVADA.

This district lies to the south of Palmetto, and is at present deserted. It was organized in 1869. The cost of working is the same as in Palmetto. The gold which was worked chiefly amounted to about $2,000. The only silver ledge in the district, the Veta Madre, runs northwest and southeast, and dips east. This lies between limestone and granite strata. The once famous Tule Cañon belongs to Green Mountain district. A part of the old Cottonwood district belongs to the Palmetto. In the latter district are about one hundred and twenty-five claims. There are not more than twelve or fifteen persons living here at present.

* From notes furnished by Dr. W. J. Hoffman.

and good. Limestone spring flows at least 6,000 gallons in 12 hours. Several springs on the western slope; one small alkali spring on eastern slope, about six miles from those in valley; water quite cold.

Rocks and minerals.—Limestone, granite, mica, greenstone trap; one very remarkable dike of the latter on east slope, almost vertical, about 8 feet or 10 feet thick, running from base to top, dividing the ridge into equal parts. The greenstone is eroded considerably, leaving a steeply-inclined channel through the limestone and granite, basalt, obsidian, trachytes, lava, scoria, volcanic ashes, salt, calcareous tufa, quartz, (all three varieties,) vitreous, chalcedonic, and jaspery formations, and pumice. Small crystals of smoky quartz were abundantly found in the felspathic lavas. In Clayton Valley are found trilobites, fossil fish, corals, and concretions.

Ores.—Gold—free gold in quartz and sulphurets, and auriferous galena. These have been worked by free process and wet-crushing process—amalgamated on electro-plated copper. Average yield per ton, $28. Silver—chlorides, sulphurets, argentiferous galena, and horn silver. These ores were worked awhile by the wet process, but it was a failure, yielding about 40 per cent. of the assay value. The ores of the Lodi and Tiger mines were worked successfully by the wet process, yielding 80 per cent. of assay value.

Bullion.—The gross annual production of bullion from these mines, while the mill was running, was between $900,000 and $1,000,000, averaging about $25,000 per month.

Cost of mining, milling, &c.—Average cost per ton for mining, (gold and silver mixed,) $5 per ton. (*Note.*—Perhaps a little more for gold, and a little less for silver.) Average cost for milling per ton, (no silver milled,) $3.50 for gold. Average cost for roasting, (none roasted here, some silver sent away and roasted.) Average cost for mining labor, $4 per diem. Indian labor, (used at mill,) 50 cents per diem. Cost of 10-stamp mill, (put up,) gold, $15,000; cost of 10-stamp mill, (put up,) silver, $20,000 to $25,000; cost of 20-stamp mill, (put up,) gold, $25,000; cost of 20-stamp mill, (put up,) silver, $30,000; cost of 30-stamp mill, (put up,) gold, $30,000; cost of 30-stamp mill, (put up,) silver, $50,000.

Mines worked.—The principal work has been upon the Crowning Glory Mine. The company employed seventy-five men upon it for three years at $4 per diem. The amount expended in the mineral development of these mines is about $280,000. Total amount of bullion extracted, about $2,000,000. The ore is hauled about seven or eight miles over a good road to the mill. The ore is transported down from the mine for some distance in ore-carts, over a railroad; these cars descend under the action of the force of gravity almost, and are hauled up empty by mules.

Inhabitants.—At present only four or five men remain here, all the hands having left, while the mill lies idle for repairs, and all work is suspended. There are in the place about twenty houses built of concrete, one store, and one livery stable. Materials for making concrete are close at hand, gravel being on the ground and limestone in a butte near by, and a lime-kiln near the mill. The company burn their own lime. There is one stage-line to Aurora, fare $25 to that point and $50 to Reno on railroad. Freight, 4½ cents per pound to Wadsworth. Mails weekly, I think.

DEEP SPRING VALLEY DISTRICT, CALIFORNIA.*

This district was organized in 1862, and called White Mountain district, but has since been changed to the above name. Nearest station on Central Pacific Railroad is Wadsworth, distance one hundred and eighty miles.

Principal Mines.

1. *Cinderella.*—This vein dips to west 5°. It is not worked now. Some miners sunk a shaft to some depth a few years ago, but were killed or driven away by the Indians. Assay value per ton, $75.
2. *San Juan.*—There has been expended in opening this mine about $2,000. It has produced so far $1,500 in bullion.
3. *Julia Dean.*—One thousand dollars have been expended on this mine. No bullion produced. Vein vertical.
4. *San Francisco.*—Five hundred dollars expended opening it. Three hundred and sixty dollars produced in bullion.
5. *Tennant.*—One thousand dollars expended on it. Produced $500 or $600 in bullion.
6. *Homestead.*—Five hundred expended. Produced $600 in bullion.

Ores.—All silver. Some of the veins contain 33⅓ per cent. of gold, and others more. The ores must be reduced by roasting. Average yield per ton, $100. The ledges and veins are situated in both the foot-hills and main range of the White Mountains. They lie in Deep Spring Valley, in the eastern slope of those mountains, and extend from the low foot-hills to the summit. There are two systems of veins running nearly at right angles to each other. In the foot-hills the strike of the lodes is north and south. Near the summit it is nearly east and west. Country rock is granite in the foot-hills, and higher up it is talcose slate.

* From notes furnished by Mr. F. Klett.

I assumed command of the escort, a detachment of twenty-five men from Troop I, Third United States Cavalry, and also of main party No. 2 of the expedition, by virtue of the following orders:

Special Field Orders } No. 10.—Extract. }

UNITED STATES ENGINEER OFFICE,
EXPLORATIONS IN NEVADA AND ARIZONA,
Camp near Belmont, Nevada, June 23, 1871.

* * * * * * *

I. Second Lieutenant D. A. Lyle, Second United States Artillery, having reported in obedience to paragraph I, Special Orders No. 98, Headquarters Military Division of the Pacific, is hereby placed in command of the escort, and, until the arrival of First Lieutenant D. W. Lockwood, Corps of Engineers, in charge of party No. 2 of the exploration.

GEO. M. WHEELER,
First Lieutenant, United States Engineers, Commanding Expedition.

Special Field Orders } No. 16. }

UNITED STATES ENGINEER OFFICE,
EXPLORATIONS IN NEVADA AND ARIZONA,
Rendezvous Camp near Belmont, Nevada, July 2, 1871.

Main party No. 2 of the exploration, under command of Second Lieutenant D. A. Lyle, Second United States Artillery, will proceed at daylight to-morrow (Monday) morning, *en route* to Camp Independence, California, on the trunk-line selected from this point to the rendezvous camp at the above-named station. He will be furnished with a copy of the letter of instructions from the Chief of Engineers of the 22d of March, 1871, and will, in all respects, adhere thereto, conducting his party in the same manner as if it were a separate expedition. Fifteen days will be allowed to reach Camp Independence, and *en route* special attention must be given to the examinations in the contiguous mining districts.

He will be called upon for a report of his trip.

By command of Lieutenant Wheeler.

D. A. LYLE,
Second Lieutenant, Second Artillery, Adjutant of the Expedition.

Accordingly, on the morning of the 3d of July, I left the rendezvous camp in Meadow Creek Cañon, north of Belmont, Nevada, and set out upon the march

FROM BELMONT, NEVADA, TO CAMP INDEPENDENCE, CALIFORNIA.

Following down Meadow Creek Cañon for several miles we struck the stage-road from Austin to Belmont; thence crossing the Toquima Range and Ralston Valley, in a southwesterly direction, we encamped at Cedar Springs (Baxter's Station) on west side of valley, having marched thirty and a quarter miles. Here we found plenty of wood and good water, but very little grass.

Ralston Valley is from eight to twelve miles wide, a sandy, gravelly, stony desert, with no vegetation except wild sage. At this point a wagon-road comes in from the southeast from Reveille.

The next day made a short march of eleven miles to Indian Springs, (San Antonio,) in Big Smoky Valley. Here we found plenty of water, slightly brackish, little grass, and no wood except sage-brush. The route to this point was upon a wagon-road, from Belmont to San Antonio and Fish Lake Valley. The road from Cedar Springs lies over a low range, through an excellent pass, bordered with plenty of nut-pine and cedar, but no grass or water. There are two quartz-mills at this point, both lying idle; some arable land, but natural facilities for irrigation are limited. If irrigated the soil would be productive. Jack rabbits and mountain quail the only game seen.

My orders being discretionary with regard to everything except time and general direction of line, I concluded to detach at this point a small topographical party, consisting of Acting Assistant Surgeon W. J. Hoffman, United States Army, in charge, one topographer, two civilian assistants, with a packer, guide, and soldier, to visit San Antonio mining district, and follow down the west side of the San Antonio Range, pushing their investigations to the east and southeast, and passing to the east of Lone Mountains to Montezuma; then crossing the mountains, after visiting the

Montezuma mines and entering Clayton Valley, this party was to join the main party at Silver Peak, while myself with the latter party crossed the Smoky Valley Desert to the west and southwest of Lone Mountains, via Desert Wells, where, instead of crossing the low summit of the Toyabe Range to the westward into Fish Lake Valley, as previously intended, we would move southeasterly into Clayton Valley to Silver Peak, in order to facilitate the junction of the detached side party, presuming that the topographical and physical results would be more fertile on this line than they could possibly be by crossing directly into Fish Lake Valley to the north of Red Mountains. This presumption was fully sustained by subsequent results.

On the 5th the main party crossed this desert, reaching Desert Wells at 5 p. m., having made thirty-two miles, very hot and dusty, both men and animals suffering severely from thirst, the result of drinking brackish water at Indian Springs. Here we found three springs filled with slimy mud, from which we could get no water. About half a mile to the northeast was a large hole containing a few gallons of water.

We concluded to bivouac here for a few hours to rest and feed the animals preparatory to making a night march to Silver Peak, twenty-five miles distant. By dint of considerable digging, at which we all took turns, we procured enough water to supply our wants and those of the animals partially, though it was very brackish and alkaline.

The country traversed this day was a sandy desert, covered with wild sage, and toward the lower end of the valley interspersed with hard, white alkali flats, destitute of vegetation. Jack rabbits, lizards, and beetles were the only specimens of animated nature seen. Owing to the cloudiness of the weather and the darkness it was not until 2 o'clock a. m. that we resumed our march to the southeast, and skirting for several miles an alkali lake, (dry,) some twelve miles long and from one to six miles wide, we passed up a rocky wash and crossed a low ridge or divide connecting Red Mountain Range with Lone Mountains. This ridge was composed of volcanic remains—lava flows, extinct volcanoes, volcanic ashes, scoria, and basalt; native sulphur and alum being also met with.

Entering Clayton Valley we passed a very perfect volcanic cone of recent date, but now extinct, and striking a salt marsh, twelve to fifteen miles long and from four to eight miles wide, we arrived at Silver Peak. Here is a cluster of saline springs, mostly warm, and of various degrees of saturation, one of which was constantly boiling; the waters were impregnated with salt, lime, borax, and sulphur. Another very remarkable spring was one out in the salt marsh about half a mile, which was nearly fresh, and the water quite cold. The white surface of this marsh was broken by two or three rocky *buttes*, upon which trilobites and other fossils were found; toward the lower part of the valley were shifting sand-hills.

Here we remained till the 8th of July, recuperating ourselves and animals, awaiting the arrival of Dr. Hoffman and party. This interval was devoted to investigations of a geographical, geological, and mineralogical nature. Astronomical and meteorological observations were also made. I visited the mines in the Silver Peak and Red Mountain mining districts, which are owned by the Silver Peak and Red Mountain Gold and Silver Mining Company, who have a 30-stamp gold-mill at this point. For the details regarding these mines I would respectfully invite your attention to my report on "Mines and mining districts," appended and marked A.

Clayton Valley is a complete interior basin, being surrounded on all sides by mountains. It is about eighteen or twenty miles long, and from eight to fifteen miles wide, the longer axis being nearly north and south. There is plenty of grass in the vicinity of the springs, but poor in quality, and no wood nearer than the summit of the main ridge, about ten miles from the mill.

Upon taking a cursory view of the topographical features of the country to the south and southeast from a peak near our camp, and foreseeing that the farther my line of topography extended

in that direction, toward what was known as the "head of the Amargosa," the position of which point was very indefinite and mythical, the greater would be the probability of my forming a junction with your line, without serious difficulty on my outward march from Camp Independence to meet you subsequent to this time.

Dr. Hoffman and party having arrived on the 8th, the next day I ordered him with the same party to cross Clayton Valley in a southeasterly direction, cross the Montezuma Range into Alida Valley, moving south and southeasterly down that valley to Gold Mountain, visiting the mines there, and swing around the Palmetto Mountains to the westward, examining those mines, and thence to rejoin me in Fish Lake Valley.

I directed the chief topographer, Mr. Nell, to make a very careful survey of the country thus traversed, to fix as many points as possible to the south and southeast of Gold Mountain, and to collect every item of topographical and geographical information he could obtain in regard to that *terra incognita*. This he did with great ability and judgment, and to my entire satisfaction. The knowledge thus obtained was afterward of the greatest service.

On the 10th we crossed the Red Mountain Range to the north of Red Mountain and Silver Peak, the two most noted peaks of this range, and camped at Red Mountain Spring, near the foot of the former peak, on the western slope, having made a short march of eleven and three-fourths miles. From this point myself and a small party made the ascent of those peaks and took barometrical observations. The assistant topographer, Mr. Klett, also took advantage of this to gain an extended view of the country.

The next day the party moved to near Fish Lake, a small body of tepid water, a few rods in extent, in Fish Lake Valley, a distance of nineteen miles.

There is pretty good grazing in the Red Mountain Range, and plenty of timber for fuel on the mountain ridge and western foot-hills. Abundance of excellent water is found at three points on the western slope, at Red Mountain, Mamie, and Cave Springs. It is said that Mamie Spring has only been running about two years.

Red Mountain is of volcanic origin, as is also Silver Peak. These two peaks are about three miles apart and joined by a sharp, comb-like ridge. The western foot-hills are of sedimentary origin.

From Fish Lake Valley to Camp Independence there is nothing new of topographical importance, as our route lay sensibly along an area surveyed by Professor Whitney in his able geological survey of the State of California.

At Fish Lake Dr. Hoffman and party joined, returning from Gold Mountain. His report is appended, marked C, and he was immediately detached to make a side trip to the northward via Columbus, thence, crossing the White Mountains to McBride's ranch, he was to follow down Owen's River and valley to the rendezvous camp at Camp Independence examining the mines and mining districts on his route. His report of this trip is appended hereto, marked D.

There are several ranches in Fish Lake Valley; hay, barley, oats, and potatoes being produced in abundance. Irrigation is necessary. Near the south end of the valley is Piper's ranch, the most important one, perhaps, in the valley, several hundred acres being under cultivation, and irrigated by the waters of Cottonwood Creek. Quite a large area could be rendered productive by a judicious use of the water from small creeks issuing from the White Mountains, which are soon lost in the sand. A good wagon-road connects Piper's ranch with Palmetto, and another with Deep Spring Valley.

From Fish Lake we marched to Piper's ranch, twenty-two miles, thence crossing a low range through a good pass, and passed down the eastern side of Deep Spring Valley, a small interior

OFFICIAL REGISTER

OF THE

UNITED STATES,

CONTAINING A LIST OF

OFFICERS AND EMPLOYES

IN THE

CIVIL, MILITARY, AND NAVAL SERVICE

ON THE

FIRST OF JULY, 1881.

VOLUME II.

THE POST-OFFICE DEPARTMENT

AND

THE POSTAL SERVICE.

COMPILED AND PRINTED UNDER THE DIRECTION OF THE SECRETARY OF THE INTERIOR.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1881.

Post-Offices and Postmasters—Nebraska—Nevada.

Post-office.	County.	Postmaster.	Compensation.
West Salem	Franklin	Samuel Freeman	$17 00
West's Mill	Seward	H. M. Monteith	22 50
West Union	Custer	R. G. Carr	29 18
Wheatland	Webster	S. B. Bierce	40 74
White Rabbit	Dawson	Miss B. J. Glover	21 49
Whitewater	Phelps	S. M. Millard	11 46
Whitney	Red Willow	Mary T. Owen	35 02
Wilber (*c. h.*)	Saline	Horace Cole	1,000 00
Wilhelm's Hohe	Sherman	Jacob Albers	14 88
Williamsburgh (*c. h.*)	Phelps	Albert Hanson	27 78
Willow Creek	Saunders	J. H. Wintersteen	32 45
Willowdale	Antelope	M. C. Aller	46 05
Willow Grove	Red Willow	John Crockford	37 44
Willow Island	Dawson	J. C. Sullivan	67 63
Willow Springs	Wheeler	C. H. Jones	60 29
Wilmot	Furnas	J. M. Gamble	33 58
Wilson	Colfax	J. S. Cushman	$43 49
Wilsonville	Furnas	L. M. Wilson	134 26
Winfield	Holt	Michael Salmon	[1]3 18
Winnebago	Omaha Reserve.	David Waterman	64 83
Wisner	Cuming	A. R. Graham	491 94
Wola	Howard	Xavier Piasecki	6 88
Wolf Creek	Pawnee	J. S. Atherton	12 65
Woodburn	Platte	John Graham	6 50
Woodlawn	Lancaster	N. B. Kendall	40 61
Wood River	Hall	N. T. Brittin	265 94
Woodville	Platte	Joseph Apgar	21 12
Wyoming	Otoe	J. E. Brown	34 25
Xenia	Sarpy	Martha A. Bates	42 46
Yale	Valley	Nels Nygrene	([2])
York (*c. h.*)	York	M. J. Hammond	1,700 00
Zyba	Kearney	Almon Stuart	5 75

NEVADA.

Post-office.	County.	Postmaster.	Compensation.
Alpha	Eureka	W. M. Patterson	$106 94
Arthur	Elko	A. W. Gedney	[3]1 84
Aurora (*c. h.*)	Esmeralda	S. B. Smith	668 29
Aurum	White Pine	J. L. Robertson	[4]8 43
Austin (*c. h.*)	Lander	William Gibson	2,000 00
Bailey	do	E. L. Bailey	15 16
Battle Mountain	do	J. P. Cope	865 88
Belleville	Esmeralda	Elias Brown	440 77
Belmont (*c. h.*)	Nye	H. P. Steimler	619 38
Beowawe	Eureka	Oliver Benson	114 93
Bristol	Lincoln	J. B. Fishback	243 47
Buffalo Meadows	Roop	E. H. Hamlin	29 80
Bullion	Elko	Eliza Hoffman	81 52
Bullionville	Lincoln	Milton Barrett	107 92
Bunkerville	do	G. W. Lee	11 11
Candalaria	Esmeralda	Talbot Root	681 57
Carlin	Elko	Thomas Holmes	358 56
Carson City (*c. h.*)	Ormsby	G. E. White	2,600 00
Cherry Creek	White Pine	D. R. Collins	925 44
Clover Valley	Lincoln	Richard Roscoe	6 70
Cold Creek	White Pine	N. Simonson	[5]4 62
Columbia	Elko	L. W. Jarvis	53 81
Columbus	Esmeralda	C. C. Cousins	110 31
Cornucopia	Elko	O. P. Vaughn	120 88
Dayton (*c. h.*)	Lyon	J. A. Bonham	507 57
Deeth	Elko	J. L. Porter	100 95
Diamond	White Pine	L. L. Higby	10 64
Downeyville	Nye	G. M. Gates	25 36
Duckwater	do	Mrs. Louisa Irwin	12 06
Dun Glen	Humboldt	D. P. Crook	[5]35 18
Eagle Salt Works	Churchill	C. M. Willey	28 75
Eberhardt	White Pine	Oliver Drake	158 01
El Dorado Canyon	Lincoln	H. Gottsfridson	75 07
Elko (*c. h.*)	Elko	Q. W. Hull	1,600 00
Ellsworth	Nye	A. J. Howk	28 74
Ely	White Pine	Harry Featherson	61 25
Empire City	Ormsby	Janus Morris	116 82
Eureka (*c. h.*)	Eureka	W. J. Smith	2,500 00
Fair Play	Elko	Marshall Lemon	.....
Fort Churchill	Lyon	S. S. Buckland	8 38
Fort Halleck	Elko	C. E. Mayer	270 73
Fort McDermitt	Humboldt	F. P. Brougham	488 28
Franktown	Washoe	C. A. Lee	.....
Galena	Lander	B. F. Wilson	228 91
Genoa (*c. h.*)	Douglas	Noah Blossom	353 16
Glenbrook	do	A. W. Pray	.....
Golconda	Humboldt	Theophili Lay	73 43
Gold Hill	Storey	S. W. Chubbuck	2,500 00
Gold Mountain	Esmeralda	S. H. Squire	[6]58 04
Grantville	Nye	A. J. Franklin	613 63
Halleck	Elko	H. L. Deacon	162 80
Hamilton (*c. h.*)	White Pine	C. A. Matthewson	1,488 13
Hawthorne	Esmerald	C. S. Batterman	([3])
Hiko	Lincoln	Mrs. M. A. Wilson	34 55
Humboldt House	Humboldt	L. A. Blakeslee	94 38
Huntington	Elko	Jos. Crawford	11 02
Ione City	Nye	G. W. Veatch	105 50
Junction	do	A. E. Minium	39 65
Lake View	Washoe	S. E. Ewing	[7]1 95
Lamoille	Elko	Henry Kirth	14 81
Lewis	Lander	D. Cozzens	$268 60
Lida	Esmeralda	A. W. Simonson	[8]8 45
Lovelock's	Humboldt	H. E. Emmons	172 82
Marietta	Esmeralda	D. G. Paul	92 51
Mason Valley	do	J. S. Craig	280 83
Mesquit	Lincoln	W. H. Branch	[9]12 50
Metallic	Esmeralda	R. T. Pierce	([9])
Mill City	Humboldt	James Gould	68 67
Mineral Hill	Eureka	T. J. Isbell	325 07
Montezuma	Esmeralda	John Howell	[5]13 64
Morey	Nye	S. W. Johnston	71 06
Mountain City	Elko	Max. Schoen	[1]36 14
Oreana	Humboldt	L. N. Carpenter	47 21
Osceola	White Pine	E. Heckathorn	154 11
Palisade	Eureka	John Marchant	556 03
Panaca	Lincoln	A. M. Findlay	87 50
Paradise Valley	Humboldt	J. W. Powell	378 24
Pine Grove	Esmeralda	J. W. Wilson	102 11
Pinto	Eureka	Henry Fish	15 93
Pioche (*c. h.*)	Lincoln	C. F. Meyers	1,600 00
Pyramid	Roop	Ebenezer Palmer	65 92
Reno (*c. h.*)	Washoe	S. M. Jameson	2,100 00
Ruby Hill	Eureka	J. W. Lambert	625 66
Ruby Valley	Elko	William Snow	78 00
Rye Patch	Humboldt	J. N. Borland	128 17
Saint Clair	Churchill	Jackson Ferguson	252 21
Saint Joseph	Lincoln	Mary E. Logan	8 34
Saint Thomas	do	A. R. B. Jennings	290 25
Salinas	Churchill	Sarah A. Parker	.....
San Antonio	Nye	J. P. Courter	[10]3 00
Schellbourne	White Pine	William Burke	68 74
Sheephead	Roop	Martha Bonham	37 53
Sheridan	Douglas	Caspar Tucke	[1]32 73
Silver City	Lyon	J. W. Grier	398 88
Silver Peak	Esmeralda	John Chiatovitch	55 08
Spring City	Humboldt	A. Grintz	121 49
Spruce Mount	Elko	Mary Callaghan	63 37
Steamboat	Washoe	C. F. Moeller	27 18
Stillwater (*c. h.*)	Churchill	J. W. Richards	179 47
Sutro	Lyon	H. H. Sheldon	266 28
Sweetwater	Esmeralda	Henry Williams	82 90
Tecoma	Elko	C. W. Burton	[1]122 67
Toana	do	A. W. Gobbell	110 80
Tuscarora	do	O. L. C. Fairchild	2,100 00
Twin River	Nye	G. C. Hall	19 71
Tybo	do	George Turin	463 38
Unionville	Humboldt	Pablo Laveage	268 99
Verdi	Washoe	G. W. Foulks	193 22
Virginia City (*c. h.*)	Storey	D. O. Atkinson	2,800 00
Wadsworth	Washoe	Edwin Fowler	575 00
Walker River	Douglas	John Hoge	45 69
Ward	White Pine	Henry Hilp	818 11
Washoe City	Washoe	P. N. Marker	81 39
Wellington	Esmeralda	I. I. Nickleson	134 41
Wells	Elko	R. P. Hamill	[1]426 23
White Plains	Churchill	Walter Schmidt	22 00
White Rock	Elko	V. J. Borette	210 67
Willow Creek	Humboldt	H. H. McColley	84 23
Willow Point	do	Asa Moore	29 90
Win'emucca (*c. h.*)	do	F. C. Robins	1,500 00

[1] For three quarters.
[2] From March 28, 1881.
[3] From May 16, 1881.
[4] From May 26, 1881.
[5] For two quarters.
[6] From April 19, 1881.
[7] From May 18, 1881.
[8] From October 11, 1880.
[9] From January 4, 1881.
[10] For one quarter.

Larry Schmidt
3098 North 300 East
Ogden Utah
84404

Known Cloudburst Floods

Aug. 1, 1901	Belleville	Rail damage due to cloudburst reported in Walker Lake Bulletin.
July 31, 1912	Belleville	7 miles of track washed out reported in Tonopah Daily Bonanza Aug 2. 1912
Aug. 22, 1904	Candelaria	Track washed out near Rhodes derails train 8 miles of track out. Floods also Kinkhead Canyon, Luning, Rhodes and New Boston. Tonopah Miner Aug. 27. 1904
July 29, 1904		Mina Near, Douglass and Silver Star obliterated by cloudburst. Reese River Revielle, Aug. 6. — 1904
July 24, 1923	Mina Near	5 miles of track washed out near Gedich

check Tonopah papers

1901
1904
1904
1912

PROFILE:

MAY BRADFORD SHOCKLEY

by John Kelly Bufton

She sits in her wheelchair, outwardly indistinguishable from thousands of other elderly. But the questions start and rusty circuits, oiled by a press on the forehead and a squint of the eyes, respond. Memories well up—memories of a President and a Nobel laureate; of Sweden's freezing cold and L.A.'s inviting warmth; of Nevada deserts and Missouri hills.

The woman is May Bradford Shockley, '02. The President was her friend, Herbert Hoover, and the Nobel laureate her son, William Shockley. But Mrs. Shockley's story extends beyond the people she knew and the son she raised, for she was never one to live her life through others. Even now her mind does what her body can do no longer—climb New Mexican mountains, walk Parisian streets, paint Santa Clara Valley's landscapes.

She lifts a tired, wrinkled hand to gesture behind her. "I did that one just after the war," pointing to a landscape on the wall behind her. Flowering fruit trees surrounded by tall, brown grass and a hint of mountains in a light mist. No cars, no buildings, no people.

The hands become more animated as the inner energy begins to flow. At 98, Mrs. Shockley still can summon the energy. She has no intention of being confined to a wheelchair forever. "I still have a valid driving license, but I need to take the test. Driving is such a convenience, I don't think I could ever give it up." Dark eyes flash defiance behind the glasses.

Her words are those of a youngster with a broken leg, eagerly anticipating freedom. A year in the wheelchair, after breaking her thigh bone on February 26, 1976, has not made her a prisoner of fear, resignation, or the past. Getting her to speak of the past is like pulling a lion's teeth—difficult and painful.

But, with a little prodding ("Oh, talking about that is like going down a shaft and upsetting the diggings.") and many long silences, the mind reaches back as far as possible—to New Mexico's mining communities in the 1880s. Here, May Bradford received two disparate backgrounds. Her mother tried desperately to inculcate her with the charm and sophistication of a Southern belle but her father, a mining engineer, encouraged a tomboy's life. For a time her father's influence was predominant.

Mrs. Shockley recalls that she was "rocked in a mining bucket instead of a cradle" as her family followed her father, who followed the scent of fortune, from claim to claim. In Kingston, New Mexico, she spent her time exploring the desert plateaus and mountains despite warnings of Geronimo's proximity.

Her wanderings ended, however, with a disease resembling tuberculosis. That, and her need for continued education, forced her return to the family farm in Carthage, Missouri—not far from her birthplace in Moberly. It did not end certain activities unbecoming a Southern gentlewoman.

"My grandfather decided to cure me of my disease so he offered me a nickel for every rabbit skin I would bring in, to get me to walk and be out in the air. I was pretty good at it—so good in fact that everyone in my family got sick and tired of eating rabbit."

Her methods were not too gentle, as she remembers, incredulous at her own brutality. "I would trap one at the corner of two walls, pull it out by its hind legs and I, gentle creature that I am, used to sling it up against the stone wall and hit its head," she shudders.

Mrs. Shockley's grades at Carthage High School did not suffer from her rabbit-hunting binges as she showed a sufficient aptitude for mathematics to warrant further education. But then a problem arose. In 1898, public higher education was not widely available to women and the Bradfords had no money for the elite Eastern schools. Leland Stanford's generosity saved her.

Stanford had established his university in Palo Alto less than 10 years previously, decreeing that no tuition should be charged. Mrs. Shockley's application was accepted with the recommendation of her principal and a former classmate then at Stanford, who "convinced me it was a good school."

She traveled alone by train to Stanford and spent a few weeks in a campus dormitory before her family arrived and bought a house in Palo Alto. "My father didn't stay long, as he went off to Alaska and elsewhere, surveying claims and digging some of his own, but my mother and grandfather were there. We had a cow, which they brought in a baggage car all the way from Missouri—it had to be milked on the way out."

The memories slow momentarily. "You must remember I don't live in that era any more—haven't for quite a while," she apologizes, rubbing the temples a bit harder. The past is just that for her. A long silence as she stares at the door. "Well, let's go on digging up the carcasses," she laughs.

Palo Alto in 1898 consisted of two boardwalks spanning a sea of adobe mud. Two horse-drawn buses ran regularly out to the campus, but Mrs. Shockley usually avoided the expense of the buses by riding her bike to campus, an activity that endeared her to Mrs. Stanford's dogs.

"I used to bicycle around, followed by the dogs—who really liked me. I'd stop and play with them and they'd practically talk to me."

Her most memorable encounter with Jane Stanford was not nearly so pleasurable. "I was in an art class with three men, sketching a nude woman. Mrs. Stanford came in and threw a fit. She said what were we doing, looking at a naked lady with men and women in the same room. She demanded we be separated, so a partition was put up, with me on one side and the three boys on the other, with the nude up front. We all thought it was pretty amusing and when we thought she'd forgotten, we went ahead and had another nude model." The last comment comes in an aside, from one sharing a secret.

Mrs. Shockley found it more mundane but also more profitable and less controversial to paint hats rather than nudes. "The junior men had these felt stovepipe hats called plugs. I used to paint them with numbers and such for a dollar a hat. I made money to go to the opera on that."

She used a lead-based paint that dried to such a hard finish that the hats were used as weapons against bands of marauding seniors bent on smashing them. The tradition, called Plug Ugly, was later abolished as too violent.

Education proceeded despite such diversions and Mrs. Shockley soon demonstrated her competence in art, math, and geology. "My art teacher—Belton Brown, a pupil of Whistler's—wanted me to study in Paris while Dr. Branner wanted me to help him by illustrating his geology text. I was torn."

Her mother's ill health helped her decide to refuse both offers and tutor art to Palo Alto students at two dollars a month to make ends meet. After a year, she found a better job in Seattle, teaching art along with mechanical drawing in a high school. Her goal was to save enough for the Paris trip, which she did with miserly efficiency, saving $1,500 in nine months.

A fire in her father's surveying office in Tonopah, Nevada, changed her plans, though. "The office was burned down by his partner, who left a lighted cigar in the room. Needless to say, that didn't make him very popular, so he left town. With all the work in the area, my father needed a new partner. He badgered me to take the job and I finally gave in."

On July 21, 1904, Mrs. Shockley arrived in Tonopah by stagecoach to open the firm of Bradford and Bradford, mineral surveyors. With the mining boom in full flower around Tonopah, Bradford and Bradford was swamped with work requests.

"My father would do the actual surveying, while I did the office work, the drawing and such. I swear I was chained to that drafting table. I'd work late at night by the light of a coal-oil lamp to get everything done. You can bet I charged plenty for that service," she laughs.

The pair charged enough to clear all the debts for their building, lot, and instruments within a few months. Before that, the Bradfords survived on income from leather pillow covers that Mrs. Shockley etched in her "spare" time. Her fingers outline the pattern, reliving long desert nights by the lamp, not unkindly.

Work continued to pour in until finally Bradford and Bradford convinced Mrs. Bradford to quit Palo Alto for the sagebrush. Her arrival allowed young May to delegate her office and housekeeping chores and concentrate on drafting. She also managed a little time for pleasure.

A Sierra trip was arranged—"They kept talking about the 'ascents' they were

making. Now I had always just run up and down the 'hills' in Tonopah before dinner for the fresh air and it turned out that I was just a super mountain climber!"

She starred in a local club play in 1905, posing as Belinda Blue Grass whose marksmanship with a revolver "makes Trampas and Diamondfield Jack stack up like ordinary Oregon sheepherders" according to a local newspaper account.

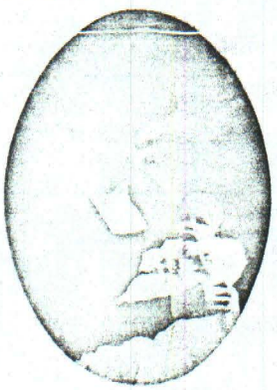
Although she may not have been that fearsome, she did regularly pack a gun on her trips from Tonopah to Goldfield–20 miles away–and her rabbit-hunting days obviously didn't hurt her aim. She gave up the gun, though, figuring "any fellow I might have met would probably have shot better than I did, but I could probably have talked better than he could and could have talked him out of shooting me."

She also managed to get away from her drafting table long enough to do one surveying job–the ncessary qualification for certification as a mineral surveyor. She mailed the application to the Surveyor General–who happened to be her high school principal–and back came her appointment as a U.S. Deputy Mineral Surveyor for Nevada. The first woman to receive such a post in Nevada, she was also probably the first woman anywhere in the U.S. to be so designated.

Mrs. Shockley's eyes shine when speaking of the appointment, but she again lapses into pensive silence; the eyes rekindle as she resumes her narrative.

"There was a German, Hermann Reiske, for whom we did a lot of surveying. So I thought it would be very nice to make him a map of his holdings because he certainly deserved something for all the business he'd given us. So I did and he was overcome by the fact. He came by and brought a pony with a saddle and bridle for me–Buck. Buck and I used to enjoy chasing storm clouds out on the hills and getting wet. He seemed to understand when I said, 'There's rain over there, let's go.' "

A long silence and the eyes close. "When I went to Paris, father took Buck to California but he was a desert pony and never much cared for it there. That was a tragedy."



With infant son William.

When did she go to Paris?

"Let's see, I graduated from Stanford in '02"–always the starting point for a calculation of dates–"then Palo Alto, Seattle, and Tonopah . . . "; the voice tails off. Then, suddenly, "It was 1906. My father was getting fussy because he was being tied down and couldn't get out to make his fortune. So I said, 'You just go out and make your million dollars and I'll take my money and go to Paris.' "

Bradford and Bradford ceased to exist on July 5, 1906, as the two partners went opposite ways. Mrs. Shockley headed for Paris to study art under Richard Miller, a transplanted American with a superb reputation on the Continent. Despite the possibility of study at the Sorbonne, she returned to Tonopah a year later.

"I came back hoping to reopen the office. But things were pretty dull in Tonopah; the boom had passed. Then I met this charming mining engineer from MIT who spoke eight languages. He was speculating in mines there."

The eyes regain their shine. "I was amazed to find someone in the middle of Nevada who could talk to me about Italian paintings." In January 1908 she married William H. Shockley.

Shockley's speculation ended within a year–an utter failure–so he decided to head for London where a group of American mining engineers, especially from MIT and Stanford, were in high demand. He spent a great deal of time on the Continent, while Mrs. Shockley was raising her son, William Bradford, and entertaining the neighbors, including the Herbert Hoover family.

"They lived within a few blocks of our house, and since we had a large garden, the children played there–Allan Hoover never realized he was playing with a future Nobel laureate."

The group of American engineers often had dinner parties, at which Mrs. Shockley had the dubious distinction of sitting next to the President-to-be. "I would much rather have sat next to my husband, who was a marvelous conversationalist. Herbert Hoover was a grunter. I would say something and he'd just say 'Unh.' He wasn't very exciting. He was not very socially adept but his wife was and she spent all her time explaining "Herbie." I was very fond of her–but I was never an intimate friend of her husband."

The Shockleys lived in London for four years, during which time the younger William began to show his creativity. "When he was about three, he had this imaginary monkey called Jacko, which went with us everywhere. We'd have to stop in the park and wait while Jacko would climb a tree. Bill demanded that his breakfast tray always have something extra for Jacko. He only lasted a year, but a year's a long time to live with Jacko!

"Bill also invented a shoe-polishing machine about the same time. It didn't work, but there were strings running all over the room–it was a mess." Shockley, who won his Nobel for inventing the transistor, showed an aptitude for electronics even then, inventing imaginary circuits along with imaginary monkeys. His early formal education came largely from his parents.

Through their association with the Hoovers, Mrs. Shockley gained an appointment as a lecturer in engineering at Stanford under Theodore Hoover, and the family traveled to Palo Alto.

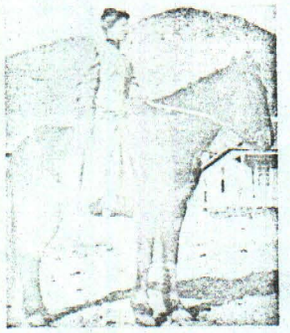
Here, during World War I, Mrs. Shockley, in her words, "made the world safe for democracy," punctuating the statement with a wry smile and giggle.

"I must have been on about 12 executive committees–the only place I could stand a women's club was from the platform. We worked to make life more complicated."

She spent the most time on the Santa Clara County unit of the U.S. food administration program. Her efforts spurred the area to a record in food conservation. "We had all these slogans about 'Save the wheat, sugar, and fat.' Our rationing program was purely voluntary, but it succeeded almost too well. Our people were starving themselves to death."

According to the *Palo Alto Times* of March 31, 1943, she was also chairman of the city's Women's Loan Committee, organizer and conductor of War Savings Stamp drives for the YWCA, a major in the Mobilized Women's Army of Santa Clara County, a member of the War Camp Community Service, and president of the Civic League.

To fill the void after the war ended, Mrs. Shockley returned to her painting–something she had had little time for since her marriage. She painted still lifes of many of the Chinese porcelains collected by her husband while mining engineering in China and later loaned by her to the Stanford Museum.



On Buck in Tonopah, about 1905.

Working at a friend's studio, for her own pleasure, she sent one of her paintings to a San Francisco gallery to be framed. "They unwrapped it and said, 'Good gracious, where has she been? You can sell work like this.' And my husband said 'What can you get for the damn thing?' and they said around $100. My husband came back and told me to get to work, that I was a gold mine in disguise."

She busily turned out sufficient numbers of sufficient quality to have several exhibitions–beginning on the West Coast, but expanding to New York and Washington. The latter was sponsored by her friend Mrs. Herbert Hoover at the National Arts Club, while Hoover was Secretary of Commerce. Hoover later hung one of her paintings in the White House during his tenure there.

She planned to return to England with her husband to live, as she felt it would be cheaper there, but once in New York she realized Mr. Shockley was dying, so they returned to the West Coast, settling in Hollywood.

"I set up a studio in back of our house, and spent my time painting and rearing Bill. He constantly kept me busy–he strung a tightrope in the backyard and used to walk it while cracking a whip. It scared me to death. He used to pull tricks all the time–usually on other people, since I always knew what was going on."

Following her husband's death and after Bill entered graduate school at M.I.T., Mrs. Shockley took advantage of the added freedom to study for a year in New York, painting copies of old masters in the Metropolitan Museum of Art.

When World War II began, Mrs. Shockley again offered her services to the war work, with the complaint that less cooperation among people made the work harder. She joined the Aircraft Warning Service, first in L.A. and then in San Francisco.

"I moved back north to take care of my mother, who was dying, and then did." A longer-than-usual silence. "I worked in San Francisco on the operation board, taking the calls from officers out on the coast watching for planes. They used to ask me for dates every once in a while!"

After the war, it was back to painting, with a switch from oils to watercolors and more emphasis on landscapes. Her exhibits continued, though now confined to California; 1947 was a signal year with showings in Sacramento, Pasadena, and Palo Alto. After that painting and exhibits ebbed.

Mrs. Shockley's travels had not ended, however, for in 1956 her son, now a renowned physicist, received his Nobel Prize and she was to accompany him to Sweden to meet the king.

"I got to shake hands with the king and when I did, I told him he looked like a friend of mine–I was trying to be chummy–but he just stood there and said nothing. Later, we were going to a banquet and it was snowing. I was never, never, so cold in my life. I was going up these stairs in my velvet dress with a chemistry Nobel laureate and realized I'd forgotten to take off my overshoes. Well, he said, 'No problem, we'll just take them off and leave them here.' So we stuck them in a corner and I forgot to pick them up when we left. I've always wondered if anyone ever found them." A mischievous smile.

The narrative abruptly ends. The tape recorder's whirring is the loudest sound in the room. More prodding on the time after 1956. Finally:

"I came back to Palo Alto just to live–living itself takes quite an effort, you know."

Her mind jumps from 1956 to 1977 in an instant. She glances at the wheelchair, which has been her only transportation for over a year. It will not climb mountains or ride horses. It will barely take her around the room.

Her voice falters and finally quits. She sits in her wheelchair, outwardly indistinguishable from thousands of other elderly. But inside . . . inside she still rides Buck to catch rain clouds.

The editors were saddened to learn, just before press time, that Mrs. Shockley has passed away.

Kelly Bufton is a senior majoring in communication serving as an Almanac *intern.*

Staff
Delta van Heyst / Editor
Kay Daley, '48 / Managing Editor
Deborah Fife / Associate Editor

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Report Dir. of the Mint
Cal. year 1883

over 900 feet of ground west that has not had any work done on it which we expect to prospect this winter. Last year we produced in bullion but $55,715.96, but expect next summer to do well. I cannot give you the value of gold and silver, as we ship our bullion crude, and my figures may vary a little from the result after assaying."

On the Elko Consolidated mine work was chiefly done on the 200-foot level and on shaft No. 2.

The Basin and Sheet Anchor mines were not worked for a part of the year; the Basin mine for a want of water, and the Sheet Anchor on account of the shaft being flooded.

Good Hope district.—In this district there has been a gradual development which has made it a promising region. Fifteen men are engaged in mining.

In the Consolidated Buckeye mine the shaft has been sunk 50 feet, and 150 tons of ore extracted, ranging in value up to $300 per ton.

From the Patience mine three men are taking out considerable high-grade ore.

The Golden Era mine is producing fine ore from a ledge, which, though narrow at the surface, widens as it goes down.

The Big Muddy has a shaft 60 feet deep, and at the bottom high-grade black sulphuret ore is found which assays from $100 to $900 per ton.

Railroad district.—A smelter has been erected near Railroad, and several car-loads of bullion have been shipped from it to the Bank of California.

The approximate value of the bullion and matte thus far turned out by the furnace is $36,000.

The assessor's returns for Elko County show the production and cost of operating the mines during 1883 to have been as follows:

Name of mine.	Ore extracted.	Gross yield.	Total cost.
	Tons.		
Grand Prize	646	$55,815 96	$44,357 56
Navajo Independence	2,693	430,457 80	228,337 43
Edward Reily	700	25,200 00	
Argenta	185	15,022 39	12,073 [illegible]
Total	4,224	526,496 15	284,767 9[illegible]

The amount carried by Wells, Fargo & Co. from this county during the same year, together with that deposited at the mint from private sources, amounted to $575,163. I have estimated the production at $580,000, of which $30,000 was gold.

ESMERALDA COUNTY.

The principal mines of Esmeralda County have yielded much less in 1883 than in the previous year. The quantities worked and the gross value for those years compare as follows:

Years.	Ore worked.	Gross value.
	Tons.	
1882	36,509	$1,372,228 53
1883	20,121	898,158 93
Decrease	16,388	474,069 60

I am indebted to Myles J. Anson, M. E., Mr. A. G. McKenzie, W. P. McIntosh, C. Novacovich, J. T. Wilson, and O. C. May for much valuable information concerning the mines in the different districts of Esmeralda County.

During the year the Princess, Mount Potosi, Victory, Enterprise, and Vanderbilt mines remained idle.

The *Columbus mining district* remains for another year the largest producer of bullion in Esmeralda County. The prominence of this district is chiefly due to the Northern Belle mine, which, since May, 1875, has shipped bullion to the amount of $10,000,000, and paid to its stockholders before ever levying an assessment not less than $5,000,000.

The Northern Belle mine.—During the year this mine has yielded 19,573$\frac{1}{2}\frac{8}{0}\frac{2}{0}\frac{3}{0}$ tons of ore, and its gross bullion product has been $763,939.32. The main shaft reached a depth of 800 feet in September. On the fifth level the drift was extended 250 feet to the west, where a winze was sunk 120 feet on an incline through soft black slate streaked and spotted with sulphurets. From the foot of the winze a cross-cut was run 97 feet, when the intense heat obliged work to be suspended. On the main level above a drift was run southwest 198 feet through a small vein of sulphurets assaying at $200 per ton. On the fourth shaft level the main drift was run westward 221 feet through low-grade sulphurets. Drifts to the length of 500 feet and cross-cuts of 351 feet have been made on this level, and an upraise of 77 feet and a winze of 69 feet have been made for ventilation. On the third level, drifts have been run 525 feet, cross-cuts 368 feet, and a winze of 98 feet and one of 60 feet have been sunk. On the second level, 230 feet of drifts and 62 feet of cross-cuts, an upraise of 108 feet, and one of 60 feet, and a winze of 110 feet have been made. On the first intermediate, 110 feet of drifts and 217 feet of cross-cuts were run. The main drift was extended 447 feet westward, and 312 feet of cross-cutting and winzes to the depth of 199 feet were made. On the upraise from this level a fine body of ore was found, and in developing and extracting it 265 feet of drifts, 201 feet of cross-cuts, and 70 feet of upraises were made. On the eleventh level explorations were made by means of 530 feet of drifts, 388 feet of cross-cutting, two upraises and one winze. On the ninth level an extensive body of soft chloride was found and yielded largely for nine months before being exhausted. In running a tunnel from the outside, 80 feet above the seventh level, a body of ore was found averaging $45 per ton. For a few months one of the mills was closed, running on half-time, but for the rest of the time until December they were running on full time, with one hundred and fifty men employed and doing a great deal of custom work.

In October the suit of the Holmes Mining Company, whose claim adjoins the Northern Belle mine, was tried in the United States district court for the district of Nevada, Judges Sawyer and Sabin presiding. The Holmes Company suit was for trespass and damages and asking for $1,500,000 in compensation for ore taken from their claim. The jury gave a verdict for the Holmes Company for $360,000, and the Northern Belle Company immediately closed their works, wound up their affairs, and advertised the property for sale. The Holmes Company having acquired it, work will soon be resumed.

The following was the financial statement of its affairs for the year:

RECEIPTS.

Bullion, 463 bars, Nos. 5279 to 5741, gross value, $855,988.18, less the deductions (which includes freight by express, mint charges, and discount on silver), $136,348.32	$719,639 86
Crushing ores for outside parties	77,453 11
Spring—sale of water	239 28
Drafts outstanding and unpaid September 1, 1883, constituting our entire indebtedness	22,586 58
Cash on hand September 1, 1882, $135,972.86, less drafts outstanding at that date, since paid, $23,719.60	112,253 26
W. V. Price, superintendent, balance in his hands September 1, 1882, since paid	54 59
	932,226 68

PAYMENTS.

Dividends—eight—Nos. 64 to 71, of $25,000 each, equal to 50 cents a share	$200,000 00
General expense at San Francisco, including salaries, surveying, legal, &c	57,060 79
General expense at mine	9,097 72
Interest, exchange, &c	41 98
Insurance ($60,000 on each mill) expires March 14, 1884	4,474 65
Mine expenses	229,210 53
Mills (two) expense	253,268 23
Ore tax for the quarter ending March 31, 1883	6,998 19
Ore purchases	66,843 97
W. V. Price, superintendant, balance in his hands September 1, 1883	50 89
Supplies and materials forwarded	30,679 23
Taxes (Nevada and California)	3,308 22
Cash on hand September 1, 1883	71,192 28
	932,226 68

RECAPITULATION.

Cash on hand September 1, 1883, as shown above	$71,192 28
Deduct drafts outstanding all told, to September 1, 1883	22,586 58
Actual cash balance, September 1, 1883	48,605 70

INVENTORY AND VALUE OF PROPERTY AT MINE AND MILLS AUGUST 31, 1883 (ALL PAID FOR).

Land at Belleville (60 acres)	$200 00
Land at mine (5½ acres at shaft)	25 00
Improvements at Belleville (two mills, furnaces, &c.)	356,850 00
Improvements at mine (hoisting works, &c.)	25,050 00
Supplies at mills	17,408 30
Supplies at mine	10,969 86
Water-works	25,000 00
Oats and hay	107 25
Total valuation	437,410 41

Columbus Consolidated mine.—During the past year new hoisting works have been erected and a double compartment shaft has been sunk 315 feet towards the old workings. The old Bonanza winze was sunk to the 150 level and drifts were made to the east and west, encountering bodies of good ore in either direction. A station was

established on the third level and a drift of 175 feet run towards the Bonanza winze. A new stope, near the mouth of this winze, has produced good ore for some time. A more perfect ventilation has been secured by the new shaft, and its connections and stations are being excavated on the fourth and fifth levels. Three shifts of eighteen men were employed.

The Doran mine.—This property, formerly known as the Nevada and the Lo Yolo mine, has been bought by New York capitalists, and by means of a Howland pulverizing machine it is expected that a profit will soon be realized from its ores.

Mount Diablo mine.—During the past year but little work was done in exploring and developing the mine, except such as was necessary in extracting the ore already found. Rich ore was taken from the drifts on the first, second, and third levels, and in December, while the machinery was being repaired, the shipping and extracting of ore was discontinued and prospecting was carried on by a cross-cut from the bottom of the shaft extending 315 feet; the object of this cross-cut being to prospect in depth the ground of the Peru, Tipton, Stump, and Adams ledges. Seventy men were employed in the mine, and on December 31 a shipment of bullion amounting to $16,537.28 was made. The deepest stope worked was the stope below the third level between winzes No. 1 and No. 2, and is 500 feet below the collar of the shaft and 160 feet west of it. It yielded considerable $75 ore and some of much higher grade. On the stope above the west drift from the Callison winze the ore was in a body from 100 to 140 feet long. It was worked for 110 feet on the dip, and in the widest place there were 12 feet of $200 ore. The stope has yielded 3,700 tons of ore and will probably yield more. Several hundred tons of ore have been taken from the old workings near the Mount Diablo adit. By the use of the Mount Cory Company's leaching process a higher percentage might be realized from the ores than by the process now in use.

The company's annual report shows a production of bullion valued at $441,518, from the 18th of December, 1882, to the 1st of December, 1883.

The following is a summary statement of the operations, receipts, and expenditures during the year:

	Tons.
Ore on hand November 30, 1883	400
Ore extracted during the year	8,027
Low-grade ore shipped to mill this year, but extracted in former years	375
Total	8,802
Amount sent to Belleville	8,029
Amount of ore at mine	773
Amount of ore sent to mill	8,029
Amount of ore milled	7,847
Amount of ore at mill	182
Total amount on hand November 30, 1883	955

RECEIPTS.

The financial statement shows cash on hand December 18, 1882	$10,478 07	
Bullion	441,157 62	
		$451,635 69

441 518
12 537
45-41 55

441 518
16 537
457 1 55

DISBURSEMENTS.

Mine supplies	$7,418 55	
Labor at mine	104,519 65	
Transportation of ore	18,467 32	
Freight	2,965 75	
Bullion tax	3,857 31	
Milling	117,705 00	
Bullion discount	75,534 53	
Express charges on bullion	4,748 90	
Water	2,098 38	
Wood	3,037 98	
Dividends—1, 2, 3, 4	50,000 00	
General expenses	10,935 68	
		$401,339 05
Cash on hand November 30, 1883		50,296 64
Gross value of unsold bullion in Bank of California	46,460 87	
Discount, estimated at 17½ per cent	8,130 65	
		38,330 22
Total surplus		88,626 86

On the Holmes mine a small force of men have been at work during the year.

The Lucky Hill, with a force of four men, and the Great Eastern, with six men, have been worked during the year.

At the Enterprise mine sixty-five men were at work, and the furnace was worked successfully for six months.

Esmeralda district.—There has been comparatively little mining done this year in this district, which was one of the first discovered by the prospectors in 1859. During the years 1860,'61,'62,'63, the Pond, Del Monte, Wide West, Antelope, Utah, Young America, Esmeralda, and other mines produced over $14,000,000 in bullion. Nineteen mills were in active operation working 196 stamps, and the rich ore was all taken from near the surface. The ore was found in pockets or chambers much of it yielding $1,000 to the ton in the rude mills of that time. At a depth of 150 feet a barren zone was struck in the mines on Last Chance Hill, and unfortunate litigation with the Pond, Del Monte, and other properties caused a reaction. At this time the discovery of the Comstock mines and the Reese River district drew off the miners and prospectors to the new fields.

The district is about 3 miles in length by 1 in width, the formation is porphyrytic, the veins are large, well defined, and no doubt true fissures, having a northeasterly and southwesterly direction, with a dip or underlie to the east. Some veins in the district have been worked to the depth of 400 feet, and are easily traced through the porphyrytic formation for 3 miles, dipping under the vast glacial deposit. On the south the same veins crop out again at Bodie, where the resemblance to the Aurora ledges is apparent. Three miles north of this district there is another outcropping of the same ledges. The only deep mining ever attempted in the district was by the Junietta and Real Del Monte companies. At the depth of 800 feet they encountered so much water that even with the use of a 16-inch pump they were unable to continue work.

I am indebted to Mr. C. Novacovich, of Aurora, for much of this information and for the following estimate of the total bullion product of these mines:

Cortez Gold and Silver Mining Company	$25,000
Centennial Gold and Silver Mining Company	15,000

MT. DIABLO MILL & MINING CO.

DIRECTORS AND OFFICERS ELECTED DECEMBER 19, 1898.

JOHN TONNINGSEN, President.

JOHN MCCARTHY, Vice-President.

D. H. WHITTEMORE.

JOHN B. BOURNE.

R. W. HEATH, Secretary.

THE BANK OF CALIFORNIA, Treasurer.

Office—Room 12, No. 318 PINE ST., San Francisco, Cal.

The Mine was closed down May 31/1895
The Mill was closed down June 14/1895

MT. DIABLO MILL & MINING COMPANY.

SECRETARY'S REPORT

FOR THE FISCAL YEAR ENDING DECEMBER 19, 1898.

STOCK ACCOUNT.

Capital Stock	50,000 shares
Forfeited to Company under Assessment No. 4, July 23, 1896	24,201 shares
Forfeited to Company under Assessment No. 5, January 18, 1897	3,070 "
Forfeited to Company under Assessment No. 6, January 20, 1899	7,670 "
Shares in Company's Treasury Jan. 20, 1899	34,941
Outstanding Stock in hands of Shareholders, January 20, 1899	15,059 shares
	50,000 shares

STATEMENT OF THE COMPANY'S PROPERTY

LOCATED AT

Candelaria and Sodaville, Esmerald County, Nevada.

CANDELARIA.

Twelve (12) Mining Claims, all covered by U. S. Patent.

Substantial Steam Hoisting Works.

Two (2) Ore Dumps.

Superintendent's House (furnished).

Superintendent's Office at Mine.

Assay Office at Mine.

Blacksmith Shop. Stable.

Complete stock of mining implements and various mining supplies.

SODAVILLE.

Eighty (80) acres U. S. Patented Land.

One hundred and twenty (120) acres State Contract Land.

Ten (10) Stamp Mill, operated by steam; White & Howell Roasting furnace; and in every respect completely equipped.

About 50,000 tons of Tailings.

Assay Office, Store House, Stable, Lumber Building, Pipe Line, full stock of Tools, and various Mill Supplies.

MT. DIABLO MILL & MINING CO.

SECRETARY'S STATEMENT OF RECEIPTS AND DISBURSEMENTS

for the Fiscal Year Ending December 19, 1898.

RECEIPTS.

1897.		
Dec. 20—Cash on hand this date		$1,200 84
Received of the Fireman's Fund Ins. Co. loss under Policy covering office building and contents at Sodaville, Nevada...		550 00
Received from Rent of Stable at Sodaville...		26 00
" " Sale of Mill Supplies.....		32 39
" " Sale of Mine Supplies.....		34 57
" on acc't Assessment No. 6, 12,139 shares @ 10c. per share.....		1,213 90
		$3,057 70

DISBURSEMENTS.

General Expense at Mine.....	$266 26
" " at Mill	277 15
" " at San Francisco office.....	813 75
Taxes, 1898–1899	258 67
Legal expenses	10 00
1898.	
Dec. 19—Balance Cash on hand this date.....	1,431 87
	$3,057 70

R. W. HEATH, Sec'y

Mt. Diablo Mill & Mining Co.

NOTE.—Pending the extreme low price of silver the Company's works remain closed down.

Reconnaissance of Mining Districts in Lander Co., Nev. Wm. O. Vanderburg

Ref. I.C. 7043

acquired by the Austin Mining Co., controlled by the J. G. Phelps Stokes interests of New York. During the next 10 years this company acquired additional ground and drove the Austin-Manhattan drainage and haulage adit to explore the veins on Lander Hill at depth. This adit has its portal in Pony Canyon near the site of the former railroad station; it was 5,985 feet in length with a lateral crosscut 2,900 feet long branching off at a point 3,855 feet from the portal. A 40-stamp concentrating mill was also built near the portal of the Austin-Manhattan adit, in which some ore was milled. Several transfers of the property took place between 1904 and 1908, when the Austin Manhattan Consolidated Mining Co. obtained possession. This company rehabilitated some of the old mines and produced some ore. In 1910 a concentrating plant was erected at the lower end of Pony Canyon and was put in operation the same year. The mill equipment included six Huff electrostatic separators, two crushers, and two concentrating tables. The mill is said to have been unsuccessful, and in 1920 the company passed into the hands of a receiver.

Except for sporadic leasing operations, there was very little activity in the district between 1911 and 1935. In 1935 nearly all of the old productive mines adjacent to the town of Austin were acquired by the Austin Silver Mining Co., which has since been operating in the district.

In addition to the Austin Silver Mining Co. holdings, a number of other groups of claims are owned chiefly by individuals. During the past 40 years a number of small companies have been organized from time to time to work mines in the district, but all of these were short-lived.

The production of the district from 1862 to 1903 is estimated by the writer, from the data available, to have been about $26,000,000. The production from 1902 to 1936, inclusive, was $332,097, chiefly silver, with some gold and a little lead and copper. The annual production for the district from 1902 to 1936 is shown in table 7.

The geology of the Reese River district has been described by Emmons[16/] and by Hill[17/].

Early-Day Metallurgy and Mining

In the early days of the Reese River district attempts were made to treat the ores by the Washoe process as developed on the Comstock lode, but, as the ores were refractory, the results were generally unsuccessful. The Washoe process consisted of wet-crushing in stamps followed by amalgamation in various types of iron pans. As more information on the character of the ores was obtained, the Reese River process was developed. This consisted of dry-crushing with stamps and a chloridizing roast, followed by amalgamation as in the Washoe process. Chlorination was not essentially new, since the extraction of gold by leaching with chlorine gas was first used by Plattner at Freiberg, Germany, some years previous; it was first introduced into the United States by G. W. Deetken at the Eureka and Idaho mills of Grass Valley, Calif., in 1857. The Reese River process was applicable to silver ores containing arsenical and antimonial sulphides, and the object of roasting was to convert the sulphides into chlorides, so that precious metals could be recovered by amalgamation.

16/ Emmons, S. F., Geology of the Toiyabe Range: Geological Exploration of the Fortieth Parallel, Washington, D. C., 1870, pp. 320-348.

17/ Hill, James M., Some Mining Districts in Northeastern California and Northwestern Nevada: Geol. Survey Bull. 594, 1915, pp. 95-114.

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At first, reverberatory furnaces having either one or two hearths, imported from Europe, were used. Because of their limited capacity and the skill required in their manipulation, a number of mechanical roasters were invented, including the White, Bruckner, Howell, and Stetefeldt. The last was an important contribution to the metallurgy of refractory silver ores, not only at Reese River but in other districts in the West. C. A. Stetefeldt discovered that silver ores mixed with salt are completely chloridized if they fall against a current of hot air rising in a shaft with no obstructions whatever to check or retard the fall of the ore particles. Instead of requiring from 4 to 8 hours to chloridize the ore, as in the reverberatory furnaces, it was done in the Stetefeldt furnace in a few seconds. The first experiments with this furnace were made in the Murphy mill, Ophir Canyon, Nev., in 1867, and in 1870 a Stetefeldt furnace was erected by the Manhattan Silver Mining Co. at Austin. This company had the exclusive right to the use of the furnace in the district and paid a royalty of $2 per ton. It was so superior in economy and operation to others then used that it gave the company a virtual monopoly on the milling of ores in the district. The gain in the treatment of rich ore amounted in some cases to as much as $20 per ton.

The Stetefeldt furnace was heated by gases produced from charcoal in two gas generators. A third generator produced gases for heating and chloridizing the dust, which was drawn by a strong draft into the main flue. The height of the furnace from cooling floor to the hopper was 30 feet; and the pulverized ore mixed with salt fell against the flame for a distance of 18 feet. A description of the furnace used by the Manhattan Silver Mining Co. is given by Raymond[18].

> The flame from the generators enters the furnace a little over 6 feet above the cooling floor, and the bottom of the flue above is 4-1/2 feet below the top. The inside size of the shaft at its lower end is 5 feet square. The bottom inclines toward the discharge door and tapers toward the top, where the size of the shaft is 3-1/2 feet square. The finely divided ore sifts into the furnace in a continual shower by a special feeding arrangement.
>
> A very expensive system of dust chambers is connected with the furnace. As the dust has to pass the fireplace in the main flue before it can reach them, the ore found here is the most perfectly roasted. From the dust chambers the waste heat passes under the large dry kiln and thence into the chimney. For the first month the cost of roasting was $6.48 per ton as compared with $15.34 per ton in the reverberatories previously used.

After being roasted, the ore was fed to amalgamating pans holding a charge of about 1,000 pounds. Sufficient water was added to the charge to bring the pulp to the desired consistency; each pan was equipped with an iron muller, which revolved at a speed of about 40 revolutions per minute to break up the lumps and agitate the material. Quicksilver was added after the pulp had been stirred enough, the amount depending on the grade of the ore. The stirring continued for about 6 hours, when the charge was run into a settler similar in design to the amalgamating pan, but with stirrers made of wood. The fluid

18/ Raymond, Rossiter W., Mineral Resources in States and Territories West of the Rocky Mountains (1870): Washington, D. C., 1872, p. 119.

amalgam was collected from the settlers, strained to eliminate the excess mercury, and the amalgam was retorted. The bullion averaged about 700 fine; the loss of quicksilver was approximately 1-1/2 pounds per ton of ore worked. The power for milling was furnished by steam engines. Wood for fuel was chiefly pinon pine obtained locally.

The Manhattan mill had 20 stamps, which operated dry. By chloridizing roasting in the Stetefeldt furnace and amalgamation, about 90 percent of the assay value was recovered on ore averaging about $230 per ton.

The annual report by the Board of Trustees of the Manhattan Silver Mining Co. for the year 1873 contained the following interesting data on mining and milling costs.

From Oregon and North Star mines:

2,287.25 tons ore, producing $224.50 per ton		$513,487.63
Milling expenses ($34.99 per ton)	$80,030.88	
Mining expenses ($78.26 per ton)	179,010.19	259,041.07
		254,446.56

From other mines:

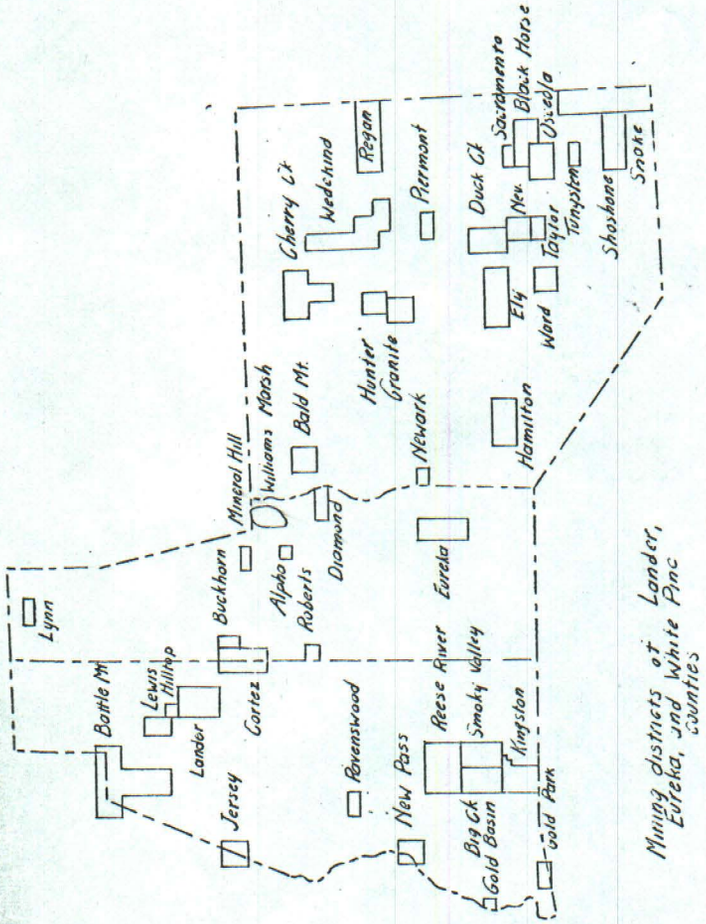
696.75 tons, producing $212.72 per ton		148,212.66
Milling expenses ($34.99 per ton)	24,379.28	
Mining expenses ($137.31 per ton)	95,670.74	120,050.02
		28,162.64

Profit on custom ores:	
1,674.5 tons at $27.74 per ton	46,450.63
Profit for 1873	329,059.83

The cost per ton for reduction of the ores during 1874 was distributed as follows:

Labor	$9.35
Fuel	10.12
Supplies	2.06
Quicksilver	2.75
Salt	2.72
Official labor	1.17
Castings	1.99
Hauling	1.35
Total per ton	31.51

water was added to bring the pulp to the desired consistency. Each pan was equipped with an iron muller, which revolved at a speed of about forty revolutions a minute to break up the lumps and agitate the material. Quicksilver was added after the plup had been stirred enough, the time depending upon the grade of the ore. Stirring continued for about six hours, when the charge was run into settler similar in design to the amalgamating pan, but with stirrers made of wood. The fluid amalgam was collected from the settlers, strained to remove the excess of mercury, and the amalgam retorted. The bullion thus secured averaged about 700 fine; the loss of quicksilver amounted to about one and one-half pounds for each ton of ore worked.



The Reese River process recovered about ninety per cent of the assay valuation on ore averaging $230 a ton. The salt used amounted to something like ten per cent of the weight of the ore. The introduction of the new process reduced the cost of milling the ore from $75 a ton to $35. In addition, the Manhattan Company guaranteed a recovery of eighty per cent of the assay value on ores averaging $400 a ton or less, and eighty-two per cent recovery on ores averaging over that figure.

Despite these figures, however, the cost of milling was too high, almost exorbitant except on very rich ores. Fuel was the costliest item in the process, amounting to a third of the total cost. Labor accounted for another third, and miscellaneous items including supplies, quicksilver, castings, hauling, etc., making up the balance. Thus, it did not pay to mine ore running much under fifty dollars a ton, except in some very rare instances. Tons of this "low grade" ore were thrown on the dumps as waste.

Crude and inefficient as this process was when compared to modern practice, it yet constituted an important advance in metallurgy and was another step toward modern efficient methods of extracting metal from its ores.

The cost of mining was also very high in the Reese River District. This was due partly to the veins being so narrow that a great deal of waste rock was necessarily brought out with the ore. To avoid this, groups of men hand-sorted the material, rejecting the waste rock, and feeding only the good ore to the mill. The narrow veins, known locally as "razor blades," "shoe strings," and "paper cutters," often ran up the cost of mining and milling above the fifty-dollar mark and made the working of some mines prohibitive.

Chapter XVII

Tuscarora

Some fifty-two miles northwest of Elko is the old mining camp of Tuscarora. Once the Queen of the Goose Creek Country, the old camp is now struggling valiantly to escape the fate of becoming a ghost camp. In her prime, Tuscarora was one of the busiest mining centers to be found anywhere within the Great Basin. The camp shook with the detonations of blasting deep within the tunnels and shafts below the town, and the steady reverberations of the stamp mills, with their huge thousand-pound stamps rising and falling, reminded everyone that here was a busy mining camp deep in a bonanza. Huge freight teams slowly wound their way up the gradual ascent that marked the road to Tuscarora. The busy throng of miners, laughing, swearing, pushing, shouting through the long streets of the roaring camp, proclaimed that here life was lived to the full in a camp confident of the future.

Perched on the southeast slope of Mount Blitzen, in the Tuscarora Range, at an elevation of 6200 feet, Tuscarora was at once typical of the mining camps of the area and personified in her history and development the evolution of a mining camp. Beginning with the discovery of gold placers, the camp developed into a silver producer with its inevitable bonanzas and borrascas, and finally came the decline which saw its mills silent, its streets deserted, and its homes abandoned.

The precise date of the camp's founding has been lost, but it is thought to have occurred some time in 1867. In that year, two brothers, Steve and John Beard, prospectors from the Reese River country, came north along the Goose Creek area in search of gold. Panning as they traveled along, they at last found colors on a low hill in the Tuscarora Mountains, which in later years was named Beard Mountain to honor the pioneer prospectors. The deposit of placer gold carried considerable metal and the two brothers went eagerly to work to determine the extent of their find. Before long they were joined by other prospectors who staked out claims until the hillside was liberally sprinkled with location and boundary posts. The placer covered a considerable area, enough for all, and as the news spread, a rush to the new placers developed.

Nearby hills, canyons, and ravines were also prospected. Nearly all of them yielded the yellow metal, though none proved to be as rich as the original find. A district was organized and on July 10, 1867, a miners' meeting was called. Present were S. M. Beard, John Beard, Ham M. Cann, William Heath, C. M. Benson, Jake Madeira, Charl Gardner, A. M. Berry, and John Hovenden, all old-time prospectors. When it came time to name the new district Benson suggested calling it Tuscarora.

"Where'd you get that name?" he was asked.

"Well, when I was a young fellow, afore I took following the gold, I was sailor on the United States Gu boat Tuscarora," he told them.

NEWS LETTER

NEVADA MINING ASSOCIATION

RENO, NEVADA

MARCH 15, 1964

ROOM 302
206 NORTH VIRGINIA STREET

POST OFFICE BOX 2498
TELEPHONE 323-8575

NUMBER 132

IN MEMORIAM

A man well-known to the mining industry and to the readers of the News Letter, Louis D. Gordon, died on March 3, and Mr. M. J. O'Shaughnessy, President of Nevada Mining Association, dedicates this issue to his memory with the following article:

LOUIS D. GORDON:- Nevada has lost one of its most colorful mining men through the death of Louis D. Gordon on March 3, 1964. "Lou", as he was known to his friends, was born in Austin, Nevada, on June 23, 1885, received his primary and high school education in that town. Later, he attended school in San Francisco, was appointed to the United States Naval Academy by U. S. Senator Francis G. Newlands, and spent a year in school in Mexico. In 1905, he returned to the Tonopah-Goldfield area in its boom days and discovered gold in the Toquina Range, 60 miles north of Tonopah, which led to the establishment of the town of Round Mountain. He was in the Round Mountain District from 1917 to 1942, during which time he was associated with Fairview Round Mountain Mines Company, Round Mountain Mines Company, and Nevada Porphyry Gold Mine, Inc. and was referred to as the "Father of Round Mountain."

He was also active in the Tintic and Beaver County sections of Utah; operated the famous Cerro Gordo Mines Company in Keeler, California; New Candaleria Mines Company, Candaleria, Nevada; San Rafael Consolidated Mines Company and Penalas Mining Company, both of Fallon, Nevada. In 1942, he was appointed a Senior Engineer of the Mining Division of the Reconstruction Finance Corporation and later was in charge of the Reno Office.

He resigned from RFC on February 1, 1953 to accept the position of Executive Secretary of Nevada Mining Association, the position he held at the time of his death.

Mr. Gordon kept an active interest in the Round Mountain District and at the time of his death, was President of Nevada Porphyry Gold Mines, Inc., successor in interest to Round Mountain Gold Mines Company, Fairview Round Mountain Mines Company, and several other mines in that district purchased by Nevada Porphyry.

His activities were not entirely confined to mining. During his high school days in Austin, he worked in the bank; in 1907, was President of the Round Mountain Banking Corporation; President of the Round Mountain Mining Stock Exchange; at one time, was interested in the real estate business in Salt Lake City, and during his early days, was associated with a brokerage firm in Philadelphia.

He has been a Registered Professional Engineer in the State of Nevada since 1935, a member of the Board of Registered Professional Engineers since 1955, and elected Chairman of that Board in January 1962. He was a member of the American Institute of Mining,Metallurgical and Petroleum Engineers and a past Chairman of the Nevada Section of the Institute. He was Secretary-Treasurer of the American Quicksilver Institute; member of the Board of Governors, American Mining Congress, Western Division; of the State Advisory Board for Nevada, Bureau of Land Management, U.S. Department of the Interior; member of the Western Governors Mining Advisory Council; of the Nevada State Advisory Committee to the Selective Service System on scientific, engineering and specialized personnel; of the Employers Advisory Committee of the Nevada Industrial Commission; of the Executive Committee of the Nevada Highway Users Conference. For several years, he was Chairman of the Advisory Committee to the Mackay School of Mines, University of Nevada. In 1953, he was granted an Honorary Degree of Master of Science by the University of Nevada. Fraternally, he was a member of Wasatch Lodge of Salt Lake City, the Scottish Rite Bodies of the Shrine of Nevada, Kerak Temple of the Shrine of Reno, and Reno Lodge No. 597 of Elks. He was an active member of Trinity Episcopal Church of Reno and a member of the Reno Rotary Club and the Reno Executives Club.

Although he never held any political office, he was keenly interested in politics and a life-long member of the Republican Party. He had a wonderful collection of stories about the boom days of mining in the Tonopah-Goldfield area, was associated with many of the "greats" in the history of Nevada mining, such as the late George Wingfield and Thomas Cole, and in 1947, in association with the late Fred L. Cole, interested the Round Mountain Gold Dredging Corporation in the Round Mountain Mining District.

He was a man of many facets and to each of you reading this article will come memories of your association with "Lou". His friends were many and will join with Nevada Mining Association in paying tribute to a "great guy".

He is survived by his wife Helen, two sons, John B. of Tustin, California, Douglas I. of Ankara, Turkey, and a number of grandchildren.

NEVADA MINES, COMPANY REPORTS, ETC.

THE ANACONDA COMPANY:- Statement of Consolidated Income (subject to year-end audit):

	Year 1963	Year 1962
Income from operations of mining, smelting, refining & manufacturing plants, before deducting depreciation & depletion.....	$145,972,820	$145,832,407
Other Income:		
Dividends from unconsolidated subsidiaries, other dividends, interest & miscellaneous income.....	3,452,206	3,428,849
	149,425,026	149,261,256
Provisions for depreciation & obsolescence & for depletion of timber lands & phosphate & gravel deposits.....	44,014,266	44,882,300
Interest on notes payable.....	4,441,374	2,777,534
	48,455,640	47,659,834
	100,969,386	101,601,422

THE CANDELARIA SILVER DISTRICT, NEVADA.

By ADOLPH KNOPF.

OUTLINE OF REPORT.

Candelaria, an old silver-mining camp in western Nevada, has produced $20,000,000, mainly during the seventies and eighties of the last century. The ore worked in those early days averaged $40, $50, or more a ton, but the bonanza ore has long been exhausted, and the attempt now being made to revive the camp is based on the belief that there is left a considerable amount of ore of moderate grade—ore carrying 10 to 15 ounces of silver to the ton—from which a profit may be won by applying modern methods of mining and metallurgy.

The rocks of the district consist of a steeply dipping series of cherts, argillites, and felsites, all very probably of Ordovician age. These rocks have been intruded by peridotite or allied rock (now completely altered to serpentine) and quartz monzonite porphyry at Candelaria itself, and large intrusions of granite appear a few miles from the camp. Resting unconformably on this group of older rocks and showing by its complete lack of any alteration that it is later than the mineralization is a series of Tertiary volcanic rocks, mainly rhyolite lavas and tuffs. Later than both these groups are the series of horizontal basalt flows that form the prominent cappings of the district. These flows were subsequently dislocated by normal faulting, and by this faulting the present relief of the district was determined.

The silver ores are highly oxidized, forming a friable aggregate deeply stained by oxides of manganese and iron. No silver minerals are visible, and the value of the ore can be determined only by assays.

The unoxidized vein filling consists chiefly of a manganiferous ferrodolomite containing pyrite, zinc blende, and jamesonite. On oxidation the jamesonite has yielded bindheimite (the so-called hydrous antimonate of lead); the zinc blende has yielded calamine and possibly other compounds, such as smithsonite; the pyrite has altered to limonite; and the manganiferous ferrodolomite has yielded black oxide of manganese and abundant limonite.

The veins are fairly persistent and dip at high angles. The greatest depth attained on them is 1,365 feet below the outcrop, and at this depth water level has not been reached. The original unoxidized vein filling appears to have been of too low a grade to be workable. The ore was the result of the enrichment of this low-grade material during oxidation.

The veins were formed by the filling and replacement of fissured and shattered zones, and the solutions that deposited the primary vein filling were able to effect notable alterations of the rocks through which they flowed, causing replacement by tourmaline, sericite, and dolomite. The primary or hypogene vein filling was deposited as one of the final consequences of the great intrusions of granite at approximately the end of Jurassic time.

The future prosperity of Candelaria is not to be sought by exploring in depth but must be won from the territory lying above the deepest levels already

worked. Modern progress in metallurgy has solved the problem of economically reducing the rebellious silver ore of Candelaria; but the efficient mining of the ore—the discovery and extraction of the ore at a lower cost than was possible in bonanza days—is a matter in which the passage of time has not so unreservedly favored the present generation. To achieve success in reviving Candelaria will especially require engineering and administrative skill of the first order.

GEOGRAPHY.

The Candelaria district is in western central Nevada, not far east of the California-Nevada State line. (See fig. 1.) It lies in an

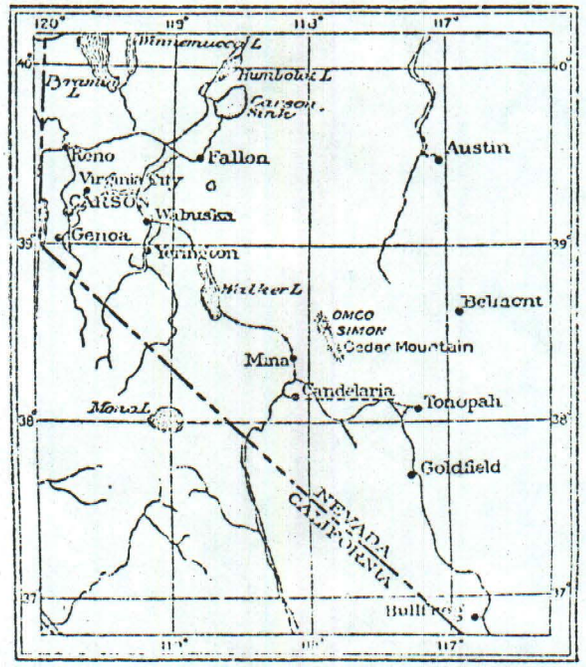


FIGURE 1.—Index map showing the location of the Candelaria district, Nev.

irregular group of mountains to which Spurr [1] gave the name Candelaria Mountains—a particularly dry and barren group extending eastward from the lofty Inyo Range (or White Mountains, as the northern portion of the range is known), to Columbus Marsh. In older reports the district is commonly referred to as Columbus, from the name under which the area was organized as a mining district in 1863, but it is now more generally known as the Candelaria district. It is situated in the southern part of Mineral County, a county that was created from the northern portion of Esmeralda County in 1911.

[1] Spurr, J. E., Descriptive geology of Nevada south of the fortieth parallel and adjacent portions of California: U. S. Geol. Survey Bull. 208, p. 113, 1903.

The topography of the region in which Candelaria lies is shown on the United States Geological Survey's topographic map of the Hawthorne quadrangle on the scale of 1 to 250,000 (or roughly 4 miles to the inch), but the mineralized portion of the Candelaria district itself is all represented within an area of half a square inch on that map. The altitude at the town of Candelaria is 5,665 feet.

A branch 6 miles long from the Nevada & California Railroad of the Southern Pacific system gives the camp the occasional freight service needed at present, about once a week. Redlich, the nearest station on the main line of the Tonopah & Goldfield Railroad, is only 7 miles distant. The nearest supply point is Mina, 25 miles distant, hardly more than an hour's run by automobile.

HISTORY.[1]

The silver veins in the Candelaria Mountains were dicovered by a company of Spaniards in 1863, and a mining district was organized in the same year. The veins themselves crop out in a particularly barren and inhospitable part of Nevada, and the town that grew up, called Columbus, was situated where water was obtainable, 5 miles southeast of the principal mines, on the western edge of a great alkali flat, the Columbus salt marsh. In 1867 the town had 200 inhabitants, many of whom were doubtless dependent on the salt industry, for in those days the metallurgic plants of Nevada consumed a large quantity of salt; but the work that had been done to prove the silver veins of the district was small. Ross Browne, writing at that time, says that crushings of small lots of ore yielded from $50 to $200 a ton, "a good result considering the quantity of ore of this class that can easily be obtained; so that the prospect is not unfavorable." The remoteness of the district, the complex metallurgic treatment required by the ores, and the fact that the veins were held in numerous small holdings all combined to retard the growth of the new camp. Not until the middle of the seventies did the district come into its own, but then, owing to the successful development of the Northern Belle mine, it became the most productive silver camp in Esmeralda County and one of the foremost in Nevada.

Two 20-stamp mills, erected 8 miles west of the mines at Belleville, where water is available, were put in operation, one in 1873 and a second in 1876. Roasting furnaces were also installed, for the ore was refractory and required preparatory roasting. In April, 1875, the Northern Belle began paying monthly dividends, and for

[1] Based largely on the biennial reports of the State mineralogist of Nevada, published during the decade 1870–1880, and on the annual reports of the Director of the Mint upon the production of precious metals in the United States, 1880 to 1884.

a period of ten years it produced annually a million dollars in bullion.

The success of the Northern Belle mine led inevitably to the growth of a town near the mine, the present Candelaria, which was started in 1876. Prosperity was everywhere apparent at this time. The town grew large enough to support a newspaper, and on June 5, 1880, the Candelaria True Fissure appeared for the first time. In naming his paper thus the editor was regarded as having made a peculiarly happy stroke. The name was intended to convey the thought that the Northern Belle and the other mines of Candelaria were on a true fissure vein, "which was the hope of every camp in Nevada which aspired to rival the Comstock lode."[3]

A water system was completed in 1882, which brings water from the White Mountains through a pipe line 27 miles long. The camp still benefits from this system. In March of the same year the Carson & Colorado Railroad, a narrow-gage line projected in 1880, reached Candelaria by a branch from the main line near Belleville and gave the camp much needed transportation facilities, connecting it with the transcontinental line of the Central Pacific by way of Mound House, near Reno. In later years, after the discovery of Tonopah in 1900, the narrow-gage line was taken over by the Southern Pacific system, changed to a broad-gage line as far as Mina, 25 miles from Candelaria, and renamed the Nevada & California Railroad.

Litigation broke out in 1883. The Holmes Mining Co., whose property adjoined that of the Northern Belle Co., sued that company for trespass and asked for $1,500,000 damages in compensation for ore taken from its ground. The jury gave their verdict in favor of the Holmes Co and awarded it $360,000 damages. Thereupon the Northern Belle Mining Co. ceased operations and wound up its affairs. The mine at Candelaria and the reduction mills at Belleville were sold by the United States marshal on March 20, 1884, and were purchased by the Holmes Mining Co. The Northern Belle, after having yielded $10,000,000 in bullion and $2,122,500 in dividends, thus went out of existence. The Holmes and the Northern Belle were consolidated as one mine, which has since the consolidation been known as the Argentum.

About this time the Mount Diablo mine became a heavy producer, and in 1883 it began paying its first dividends. The richness of the ores then available is perhaps shown most impressively by the fact that the total cost per ton of ore treated in 1883, including charges for mining, milling, transportation, overhead, taxes, and other expenses, was $44; nevertheless the mine was able to pay dividends.

[3] Drury, Wells, Journalism, in History of Nevada, edited by Sam P. Davis, vol. 1, p. 484, 1913.

The ore milled in 1883 yielded $56 a ton in bullion; as mined it must have carried at least $65, or roughly 60 ounces of silver to the ton. In the Callison stope there was a body of ore from 100 to 140 feet long; it was worked for 110 feet on the dip, and in the widest place it contained 12 feet of $200 ore.[4]

The Argentum and Mount Diablo mines were the mainstays of the camp; together they are credited with having produced $19,000,000. As the bonanza ores of the early days became exhausted in the late eighties and early nineties the camp declined and fell into decay. To-day there are hardly a dozen buildings in the town, even though some revival has taken place as a result of new activity.

In 1918 the Candelaria Mines Co. was incorporated. It owns or controls under lease and bond the Argentum, Mount Diablo, Lucky Hill, and other properties, including the water system from the White Mountains. It has carefully sampled the old workings, nearly 10,000 samples having been cut and assayed. Active development has been concentrated on the Lucky Hill mine, and new ore bodies have been found. An extraction plant of 150 tons daily capacity is projected, which, it is estimated, can earn a profit of $216,000 a year, or $4 on each ton treated. It is planned to extend an electric power line from Mina into the district early in 1922.

PRODUCTION.

The district has produced about $20,000,000, chiefly in silver, amounting roughly to 20,000,000 ounces. Estimates ranging as high as $55,000,000 are current, but like those for other old camps they rest upon tradition and err greatly upon the generous side.

The United States Geological Survey has collected detailed statistics since 1903, and for the following summary of production from 1903 to 1920, inclusive, I am indebted to Mr. Victor C. Heikes, of the Survey: Ore, largely tailings re-treated, 148,340 tons; gold, 6,475.13 ounces; silver, 1,021,867 ounces; copper, 50,129 pounds; lead, 653,982 pounds; total value, $977,868.

Since 1913 about 125,000 tons of old tailing at Belleville has been treated by cyanidation. In 1918 the 130-ton tailing mill ceased operations.[5]

ACKNOWLEDGMENTS.

To Mr. E. E. Carpenter, of the Candelaria Mines Co., I am indebted for many courtesies during my examination of the district. In the field work on which this report is based I was assisted by my wife, Eleanora Bliss Knopf, of the United States Geological Survey.

There are no previous accounts of the geology of the Candelaria district and its silver deposits. Within the compass of the small

[4] Director Mint Rept. for 1883, pp. 510–511, 1884.
[5] Heikes, V. C., U. S. Geol. Survey Mineral Resources, 1918, pt. 1, p. 248, 1921.

area of this district is crowded an unusual variety of formations and geologic phenomena of much interest, complex in character but fortunately well exposed. With sufficient time and adequate maps the details could doubtless be deciphered and would prove of direct economic value in the search for more ore in the old mines.

AREAL GEOLOGY.

ORDOVICIAN (?) ROCKS.

GENERAL CHARACTER.

The oldest rocks at Candelaria, which are those that inclose the silver-bearing lodes, show in a rough way a threefold succession. The lowermost rocks are predominantly thin-bedded cherts with interstratified dolomite, the middle portion consists largely of argillite and felsite, and the upper portion of felsite. To distinguish between these exceedingly fine grained rocks—cherts, argillites, and felsites—which commonly resemble one another to the point of absolute identity of appearance, is as a rule extremely difficult.

The lowermost rocks are well exposed on the ridge south of the Lucky Hill mine. They consist of thinly stratified cherts in beds which average 1 inch in thickness but which pinch and swell. Black chert predominates, but brown and light-colored varieties also occur. At the top of the section that consists dominantly of cherts is a 25-foot bed of graywacke which is made up of small angular and subangular fragments of chert and perfectly rounded grains of quartz. It strikes east and dips 60° N., and as it conforms in strike and dip to the underlying cherts and the overlying argillites, it does not appear to mark an erosion interval. The cherts aggregate at least several hundred feet in thickness, but the base on which they rest was not found, so that the full thickness is unknown.

The argillites in the middle portion of the section are thin-bedded nonfissile indurated rocks of argillaceous composition. Cherts and fine-grained banded calcareous sandstones are associated with them. They are all difficult rocks to distinguish with the unaided eye.

The felsites are nonporphyritic aphanitic rocks resembling cherts, from which they differ, however, in forming thicker, more massive bodies. Some felsite on the ridge east of the Diablo mine resembling a white chert shows, when carefully examined, a faint flow banding and a few exceedingly inconspicuous phenocrysts of feldspar. This felsite is one of the few that give some megascopic evidence of their igneous origin. Some of the intercalated masses of felsite are of notable thickness—for example, that at the Lucky Hill mine is 500 feet thick. Most of the felsites appear to represent ancient flows of highly glassy lava, long since devitrified. Doubtless some sills and

dikes that were injected contemporaneously with the eruption of the lavas occur in the district, but most of the recognized dikes appear to have been injected during the period of plutonic igneous activity that affected the region near or soon after the end of Jurassic time.

AGE.

No fossils were found other than a few obscure radiolaria seen in the chert under the microscope, so that the age of the chief rocks at Candelaria is not directly determinable. However, the same intimate association of chert and felsite occurs at Silver Peak, 35 miles in an air line southeast of Candelaria, where Turner[6] found dark cherts interbedded with "very numerous streaks of light-colored felsite rocks," which the microscope showed to be altered rhyolitic or dacitic tuffs and lavas. In the slate layers associated with dark thin-bedded cherts graptolites were found, which proved that the rocks are of lower Ordovician (Normanskill) age. This peculiar association of thin-bedded chert and felsite is unknown elsewhere in Nevada in rocks of any other age, and it therefore suggests strongly that the series at Candelaria is Ordovician.

According to Spurr,[7] "on the road between Columbus and Candelaria there occur dark-gray, nearly black quartzites and stretched conglomerates, with some coarse sandstones and nearly white fine-grained chert." Fossils collected by H. W. Turner at a locality 3 miles northwest of Columbus on the trail to Candelaria, at an elevation of 4,900 feet, show that these rocks are of Carboniferous age. What relation the probably Ordovician rocks at Candelaria sustain to these Carboniferous rocks remains unknown.

JURASSIC (?) ROCKS.

Igneous rocks cut the cherts, argillites, and felsites. Their general relations suggest that they were intruded at or near the end of Jurassic time.

SERPENTINE.

Serpentine is the prevaling rock in Pickhandle Gulch, and it has been cut underground in numerous places in the Argentum mine. It is generally a dark olive-green fine-grained rock mottled with yellowish patches of waxy luster, but, as is common in most masses of serpentine, many other facies occur. Dikes of serpentine cut the argillites, so that the intrusive origin of the parent igneous rock is firmly established. The variety of peridotite or pyroxenite repre-

[6] Turner, H. W., A sketch of the historical geology of Esmeralda County, Nev.: Am. Geologist, vol. 29, p. 266, 1902.

[7] Spurr, J. E., Descriptive geology of Nevada south of the fortieth parallel and adjacent portions of California: U. S. Geol. Survey Bull. 208, p. 113, 1903.

Williamson

M I N A N E V A D A

Mina was the junction for the Tonapah & Goldfield R. R. to Goldfield and also for the Narrow Gauge extending down to Keeler. Originally the headquarters for the Carson & Colorado was at Hawthorne but later was moved to Mina as that location more convienent. There was quite a lot of bargaining before this site was selected as fapt location considered was at Sodaville where there was a smmll supply of water but the owners of that site wanted too much money for their holdings and a location at New Boston (short distance west of Mina, was considered but some speculators got control of ground at that point so it was decided to locate this terminal at Mina about half way between New Boston and Sodaville. Two wells were driven which furnished a supply of a very poor grade of water and a pipe line built to divert the water from New Boston Spring to Mina. A passenger station and office building was constructed, a freight house and transfer platform and fourteen cottages for the occupancy of various employees and officers constructed. A high line to be used for transfer of oil, ore, coke was constructed to permit of transfering those producta by gravity. Also a roundhouse, office building for mechanical department and store department a pump house and a power house were built for the use of the mechanical dept ron and equipment. Only wrecking crane consisted of an old standard gauge and operated hoist which was too wide to go through Mt Montgomery tunnel and also so little power that we seldom used it.

The yard was ppart standard gauge and part narrow gauge with some of the tracks three rail and due to this condition we frequently had derailments account trying to put standard gauge equipment down a narrow gauge track or the reverse and I was never quite sure which was the worse except that the standard gauge equipment was heavier. A three rail yard is a track mans nightmare as every switch has to have three switch points and three frogs one of the frogs being a double pointed one through which the gauge had to be almost perfect to prevent wheels from going down the wrong side of frog. The man who figured out how to turn a narrow gauge equipment was a marvel as the third rail has to reverse from right hand to left hand and that is accomplished with the aid of what we termed a draw-over point or rather two of them which amounted to a switch point fastened down firmly in such a manner that standard gauge cars would pass between point and rail while narrow gauge cars would be caught by a gaurd rail andpulled over to catch point. Difficult to discribe but very efficent.

At first we had a switch engine in Mina Yard which was equipped with three couplers both front and back, two for narrow gauge and the middle one for standard gauge. When picking up narrow gauge cars they would use either the right hand or left hand coupler according to whether third rail was on either side but when this switch engine took narrow gauge equipment round the wye they had to make a drop of cars over the draw-over point as the third rail reversed its position at that location.

My first trip to Mina was in 1910 when I was working at Sparks as a Harriman student and made the trip down to Keeler with Roadmaster Reiley just to see the country. In 1918 I was assigned to duty as Roadmaster on the Mina District which at that time extended from Wabuska to Keeler. Later, about 1920 I was given the duties of Trainmaster in addition to that of Roadmaster and at that time my territory extended from Hazen to Keeler and also included the Moundhouse Branch. At that time we had two passenger trains 23-24 from Oakland to Goldfield. One mixed train on the Moundhouse Branch between Moundhouse and Wabuska (189-190). Two mixed runs Mina to Keeler (195-196. One mixed run Keeler to Laws and return (195-196) One local extra daily between Hazen and Mina and one local triweekly between Laws and Keeler. Later 23-24 were made into mixed runs and 191-192 were reduced to triweekly.

U. S. GEOLOGICAL SURVEY
GEORGE OTIS SMITH, DIRECTOR

BULLETIN 594 PLATE XVIII

LEGEND

Qgr	Gravel and silt	QUATERNARY
Qb	Basalt	QUATERNARY
Tgr	Pliocene gravel	TERTIARY
Tv	Volcanic rocks	TERTIARY
qm	Quartz monzonite and allied rocks (*Intrusive*)	CRETACEOUS OR TERTIARY
t	Tuffs, argillite, and conglomerates	TRIASSIC? AND JURASSIC
Tl	Limestone	TRIASSIC
	Strike and dip	
	Strike and vertical dip	
x	Mine and prospect	

LIST OF MINES AND PROSPECTS

SANTA FE MINING DISTRICT

1 CHAMPION (PARROT)
2 COPPER BUTTE
3 DUNBARTON
4 ESMERALDA
5 GARDIAN (F. M. SMITH)
6 GIROUX (ARIZONA-NEVADA)
7 INDEPENDENT
8 IRONSIDES
9 LOTTIE (DEL MONTE)
10 MAYFLOWER
11 NEVADA MARBLE CO.
12 NEW YORK
13 PILOT RANGE GROUP (FERMINA SARRIAS)
14 SANTA FE (HIDDEN TREASURE)
15 SHIPPER
16 SMOKED UP
17 TODD
18 SUNRISE
19 WALL STREET (TURK)

SILVER STAR MINING DISTRICT

20 BIRDSONG
21 BLACK HAWK
22 BOUNCE
23 ENDOWMENT
24 GEM
25 GRASSI
26 JUNIPER
27 HARDLUCK
28 LITTLE CHIEF
29 MARY
30 MOHO
31 NEW PARTY
32 ORIOLE
33 ORPHAN BOY
34 PEPPER
35 RIP VAN WINKLE
36 ROOSEVELT
37 SNOW BALL
38 WOODCHUCK

MAP OF THE SANTA FE AND SILVER STAR MINING DISTRICTS, MINERAL COUNTY, NEVADA

Showing location of mines and prospects and approximate distribution of formations

Base from topographic map of the Hawthorne quadrangle

Scale 1:250,000

2 1 0 2 4 6 8 10 Miles

Contour interval 100 feet.
Datum is mean sea level.

1914

USGS Bulletin, 1914 James M Hill

[redacted]in, the northern vein of this property, [redacted] work has been done, strikes N. 60° E. [redacted]z monzonite. It is developed by a 150-foot [redacted]ateral from a 550-foot crosscut which runs [redacted] nearly parallel to it. The vein is exposed [redacted]t connecting with one 500 feet from the [redacted]arer the mouth there is a winze said to be

[redacted] inches to 2 feet in width and has a thin [redacted]all side but is frozen to the footwall. The [redacted]er stained quartz carrying cerusite, galena, [redacted]s said to carry $20 a ton in lead, silver, and

[redacted]n, one-fourth of a mile south of the Nogal, [redacted]t in crystalline limestones that dip east at [redacted]he lenses of ore occur in a zone of fracture [redacted]d dips 50° SW. The ore is a very heavily [redacted]tz containing some large pockets of soft [redacted]owder, said to carry between $10 and $40 [redacted]t is developed by a 100-foot inclined shaft, the 40-foot level in 1912 as stoping on a progress at that time.

SUNRISE MINE.

[redacted]8, Pl. XVIII) is in a northwestward-trend-[redacted]nes[redacted], which is developed by an irregular [redacted]feet and by a long crosscut that cuts the [redacted]lar. The ore occurred in a short shoot and depth attained. It consists of argentifer-[redacted]ite largely altered to cerusite and copper [redacted]re is said to have carried very high silver

WALL STREET.

[redacted]9, Pl. XVIII) is on the north side of a [redacted]zonite about 100 feet north of the contact. [redacted]s occur along an eastward-striking brec-[redacted] in westward-dipping limestones. Copper [redacted]socolla, azurite, and cuprite, the principal [redacted]in films and irregular masses in reddish [redacted]e ledge is developed by two tunnels run-[redacted] Gulch, the upper one 200 feet in length [redacted]y longer, to judge from the dump. The [redacted]e mouth, but some ore on the dump shows [redacted]pyrite in the oxidized ores.

OTHER RESOURCES.

It is said that stibnite and antimony oxides have been taken from small stringers and pockets on the slopes of Volcano Peak.

The Nevada Marble Co. operates two quarries near Luning, one about half a mile south of the Fermina mine on the east side of Giroux Canyon, 6 miles northeast of Luning. A white coarsely crystalline limestone seems to be the principal bed. It strikes northeast and stands vertical. To the southeast there is a bed of mottled white and dark-gray marble that is much finer grained. The beds are opened by cuts to a depth of about 20 feet. The marble is somewhat jointed, but some fairly large blocks can be quarried. This company also owns another quarry 2 miles southwest of Luning, in the foothills, and much nearer transportation.

SILVER STAR DISTRICT, MINERAL COUNTY, NEV.

LOCATION AND ACCESSIBILITY.

The Silver Star district (No. 17, Pl. I, p. 18) is in the south-central part of Mineral County, Nev., the position of its center being in approximately 118° 15′ east longitude and 38° 20′ north latitude. It embraces the southern or main part of the Excelsior Mountains, which lie west of the Soda Spring Valley and south of Garfield Flat, and is shown in the lower left-hand part of Plate XVIII.

The district is tributary to the towns of Mina and Sodaville on the branch of the Southern Pacific connecting Goldfield with the main line at Hazen. Mina is a division point on this railroad and is the larger of the two towns.

There are five camps in the district, three on the north side of the mountains, Silver Star, Grassie, and Roosevelt; and two on the south side, Moho and Marietta. Silver Star is the largest of these camps, though in July, 1912, the population numbered about 15, and some of the houses of the town were not occupied. The other camps are virtually "one-man" affairs, though at one time Marietta, while a station on the Carson-Bishop stage route, was a flourishing settlement. The ores mined near Marietta are shipped from Belleville, a siding on the narrow-gage branch of the Southern Pacific Railroad that runs between Mina, Nev., and Keeler, Cal.

The roads in the district are good and wagon transportation to the shipping places is not as serious a problem as it is in many camps.

WATER SUPPLY AND VEGETATION.

Water is scarce and the supply obtainable is not very good. At Mina there are wells, and at Sodaville a number of hot, highly mineralized springs, though all the drinking water for that town is piped from

Martin Springs, about 3 miles northeast in the Pilot Mountains. At Silver Star the water supply is obtained from small seeps south of the town and at a higher elevation. These seeps have been developed by shafts or tunnels to give a small though continuous flow. Grassie camp is supplied by a small spring, barely sufficient for domestic purposes. About three-fourths of a mile east of Moho, on the road to Rhodes Marsh, a spring has been developed to supply a meager flow of water. Several shallow wells at Marietta give an abundance of highly mineralized water.

The meager and stunted vegetation is typical of the desert country, though on the higher parts of the mountains there is a small stand of juniper and here and there a nut pine to relieve the general monotony. The lower hills support only very small sage and greasewood shrubs. After the rains the lowlands are covered with forage and are used to some extent for early spring grazing.

TOPOGRAPHY.

The Excelsior Mountains form an irregular group extending east and west, contrary to the usual direction of ranges in the Great Basin province. They are composed of two nearly parallel ridges partially separated by low flats but connected by ridges that lie north and south. The mines of the Silver Star district, as the name is used in this report, are all situated on the main south ridge, which is rugged and cut by deep narrow canyons. Garfield and Excelsior flats, north of this ridge, are about 5,500 feet, and Teels Marsh, to the south, is about 5,000 feet above sea level. (See Pl. XVIII, p. 158.) The Soda Spring Valley, east of the range, has a minimum elevation of 4,400 feet at Rhodes Marsh. The mountains rise abruptly west of this valley, probably along a fault that trends north and south.

The highest peak in the vicinity of the mines has an elevation of 8,766 feet and is about 3 miles north of Moho and 5 miles southwest of Silver Star.

GEOLOGY.

The main body of the Excelsior Mountains is composed of dark-gray bedded rocks ranging from fine-grained argillites to coarse conglomerates. This series is capped by volcanic material along the north and east sides and has been intruded by granitic rocks in two places on the south side of the range.

SEDIMENTARY ROCKS.

Triassic (?) rocks.—The bedded deposits, well exposed at Silver Star and in Endowment Canyon, are composed of a very hard, siliceous compact material, and in the field were supposed to be con-

glomerates and argillites of normal sedi
lites, as a rule, are fine grained and
purple. In a few of the coarser beds f
some places feldspar were noted. Un
ever, the rock is seen to be composed
orthoclase, and quartz, with a little horn
specimens. The general fine-grained typ
andesitic tuff or arkose.

A coarser phase of the same rock was th
intrusive dike rock of andesitic character
show that the material is all fragmental
medium fine-grained andesitic tuffs or agg

Interbedded with the fine-grained tuf
glomerate, ranging from red to purple or
angular pebbles, the largest of which are
darker conglomerates are composed of
andesite or rhyolite, though the two vari
in the same bed. These pebbles are fir
across rather than out of the matrix when
some beds the fragments are elongated by

The lighter-colored conglomerates, found
are composed of fragments of reddish
cemented by quartz into a very hard rock.

As far as could be made out in this brie
grained red, green, and gray shaly tuffs a
the series and are about 400 feet in thic
lies between 2,000 and 2,500 feet of medi
4 foot beds, interstratified with andesitic a
that in places attain a thickness of 50 feet.
the massive cherty and quartzitic conglom
many layers of light and dark quartzites,
800 feet in thickness.

The sedimentary series in the Excelsi
3,500 feet thick, though its total thickness
short time taken for this reconnaissance,
plicated faulting and folding which the be

The age of these sediments is not determ
district. Spurr[1] considered the rocks to
possibly the equivalent of the Esmeralda
that there is considerable question as to the
of the extent of the induration and altere
and that they may be either Mesozoic or Te

[1] Spurr, J. E., Descriptive geology of Nevada south of
Survey Bull. 208, pp. 110–111, 1903.

[illegible] northeast in the Pilot Mountains. At [illegible] is obtained from small seeps south of [illegible] elevation. These seeps have been developed [illegible] give a small though continuous flow. Grassie [illegible] small spring, barely sufficient for domestic pur[illegible] of a mile east of Moho, on the road to [illegible] has been developed to supply a meager flow [illegible] flow wells at Marietta give an abundance of [illegible]

[illegible] vegetation is typical of the desert coun[illegible] parts of the mountains there is a small [illegible] and there a nut pine to relieve the general [illegible] support only very small sage and grease[illegible] mins the lowlands are covered with forage [illegible] for early spring grazing.

TOPOGRAPHY.

[illegible] form an irregular group extending east [illegible] usual direction of ranges in the Great Basin [illegible] of two nearly parallel ridges partially [illegible] connected by ridges that lie north and [illegible] Silver Star district, as the name is used in [illegible] on the main south ridge, which is rugged [illegible] canyons. Garfield and Excelsior flats, north [illegible] feet, and Teels Marsh, to the south, is [illegible]. (See Pl. XVIII, p. 158.) The [illegible] of the range, has a minimum elevation of [illegible]. The mountains rise abruptly west of [illegible] a fault that trends north and south. [illegible] vicinity of the mines has an elevation of [illegible] miles north of Moho and 5 miles southwest

GEOLOGY.

[illegible] Excelsior Mountains is composed of dark[illegible] ing from fine-grained argillites to coarse [illegible] is capped by volcanic material along the [illegible] has been intruded by granitic rocks in two [illegible] the range.

[illegible] SEDIMENTARY ROCKS.

[illegible] bedded deposits, well exposed at Silver [illegible] Canyon, are composed of a very hard, sili[illegible] and in the field were supposed to be con-

glomerates and argillites of normal sedimentary origin. The argillites, as a rule, are fine grained and black to greenish-gray or purple. In a few of the coarser beds fragments of quartz and in some places feldspar were noted. Under the microscope, however, the rock is seen to be composed of particles of plagioclase, orthoclase, and quartz, with a little hornblende and biotite in some specimens. The general fine-grained type is a highly consolidated andesitic tuff or arkose.

A coarser phase of the same rock was thought in the field to be an intrusive dike rock of andesitic character. Thin sections, however, show that the material is all fragmental and that these rocks are medium fine-grained andesitic tuffs or agglomerates.

Interbedded with the fine-grained tuffs are thick beds of conglomerate, ranging from red to purple or white, and containing subangular pebbles, the largest of which are 3 inches in diameter. The darker conglomerates are composed of subangular fragments of andesite or rhyolite, though the two varieties of rock are not seen in the same bed. These pebbles are firmly cemented and break across rather than out of the matrix when the rock is fractured. In some beds the fragments are elongated by pressure.

The lighter-colored conglomerates, found near the top of the series, are composed of fragments of reddish chert and white quartzite, cemented by quartz into a very hard rock.

As far as could be made out in this brief reconnaissance the finer-grained red, green, and gray shaly tuffs are the lowest members of the series and are about 400 feet in thickness. Above these beds lies between 2,000 and 2,500 feet of medium-grained tuffs in 2 to 4 foot beds, interstratified with andesitic and rhyolitic conglomerates that in places attain a thickness of 50 feet. The uppermost beds are the massive cherty and quartzitic conglomerates, interstratified with many layers of light and dark quartzites. These beds are at least 800 feet in thickness.

The sedimentary series in the Excelsior Mountains is at least 3,500 feet thick, though its total thickness was not measurable in the short time taken for this reconnaissance, on account of the complicated faulting and folding which the beds have suffered.

The age of these sediments is not determinable in the Silver Star district. Spurr[1] considered the rocks to be early Tertiary in age, possibly the equivalent of the Esmeralda formation, but he states that there is considerable question as to their correlation on account of the extent of the induration and altered condition of the series, and that they may be either Mesozoic or Tertiary.

[1] Spurr, J. E., Descriptive geology of Nevada south of the fortieth parallel: U. S. Geol. Survey Bull. 208, pp. 110–111, 1903.

In the Augusta Range the geologists of the Fortieth Parallel Survey[1] found quartzites which closely resemble the Triassic Koipato formation, and dark-colored limestones, argillites, and greenish cherts, with Jurassic fossils in the limestone members.

The central part of the Desatoya Range they found to be composed of not less than 6,000 feet of greenish and purple cherty conglomerates, capped with about 1,000 feet of quartzites and conglomerates passing into slates, which they considered to represent the Koipato group. Green porphyroidal conglomerates are prominent features. These beds are overlain by dark compact limestones with a yellowish shaly layer at the bottom rich in Triassic fossils.

It seems probable from the descriptions of the Triassic cited above that the dark-gray, green, and purple tuffs and conglomerates of the Excelsior Range are of Triassic age and are to be correlated with the Koipato formation of the Humboldt Range.

Tertiary (Pliocene) and Quaternary deposits.—Spurr[2] noted the presence of horizontally stratified gravels and volcanic tuffs of Pliocene age in the low hills on the west side of Soda Spring Valley that lie unconformably on the upturned Triassic (?) sediments. These sediments are in large part covered by the later detrital wash which fills the whole of the valley. Beautiful examples of the Quaternary outwash cones are seen at the mouths of the large canyons.

INTRUSIVE ROCKS.

Quartz monzonite.—Intrusions of two ages were noted in the Silver Star district. The oldest of these intrusions is probably of Cretaceous age. Granular igneous rocks were seen at only two localities on the south side of the range in the vicinity of Moho (see Pl. XVIII, p. 158), though possibly there are other masses of this rock in the mountains. The rock is a light-gray, coarsely granular to porphyritic quartz monzonite, consisting of oligoclase, orthoclase, microperthite, quartz, brown biotite, and green hornblende named in the order of decreasing abundance, and a small amount of accessory magnetite and apatite.

Augite andesite.—The younger intrusive rocks were seen only on the north and east sides of the mountains north of Silver Star and in the localities where they form a part of the west wall of Soda Spring Valley. (See Pl. XVIII.) They are typical augite andesite porphyries of very fine grain and few phenocrysts, but most exposures are weathered a deep red-brown or yellow. The hills composed of these rocks are quite distinct, on account of their brilliant coloring, from those formed of the bedded tuffs and conglomerates. Most of

[1] King, Clarence, Systematic geology: U. S. Geol. Expl. 40th Par., vol. 1, pp. 281–284, 1878; Emmons, S. F., Descriptive geology, idem, vol. 2, pp. 649–659, 1877.

[2] Op. cit., p. 111.

the thin sections examined are very high
constituents seem to have been andesine
magnetite. The feldspar is altered to s
femic minerals to chlorites and some e
many slides is changed to red-iron oxide.

EXTRUSIVE ROCK

Biotite andesite.—The top of the ridg
at the head of Endowment Canyon is ca
weathering vesicular biotite andesite that
of plagioclase feldspar, biotite, and a few
feldspar is andesine-labradorite, as show
biotite is greatly in excess of the hornbl
this rock, a grayish glass with a few feld
ceeds in quantity the few scattered phenoc

Rhyolite.—On the eastern road from Sil
miles northeast of the former town, ther
platy rhyolite that shows long needles o
specimens. In thin section the microscope
be largely composed of glass carrying ort
are set a few small crystals of orthoclase,
are seen to be largely altered to iron oxide.

Basalt.—A dark-gray, nearly black ve
a rather recent flow, overlies all the above
forms the large rounded hill west of Bell
much of the country southwest of the area

STRUCTURE.

At Silver Star the beds strike about N.
Near the crest of the range south of the tow
On the south side of the range, northeast
nearly vertical or dip steeply to the no
Between Moho and Belleville the strike is
dark argillitic beds in this locality dip to t
Canyon, a few miles north of Marietta, t
north at very high angles or are nearly ver
canyon the light-colored quartzite conglom
low angles immediately under the capping

The variations in dip noted above might
lowing structure: The north side of the m
is the southern limb of an anticline strik
summit has been eroded to the level of Ga
At the crest of the first ridge south of Sil
dip at lower angles, there is possibly a shal
which the glassy biotite andesite is found.

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closely resemble the Triassic Koipato
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[2] geology: U. S. Geol. Expl. 40th Par., vol. 1, pp. 281–284, geology, idem, vol. 2, pp. 649–659, 1877.

the thin sections examined are very highly altered, but the original constituents seem to have been andesine, augite, some biotite, and magnetite. The feldspar is altered to sericite and calcite, and the femic minerals to chlorites and some epidote. The magnetite in many slides is changed to red-iron oxide.

EXTRUSIVE ROCKS.

Biotite andesite.—The top of the ridge south of Silver Star and at the head of Endowment Canyon is capped by a light-gray pink-weathering vesicular biotite andesite that shows distinct phenocrysts of plagioclase feldspar, biotite, and a few hornblende needles. The feldspar is andesine-labradorite, as shown by thin sections, and the biotite is greatly in excess of the hornblende. The groundmass of this rock, a grayish glass with a few feldspar microlites, greatly exceeds in quantity the few scattered phenocrysts.

Rhyolite.—On the eastern road from Silver Star to Mina, about 1¼ miles northeast of the former town, there is a small area of gray platy rhyolite that shows long needles of hornblende in the hand specimens. In thin section the microscope shows the groundmass to be largely composed of glass carrying orthoclase microlites in which are set a few small crystals of orthoclase, and the hornblende needles are seen to be largely altered to iron oxide.

Basalt.—A dark-gray, nearly black vesicular basalt, apparently a rather recent flow, overlies all the above-described formations and forms the large rounded hill west of Belleville. This basalt covers much of the country southwest of the area shown in Plate XVIII.

STRUCTURE.

At Silver Star the beds strike about N. 66° E. and dip 75°–80° S. Near the crest of the range south of the town the dip decreases to 30°. On the south side of the range, northeast of Moho, the beds stand nearly vertical or dip steeply to the north and strike N. 70° E. Between Moho and Belleville the strike is about the same, but the dark argillitic beds in this locality dip to the south. In Endowment Canyon, a few miles north of Marietta, the beds again dip to the north at very high angles or are nearly vertical. At the head of the canyon the light-colored quartzite conglomerates dip to the north at low angles immediately under the capping of glassy andesite.

The variations in dip noted above might be explained by the following structure: The north side of the mountains near Silver Star is the southern limb of an anticline striking east-northeast whose summit has been eroded to the level of Garfield and Excelsior flats. At the crest of the first ridge south of Silver Star, where the beds dip at lower angles, there is possibly a shallow synclinal fold, along which the glassy biotite andesite is found. South of this locality,

along the main crest of the mountains, there is a tightly compressed anticlinal fold that apparently strikes north-northeast, which accounts for the steep dips or vertical beds in the vicinity of Moho and the lower part of Endowment Canyon.

ORE DEPOSITS.

HISTORY AND PRODUCTION.

The Endowment mine, in the southwestern part of the Silver Star district, was the first property worked in this vicinity. It was discovered shortly after the mines at Aurora were opened and for a number of years was a steady producer of rich silver-lead ores. The production from this mine is supposed to be in the neighborhood of $1,500,000, though no authentic figures of production can be obtained. The original owners finally abandoned the Endowment after they had supposedly taken out most of the ore, and in 1903 it was relocated by Joseph Rutty and R. L. Mason, of Marietta.

In 1874 and 1875 F. M. Smith operated a borax plant on the south side of Teels Marsh, and this industry was continued for a number of years, being abandoned only after the discovery of richer deposits in Death Valley, Cal.

The veins near Moho are of comparatively recent discovery and little work has been done on any of them.

The Blue Light or Garfield copper deposits, located about 10 miles northwest of Silver Star, on the south side of the northern ridge of the Excelsior Mountains, were worked as early as 1882, when Burchard[1] reports a production of 128 tons of ingot copper from the properties. The total production from the Garfield mine was estimated by him at $100,000.

This property was not visited in the course of this reconnaissance, but from the descriptions of the ore body it would appear that it is an irregular eastward-trending replacement in limestone.

In the vicinity of Silver Star the first ore was discovered in 1893 on the Duke claim, on the divide west of town, by Thomas Pepper, E. Grassie, and D. J. Robb. These men located 16 full claims and three fractions, covering a large part of the area then thought to be mineral bearing. The Bounce vein was discovered in 1894, and a five-stamp amalgamation mill of the California type was built that year to treat the ores of the district. The original locations were acquired by the Douglas Mining & Milling Co. in 1904, and since that time not much ore has been produced from that property, though a large amount of development work has been done. Several of the other properties have been steady producers. The total production from these mines

[1] Burchard, H. C., Report of the Director of the Mint for 1883, p. 514.

previous to 1901 was estimated by Mr. Dou
averaging $25 a ton.

The latest discovery on the north side of
velt, located about 2 miles east of the town

Figures of production from the district
be found. The following table is compi
sources reports, published by the United S

*Production of the Silver Star district, Minera
1911, inclusive.*

	Crude ore.	Gold.
	Tons.	
1902	480	$5,958
1903	205	7,403
1904	256	4,671
1905	698	14,850
1906	650	6,000
1907		
1908		
1909	234	2,232
1910	127	862
1911	250	4,301
	121	1,352
	3,021	47,629

TYPES OF VEINS.

Two distinct types of veins occur in the
the north side of the mountains near Silv
number of eastward-trending veins that
quartz, adularia, and a little calcite or si
silver as the only metallic constituents. Th
by the Bounce, Snowball, Jupiter, Mary
Closely associated with these veins is the
free gold in crushed, hydrothermally alt
possibly the Moho vein is altered andesite
of the mountains, in the vicinity of Marie
veins contain a large quantity of the ba
sphalerite), but the surface ores were extre

QUARTZ-ADULARIA VEI

OCCURRENCE AND CHARAC

In general the quartz-adularia gold veins
mountains strike not far from east and d
angles usually between 60° and 80°. A
numerous veins closely spaced and all very

[1] Turner, H. W., The mines of Esmeralda County, Ne
p. 73, 1901.

Inf Circ 6941 Reconnaissance of Mining Districts in Mineral Co Nev

1937

CANDELARIA DISTRICT

William O. Vanderburg

The Candelaria district also known as the Columbus district, is in the Candelaria Mountains at an altitude of 5,665 feet above sea level, 22 miles south of Mina by automobile road. Silver veins were discovered here in 1863 by a party of Spaniards. The Northern Belle, the oldest and most productive mine, was located in 1864 and in the same year was acquired by Messrs. Bateman, Allen, and Holmes. Subsequently this property was abandoned, to be relocated in 1870 by A. J. Holmes. In 1873, a company was incorporated to work the Northern Belle property, and in the same year a 20-stamp mill and 3 White furnaces were erected at Belleville 8 miles from the mine. With the successful development of the Northern Belle property, attention was attracted to the district, and it became the most productive silver camp in Esmeralda County and one of the foremost in Nevada. The 20-stamp mill erected at Belleville was equipped with 10 pans and 6 settlers for treating the ore by the Washoe process (amalgamation in pans heated by steam).

In 1876, a second 20-stamp mill, equipped with 12 pans and 6 settlers, was erected by the Northern Belle Co. at Belleville. The two mills had a combined capacity of 120 tons of ore per day. Power was generated with steam, pine wood being used for fuel. An old report states that the two mills required 1,000 cords of pine wood per month. Other companies erected mills at Columbus and Sodaville. The value of the ore treated in the early days averaged from \$45 to \$60 per ton.

In 1883, the Holmes Mining Co., whose property adjoined the Northern Belle, sued the latter company for trespass and sought compensation for ore extracted from its ground. The court awarded the Holmes Mining Co. \$360,000 damages, and the Northern Belle Mining Co. mine and mills were sold by the United States marshal in 1884 to the Holmes Mining Co.

As the bonanza ore of the early days became exhausted, the camp declined and fell into decay. The last important revival of activity in the district was in 1919, when the Candelaria Mines Co. was organized. This company was a consolidation of the most important mines, including the Argentum, Mount Diablo, and other properties of less importance.

In 1882, water was brought to Candelaria by gravity from the White Mountains. The pipe line has a diameter of 4 to 5 inches and is 27 miles long. It is still in serviceable condition.

From 1913 to 1918 about 125,000 tons of old tailings at Belleville were re-treated in a 120-ton cyanide plant.

The total production of the district in the early days is reported to have been \$20,000,000. According to a report of the Mint,6/ by the end of

6/ Director of the Mint, Report for 1883, p. 508.

1883 the total amount of silver bullion aggregated $10,000,000, out of which about $2,000,000 had been paid as dividends.

From 1903 to the present time production has been in excess of $1,000,000.

Argentum Mining Co.

The Argentum Mining Co. property includes the Northern Belle and Holmes mines and other mineral acreage in the Candelaria district. Fred G. Gruby, 241 Sacramento Street, San Francisco, Calif., is the western representative of this company. In 1918, the Argentum holdings were leased to the Candelaria Mines Co. Lease was canceled in 1927 for failure to comply with its provisions. In 1922, the Candelaria Mines Co. erected a 300-ton cyanide plant, which operated at intervals until September 1925. A large proportion of the ore treated consisted of tailings and material from mine dumps. Considerable difficulty was encountered in the metallurgy. This mill has been dismantled.

Property is developed by the Northern Belle and Argentum shafts, the latter 1,365 feet deep, and many miles of underground workings.

According to Knopf 7/ the rocks of the district consist of a steeply dipping series of cherts, argillites, and felsites intruded by peridotite or allied rock and quartz monzonite porphyry. Resting uncomformably on this group of older rocks is a series of Tertiary volcanics, mainly rhyolite, lavas, and tuffs capped in places by basalt flows.

The ore deposits are highly oxidized manganiferous silver veins mostly several hundred feet in length and a few feet wide, broken up by complex fissures. No silver minerals are visible, and the value of the ore can be determined only by assay. The amount of gold in the ore is of minor importance. The veins are fairly persistent and dip at high angles. The deepest workings are 1,365 feet vertically below surface, and at this depth water level has not been reached. There is said to be little hope at depth, either in grade or quantity of ore.

According to Fred G. Gruby, several reports on the property made by prominent engineers give estimates of ore reserves in excess of 200,000 tons and averaging 10 to 15 ounces in silver.

Secretary Lode Mines Co.

The Secretary Lode Mines Co. owns five claims in the Candelaria District between the Mount Diablo and Lucky Hill mines. In the fall of 1936 this mine was reopened under the direction of Mark G. Bradshaw of Tonopah. A carload of ore was shipped from the property in September 1936.

7/ Knopf, Adolph, The Candelaria Silver District, Nevada: U. S. Geol. Survey Bull. 735-A, 1922, 22 pp.

The property is developed by a 600-foot shaft and tunnels, which with other workings total about 1 1/2 miles. Equipment includes two Chicago pnuematic compressors and rock drills.

Turquoise and Variscite

Turquoise and variscite deposits were discovered in the Candelaria Mountains in 1908 by A. L. Dees and Edward Murphy. One deposit is several miles northwest of the deserted camp of Columbus and the other is 2 miles west of Rock Hill siding on the Southern Pacific R. R. between Redlich and Coaldale. These deposits have been worked intermittently for gem material when market conditions were favorable.

The production of gem material from these deposits is not a matter of record. According to Carl Reik, who until recently held turquoise claims near Columbus, more than 1,000 pounds of turquoise has been produced by him since 1916.

The Reik group of three claims was sold in 1936 to W. F. Godber, owner of the Western Gem and Jewel Co., 1639 Wooster St. Los Angeles, Calif., wholesale dealers in turquoise. This company uses approximately 25 pounds of turquoise per day for gem stones.

According to Godber, Nevada turquoise is the finest produced in the United States, and much of the material is sold in foreign countries, including England and India, for semiprecious gems.

The turquoise occurs in limestone and shale formation, principally as veinlets along joints or fissures. The veinlets range from knife-blade thickness to a maximum of 1/2 inch. The joints or fissures are quite local and can be traced only a few feet in any direction. The turquoise is closely associated with variscite, which is sometimes mistaken for turquoise.

In October 1936, three men were employed in mining the turquoise. Considerable patience is required because explosives cannot be used and the ground is fairly hard. According to Godber, the quality of the turquoise improves with the hardness of the enclosing rocks. Mining is done mainly in open-cuts, and three men can produce about 1 pound per day.

DOUBLE SPRINGS MARSH DISTRICT

Double Springs Marsh is about 8 miles east of Schurz, a station on the Mina Hazen branch of the Southern Pacific R. R. at the north end of Walker Lake.

The only mining activity on the marsh occurred about 1898, when the Occidental Alkali Co. produced a considerable amount of high-grade soda.

Double Springs Marsh is a typical dry-lake deposit formed by the evaporation of mineral-bearing waters derived from drainage from the surrounding

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Reconn. of Mining Dist. in Mineral Co.
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Hill, J. M.
USGS Bull 504 1915

Ferguson, H. G.
The Mining Districts of Nev.
Econ Geol 24(2) 175

course of the mineralization. Most of this work was done by lessees in searching for shipping ore.

The formations are principally andesite and rhyolite intruded into granite. The mineralization appears to be associated with a dike 40 to 50 feet wide. The mineralized zone is roughly 4,000 feet long and 60 to 200 feet wide, traversed with numerous seams and small fissures filled with quartz carrying gold, silver, lead, pyrite, and a little copper. The individual seams are too small and irregular to be mined separately, but thorough sampling may show that the seams are numerous and rich enough to carry the intervening rock making a low-grade ore.

Sporadic sampling in places by Mr. Donnelly showed values varying from $1.60 to $16 per ton. In addition, numerous panningsindicated a wide distribution of values. More thorough sampling is necessary to determine the value of the deposit. Probably the only hope for the district is the possibility of developing a large tonnage of milling grade ore.

MARIETTA DISTRICT

The Marietta, also known as the Black Mountain district, is in the vicinity of the old camp of Marietta 25 miles by automobile road southwest of Mina and 10 miles west of Belleville, the latter a station on the narrow-gage railroad that runs between Mina and Keeler, Calif.

The Endowment mine was discovered in this area in the early sixties, shortly after the discovery of Aurora. In recent years the principal property has been the Moho mine.

Moho Mine

The Moho mine, on the south slope of the Excelsior Mountains, is accessible by automobile road from Mina 15 miles distant. The mine was located in 1903, and considerable work was done in searching for shipping ore. Property is credited with a production of $75,000, made mostly by lessees.

With the increase in the price for gold, interest in the property was renewed. It was sampled by Earl Bohannon; and a small company, called the Federal Mining and Engineering Co., acquired 12 unpatented claims. In 1935, a pilot milling plant employing cyanidation was erected. This plant has a capacity of 25 tons per day, and up to October 1936 about 1,500 tons of dump ore had been milled.

The mill equipment includes a Dorr classifier in closed circuit with a home-made rod mill 5 feet long and 28 inches in diameter, 2 Parral agitators, a clarifier, and 2 solution tanks. Power for milling is furnished by a 60-horsepower Holt gasoline engine.

Dump material is fine, so that primary crushing is not necessary. Ore is ground to minus 60-mesh in a 2-pound-strength cyanide solution. Lime

consumption is 7 pounds and cyanide consumption 1/2 pound per ton. Precipitation is effected with zinc shavings. The recovery by cyanidation is reported to be 90 percent on ore averaging about $8 per ton.

Water for milling is pumped from Marietta Springs through a 2-inch-diameter pipe line 4,500 feet long. Approximately 25 gallons of water per minute are pumped by Gould Triplex pump, size 3 1/2 by 5 inches, driven by Fairbanks-Morse Z-type, 10-horsepower, gasoline engine. Water is under head of 350 feet.

Mine development consists of one tunnel driven 1,200 feet on a vein, nine shorter tunnels, and several shafts, the deepest of which is 300 feet. Total underground workings comprise 3,500 feet.

The formation is mainly andesite. The ore occurs in a series of veins that average 3 1/2 to 4 feet in width and dip about 70°. One vein is traceable on the surface for a distance of 1 mile. The values are chiefly in gold, with some silver. Lead in the form of cerussite is present in the ore in amounts averaging about 2 percent.

Before the property was purchased it was sampled by 900 cut samples and, according to Bohannon, at least 100,000 tons of ore averaging $9 per ton in gold and silver have been blocked out. During the last 2 years several sets of lessors working on the property produced $12,000 in shipping ore. Mining is done by hand. The royalty payments are 15 percent of the net smelter returns on ore having a value of $30 per ton or less and 20 percent above $30 per ton.

The smelter returns on a shipment of ore made by W. J. Forbes on March 1, 1935, to American Smelting & Refining Co., furnished the following data:

Metal quotations:	Au	$34.9125 per oz.	
	Ag	.64 1/8 per oz.	
Settlement assay:	Au	1.015 oz.	
	Ag	6.3 oz.	
	Pb	1.4 percent	
Value	Au at $31.81825 per oz.		$32.30
	Ag less 0.5 oz. at $0.64125		3.72
	Total		36.02 per ton

Treatment charge:	Base charge	$3.50
	10% excess over $20	1.60
		5.10
	Labor increase	.06
		5.16 per ton

I. C. 6941

	Pounds		
Wet weight	119,164		
Less 10.48% moisture	12,488		
Net weight	106,676	53.338 tons at $30.86	$1,646.01
Freight advanced at	$4.30 per ton	$245.87	
Demurrage	.....	6.00	
Fed. Min. & Engr. Co., 15 percent	.....	207.57	
			459.44
		Net proceeds	1,186.57

The trucking cost to railroad is $1.50 per ton; distance of haul, 13 miles.

Endowment Mine

The Endowment mine is 3 miles northerly from the old camp of Marietta. This property comprises five unpatented claims owned by B. F. Baker and A. V. Reeves of Mina, Nev.

Property was idle from 1884 until 1923, when it was worked by lessees. In 1926 lessees shipped 144 tons of ore averaging 81.6 ounces in silver, $2.34 in gold, 3.83 percent copper, 5.25 percent lead, and 7.6 percent zinc.

Production from this mine, according to statements of men familiar with the property, has been approximately $150,000, although some estimates in earlier reports give a figure as high as $1,500,000 prior to 1884.

In recent years the property has been idle.

Development consists of a tunnel reported to be 500 feet long, a winze 333 feet deep sunk from the tunnel level, and several other winzes.

Two veins occur in quartzite and quartzite conglomerate with interbedded argillite. The width of the veins ranges from several inches to 6 feet. The principal values are in silver associated with cerussite, smithsonite and copper carbonates near the surface, while at depth galena, sphalerite, pyrite, and a little chalcopyrite are associated with silver.

The following account of the mine taken from an early report by Whitehill[11] is of interest.

> The vein matter is decomposed and carries carbonate of lead, argentiferous galena, and iron. By mill process the ore yields from $50 to $125 in silver. A tunnel has been run in on the vein a distance of 500 feet and connects with a shaft at a depth of 200 feet. From this tunnel level two winzes have been sunk 200 feet, a distance of 300 feet apart. The pay ore is about 5 feet in width,

11/ Whitehill, H. R., Biennial Report of the State Mineralogist of the State of Nevada for years 1877-78-79, p. 25.

though the vein matter is much wider. The 5-stamp quartz-mill, erected at Philadelphia by the State of Nevada for the Centennial Exhibition, was removed to this district and has run very successfully on the ores obtained here. The Endowment is an incorporated company, the stock of which is listed in the San Francisco Stock and Exchange Board. The assessments levied have been $50,000 and the yield of bullion $88,764.

Rutty Group

The Rutty group of three unpatented claims owned by Joe Rutty of Marietta is on the south slope of the Excelsior Mountains about 1 1/2 miles north of the camp. Rutty, an old time Cripple Creek miner, has worked his property by himself since 1910 and made a living from it.

The mine workings comprise four adits driven at various elevations, which, with subsidiary workings, total about 4,000 feet. The ore is mined by hand and is packed down the hill on burros for trucking to the mill.

The Rutty mill is a small affair equipped with a 12- by 8-inch jaw crusher, two stamps weighing 1,050 pounds each, and an amalgamation plate 8 feet long and 3 feet wide. The stamps and crusher are driven by an old automobile engine. Water for milling is pumped by a 3-horsepower Fairbanks-Morse Z-type engine from a well 23 feet deep near the mill site.

The ore bodies are small and bunchy and occur along cross fractures in limestone. Values are mainly in gold. According to Rutty considerable ore that will average $6 per ton at current metal prices is developed on his property. This ore is too low grade to be mined under existing conditions.

Gold Gulch Mining & Milling Co.

The Gold Gulch Mining & Milling Co. was incorporated in 1929 as a reorganization of the London Silver Lead Mines Co. In December 1934 this property was sold at sheriff's sale to C. E. Flagg of Reno, Nev. The property which has been idle for several years, comprises 14 claims several miles northeast of Marietta and about 12 miles from Belleville.

Development work consists of a two-compartment shaft 150 feet long and some lateral workings. In 1928 a mill was erected at the Marietta. Mill equipment includes a Dodge crusher, a Denver quartz mill, and two concentrating tables powered by a Fairbanks-Morse gasoline engine.

Judging from the size of the tailings dump, the mill treated only a few tons of ore.

Annett Group

Several miles east of Marietta is a barite deposit covered by four unpatented claims owned by Al Annett of Mina. Belleville, on the Mina-Keeler narrow-gage railroad 11 miles east of the property, is the nearest shipping point. No production has ever been made.

The ore occurs in veins in rhyolite. Values are chiefly in gold.

Bentonite

A deposit of bentonite type of clay was discovered about 1928 on the east slope of Excelsior Mountains about 1 mile west of Sodaville.

Production of bentonite has been in the neighborhood of 15,000 tons from two claims owned by Cooper Shapley, formerly of Bishop, Calif. The bentonite was mined by power shovel and hauled by truck to Sodaville at a cost of 90 cents per ton. The bentonite was shipped to the Pacific coast markets for use as oil-well drilling mud. The deposit has been prospected by a number of trenches and shallow shafts.

Individuals living at Mina, Nev., who own bentonite claims are J. R. Towner, three; William Ray and William Gash, two, jointly; and George F. Thompson, several.

The bentonite occurs as a bedded deposit underlying surface detritus. It is said to be free from grit and in places is iron-stained and traversed by seams of gypsum. The overburden ranges in depth from 6 to 10 feet. Large reserves are indicated.

TEEL'S MARSH DISTRICT

Teel's Marsh is 2 miles south of the old mining camp of Marietta in southern Mineral County. It is reached by automobile road from Mina, a town on the Southern Pacific R. R. 26 miles to the northeast by way of Belleville.

This marsh, which in reality is a dry lake, was first worked for sodium chloride in the late sixties. The salt supplied the chlorination mills at Aurora, Comstock, and Candelaria. It is interesting to note that this marsh was the site of the first discovery of borax in Nevada by F. M. Smith, better known as "borax" Smith, and J. P. Smith, his brother. According to S. T. Kelso of Hawthorne, Nev., who was at one time superintendent for the Smith Brothers, borax was found in Teel's Marsh about 1872. Shortly after, several plants for the extraction of borax were erected in the southeast portion of the marsh. These plants maintained a steady production up to 1892, when they were abandoned because of the discovery of richer deposits of the borax mineral, colemanite, in the vicinity of Death Valley, Calif. Although Teel's Marsh is not important economically at present, it produced a considerable quantity of borates and played an important part in the development of the borax industry in the United States.

Teel's Marsh is 5 miles long, 1 to 2 miles wide, and covers an area of about 8 square miles. The elevation of the surface of the marsh is 4,900 feet above sea level. The common salts in the playa deposits in the great basin region of which Teel's Marsh ia an example are the chlorides, sulphates, carbonates, bicarbonates, and borates of sodium and potassium. Magnesia and lime are present as minor constituents. In nearly all of the deposits the

sodium salts predominate. Due to the fact that the borates are more soluble than the other salts, they remain in solution longer, and if the lake has alternate periods of desiccation and flooding the borates will crystallize out at or near the surface.

The deposition of borates in the playa type of deposits depends upon a combination of favorable conditions that is not widespread, and in consequence this type of deposit is restricted as to locality. The essential conditions required for the accumulation of borates are:

1. A source of boron, namely, solfataric springs in a region of former volcanic activity.

2. Suitable drainage basins, without any outlet, for the accumulation of the salts.

3. The climate must be sufficiently arid to concentrate the salts by evaporation and to prevent the removal of the borates, which are relatively soluble compounds.

At Teel's Marsh the boron-bearing mineral was principally borax, the natural sodium tetraborate intimately mixed with other salts forming a crust on the surface of the playa. The upper stratum of the deposits was the purest worked, but when this crust was removed other strata were found below at shallow depths associated with greater quantities of carbonate of soda or sodium chloride. The presence of sodium carbonate in the salts prevented the formation of the mineral ulexite nodules, the characteristic boron mineral in some dry-lake deposits.

The refining of the product was simple, as the natural borate of soda only required boiling to get the mineral in solution. On cooling, the borax was precipitated on wires or rods suspended in vats, leaving the other forms of soda, sand, and clayey matter at the bottom of the vat to be run off in the waste solution. The solution pans were semicircular, about 8 feet in diameter and 30 feet in length. These were fired from beneath with sagebrush, greasewood, or pinon pine from the foothills.

The crude borax obtained by crystallization was first hauled with wagon teams to Wadsworth, Nev., 130 miles distant, for shipment by rail to the San Francisco Bay region, where refineries were located. In 1882 a narrow-gage railroad was completed to Mina, and long haul with a team was eliminated.

WHISKEY FLAT DISTRICT

The Whiskey Flat district is at the south end of Whiskey Flat, on the north slope of the Excelsior Mountains, about 20 miles southeast of Hawthorne. Mining was first done in this area in 1882, when copper ore carrying silver and a little gold was treated locally in a 400-pound-capacity furnace.

A company called the Excelsior Mountain Copper Co. operated for several years after 1907. Production has been small. There has been no activity in the district in recent years.

The mineralization is in limestone near a granite contact. In addition to silver and a little gold, the ore carries copper carbonates and sulphides. Garnet occurs as a gangue mineral.

Name of C.	Patentee	Located	Sur.	Pat	Location
Commodore	Holmes Min. Co.	1875	1900	1901	H
Commodore #2	" "	1875	1900	1901	H
Mt. Potosi ... #1	A.J. Holmes		1873	1875	H
Jebson	Holmes Min. Co.	1881	1900	1901	H
Triangle	" " "	1881	1900	1901	"
Noble and Lent	" " "	1878	1900	1901	"
Western Belle, Grand and Morning Star	" " "	1889	1900	1901	"
Northern Belle no. 2					
Melantius	" "	1884	1900	yes	
Laconia					
Consuelo					
Bar	" "	1890	1900	1901	
Rescue	" "	1890	1900	1901	
First Ext. of Northern Belle	" "	1891	1891	yes	
Gen. Thomas No 1	" "	1871	1900	1901	
" " No 2	" "	1871	1900	1901	
" " No 3	" "	1871	1891	yes	
Southern Belle no. 2	W. J. Sutherland's		1880	no	
George Washington	J. Chartouich etal		1882	1883	
Northern Belle	A.J. Holmes	1870 1865	1873	yes	H
Lightning	Gen. Jackson M. Co.		1880	1883	
Tramp Quartz	" "		1880	1883	
Silver Quartz	" "		1880	1883	
Lander	Northern Belle M & M Co.		1881	no	N B.
Mt. Diablo Consolidated	Mt. Diablo M & M Co.	1867	1893	1895	M D
Dinero, Peru	" "	"	"	"	
Tipton, Stuart & Adams	" "	"	"	"	
Mt. Diablo Quartz	East Mt. Diablo Mg. Co.	1880	1880	1882	
Dinero Quartz & Peru	" " "		1880	1882	

claim	Patantee	Loc.	Sur.	Pat.	
Secretary	Jacob Rauer	1879	1887	yes	
McCastle	" "	1888	1888	no	
Mountain Queen	" "	1878	1888	no	
Bismark	Bismark M. Co.		1880	yes.	
Potosi Quartz ?	" "		1880	yes	
Green Linnet	Lucky Hill Cons. Co	1870	1885	no	
Newark	" " "	1880	1885	no.	
Raker	" "	1870	1885	no.	
Rex	Mt. Diablo M & M Co.	1879	1893	yes.	HK
Sailor Boy, Small Hope	" "	1879	1893	yes	HK
Tom Paine	" "	1879	1893	yes	HK
Commodore	J. C. L. Wadsworth		1880	no	
Commodore No. 2	" "		1880	yes	
Laughrea	Saratoga M Co.		1880	no	
Fueto	J. Mc Clane et al		1880	no	S
Mountain Girl	" "		1880	no	
Green Nick	S. Ward		1880	yes	?
Great Eastern	Lucky Hill Cons. Co	1871	1885	no	
Red Bank	F. A. Hanke	1885	1880	yes	?
Helca	R. Greer & Corkhill	1884	1885	yes.	
Leo.	Jacob Rauer	1878	1887	yes	
Chief of the Hills	So. Nev G. & S. M Co.		1880	yes.	
Good Faith.	P. Martin		1882	yes.	
Chief of Columbus	F. A. Hanke's et al		1880	no	
Geraldine & Edna	Helmes Mining Co.	1884	1900	yes	H

Business directory of the Pacific states and territories, 1878

ttorney-at-law
ine owner
s
District Judge
Churchill Cos
es
dealer

WER, Liquors
UIN, Livery

S, Bankers
se
(Catholic)
astin baths and

Merchant tailor
ruit, cigars, to-

ruits & varieties
Y. Meat market
County Clerk

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house
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e
nors
Paxton & Cur-

ER, Fruits, ci-
s, crockery, etc
or

ARK, Liquors

ilor
urnishing goods
M, Ice dealer
ksmith & wagon

ographer
ilor
. Gen mdse
gist
CK, Druggists
ician

hes and jewelry

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NTY,

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eys, at an eleva-
a population of
a daily line of
rora. There is
to Austin and
outh of Battle
from which the

town is supplied with water. Also here is situated the mountain from which the station derives its name. This mountain was once the scene of a fierce battle between the Indians and some emigrants camped near by, in which both parties suffered a considerable loss, but the white men came off conquerers.

ALTENBURG A, Bakery and restaurant
Amfahr John, brewery
BARCLAY A, Agent D W Earl
BATEMAN GEO W, Meat market and stockraiser
BATTLE MOUNTAIN MESSENGER, E A Scott, propr
BLOSSOM J A & CO, Gen mdse
BROWN JAMES, Agent CPRR
DAVIS WALTER, Manager A & P Tel Co
DUSANG JOE, Liquors and billiards
EARL D W, Forwarding merchant
FELIZ LOUISE, Bakery and varieties
FRAZER C W, Livery stable
HAGAR T E, Postmaster
HAYNES CHAS C, Propr Tuscarora and Battle Mountain stage line
Huntsman L D, propr Capital Hotel
Le Grande Louis, liquors
LEMAIRE A D, Liquors
Lucas Louis, varieties
LUCKETT THOS, Deputy Sheriff
MAYO URIAH, Liquors
McWilliams J W, general merchandise
MIDDLETON GEO A, Liquors, farmer and miner
MOZINGO SAMUEL G, Blacksmith and wagonmaker
NEWMAN ROBT, Delmonico Restaurant
NORTHWAY FRANK, Boot and harnessmaker
PARKS JOSEPH, Liquors and billiards
POSTLES CHAS, Hairdresser
Rae Jno, blacksmith and wagonmaker
ROBERTSON ALEX, Agt Wells, Fargo & Co, Stage Cos, and Justice of the Peace
ROBINSON Mrs PHEBE, Proprietress Battle Mountain Hotel
SCOTT E A, Propr Battle Mountain "Messenger"
SMALL LEWIS, Carpenter
SMITH F H, Forwarding merchant and lumber dealer
SPONOGLE F M, Physician
SWIFT FRED, Agt for F H Smith
Taylor N, Notary Public
THOMPSON G E, News depot and manager W U Tel Co

Belleville,

ESMERALDA COUNTY,

A town of about 350 inhabitants, and is supported by the mills of the Northern Belle mine, which are situated here. It is reached by stage from Carson City. The surrounding country is sandy and rockey. The water being brought about thirteen miles in pipes, sells to the inhabitants at two cents per gallon. The premium salt marsh of Rhodes & Wason is distant eight miles. This marsh is the finest in the State, and one of nature's wonders.

ARNOLD A E, Tinware and hardware
Belding W F, Supt Northern Belle Mills
CROTTY & BOYLAND, Liquors
EDWARDS C R, Lumber
FARRINGTON BROS, Blacksmiths and contractors
GILDERSLEEVE & OGG, Livery stable
HICKOK S B, Propr Marietta and Belleville Stage Co
HOLMDRUP MARTIN, Liquors
HOTZ CONRAD, Fruits, candy, nuts, etc
JONES JOSEPH M, News agency and liquors
LATER PETER, Liquors
Lind James, harnessmaker
McALPIN RICHARD, Liquors
McGraw Mrs Maggie, restaurant
McVEY STEWART, Liquors and brewery
Mercich Nick, restaurant
Moore Geo, liquors
MUNROE J M, Hairdresser
NICHOLSON J J, Propr Belleville Hotel
NORTHERN BELLE M & M CO, P S Buckminster, Supt
NORTON THOS, Druggist
PINSCHOWER SIMON, Postmstr
RABJOHN WM, Justice of Peace and liquors
RHODES A J, General merchandise
RHODES & WASON, Proprs Premium Salt Marsh
Richardson A S, physician
ROGERS W H, Physician
ROMO RAFAEL, Liquors and restaurant
BUCKMINSTER P S, Supt Northern Belle M & M Co
SKANKS J F, Wtchmker and dentist
SMITH LEVI, Groceries, fruits and liquors
SUMMERS & CO, Market
SUPONIZKA B, Propr Belleville House
TRAVER & STONE, General mdse
Wheeler Enoch, bootmaker

Belmont,

NYE COUNTY,

County seat of Nye County, quite an old town of eastern Nevada, supported by silver mining, having some very good prospects in mines. Has a population of 500 inhabitants; also a fine brick Courthouse.

BALL J A, Furniture dealer and carpenter
BAUER CHRIS, Brewery
BELMONT COURIER, Andrew Mante, propr
BOWMAN JOHN, Attorney-at-law
Cafferty James, liquors
CAREY SIMEON, Hairdresser
Carpenter S, liquors, East Belmont
Courter J P, Supt El Dorado South Con Mining Co
CRESWELL H T, Attorney-at-law
CURLER BENJ, District Attorney, attorney-at-law
Decker B C, livery stable
Duffy Thos, liquors
DYKEMAN CHAS, Liquors
EMERSON GEO W, Druggist and varieties
ERNST GEORGE, Co Surveyor and acting Co Recorder and Auditor
ESSER & STIMLER, Groceries, fruits and varieties
FALKINHAM J J, Supt Belmont Mining Co, agt E&PRR Co, and lumber dealer
Flack Rev D, clergyman (Episcopal)
GATES URIAL, Ice dealer
GODWIN D M, Cashier Paxton & Curtis' Bank
GRANGER W N, Attorney-at-law and Notary Public
HUYCK WM H, Sheriff
KING R M, Druggist and hardware dealer
MANTE ANDREW, Propr Belmont "Courier"
McKENNEY D C, District Judge Nye, Lander and Churchill Counties, res Austin
McLEAN ADAM, County Treasurer
Mestriean Alex, restaurant
MOORE S GRANT, Physician
MORGAN THOS F, Meat market
NICHOLL GEO, County Clerk
OHLANDER J A, Watchmaker and jeweler
OWEN FRANK, Attorney-at-law and Notary Public
PAXTON & CURTIS, Bankers
SAMTER LOUIS, Clothing, drygoods, boots, shoes, etc
SEYMOUR J R, Liquors
SINE E P, Attorney-at-law
SLAGHT JACOB, Blacksmith and wagonmaker
STIMLER H P, Postmaster
STOWE JOSEPH, Deputy Sheriff and constable
STRATTON H H, Liquors
TALLMAN S & CO, General mdse
THOMASON J L, Public Administrator and Coroner
Thomas & Wood, liquors
TROLSON JOHN, Agt W, F & Co, Stage Co, and W U Tel Co

Warburton Thos, County Assessor
WOOD J S, Blacksmith and wagon-maker

Candelaria,

ESMERALDA COUNTY.

The Northern Belle mine is located here, from which the town derives its entire support, 225 men being employed. The General Thomas, Silver Star and Victor mines are also located here. The town is entirely without water, water being brought from Belleville and Columbus, a distance of 8 miles, and sells for five cents per gallon. Population, 350.

HAGGELT C G, Northern Belle boarding house
HATTERY A J, Justice of Peace
Holland David, liquors
McCLANE B W, News agency, clothing and varieties
McKISSICK DAVID, Liquors
McLaughlin Frank, liquors
NICHOLSON JOHN M, Barber
PIERCE Z, Gen mdse and liquors
Roach John, liquors
Stevens Henry, constable
Summers & Williams, market
Traver P L, gen mdse and agt W, F & Co
Vernon G H, Postmaster
Willoughby W M, liquors

Carlin,

ELKO COUNTY,

Is pleasantly situated on the railroad, on which its main street fronts. It is 583 miles from San Francisco, at an elevation of 4,897 feet. It derives its support from the machine shops of the Humboldt division of the Central Pacific Railroad. The company's buildings are of wood, and consist of a round-house, machine, car, and blacksmith shops. Carlin has a fine library association, with building, piano, and eight or nine hundred volumes. Population, 400.

BADT A L & CO, General mdse
BIEN B, Bootmaker
CARLIN LIBRARY ASSOCIATION, T B Gray Librarian
CARLYLE WM, Contractor and builder
Clark J M, Deputy Sheriff
CODDINGTON GEO W, Division Supt Humboldt Division CPRR
COSTIFF GEO, Hairdresser
DEACON H L, Manager A & P Tel Co
FOSTER THOS, Liquors & lodgings
GRAY T B, Librarian Carlin Library Association
HALL A C, Physician
HOLMES THOS, Liquors, lodgings, and Postmaster
Henden Victor, varieties
Jones T A, general merchandise
Kappeler J D, market
KNIGHT I W, Stock raiser and boarding house
LOWENBERG R, Agent W, F & Co
McCLURE J C, Manager for Sisson, Wallace & Co
Palmer J A, Justice of the Peace
ROBINSON W I, Carpenter
Russell & Bradley, market
SISSON, WALLACE & CO, Chinese supplies
SMITH W F, Master mechanic Humboldt Division CPRR
TRUXEL JEFFERSON, Restaurant
WASHEIM D, Agent CPRR
Whited J H, train dispatcher
Wright Samuel, foreman CPRR shops

Carson City,

ORMSBY COUNTY,

The capital of the State of Nevada, is situated on the west bank of the Carson River, in Eagle Valley, which is noted as rivaling all others in the State in point of agricultural qualities. Carson is the county seat of Ormsby County. The place derives its name from the celebrated trapper, Kit Carson, and is the oldest town in the State. The beautiful and finely finished Capitol building, the substantial structure of the United States Mint, and the State Penitentiary, a mile and a half from town, are points of great interest to visitors. Its population numbers some 9,000. Although Eagle Valley, in which Carson is situated, is largely agricultural, yet its main reliance is the wood and timber trade, the mountains around affording an almost inexhaustible supply.

ADAMS J W, Lieutenant Governor of Nevada, Capitol
Allen Mrs L H, dressmaker, S Carson
Anderson Wm, painter, Telegraph
Ardery A M, mngr V & T Tel Co, depot
ARLINGTON HOUSE, D G & W H Corbett Proprietors, cor Carson and Robinson
ATHERTON COLEMAN C, Hay and feed yard, cor Spear and Fall
Baldeck I, bootmaker, N Carson
BATTERMAN C C, Warden State Prison, Main
BEATTY W H, Associate Justice of Supreme Court, Capitol
BENDER D A, General freight agent V & TRR, depot
BENTON J M, Livery stable and proprietor Lake Tahoe stage line, and ice dealer, cor Third and Carson
Bergman Albert, clothing, N Carson
BICKNELL CHAS F, Clerk Supreme Court, Capitol
Billings C, dentist, N Carson

1878

SMART J S M, Physician, cor King and Ormsby
Smith E C, drygoods and notions, N Carson
SODERBERG N, Atty-at-law, cor Musser and Plaza
STAMPLEY O K, Propr St Charles Hotel, cor Carson and Third
Stern Leopold, constable, Courthouse
Stewart Wellington, atty-at-law, N Carson
SUTHERLAND JOHN, Merchant tailor, N Carson
SWIFT S T, Sheriff, Courthouse
Torreyson W D, blacksmith and wagonmaker, cor Carson and Third
TICKNER HENRY L, Cashier W, F & Co's bank, S Carson
Tobriner J, cigars and tobacco, N Carson
Turner D C, bootmaker, N Carson
Turner Fred D, Co Recorder, Courthouse
Trapp & Rau, blacksmiths and wagonmakers, cor Carson and Sixth
TREADWAY A D, Farmer, also gardens and picnic grounds
TUFLY GEO, President Carson City Savings Bank, cor Carson and Proctor
Uhl Adam, market, King
Vieira J B, barber, N Carson
Vincent & Elder, blacksmiths and wagonmakers, cor Plaza and Robinson
Wagner P A & Co, hardware, crockery, etc, cor Carson and Musser
WAITZ A, Atty-at-law, cor King and Ormsby
WALKER E, Liquors, Carson
Welch Saml E, restaurant, N Carson
WELLS & STEWART, Attorneys-at-law, N Carson
Wells T H, atty-at-law, N Carson
Willis O P, druggist, cor Carson and King
WITHERELL C A, Justice of Peace, Courthouse
WHITE F J, Physician, cor King and Carson
White G C, Postmaster, King
WHITEHILL H R, State Mineralogist, Capitol
Wood & Kelly, furniture, cor Carson and Robinson
Wright S C, Receiver U S Land Office, cor Carson and Proctor
Wright S H, District Judge, Courthouse
Yager M L, Dep'y State Treasurer, Capitol
YERRINGTON & CO, wood and lumber, N Carson
YERRINGTON H M, General Supt V and T RR. Depot
YOUNG J W, Carriage factory, S Carson

Columbus,

ESMERALDA COUNTY,

Once a very properous town of southern Nevada, but now at a standstill. There are some important borax works 5 and 18 miles distant. A good farming district, known as Fish Lake Valley, 18 miles away, gives it part of its support. Population, 200.

Abraham R, general merchandise
AUBEE NORBERT, Liquors
Barker E D, liquors
BARNES W W, Proprietor "Borax Miner"
BARRY & KERNEY Misses, Restaurant
BARTON H W, Agent W, F & Co
BORAX MINER, W W Barnes propr
CALDWELL JAMES M, Propr Columbus Foundry
COLLINS JOHN, Supt Gen Thomas Mill and Mining Company
DUNLAP & PEDDICORD, Hotel
ELDRED J R, Blacksmith and wagonmaker
Harrall John, livery stable
Hauke F A, Supt Mt Diablo M & M Co
HOCK CHARLEY, Restaurant
Marrolte A, physician
NEUENSCHWANDER RUDOLPH, Supt Pacific Borax Works
PARMENTEL JOSEPH, Liquors
Remington & Hetiker, livery stable
Spencer A, general mdse and Postmaster
Sutton D M, machinist and assayer
TRAVER P L, general merchandise
TRUDO & BANOCICH, Liquors, wines, clothing, etc
Williams & Co, market

Cornucopia,

ELKO COUNTY.

George Eli, liquors and lodging house
Greenbaum & Gratzer, groceries & clothing
Hallum —, market
Hogle L I, general merchandise
Meachum A D, druggist, Postmaster and Notary Public
Moser Samuel, groceries
Orr Wm, restaurant
Ottenheimer Jacob, liquors, cigars, notions, etc
PARK S P, Contractor and builder
Ringgold J B & Co, livery and feed
Rogers & McAvin, liquors
Tipple —, restaurant
Truett & Roundtree, general merchandise
Welch —, hotel
Woodruff & Ennor, general merchandise

Dayton,

LYON COUNTY,

The county seat of Lyon County, located on the Carson River.

Ahl J G, boot and shoemaker
Bonham J A, stationery
Brant C F, County Assessor
Byran W W, public hall
Friedhin A, barber
Gerber J C, hotel
Hanson Q, liquors
Hazlett J C, druggist

Pacific Coast directory 1880-81

Belleville,

ESMERALDA COUNTY,

A place of four hundred inhabitants and has communication by stage line with Carson City. It depends upon the mining interests, chief among the best paying lodes is the Northern Belle. The water used by the residents is brought a distance of thirteen miles and sold by the company at two cents per gallon.

Gamble & Co, fruit, candy, nuts, etc
Jackson Jno A, saloon
Johl & Goodwin, butchers
Jones R Z, Sup't N Belle, M & M Co
Kibbe & Blakeley, hotel
MINTA THOS OGDEN, postmaster
MINTA THOS O & CO, gen mdse
Ostrander W H, restaurant
Stone W S, gen mdse
Turner A J, justice of peace

Belmont,

NYE COUNTY,

Is the county seat and has a population of 500. It is among the oldest towns of Nevada and supported by the mining interests situated in the eastern portion of the State.

Ball J A, furniture dealer and carpenter
Bauer Chris, brewery
"Belmont Courier," Andrew Mante propr
Bowman John, attorney at law
Cafferty James, liquors
Carey Simeon, hairdresser
Carpenter S, liquors, East Belmont
Courter J P, Sup't El Dorado South Con Mining Co
Creswell H T, atty at law
Curler Benj, dist attorney, atty at law
Decker B C, livery stable
Duffy Thos, liquors
Dykeman Chas, liquors
Emerson Geo W, druggist and varieties
Ernst George, county surveyor and acting county recorder and auditor
Esser & Stimler, groceries, fruits and varieties
Falkinham J J, sup't Belmont Mining Co, agt E & P R R Co, and lumber dealer
Flack Rev D, clergyman (Episcopal)
Gates Urial, ice dealer
Godwin D M, cashier Paxton & Curtis Bank
Granger W N, atty at law and notary public
Huyck Wm H, sheriff

King R M, druggist and hardware dealer
Maute Andrew, propr Belmont "Courier"
McKenny D C, dist judge Nye Lander and Churchill counties, res Austin
McLean Adam, county treasurer
Mestriean Alex, restaurant
Moore S Grant, physician
Morgan Thos F, meat market
Nicholl Geo, county clerk
Ohlander J A, watchmaker and jeweler
Owen Frank, atty at law and notary public
Paxton & Curtis, bankers
Samter Louis, clothing, dry goods, boots, shoes, etc
Seymour J R, liquors
Sine E P, atty at law
Slaght Jacob, blacksmith and wagonmaker
Stimler H P, postmaster
Stowe Joseph, deputy sheriff and constable
Stratton H H, liquors
Tallman S & Co, gen mdse
Thomason J L, public administrator and coroner
Thomas & Wood, liquors
Trolson John, agent W F & Co, Stage Co, and W U Tel Co
Warburton Thos, county assessor
Wood J S, blacksmith and wagonmaker

Beowawe,

EUREKA COUNTY.

BENSON OLIVER, hotel, gen mdse, and postmaster

Bristol,

LINCOLN COUNTY.

Curtis J N & Co, gen mdse
FISHBACH JOHN B, postmaster and varieties
Greenwood J B, saloon
Leahigh Mrs K, boarding house
McCarter D C, saloon
McDonald W A, saloon
Quinn John, saloon
Riepe R, boarding house

Bullion,

ELKO COUNTY.

Carpeaux E J, gen mdse
Hoffman Wm, hotel
Phillips Jas, hotel and saloon
Stocker M, saloon

Bullionsville,

LINCOLN COUNTY.

Culverwell Wm, butcher
FULTON JULIUS, postmaster
Gealing Wm, gen mdse
JACOBS & FULTON, gen mdse
McKeog Thos, saloon
McMahon A, saloon
Saul John, restaurant
Woldenberg L & Co, gen mdse

Cambridge,

ESMERALDA COUNTY.

Blasdel H G Jr, sup't Cambridge M & M Co
Cain W, stage agt
Glann J F, dairyman
Irving J G, hotel
Little Wm, ———
Webster Bros, stock raisers
WILLIAMS J H, postmaster and agt Wells, Fargo & Co, and gen mdse
Willis E R, propr "Arrastra"

Camp Halleck,

ELKO COUNTY.

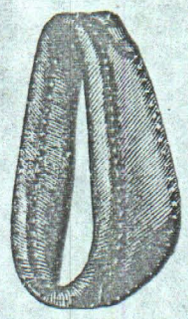
MEYER C E, general merchandise and postmaster
Mayer & Keith, hotel and blacksmiths
McCain H, hotel

Candelaria,

ESMERALDA COUNTY,

Is a very lively mining camp of 400, and depends solely upon that interest for its entire support. The absence from water, and the expense of procuring it from Belleville, are features not conducive to the permanent growth of the place.

Haggelt C G, Northern Belle boarding house
Hattery A J, justice of the peace
Holland David, liquors
McClane B W, news agency, clothing and varieties
McKissick David, liquors
McLaughlin Frank, liquors
Nicholson John M, barber
Pierce Z, gen mdse and liquors
Roach John, liquors
Stevens Henry, constable
Summers & Williams, market
Traver P L, gen mdse and agt W F & Co
Vernon G H, postmaster
Willoughby W M, liquors



Cherry Creek,

WHITE PINE COUNTY.

Alexander M, dry goods
Ardant J F, fruits
Banning Mrs, hotel
Cochran M H, brewery and saloon
Cosgrove George, saloon
Delcker C C, saloon
Drake W B, harness
Filmore W H, blacksmith
Gray & Collins, stationery
Johnson M, shoemaker
Moore A & Co, saloon
Parker George F, restaurant
Parker L, drugs
Sisson J F, blacksmith
Spencer Frank & Co, gen mdse
Stokles G F, shoemaker
Thacker George & Co, saloon
Wearne John, produce, etc
Weber Jacob & Son, saloon
Welch Mrs B, milliner
Young A, grocer

Cloverdale,

NYE COUNTY.

Williams J E, hotel

Columbia,

ELKO COUNTY.

C C G & S M Co, C A Watson supt
Columbia Mining Co, gen mdse
Dayly Mrs James, boarding house
Haws B F, hotel
Hughes R E, saloon
JARVIS L W, postmaster
Reed G O, assayer
Watson G A, supt C C G & S M Co

Columbus,

ESMERALDA COUNTY,

Has a population of 200, and its support is derived from the borax works located a few miles away. In Fish Lake valley, a good agricultural district, considerable farming is carried on, which is a feature that forms an important factor in its foundation.

Abraham R, gen mdse
Aube Norbert, liquors
Barker E D, liquors
Barnes W W, propr "Borax Miner"
Barry & Kerney Misses, restaurant
Barton H W, agent Wells, Fargo & Co
"BORAX MINER," W W Barnes propr
Caldwell James M, propr Columbus Foundry
Collins John, supt General Thomas Mill and Mining Co
Dunlap & Pedlicord, hotel
Eldred J R, blacksmith and wagonmaker
Harrall John, livery stable
Hauke F A, supt Mt Diablo M & M Co
Hock Charley, restaurant
Marrolte A, physician
Neuenschnander Rudolph, supt Pacific Borax Works
Parmentel Joseph, liquors
Remington & Hetiker, livery stable
Spencer A, gen mdse and postmaster
Sutton D M, machinist and assayer
Traver P L, gen mdse
Trudo & Banocich, liquors, wines, clothing, etc
Williams & Co, market

Cromo,

LYON COUNTY.

CROMO HOTEL, J C Brown propr

...FIELD NEWS
...Y TRIBUNE
...Goldfield District

...Every Friday by
...NTING COMPANY, Inc.
...uilding, Goldfield, Nevada

...is expressed in the editor... printed in the Goldfield ...ly Tribune, and it is ob... ...been believed to be reliable. ...publishers do not hold ...onsible for misstatements ...respondents and contribu-

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...ear $2.00
.... $1.25

...HAD RIGHT IDEA

...r Mining Record, in its ...y 21, published the fol... ...written and timely edi-

...back over the days of ...eral discoveries in the ...d that political reward ...generally to men who ...heir worth through their ...ning development. Con... ...shington was fortunate ...hese successful mining ...body. They were the ...ders of their day and ...ods of the West. It was ...prospecting for mines ...velopment that fortune ...n in this new western ...e man who blazed the ...ned a new mine proved ...d became the outstand... ...his community.

...man who won fortune ...ing and provided work ...fortunate was half way ...ed States Senate if he ...o become a solon. ...ining law of the ...n by western min... ...o became congressmen ...had attained wealth ...ing. Stewart of Nevada, ...ontana, Hearst of Cali... ...en, Thomas, Teller and ...Colorado and a score ...cluding H. A. W. Tabor, ...a short period in the ...rom Colorado, were men ...their ability in the min... ...and gained popularity ...ing success.

...t would be fortunate if ...a measure political pref... ...e basis of what the indi... ...done for the upbuilding ...ty of his state. The men ...cess in mining are busi... ...ability as well as cour... ...are head and shoulders ...litical fencebuilders who ...ite generally elected to ...f the mining West were ...ing congressmen from ...ining men, we would not ...the statute books that ...financing of this impor... ...These mining men would ...lly stopped the only ...nnection with mine fi... ...sale of promotion stock ...ny financing is under... ...ould have otherwise en... ...important industry by ...favorable to financing ...n of legitimate compa... ...is present-day red tape ...company financing stops ...of the West and causes ...nt. Western congress... ...mer days would have ...defeated any plan that ...ed western prog-

...P THE OVERHEAD

...citizens have a direct ...ith our leading security ...hrough periodic buying ...f stocks and bonds. Ev-

BORAX SMITH'S STORY ABOUT EFFORTS TO DISPOSSESS HIM OF A WOOD RANCH

No other name is as prominent in the early history of the western borax industry as that of F. M. ("Borax") Smith, says the "Tales of the Pioneers" column of the Inyo Register. His rise from poverty to riches and his final bankruptcy and death as a comparatively poor man have parallels in other instances, yet are comparatively rare.

Smith's first appearance in the intermountain country was as a woodchopper, furnishing supplies to Columbus and other camps of western Nevada. His own story of that experience revealed something of the determination of character which carried him on to later success. The following is taken from that account by himself:

"In the fall of 1827 I found myself among the woodcamps about ten miles from Columbus, Nevada. Just before the discovery of Teel's Marsh I had bought a wood ranch from a fellow woodsman, and by the help of a woodchopper in my employ had erected a good, comforable cabin in a narrow gulch.

"One morning, immediately after my cabin was completed, I heard someone chopping wood nearby. Upon going out to examine, I found a Mexican chopping in the timber described and designated as my property. He refused to leave when I ordered him off the premises, and I laid hands upon the ax. He was reinforced by another Mexican and a white employe. I soon found that they intended to forcibly dispossess me. The nearest officer or court of justice was at Aurora, the county seat fifty miles distant, and the only convenient or satisfactory appeal was to the rifle. I had no weapons and knew short arms were of little use.

"I went immediately to a fellow woodsman two miles distant, who owned a Spencer rifle, and found that the weapon was at Columbus, ten miles away. He gave me an order for it, and I returned that night to mqy cabin with the carbine and only four cartridges, all I could get in the town to fit it. I found that the Mexicans had reinforced their gang, and had been chopping down a fine cluster of pine trees in front of my cabin door, and had several cords of wood piled up in front of the trees I had so admired. My chopper told me they were in full force, and intended to bring in a packtrain in the morning to carry out the wood they had chopped.

"We breakfasted early the next morning. I soon heard the tinkle of bells worn by the bell mare which always leads the train, and took up my position on the hillside just out of close shooting range with small arms, and some 125 yards from the woodpile.

"Then the train appeared, and I counted twenty-one pack animals, four Mexicans, one Indian and one white man. Upon reaching the timber two Mexicans alighted and took one of the animals and led it to the pile of wood and began to load. I called out: 'Hold up there, don't load that wood!' and took aim with my rifle. After plenty of cursing, one of the party approached, saying he wanted to talk with me.

"As he stepped forward I took deliberate aim and again bade him 'Hold on!' He stopped advancing, but did not stop swearing. This was repeated several times. I knew that I had no ammunition to waste and that at close quarters with their knives and pistols I stood no chance, even were their number less.

"They finally offered to compromise by taking the wood they had chopped. I replied that they had no business to chop it on my claim and no right to it now that it was chopped. I stood with my rifle at my shoulder, and as a final result the train of twenty-one mules, two Mexicans, two helpers, turned about and retired empty handed, leaving me in possession

"The next day they sent a delegation from Columbus to propose a compromise, but as I had no compromise to offer, they soon retired, and I had no further difficulty from that source, though it is true for some time an assault on my cabin was not unexpected.

"Not many days later I did have a [illegible] alarm. It was the [illegible] of the earthquake which proved so disastrous in the Lone Pine district. The shock was very severe in the hills. I was alone in my cabin that night and woke at the violent shaking and the general rattling down of all loose articles. I at once concluded the Mexicans had made an attack, and sprang to my feet, pistol attack, and sprang to my feet, pistol when they attempted to load the wood: 'Hold on there!' The shaking did not hold up at my command, however, though it grew perceptibly less, and I soon fully understood the nature of the attack."

Dominick Maloney, Ireland's oldest man, celebrated his 109th birthday at his home in Ballaghaderreen, Irish Free State.

The Goldfield News and Weekly Tribune is only $2.00 per year.

Classified Advertising

(The rate for classified advertising is one cent per word per insertion. Minimum charge 25 cents. Replies may be mailed to this office, by use of box numbers, and will be promptly forwarded to the advertiser. Initials, street numbers and abbreviations count as one word. All classified advertising is payable in advance. Remit by postal money order or currency. Amounts less than 25 cents may be paid by use of uncanceled 1-cent postage stamps.)

WANTED

WANTED—To hear from owner of farm or unimproved land for sale. Wm. Hawley, Baldwin, Wis. 1t*

WANTED — Books, Pamphlets, Prints. Printed in America before 1885. Write, giving title, author and date. HEISE BOOK SHOP, 729 Fulton Street, Brooklyn, N. Y. 1t*

BUSINESS OPPORTUNITIES

ARE you interested in financing your mining proposition? Send facts to Bonded Investigators, Box 556, Milwaukee, Wis. 1t

FOR SALE

FOR SALE—35 foot gallus frame, ore buckets, retort. S. R. KENNEDY, Dyer, Nevada. 1t*

PIANO FOR SALE: — Want responsible party living near Goldfield to take over small bungalow piano and finish out contract on most any terms, as this piano must be moved at once. Write F. Gatcher, care of Baldwin Piano Co., Box 635, Bakersfield, Calif. J-4-*

MALE HELP WANTED

POWERFUL United American Secret Order (U. A. P.) wants white organizers each county qualify splendid paying contract. Free folder "America Wake Up." Write, stating orders now belong. Box 122, Trinidad, Colorado.

WANTED FARMS

WANTED—to hear from owner of farm for sale for Spring delivery. WM. HAWLEY, Baldwin, Wis. 1t*

PERSONAL

LONESOME?—Join Gate City Correspondence Club, Box 214, Denison, Texas. FREE particulars. 1t

PERSONAL, LADIES—I need a wealthy partner. Box 91, Flushing, New York City. 7t.

SAN FRANCISCO MINING EX...

SAN FRAN...

Company	No. Shares	No. Assmt.	Amt. per Share	Last Assmt. ...
Acme	2,200,000	2	.00½	2-10
Aladdin Gold	1,500,000	10	.01	2-16
Alto Divide	2,000,000		.01	2-14
Arrowhead Dev.	2,500,000	6	.02	11-4
Best & Belcher	250,000	15	.03	7-1
Black Mammoth	1,500,000	11	.02	11-4
Blue Ridge M'd'y	1,500,000	1	.01	2-27
Booth, Re	1,000,000	16	.01	7-16
Broken Hills, Re	2,000,000	16	.01	2-12
Brougher Divide	1,000,000	4	.00½	4-6
Bullion	2,000,000	86	.01¼	3-24
Carrie, Re.	1,500,000	15	.00½	5-15
Central Eureka	400,000	68	.05	2-1
Con. Virginia	2,160,000	13	.01	6-7
Divide-Annex, Re.	1,000,000	3	.00½	12-5
Gipsy Queen	1,500,000	21	.01	2-24
Gold Metals	2,500,000		.02	5-8
Gold Wedge	1,500,000		.01	11-22
Gruss	1,000,000	14	.02	2-10
Halifax Tonopah	2,000,000	1	.10	1-26
Jack Waite	2,500,000	1	.04	2-21
Manhattan Con.	1,500,000	17	.01	2-25
Manhattan Gold	2,000,000	7	.01	8-14
Mexican	201,600	127	.10	5-22
New Suthrld. Div.	1,500,000	7	.00½	12-14
Operator Con.	3,000,000		.01	2-24
Pacific Butte	2,000,000	3	.01	4-24
Red Hill Florence	2,500,000	23	.01	10-1
Round Mountain	3,000,000		.02	5-15
Silver Divide	1,500,000	1	.02	3-7
Silver King, Re.	2,500,000	17	.01	4-24
Simon Silver Lead	3,000,000	12	.03	1-2
Smuggler	1,500,000	8	.01	7-16
Trinity Gold Bar	1,000,000	6	.01	1-16
Union Con.	200,000	90	.02	5-17
Vera Mines	2,000,000	1	.02	11-6
Verdi	1,500,000	11	.01	7-1
Wilson	2,000,000	3	.01	5-15

The data on this list are collected with care ... formation is guaranteed; no responsibility is assum... omission or inaccuracies therein.

quicksilver was not the product of any ores supplied to the mill for treatment, was apparently not mined at all in the district, but was purchased, furnished and used by the mill itself in the process of recovering values from the ores that it treated.

2. Respondents contend, and it was apparently the holding of the trial court, that because the Corkill locations of the Dorris and Lake placers were not contested and the Corkills and their successors in interest (eventually the plaintiff herein) filed proofs of labor thereon for many years, this is in some way a recognition by plaintiff and its predecessors that the tailings, embraced within the exterior boundaries of these two placers, were part of the realty and belonged to the owner of the placer location. This is not necessarily so. The Corkills did not attempt, so far as anything in the record shows, to remove any of the tailings. The owner of the tailings could well have been justified in concluding that these placer locations were made subject to its rights to remove its tailings. Conway v. Fabian, 108 Mont. 287, 89 P.2d 1022; O'Keiffe v. Cunningham, 9 Cal. 589. The mill company might, as suggested by Judge Hawley in Ritter v. Lynch, C.C., 123 F. 930, have desired to pursue the safer course in actually acquiring the possessory right to the placers and for such reason have purchased or otherwise acquired the Corkill locations.[6]

It is important to note the following paragraph of the

[6]The Corkills' possessory rights growing out of their location of the Dorris and Lake claims in 1896 lasted only till they conveyed to Sutherland in 1899, who, the following year, conveyed to Bonbright. (Sutherland was the treasurer and general manager of Georgene Mining Company, all of whose ores were processed at the mill under the contract of 1886, and was president of the Holmes Mining Company, all of whose ores were processed through the mill under the contract of 1891. The mill on those dates operated as the Candelaria Water Works and Milling Company, Ltd., whose registered office was at Drapers Garden, Throgmorton Street, London.) Although the Georgene Mining Company, the Holmes Mining Company and the Candelaria Water Works and Milling Company, Ltd., were separate corporations, their stock was owned by the same people. Though Bonbright and Company (a partnership, comprising some ten partners, residing, respectively, in London, New York, and Colorado) did not quitclaim to Esmeralda Water and Milling Company till 1907, proofs of labor were filed every year from 1901 to 1910, and later. In 1902 one A. G. Draper, when filing proof of labor for the Lake and Dorris, did so as agent of the Calendaria Water Works and Milling Company, Ltd., whose ownership of the mill, as we have seen, long antedated any title attaching by reason of the acquisition of the Corkill locations. Again in 1903, in filing proof on the Lake claim, he did so as agent for the same Calendaria Water Works and Milling Company. F. G. Grube, in filing proof of assessment work for 1904, likewise did so as agent for the same company. For the assessment work for 1905 Grube acted as the agent for both the Calendaria Water Works and Milling Company and Bonbright and Co., and the same the following year. His proof in December 1907 for the work that year was as agent only for Bonbright and Co., but his proof in 1908 was as agent for Esmeralda Water and Milling Co., likewise repeated in January 1910 for the assessment work of 1909. During the 1920's, proofs seem to have been filed indiscriminately for Esmeralda Water and Milling Company and for Candelaria Mines Company. In 1912, when about 2,000 tons of ore were run through the mill in a six months' period, the tailings from which were discharged into the same tailings pond, Grube was in charge as "general manager of the Argenta Mining Company and the Esmeralda Water Company." In this capacity he actually lived in Calendaria from 1903 to 1922, and made monthly trips from his new residence in California to Calendaria from 1923 to 1942. The two corporations were under one management, and the mill and tailings pond of Esmeralda Water and Milling Company was the same that had been operated before his time by the old Calendaria Mining Company. We see in the derivation of plaintiff's title from the Corkill placer locations nothing inconsistent with the claim to, and possession of, the water works, water rights and tailings pond (which covered a period prior to and at the time of and continuing beyond the Corkill locations) independently thereof or in addition thereto, and deriving, whether directly or indirectly, from Calendaria Water Works and Milling Co. in 1886. The official Mineral county tax list for 1947 assessed to the appellant herein, improvements, pipe lines, etc., still identifiable with the original properties owned by Calendaria Water Works and Milling Company.

learned district judge's opinion (Italics supplied): "In connection with this mill and its operation it should be noted that as originally there was in Candelaria no reliable or sufficient source of water, it was necessary in order to provide water for the operation of the mill and for the camp to bring water some 27 miles by means of a pipe-line from the White Mountains where certain water rights had been acquired previously. The testimony and other proof indicate that the title to the water

works which as above stated included a pipe-line, a reservoir, and water rights, *was in the operators of the mill.* As the mining activities at Candelaria began to drop off, the water works remained a valuable property and it was necessary to employ men to keep it in a condition of repair. The plaintiff finally succeeded to the ownership of the water works in 1929 from the Esmeralda Water and Milling Company and kept the water works operating until 1942 when its agent Mr. A. R. Nelson ceased living in Candelaria. In 1944, 12 miles of the pipe-line was sold to the State of Nevada together with water rights, with the right reserved in the vendor to re-purchase the same on specified terms at any time within 10 years from the sale."

As noted by the district judge, the Esmeralda Water and Milling Company owned the water rights. It also owned the mill, under the deed from Bonbright and others in 1907. But the deed from the trustees of Esmeralda Water and Milling Company to the Esmeralda Water Company, the plaintiff herein, also included the water rights *and the mill "and also the pile or bed of tailings located on the Lake and Dorris placer mining claims."* When Esmeralda Water and Milling Company leased the property to Jarmouth in 1918, including the mill, mill site, buildings, etc., it expressly reserved the tailings. Other instruments in the record likewise treated the tailings as personal property segregated from the real estate. It is also significant that plaintiff still is the owner of an option, running into the year 1954, to buy back from the state the water rights and twelve miles of pipe line sold to it in 1944.

3. Respondents at some length attack the deraignment of plaintiff's title, not only with reference to ownership of the ground in question but also with reference to ownership of the tailings, even if the same are considered personal property. We think it clear from the opinion of the trial judge that appellant's claim to the tailings traces back to the original mill, but even a break

in that chain of title would not destroy appellant's possesory right under color of title for some twenty years. Such possession, unless abandoned, affords it sufficient warrant to maintain this action. Risch v. Wiseman, 36 Or. 484, 59 P. 1111, 78 Am. St.Rep. 783; Schuman v. Venard, 110 Colo. 487, 136 P.2d 289; Stanley v. Sierra Nevada Silver Mining Co., C.C., 118 F. 931.

Respondents contend that "the lower court did not accept plaintiff's proof which sought to establish that it and its predecessors impounded the tailings upon the ground or preserved them against being lost * * * the proof on the part of defendant and plaintiff in this respect was conflicting and the court chose to adopt the proof submitted by defendants as carrying the greater weight in this respect." A careful examination of the record, however, shows that this is not the case. The trial court made findings only as to the forfeiture of the plaintiff's Dorris and Lake claims and the lawful relocation of these claims by the defendants as the Victory and the Victory Fraction. It made no findings or conclusions whatsoever as to the preservation by the plaintiff and its predecessors of the tailings as personal property. In its opinion, however, the court definitely stated that the tailings came from the mill, that the retaining wall had been constructed for the purpose of containing the tailings, that overflow and driftings over the retaining wall were checked by the lower retaining wall and that the tailings, except for some that were lost by wind, erosion and storm waters, are still concentrated in the tailings pond. It was largely in view of this situation that we were moved to state that the court's general finding No. 7, "that plaintiff failed to substantiate by proof the allegations of its complaint and defendants have shown by proof the relocation of valid and subsisting mining claims * * *" was of meager help. In view of findings one to six, having to do entirely with the location, forfeiture and relocation of the claims, this finding must be considered as attaching only to that

feature of the case. The court did not find that the plaintiff had not maintained its possession of the tailings pond. It did not find that the plaintiff had abandoned its possession or ownership of the tailings pond. It *refused* to find an abandonment of the tailings as personal property, and confined itself entirely to the question of forfeiture of the Dorris and Lake claims, and respondents, in seeking to uphold the judgment in their favor, under the trial court's theory, still insist that the question of abandonment is not in the case. There being no abandonment of the tailings by plaintiff and its predecessors, plaintiff is still the owner and entitled to the possession thereof.

The final disposition of the case on appeal involves some difficulty, as it is not the province of this court to make original findings. On the other hand no purpose could be served by directing a new trial for the purpose of permitting the trial court to make findings which it has already clearly indicated. It is clear that the judgment must be reversed on account of the trial court's erroneous decision that plaintiff's title to the tailings fails because the tailings were owned by the producers of the ores from the mines and not by the mill. It is our understanding from the record, however, that the trial court did not find, in fact refused to find, that plaintiff and its predecessors even abandoned the tailings or abandoned their claim of ownership of the tailings, other than through the court's erroneous conclusion that the tailings lost their character of personal property and became real estate, by reason of the so-called recognition by plaintiff of the Corkill locations. With our conclusion that the tailings were personal property belonging to Candelaria Water Works and Milling Company, and that plaintiff's title, or at least its possessory rights, attached thereto prior to the Corkill locations, and that such possessory rights were not destroyed by the Corkill locations in 1896, and in the absence of a finding by the trial court, as a result of clear and convincing proof, that the tailings and plaintiff's possessory rights thereto had been abandoned, the case ends.

The trial court's findings to the effect that the Dorris placer mining claim and the Lake placer mining claim became forfeited by reason of failure of the owners to perform the annual assessment work thereon or to file notice of intention to hold said placer mining claims under the provisions of the acts of congress, for the years 1926–1945, and that said claims thereby became subject to relocation, and that the defendants Martin P. Mackley and Charles R. Hammock validly located the Victory placer mining claim and the Victory Fraction placer mining claim and that the same were at the time of the filing of the complaint herein valid and subsisting relocations of portions of the forfeited Dorris and Lake placer mining claims, are hereby approved. The judgment insofar as it adjudges that said defendants are the owners of the said Victory and Victory Fraction mining claims and that the same are valid and subsisting placer mining claims, is hereby affirmed. The judgment insofar as it fails to adjudge that the defendants' ownership of the Victory and Victory Fraction placer mining claims is subject to plaintiff's ownership and right to the possession of the tailings pond described in the complaint, is reversed. The case is remanded to the district court with instructions to modify and add to its findings and to enter judgment accordingly. Appellant will be allowed its costs in this court.

HORSEY, C. J., and EATHER, J., concur.

ON PETITION FOR REHEARING

September 26, 1949.

Per Curiam:

Rehearing denied.

chapter 38, Statutes of Nevada 1949, is hereby amended to read as follows:

Section 2. No presidential electors shall be nominated at the primary election. The names of the presidential elector nominees chosen at the state convention, as provided in section 1 of this act, shall not be placed upon the general election ballot; provided, the presidential elector nominees of the party whose candidates for president and vice president of the United States *receive the highest number of votes* shall be deemed the elected presidential electors and thereafter they shall perform the duties of presidential electors required by law and the constitution of the United States. The governor upon the said election of such presidential electors shall grant each of them a certificate and commission of election.

SEC. 2. This act shall become effective upon passage and approval.

Assembly Bill No. 259—Messrs. Carlson and Castle.

CHAPTER 129

AN ACT authorizing and directing the State of Nevada, acting through its department of highways to execute and deliver to the Esmeralda water company, a Nevada corporation, a good and sufficient deed for certain lands and property.

[Approved March 18, 1953]

WHEREAS, On the 31st day of December, 1942, the Esmeralda water company, a Nevada corporation, did by a deed grant, bargain, sell and convey to the State of Nevada, acting through its department of highways, the following described lands and premises in the county of Esmeralda, State of Nevada:

The southwest quarter (SW¼) of the southwest quarter (SW¼) of section 14; also the northeast quarter (NE¼) of the southeast quarter (SE¼), and the northwest quarter (NW¼) of the southwest quarter (SW¼) of section 15; also the southwest quarter (SW¼) of the southwest quarter (SW¼) of section twenty-three (23); also the southwest quarter (SW¼) of the northeast quarter (NE¼), and the north half (N½) of the southwest quarter (SW¼) of section twenty-seven (27); also the northwest quarter (NW¼) of the southeast quarter (SE¼) of section twenty-eight; all of said land being in township one (1) north, range thirty-three (33) east, Mt. Diablo base and meridian.

Together with all and singular the tenements and hereditaments and the appurtenances thereunto belonging or in anywise appertaining, and the reversion and reversions, remainer and remainders, rents, issues and profits thereof; and also all the estate, right, title, interest, possession, claim and demand whatsoever, as well in law as in equity, of the Esmeralda water company, of, in or to the said premises and every part and parcel thereof with the appurtenances.

Also, all springs upon said lands, or any of them, all water flowing or to flow therefrom, and all water rights and privileges appurtenant to said lands or any of them and formerly belonging to the Candelaria

waterworks and milling company, limited, and its successor in interest, the Esmeralda water and milling company, together with the line of water pipe, as originally conveyed, and rights of way therefor legally held by the company from the springs in Trail Canyon and Pinchot Canyon (known also as Pinshower Canyon and Pinchower Canyon), the sources of the company's water supply in said canyons to a point on said line of water pipe at the base of Rattle Snake Hill near Miller Mountain in the county of Mineral, State of Nevada, which said point is approximately three miles northerly of the so-called highway valve box on said line of water pipe, said highway valve box being located at the junction of said line of water pipe with the line of water pipe now owned by the state's department of highways and used by it to supply its maintenance station at Basalt, county of Mineral, State of Nevada, and together with all the reserve supply of pipe, fittings and special tools now owned and used by the State of Nevada in the maintenance and repair of said line of water pipe, and

WHEREAS, As a part of the consideration of said conveyance the State of Nevada expressly agreed with said Esmeralda water company that said company, at any time during the period of 10 years after the date of said deed, should have the right and option to repurchase the real estate, water rights, pipe line, and rights of way so conveyed by said company to the State of Nevada, together with such reserve supply of pipe, fittings and special tools that may be at the time of such purchase owned and used by said State of Nevada in the maintenance and repair of the water pipe line, for the sum of $4,000, together with interest thereon from December 31, 1942, to the date of the repurchase of said property at the rate of 4 percent per annum, plus such reasonable and proper amounts, if any, as may have been theretofore expended by the State of Nevada in proving title to and protecting its interests in the water rights thereby conveyed; and it being agreed that the option of said Esmeralda water company would constitute a lien upon the property herein described and be a covenant running with the land; and

WHEREAS, The said Esmeralda water company did exercise its option to repurchase said property from the State of Nevada in the manner and within the time provided in said option agreement, and the said Esmeralda water company did deposit with the state highway engineer of the State of Nevada and the board of highway commissioners of said state the said purchase price stipulated in said option, with interest, in order to complete the exercise of said option; and

WHEREAS, Said option is conditioned upon the agreement of said Esmeralda water company with said State of Nevada to furnish water to the Basalt maintenance station of the state highway department located in Esmeralda county, Nevada, as charged said State of Nevada for similar service prior to the sale of said property to said State of Nevada by the Esmeralda water company; now, therefore,

The People of the State of Nevada, represented in Senate and Assembly, do enact as follows:

SECTION 1. The State of Nevada acting through its state highway

department is hereby authorized and directed to execute and deliver to said Esmeralda water company, a Nevada corporation, a good and sufficient grant, bargain and sale deed, duly signed and executed, conveying to said Esmeralda water company, the following property:

The southwest quarter (SW¼) of the southwest quarter (SW¼) of section 14; also the northeast quarter (NE¼) of the southeast quarter (SE¼), and the northwest quarter (NW¼) of the southwest quarter (SW¼) of section 15; also the southwest quarter (SW¼) of the southwest quarter (SW¼) of section twenty-three (23); also the southwest quarter (SW¼) of the northeast quarter (NE¼), and the north half (N½) of the southwest quarter (SW¼) of section twenty-seven (27); also the northwest quarter (NW¼) of the southeast quarter (SE¼) of section twenty-eight; all of said land being in township one (1) north, range thirty-three (33) east, Mt. Diablo base and meridian.

Together with all and singular the tenements and hereditaments and the appurtenances thereunto belonging or in anywise appertaining, and the reversion and reversions, remainder and remainders, rents, issues and profits thereof; and also all the estate, right, title, interest, possession, claim and demand whatsoever, as well in law as in equity, of the State of Nevada, of, in or to the said premises and every part and parcel thereof with the appurtenances.

Also all springs upon said lands, or any of them, all water flowing or to flow therefrom, and all water rights and privileges appurtenant to said lands of any of them and formerly belonging to the Candelaria waterworks and milling company, limited, and its successor in interest, the Esmeralda water and milling company, together with the line of water pipe, as originally conveyed, and rights of way therefor legally held by the company from the springs in Trail Canyon and Pinchot Canyon (known also as Pinshower Canyon and Pinchower Canyon), the sources of the company's water supply in said canyons to a point on said line of water pipe at the base of Rattle Snake Hill near Miller Mountain in the county of Mineral, State of Nevada, which said point is approximately three miles northerly of the so-called highway valve box on said line of water pipe, said highway valve box being located at the junction of said line of water pipe with the line of water pipe now owned by the state's department of highways and used by it to supply its maintenance station at Basalt, county of Mineral, State of Nevada, and together with all the reserve supply of pipe, fittings and special tools now owned and used by the company in the maintenance and repair of said line of water pipe, and, conditioned upon the undertaking of the said Esmeralda water company to furnish water to said Basalt maintenance station at the same rate as charged by said company for similar service to said maintenance station when the original deed and agreement were executed between the said company and the State of Nevada.

SEC. 2. This act shall become effective upon passage and approval.

Assembly Bill No. 138—Miss Frazier.

CHAPTER 130

AN ACT to amend an act entitled, "An act regulating the nomination of candidates for public office in the State of Nevada," approved March 23, 1917, as amended.

[Approved March 18, 1953]

The People of the State of Nevada, represented in Senate and Assembly, do enact as follows:

SECTION 1. Section 5 of the above-entitled act, being section 1 of chapter 29, Statutes of Nevada 1951, is hereby amended to read as follows:

Section 5. The name of no candidate shall be printed on an official ballot to be used at a primary election unless he shall qualify by filing a declaration of candidacy, or by an acceptance of a nomination and by paying a fee as provided in this act.

(a) Every candidate for nomination for any elective office not less than fifty days prior to the primary shall file a declaration or acceptance of candidacy in substantially the following form:

Nomination paper of....., for the Office of.....

STATE OF NEVADA, }
COUNTY OF..... } ss.

For the purpose of having my name placed on the official primary ballot as a candidate for nomination by the.....party as its candidate for the office of....., I, the undersigned....., do solemnly swear (or affirm) that I reside at No.....street, in the city (or town) of....., county of....., State of Nevada, and that I am a qualified elector of the election precinct in which I reside; that I am a member of the..... party; that I have not reregistered and changed the designation of my political party affiliation on an official registration card since the last general election; that I believe in and intend to support the principles and policies of such political party in the coming election; that I affiliated with such party at the last general election of this state; that if nominated as a candidate of said.....party at said ensuing election I will accept such nomination and not withdraw; that I will not knowingly violate any election law or any law defining and prohibiting corrupt and fraudulent practice in campaigns and elections in this state; and that I will qualify for said office if elected thereto.

.....(Signature of candidate for office.)

Subscribed and sworn to before me this.....day of ....., 19..... .....Notary public (or other officer authorized to administer an oath.) Provided, that no candidate for a judicial office or a school office shall certify as to his party affiliations, and the names of such candidate shall be printed on the

[3] *Ibid.* This section of the act was repealed by the act of 1872, which is embodied and set forth in the Revised Statutes. The requirements in the repealed section, not included in the subsequent act, are in most of the mining districts the subject of local legislation. The reader is therefore referred to subsequent pages containing the local regulations upon the subject of location. See *post*, Ch. xv, Local Statutes.

[4] Hess vs. Winder, 30 Cal. 349.

[5] Holland vs. Mt. Auburn, &c. Co., 53 Cal. 149.

[6] North Noonday M. Co. vs. Orient M. Co., 9 Reporter, 601; Gleeson vs. Martin White, 13 Nev. 443. Posts or monuments at the corners and the center of end lines held sufficient. Southern Cross, &c. Co. vs. Europa M. Co., 15 Nev. 383.

[7] Sullivan vs. Heuse, 2 Col. 424; Chapman vs. Toy Long, 4 Sawyer, 28.

[8] Kinney vs. Con. Va. M. Co., 4 Sawyer, 382; Harris vs. Equator, &c. Co., 2 Col. Law Rep. 63.

[9] Morton vs. Solambo C. & M. Co., 26 Cal. 527; Gore vs. McBrayer, 18 Cal. 583; Van Valkenburg vs. Huff, 1 Nev. 142.

[10] Murley vs. Ennis, 2 Col. 300.

[11] Whitman M. Co. vs. Baker, 3 Nev. 386.

[12] Table M. T. Co. vs. Stranahan, 20 Cal. 198; *s. c.*, 21 Cal. 548.

[13] Atkins vs. Hendree, 1 Idaho, 108.

[14] Robinson vs. Imperial M. Co., 5 Nev. 14.

§ 26. Survey, length, width, form.—The "survey" here referred to is not that which is required in order to obtain a patent; but merely the measuring off of the claim by metes and bounds and courses and distances. It is not even necessary that it should be done by a surveyor, provided it conforms to the requirement that the boundaries shall be *distinctly marked*. Prior to May 2, 1872, when the provisions now in force governing the length of claims were enacted,[1] they were limited as to length, to 200 feet to the individual, or 3,000 feet to an association, with no definite limits as to width, beyond the provision that the locator should have a "reasonable quantity of surface for the convenient working of the same as fixed by local rules."[2] But by the present law the length is fixed at 1,500 feet. The language of the statute does not seem to permit any variation from this by local legislation—certainly not to exceed this. But it has never been doubted that the locator may, within the prescribed limits fix the length at will. The width of claims is less definitely fixed by the the general law.[3] The maximum width being 300 feet on each side of the middle of the vein or lode, and the minimum, 25 feet, on each side. The only provision as to *form* is that the end lines shall be parallel,[4] and the claim shall be so many feet in length "along the vein."[5] There have been some land office decisions upon this subject which would serve no good purpose as guides to the judicial interpretation of the statute, for the reason that they are so vague and uncertain.[6] But as these decisions only affect the rights of applicants for patents they will be noticed elsewhere.[7] The provision that the claim shall follow the vein, seems to give great latitude as to the shape of the claim as surveyed. I might add further as to *width* that the construction which these provisions has received, is that these limits are not to be exceeded on *either* side, and that claims may be restricted to 25 feet on *either* side. So that if the locator in making his survey, found it impossible to take the full extent allowed by law or local regulation on one side, he could not make up the deficiency on the other. But the strict letter of the law as to width it has been found almost impracticable to observe, owing in a great measure to the uncertainty of the exact center of veins, even where the lode claim is taken upon what may be appropriately styled a *vein*. But the chief difficulty arises from the fact that lode claims are not in every instance located upon veins even approximately vertical in position. Many such are upon what are known as "flat," "blanket" or "horizontal" veins, which lie in such a position that it would be impossible by ordinary means to discover the

center at the surface. Many others are located upon discoveries of large deposits or chambers that do not conform in any respect to the common understanding of the term "vein," and of which so little was known when the law was enacted, that they could not have been contemplated by the law-makers when the statute was enacted. These peculiarities of formation have led the miners to rely upon the center of the discovery shaft or tunnel, as the proper point from which to measure the width of their claims, and locations made in this manner have generally been regarded as valid.

[1] Rev. Stat. U. S. § 2320, *ante*, p. 14.

[2] Act of Congress July 26, 1866. "§ 4. No location hereafter made, shall exceed 200 feet in length, along the vein for each locator, with an additional claim for discovery, to the discoverer of the lode, with the right to follow such vein to any depth, with all its dips, variations and angles, together with a reasonable quantity of surface for the convenient working of the same, as fixed by local rules. *And provided further*, that no person may make more than one location on the same lode, and not more than 3,000 feet shall be taken in any one claim, by any association of persons."

[3] Rev. Stat. § 2320, *ante*, p. 14.

[4] Eureka, &c. Co. vs. Richmond M. Co., 4 Sawyer, 302.

[5] Zollers vs. Evans, 1 Col. Law Rep. 217; Vanzandt vs. Argentine M. Co., *id*, 524.

[6] That the form of a claim shall be *substantially* a parallelogram. *Sickel's Mining Rules & Dec.* 36.

[7] See *post*, Ch. xiv, *Land Office Decisions.*

§ 27. **Provisions as to recording and herein of notice to subsequent purchasers.**—There is nothing in the general law requiring a record to be made of the location; but the statute seems to take it for granted that this will be required by local laws or regulations.[1] When, however, such records are made, they are required to contain the name of the locator, the date of location, and such a description of the claim by reference to natural objects or permanent monuments as will identify the claim.[2] Whether it is necessary to record at

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Las Vegas Sun

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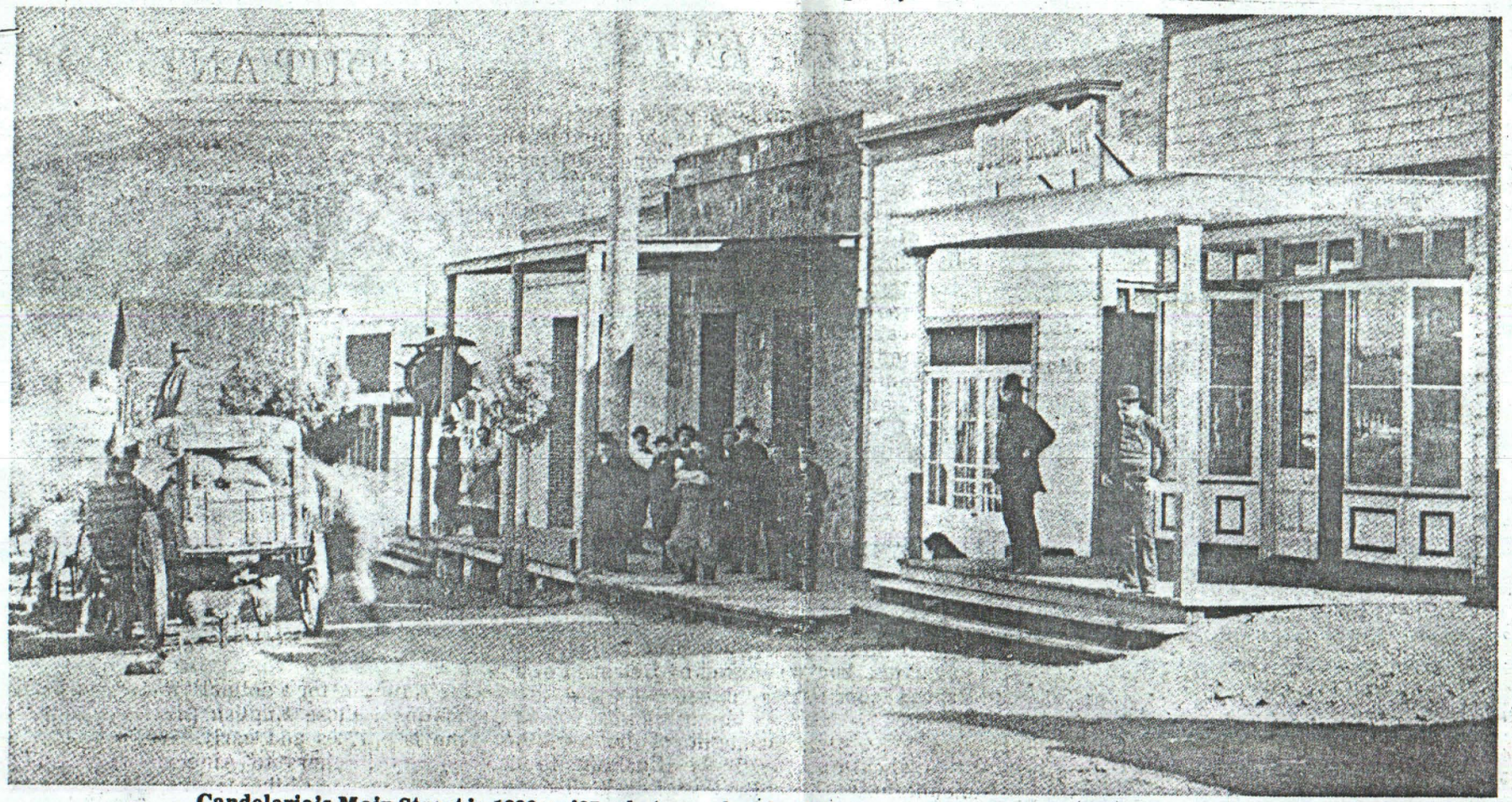

Candelaria's Main Street in 1886 or '87, photographed by J.H. Crockwell. Stone bank building housed the Edwards' store. Man with arms crossed is George Elder, the blacksmith.

CANDELARIA

It wasn't always a ghost town

by Lorena Edwards Meadows

It wasn't always a ghost town

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Wanting to visit my birthplace, the ghost town of Candelaria, Nevada, we drove south on Highway 95 through Mineral County. Fifteen miles south of Mina, a sign directed us to turn right onto a dirt road. A gradual climb of about six miles brought us to a knoll where suddenly the whole panorama of Candelaria lay before us; the entrance to Pickhandle Gulch, the site of the once-prosperous mines, rising to our left, the mine dumps looking like molehills from this distance.

We went on down to the main street, to the one remaining building which is intact. Constructed of black lava rock, with heavy iron doors still in place, it gives the impression of sturdiness, but on closer inspection, one tired wall seems ready to collapse, and much of the floor has caved in. But it was of special interest to me because my father, Ben Edwards owned it from 1898 until 1904.

The history of Candelaria began in 1864, during the time when the Comstock mines were flourishing. Some Mexican prospectors discovered rich silver deposits in the harsh, wind-swept area, then a part of Esmeralda County, which became known as the Columbus Mining District. There they staked out claims, giving them Spanish names. Candelaria refers to a Mass day of the Catholic Church.

In 1865 several Americans filed claims in this district. Little work was done to develop these properties at first, partly due to the inaccessibility of the area, and to the open hostility of the nearby Indians. But in 1870 several companies became active. In 1873 the Northern Belle Mine opened a body of rich ore, followed by the Mount Diablo Mining Company, which under the management of William H. Shockley produced well and paid dividends.

In 1876 the townsite of Candelaria was surveyed by J.B. Hiskey at the foot of the steep ravine where the mines were located. The small settlement at the mines, at first called Metallic City, soon became known by the more down-to-earth name of Pickhandle Gulch.

Only the production of rich ore could compensate for the hardships endured in these camps during the following years. This dry, desolate country was strewn with volcanic rock, and supported little vegetation other than grease wood, bunch grass and sagebrush. At an altitude of 5842 feet, Candelaria's temperatures varied from far below zero in winter, sometimes accompanied by blizzards, to extreme heat in summer, with little or no shade. Supplies were brought in by mule teams; water had to be hauled in barrels and sold at a price so high its use was greatly limited. (Whisky cost $1.50 per gallon, and was preferred as a beverage by many.) Hay, grain and some meat were brought from Fish Lake Valley. Stove wood and timbers for the mines came from Benton, California, a distance of seventy miles.

By June of 1880 Candelaria was large enough to support a newspaper, "The True Fissure." In August 1880 it reported that D.A. Bender, a Reno banker, and H.L. Tickner, an employee of Wells Fargo & Co., had come to Candelaria to select a site for the Esmeralda County Bank. The paper followed the construction of the new stone building, from the first heaps of lava rock piled in the streets to its completion. — "The iron doors have been set in place." "The walls are marvels of strength and durability and will remain in place until the crack of doom."

Banking in a mining camp was a far cry from what we know today. The medium of exchange was gold and silver, commodities much too heavy to carry and too precious to leave around, so the miners looked for some secure repository. A trustworthy storekeeper might be given this responsiblity, but usually it was handled by Wells Fargo Express Company.

Before the end of 1880, Candelaria's bank building played an unusual role. There had been many stage robberies on the road from Bodie to Carson, taking from the Wells Fargo messengers gold bullion intended for the Carson City Mint. Milton Sharp, the highwayman who had committed these holdups was captured and locked up in Aurora. Although burdened by a steel shackle on his leg, he managed to escape. After wandering for several days in freezing weather without shelter or food, he gave himself up to a group of men who were playing cards in the back of McKissick's saloon in Candelaria. The town had no jail, so he was put under guard in the solid new bank building until he could be returned to Aurora.

The bank building, also being the office of Wells Fargo Express Company, was the stopping place for the stage, whose arrival brought out more Candelaria citizens than any other event, except the dreaded alarm of a fire or, perhaps, a good lively dog fight. Crowds would gather on Main Street to watch the coach and six horses clatter down the road into town. They loved to see the shot-gun messenger jump down from his high perch to deliver the treasure box to the Wells Fargo agent, and it was always a matter of great curiosity to learn what passengers were coming and going.

Better transportation became more necessary as the mines prospered. In 1880 The Carson & Colorado Railroad Company was incorporated to build a narrow gauge railroad from Mount House Nevada to Keeler, California, with a spur track into Candelaria.

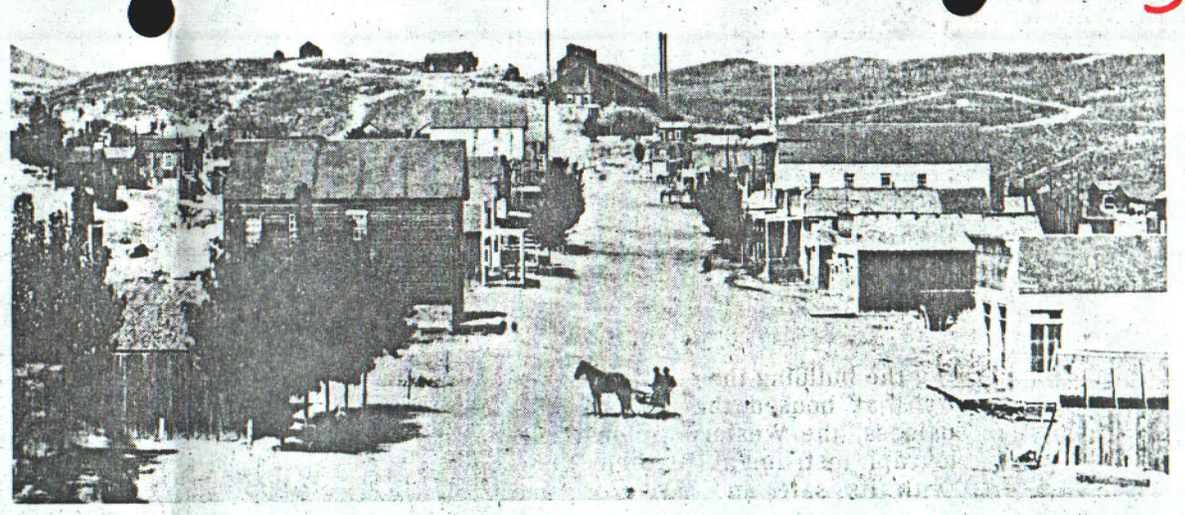
Another increasing need was that of an adequate water supply. The town had managed with water hauled in barrels from Columbus, eight miles away. The mills had operated with dry "batteries", (heavy stamps, used to crush the ore) which produced great clouds of dust.

In April 1881, John K. Kinkaid, Governor of

(Continued on page 4)

Tonopah gave the dying town a brief boom

(Continued from page 3)



Looking to the west down Main Street toward the big mill in 1893. Photo from Art Nelson Collection.

Nevada, and a group of men went to Candelaria to look over the possibility of a water line from Trail Canyon in the White Mountains. A corporation was formed and by June the enormous task of putting in more than twenty-seven-miles of pipe line and three large stone reservoirs was under way.

The main topic of conversation was the neck and neck race between the railroad and the pipe line. Both projects suffered setbacks by the severe winter of 1881, but by the end of February 1882, water was running into the reservoir above Pickhandle Gulch, and on March 4th, the first passenger train came to the station. It was met by a cheering crowd, and the following celebrations were long and lusty. Empty champagne bottles soon piled up in the gullies nearby.

About this time Chris Zabriskie, a young man from Carson City came to Candelaria to work in the Esmeralda County Bank. In a letter to the newspaper, "The Carson Appeal," Chris wrote: "Candelaria is quite a little town. There are five large stores, one hotel, a bank and saloons without number. Many mines are working and money is plentiful. The White Mountain Water Co. has succeeded in bringing water as far as Pickhandle Gulch. Water can now be bought for the remarkably low price of 5 cents per gallon. People, however, do not go swimming here. Since the Carson & Colorado Railroad has been completed to Candelaria we have been enjoying a great many luxuries. Oysters in the shell and San Francisco fish are displayed in the windows of the restaurants ... the sound of the saw and hammer is almost incessant."

In December 1883 fire destroyed many of the wooden buildings on the south side of Main Street, including the two-story hotel. As a result of this and of a slump in mining production, the Esmeralda County Bank closed its doors in 1884. But the little stone building did not remain empty. The bank from his discoveries of borax at Teel's Marsh and his borax operations at Columbus Marsh, both near Candelaria. The completion of the railroad made the shipment of borax much easier, and soon a common sight on Main Street was the movement of large freight wagons, drawn by from sixteen to twenty mules, laboring through town and up the winding road to the station, heavily laden with sacks of borax which had been processed by Chinese coolies on the marshes. The return trip of the empty wagons was more exciting when the brakes often gave way and the mules frightened into a runaway, with the Chinese drivers screaming their own form of abuse.

Soon it was announced that B.G. Smith would conduct a banking business, with Chris Zabriskie to handle the telegraph and express departments. This assignment was apparently not enough to fill all of Chris's time. He often took relief jobs with the Carson & Colorado Railroad, using his skill as a telegrapher.

On one such assignment in Benton, California he became acquainted with my grandparents, Thomas and Catherine Edwards and their four sons and two daughters. But the member of the Edwards family who caught Chris's eye was sixteen-year-old Margaret, a beautiful, blue-eyed girl. He fell in love with her and a long, and sometimes stormy, courtship followed.

He returned to his job in Candelaria, and Although reluctant to live away from Candelaria, Chris accepted the position just about the time that Margaret Edwards became the school teacher in Columbus. The courtship continued, and in 1888 they were married.

About this time Chris formed a partnership with Walter Shockley. They bought the Candelaria bank building and started the business of ZABRISKIE & SHOCKLEY, BANKERS AND BROKERS.

In 1890 Walter Shockley planned a bicycle tour of Europe, and Chris found that his borax interests were taking much of his time, so they asked Ben Edwards, brother of Margaret Zabriskie, to work for them. Walter Shockley taught him the banking procedures and he was left in full charge of the Candelaria bank, as cashier.

Ben was also a man of many hats. He carried on as banker, telegrapher, express agent, store keeper and added some new roles, those of postmaster, notary public and school trustee.

In 1893 he brought Lorena Barlow as his bride from Oakland. They moved into a house on Main Street which he rented for $5 per month. It was one of the town's nicest homes. He later bought it for $100. They were greeted with a noisy shivaree and showered with gifts. It seemed that nothing could cloud their

the windows of the restaurants ... the sound of the saw and hammer is almost incessant."

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B.G. Smith had operated a general store in Candelaria for several years, as well as one in Marietta. He was a brother of F.M. Smith, who had become known as "Borax" Smith

fornia he became acquainted with my grandparents Thomas and Catherine Edwards and their four sons and two daughters. But the member of the Edwards family who caught Chris's eye was sixteen-year-old Margaret, a beautiful, blue-eyed girl. He fell in love with her and a long, and sometimes stormy, courtship followed.

He returned to his job in Candelaria, and soon added a new and important dimension to his life. "Borax" Smith, whose home was in Oakland, needed someone to look after his borax operations at Columbus Marsh. He was impressed by the drive and dynamic personality of young Zabriskie and offered him the job.

The view down Main Street toward the east when Candelaria was a booming mining camp.

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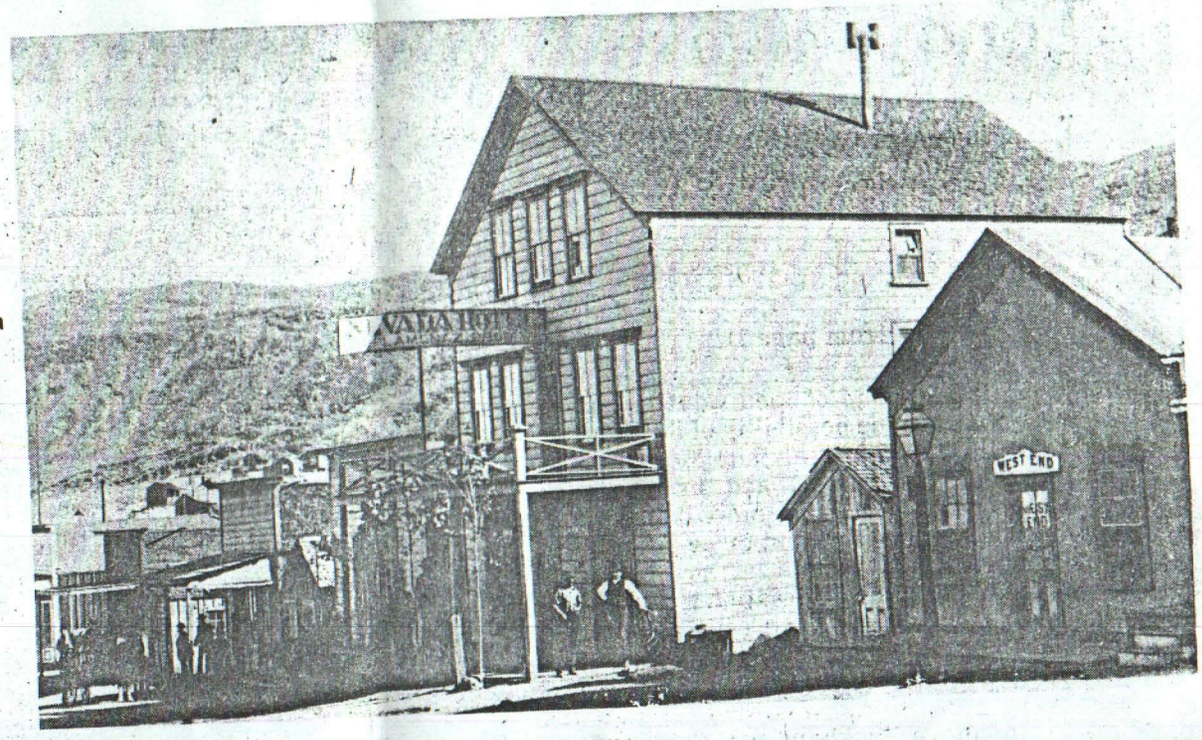
However, 1893 was a year of financial panic throughout the nation, and it soon was felt in Candelaria. The mine owners offered lower wages, hoping to adjust to the falling price of silver; the miners refused to accept a cut, and in June the mines shut down completely. There followed a great exodus from the district.

Now there was little inducement to remain in the town, but Ben decided to stay. He believed that the marshes would still yield enough borax to be profitable. He secured leases on the Pacific Coast Borax Company's abandoned plants, and hired a "boss Chinaman" with the improbable name of Billy Ford, to take charge of production. Working with about one hundred Chinese coolies, Ford processed and delivered to the depot several hundred tons of borax each month. Ben had only to supervise and keep books on this business, which undoubtedly tided the Edwards family over the seven lean years that followed, and made it worthwhile for the railroad to continue a limited service to the town.

The little stone building was still the hub of whatever activity continued in Candelaria, the terminal point on the railroad from which many outlying communities received their supplies. Ben added a larger stock of general merchandise and arranged for teamsters to deliver orders to the residents of Fish Lake Valley, Silver Peak, Dyer, Coal Wells, Lida, Red Mountain, Pigeon Springs, Marietta and others.



The Nevada Hotel and the West End rooming house. Photo believed to have been taken in 1887.

On entering the building the customers saw the counters that housed the Wells Fargo Express business, the Western Union office with its telegraph instrument, the bank compartment with its safe and the postoffice cubbyholes. A large, pot-bellied stove stood in one corner, flanked by barroom chairs which seated the regular cronies who made this their meeting place to swap stories and learn the latest gossip.

The rear wall was hung with picks and shovels, horse collars, harness parts and overalls. A narrow stairway led to the cellar, where large reels of rope were kept. Counters, shelves, bins and barrels filled the room. Cracker barrels, pickle barrels, glass candy jars, many kinds of canned foods and an occasional display of fresh produce appealed to the appetite. Bottled wines and liquors were sold, but not as drinks as that was well provided for in the saloons. Nails and horseshoes, crockery, tinware, agate ware, boots and shoes, underwear and dry goods filled the bins and shelves. All in all, there was seldom a dull time in this place, although the mines produced almost nothing for the rest of the decade.

The severe winter of 1894 caused the water pipes in the White Mountains to burst. Candelaria and Pickhandle Gulch had to rely on water from the locomotive tanks of the railway, or on barreled water hauled in from Columbus. It was two years before the pipes were repaired and the hot dusty summers were almost unbearable. With two small [illegible] the Edwards family, the temptation

been told and retold with as many variations as a theme by Beethoven. Its impact on Candelaria was tremendous. Sodaville and Candelaria, each about sixty miles from the new booming camp, became rivals for the enormous surge of business which followed.

Ben Edwards' Candelaria store was soon swamped with orders. His building fairly bulged with wares destined for Tonopah, and freight piled up at the station to such an extent that he had to hire a guard with a shot gun to discourage thievery, until he could arrange for transportation to the new camp. Every available vehicle was pressed into service, resulting in a strange caravan crossing the desert. Borax wagons, freight and hay wagons and even buckboards were piled high with goods to join the procession.

The new-found prosperity allowed many improvements in the building. Acetylene lighting replaced the coal oil lamps. A [illegible] facilitated

took his wife and four children to Bishop, at the same time moving two houses which he owned in Candelaria. These had to be cut into sections of a size that would go on the flat cars of the railroad, and which would go through the tunnel near the top of the White Mountains. These were reassembled in Bishop while the family vacationed in tents in the mountains near Bishop Creek.

Tonopah celebrated Railroad Day on July 25, 1904 with exuberance, but this was the swan song of Candelaria which had no reason to go on.

But the town did not die, although it was almost deserted by the end of 1905 when the station was torn down and the train service ceased. It lay dormant for a decade or more, with sporadic bits of mining carried on by leasers who produced scarcely enough to be recorded.

The building stood empty, but its working days were not quite over. In 1918 the mining

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The century ended with a very pessimistic outlook for all of Nevada. The Carson & Colorado Railroad took a dim view of the future, and in March, 1900 sold out to the Southern Pacific. Strangely enough, this took place just two months before a most unexpected event happened, one which quickened the pulse of the whole mining world, and soon a silver stampede to Tonopah was under way.

The story of Jim Butler's discovery of rich silver ore, while searching for a lost burro had that he had to hire a guard with a shot gun to discourage thievery, until he could arrange for transportation to the new camp. Every available vehicle was pressed into service, resulting in a strange caravan crossing the desert. Borax wagons, freight and hay wagons and even buckboards were piled high with goods to join the procession.

The new-found prosperity allowed many improvements in the building. Acetylene lighting replaced the coal oil lamps. A typewriter and a letter press facilitated Ben's increasing correspondence, and he might have made more changes had he not realized that Candelaria's active days were numbered. When he saw the richness of the ore that was piling up in Tonopah, he knew there would have to be a railroad extended to that place which would bypass Candelaria, putting an end to the teaming business which kept the town alive.

Ben prepared to leave Candelaria. In 1904 he sold all that was left in the store to the Nye County Mercantile Company of Tonopah. He 25, 1904 with exuberance, but this was the swan song of Candelaria which had no reason to go on.

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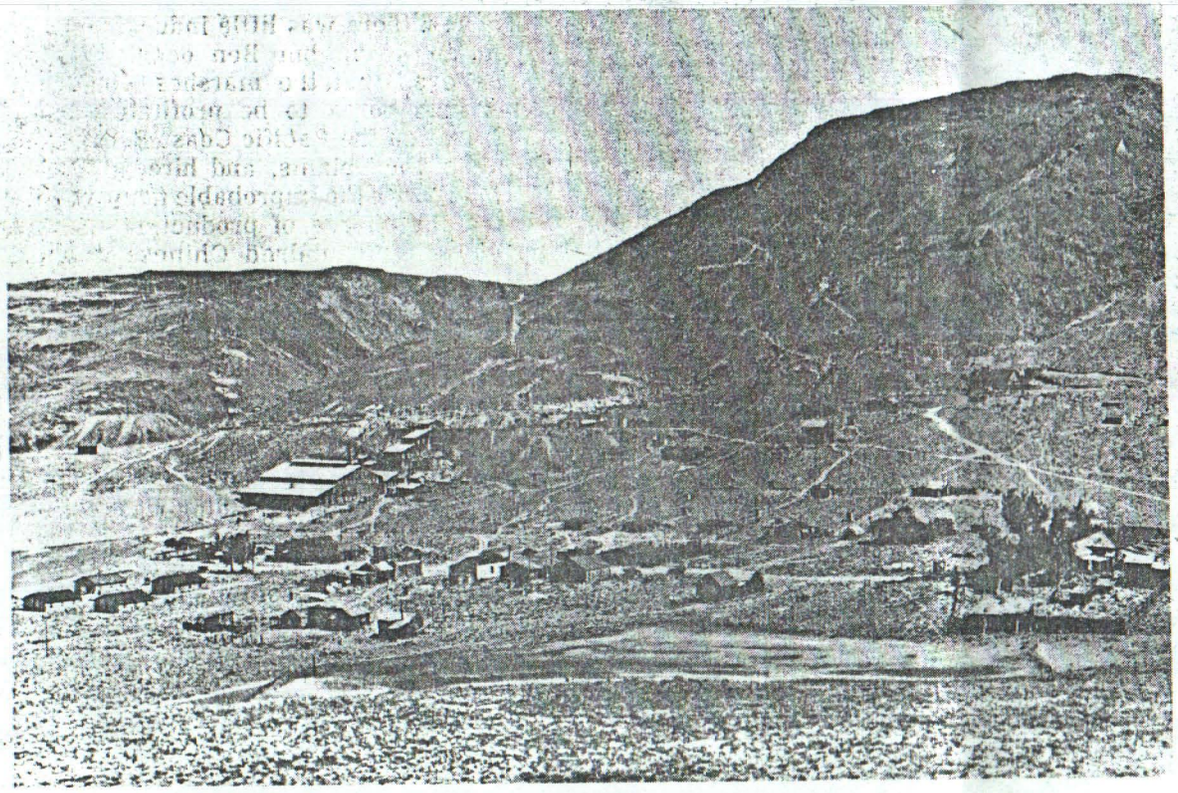
The building stood empty, but its working days were not quite over. In 1918 the mining industry received a vital shot-in-the-arm in the form of the Pittman Silver Purchase Act, promoted by Nevada's Senator Key Pittman. This assured a price of $1 per ounce for silver, and resulted in a spurt of activity in all mining areas. In Candelaria a new company was formed, the Candelaria Mines Co., which leased the Northern Belle, the Mount Diablo and Lucky Hill mines and began intensive operations. In 1922 a 150-ton cyanide processing plant was completed, and once again the town was buzzing with industry.

The little building was given a part in this new lively scene. It served as a bunk house for miners and mill workers when the company boarding house was overcrowded. Now it enjoyed the undreamed of convenience of electric lighting, but never knew that of indoor plumbing. Once again its walls resounded with hearty man-talk, and it may have seemed like old times, but not for long. In 1923 the government ceased purchasing silver, and the price slid to 65 cents per ounce, with a consequent slump in mining. The Candelaria Mines Co. was closed in 1925, and in spite of several further attempts to revitalize the area, by the start of World War II Candelaria was truly a ghost town.



A year after this photo was taken the mill closed and the town began to give up the ghost.

Candelaria

	Gold	Silver	Copper lbs	Lead lbs	Zinc	Total $
1870						762.
71						134,609
72						146,852
73						280,461
74						282 624
75						910 905
76						1,424,175
77						1,326,919
78						301,362
79						823,864 ~~1,184,028~~
1880						1,189,028
81						1,237,869
82						1,372,228
83						1,205,457
84						26,616
85						497,958
~~886~~						361,218
87						318 676
88						284,909
89						279,418
1890						259,446
91						548,440
92						92 00
1893-1897						—
1898						22,640
Totals	1861- 1898 13,210,626		61,611 lbs	3589,064 lbs	225,800 lbs	15,263,355

No. 4 of 10 Wood Hauling Series
Mule skinners (drivers) and pack mules assembled before a huge rick of cordwood at wood camp near Belleville, Nevada in 1880's, wood provided fuel for ore mill, many stumps seen in background.

REPRODUCTIONS, SCOTT-CRISPIN COLLECTION, Belleville, Nevada in 1880's

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No. 1 of 10 Wood Hauling Series
Cord-wood, cutting operation camp near Belleville, Nevada in 1880's. Wood used for fuel in ore processing mill there. Stacks of wood and corral in center.

REPRODUCTIONS, SCOTT-CRISPIN COLLECTION, Belleville, Nevada in 1880's

PLACE STAMP HERE

No. 2 of 10 Wood Hauling Series
Mule skinners (drivers) and pack mules loaded with cordwood where it will be transferred to wagons pulled by sixteen mule (jerk-line) teams and hauled to ore mill at Belleville, Nevada, to be used for fuel in 1880's.

REPRODUCTIONS, SCOTT-CRISPIN COLLECTION, Belleville, Nevada in 1880's

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No. 3 of 10 Wood Hauling Series
Pack mules assembled after unloading cordwood to be transferred to wagons and hauled to provide fuel to operate ore mill at Belleville, Nevada in 1880's.

DUCTIONS, SCOTT-CRISPIN COLLECTION, Belleville, Nevada in 1880's

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No. 7 of 10 Wood Hauling Series
Ore mill at Belleville, Nevada in 1880's, mule teams and ore wagons from mines approaching unloading chutes above mill, employees standing below.

REPRODUCTIONS, SCOTT-CRISPIN COLLECTION, Belleville, Nevada in 1880's

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No. 6 of 10 Wood Hauling Series
Mule teams and wagons loaded with cordwood on way to ore mill at Belleville, Nevada in 1880's. Stumps of trees show extent of cutting operation, wood was used for fuel at the mill.

REPRODUCTIONS, SCOTT-CRISPIN COLLECTION, Belleville, Nevada in 1880's

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No. 5 of 10 Wood Hauling Series
Sixteen mule team hauling fifteen cords of wood on one wagon to ore mill at Belleville, Nevada in 1880's, water barrel lashed to front of wagon, Mule skinner (driver) riding wheel horse, team controlled by "jerk-line" a single line to trained lead horse or mule.

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DUCTIONS, SCOTT-CRISPIN COLLECTION, Belleville, Nevada in 1880's

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No. 10 of 10 Wood Hauling Series
Belleville, Nevada in 1880's, looking toward the main street from the ore mill. A typical scene of early mining activity in Nevada, where they hauled water as well as everything else on wagons and pack animals.

REPRODUCTIONS, SCOTT-CRISPIN COLLECTION, Belleville, Nevada in 1880's

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No. 9 of 10 Wood Hauling Series
Belleville, Nevada in 1880's, ore mill at left, sixteen mule, team pulling four wagons on way to mine or wood camp. Mule skinner (driver) riding wheel horse, swampers and passengers standing, fifty gallon water barrels lashed to sides of wagons. Cordwood stacked below mill.

REPRODUCTIONS, SCOTT-CRISPIN COLLECTION, Belleville, Nevada in 1880's

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No. 8 of 10 Wood Hauling Series
Ore mill at Belleville, Nevada in 1880's, where ore from mines was processed, cordwood stacked in foreground, mule teams with ore wagons unloading, on ramp above and behind smokestacks.

REPRODUCTIONS, SCOTT-CRISPIN COLLECTION, Belleville, Nevada in 1880's

PLACE STAMP HERE

No. 10 of 10 Wood Hauling Series
Belleville, Nevada in 1880's, looking toward the main street from the ore mill. A typical scene of early mining activity in Nevada, where they hauled water as well as everything else on wagons and pack animals.

REPRODUCTIONS, SCOTT-CRISPIN COLLECTION, Belleville, Nevada in 1880's

PLACE STAMP HERE

No. 9 of 10 Wood Hauling Series
Belleville, Nevada in 1880's, ore mill at left, sixteen mule, team pulling four wagons on way to mine or wood camp. Mule skinner (driver) riding wheel horse, swampers and passengers standing, fifty gallon water barrels lashed to sides of wagons. Cordwood stacked below mill.

REPRODUCTIONS, SCOTT-CRISPIN COLLECTION, Belleville, Nevada in 1880's

PLACE STAMP HERE

No. 8 of 10 Wood Hauling Series
Ore mill at Belleville, Nevada in 1880's, where ore from mines was processed, cordwood stacked in foreground, mule teams with ore wagons unloading, on ramp above and behind smokestacks.

REPRODUCTIONS, SCOTT-CRISPIN COLLECTION, Belleville, Nevada in 1880's

PLACE STAMP HERE

COLUMBUS DISTRICT, NEVADA.*

The town of Columbus is situated on the southern slope of the mountains, facing the desert. Columbus district was formed and organized in December, 1864. The nearest railroad station is Wadsworth, which is one hundred and thirty-three miles distant. The district is twenty miles square. The general course of the mountains is east and west, with small spurs running off in northerly and southerly directions. The mines are located all over the mountains. The metal-bearing veins run northwest and southeast, and are found in limestone, slate, and granite. Wood occurs in abundance eight miles from town. Water is scarce, as it is taken from wells. There are three mills at this place, two of which are 5-stamps each, and one a 4-stamp mill. There is no Stedefeldt furnace attached to any of them. The ore is chiefly chloro-bromide, (embolite,) and the mills since starting, a year ago, have yielded about $30,000. Ores are worked by the dry process. The total number of tons worked is between 3,000 and 4,000. Cost of mining is $10 per ton; cost of roasting and milling, $45 per ton; cost of labor per day, at mines and mills, $4; cost of barley, 5½ to 6 cents per pound; cost of hay, $45 per ton.

The stage runs to and from Reno; fare, $50. Freight is taken to and from Wadsworth, and costs from 4 cents to 5 cents per pound. The two 5-stamp mills work each about six tons of ore per day, and the 4-stamp mill about five tons per day, making a total of seventeen tons per diem.

The principal mines of the district are the Mount Diablo, Black, Metallic, Columbia, Northern Bell, Peru, Potosi, Bellmarte, Pappinaux, and Vulture. Development of Mount Diablo has cost $40,000, the remaining ones each $15,000. There are five hundred or six hundred locations in the district. Total number of inhabitants about three hundred; number of houses about forty-five, including stores; stores, 4; livery stables, 2; saloons, (about,) 10.

ONEATA DISTRICT, CALIFORNIA.*

This district was formed in June, 1870. The town is ten miles from the district. Reno is one hundred and twenty-five miles from Benton and the nearest railroad station. The mines and district are located on the western slope in the northern spur of the White Mountain Range. The ore is, in appearance, a mere deposit, and the 100 tons that are now in sight yield, or are worth, according to assay, from $25,000 to $30,000.

There is running water and plenty of timber all through this part of the mountains. The ores accompany talcose slate, granite, and metamorphic limestone. The ores are all sent to Columbus for milling. Cost of working mines, $60 per ton; cost of milling, $60 per ton; cost of mining and milling labor, each $4 per day; hay worth $40 to $45 per ton.

The principal mines are the Wetherell and Indian Queen, and proceeds for one month's work (of ore) was $500. Freight to Reno is 7 cents per pound, and for ores $60 per ton. There is a 10-stamp mill and Stedefeldt furnace building now at Partzwick, costing $25,000. In these mines there are generally from twenty to thirty men employed.

MONTGOMERY DISTRICT, CALIFORNIA.*

The next district is the Montgomery, organized in 1863 by Henry B. Rich as recorder. The mountains, as in the last district, run north and south, and the mines are located over nearly all parts.

The true metalliferous veins run irregularly north and south. There is plenty of wood and water in the mountains. The rock overlying the silver-bearing rock is limestone, over which comes granite. The ore yields generally from $250 to $300 per ton. Cost of mining, per ton, $75; cost of milling, per ton, $50; cost of roasting, per ton, $15; cost of labor, per diem, $4.

SILVER PEAK AND RED MOUNTAIN MINING DISTRICTS, NEVADA.†

These mines are situated in Esmeralda County, Nevada.

Red Mountain district.—The mines in the district were discovered January 26, 1864.

Silver Peak district.—The mines in this district were discovered, and district organized February 1, 1865. The distance from railroad is one hundred and sixty miles by wagon-road. Nearest station on railroad is Wadsworth.

Timber.—This is located on the summit and west slopes of the Red Mountains, extending twelve or fifteen miles along the summit, and about ten miles from the mill. The timber-belt is about eight or ten miles wide. Varieties; Piñon or nut-pine, cedar, mountain mahogany. The timber is small, but good for that country, and plenty of it.

Water.—In Clayton Valley, near foot of eastern slope, is a cluster of large springs. They are all brackish, one or two boiling, nearly all warm, and a few cold. Water is abundant enough to run a 200-stamp mill. Also springs on west slope. Red Mountain Spring, the principal one, issues from the foot of the peak of that name. This water is pure

* From notes furnished by W. J. Hoffman.

† From notes furnished by Lieutenant D. A. Lyle.

FOR SILVER PEAK.—Billy Pearson was in camp on Thursday last, loaded with merchandise for John Chiatovich, of the Peak. This is the first time for over a year that Billy has freighted through here. He is driving sixteen splendid animals, and his team attracted considerable attention from the admirers of fine stock. Quite a little traffic is springing up in that direction since the Silver Peak and Red Mountain Company have taken hold of their interests there. Our old friend J. R. McNees, has started a store there, and has already had three loads of goods shipped out from R. Abraham's store in this camp. We are informed that Mr. Young has ten stamps of one of the company's mills ready for work and will start up immediately.

TEEL'S MARSH.—Dr. Webber was in town yesterday. He speaks hopefully of the mining enterprise in which he is engaged at Teel's Marsh. The 5-stamp mill now being erected to work their ores by wet process will be ready to run on or about the fifth proximo. The doctor says the company have had their rock put to practical test by several well known experts, getting results which were quite satisfactory by that process. If they find that working by this plan does not prove successful a furnace will be put in at once, and other machinery added from time to time as the development of their mines justify.

FINANCIAL.—Thursday, June 28th.—Gold in New York, 105¼. Greenbacks, 95¾. Trade dollars, 96½. Silver, discount, 5.

STOCKS.—San Francisco, Thursday evening; June 28th.—305 Northern Belle, $15½, $16. 350 Gen. Thomas, 10c.

THANKS.—Secretary of State, Minor, will accept our thanks for a copy of the Statutes of Nevada for 1877.

NORTHERN BELLE BULLION.—No report received.

DELINQUENT SALE.

VICTOR MILL AND MINING COMPANY. Location of principal place of business, San Francisco, California. Location of works, Columbus Mining District, Esmeralda County, Nevada. Notice—There are delinquent upon the following described stock, on account of assessment (No. 2) levied on the 29th day of March, 1877, the several amounts set opposite the names of the respective shareholders, as follows:

Names.	Certificate.	Shares.	Am't
Allen, H. H. trustee	137	2400	$480 ..
Allen, H. H. trustee	142	1083	216 60
Fernbach, V. trustee	141	400	80 ..
Fernbach, V. trustee	143	835	167 ..
Fernbach, V. trustee	148	100	20 ..
Fernbach, V. trustee	150	400	80 ..
Fernbach, V. trustee	155	1775	355 ..
Fernbach, V. trustee	159	100	20 ..
Fernbach, V. trustee	169	361	72 20
Fernbach, V. trustee	170	216	43 20
Fernbach, V. trustee	171	216	43 20
Fernbach, V. trustee	172	790	158 ..
Fernbach, V. trustee	173	2167	433 40
Fernbach, V. trustee	175	500	100 ..
Fernbach V. trustee	176	22	4 40
Fernbach, V. trustee	177	35	6 80
Holmes, A. J. trustee	138	1425	285 ..
Holmes, A. J. trustee	149	100	20 ..
Holmes, A. J. trustee	165	750	148 80
Land, C. B.	136	100	20 ..

And in accordance with law and an order of the Board of Directors, made on the 28th day of April, 1877, so many shares of each parcel of such stock as may be necessary, will be sold at public auction on MONDAY the EIGHTEENTH (18th) day of JUNE, 1877, at the hour of one o'clock P. M. of said day, to pay said delinquent assessment thereon, together with costs of advertising and expenses of the sale.

VICTOR FERNBACH, Sec'y.

Office, No. 6 Leidesdorff Street, first floor, San Francisco, California. je9-td

Postponement.—At a meeting of the Trustees of the VICTOR MILL AND MINING COMPANY, held on the 16th day of June, the date of sale of delinquent stock of assessment No. 2 was postponed until WEDNESDAY, the EIGHTEENTH day of JULY, 1877, at the same hour and place.

je-30td VICTOR FERNBACH, Sec'y.

FOURTH OF JULY BALL.

At Belleville Hotel,

WEDNESDAY EVENING, JULY 4th, 1877.

Committee of Invitation.

BELLEVILLE:

D. C. Griffin, W. A. Quiggle, G. T. Harbor.

CANDELARIA.

B. C. Worley, George Vernon, B. McClain, Jas. Sparrow.

COLUMBUS:

R. E. Eldred, T. Root, Frank Stewart, E. D. Barker.

FISH LAKE VALLEY:

Loudon McAfee, A. P. Dyer.

TEEL'S MARSH.

H. M. Keene, Dr. Webber.

Floor Managers.

Wm. Quiggle, E. John M. Schilling.

☞ The best of music will be in attendance. Supper at 12 o'clock. A full attendance is solicited.

TICKETS.....FIVE DOLLARS

je33-td

BORAX MINER.

COLUMBUS, SATURDAY, ..SEPT. 15

SILVER PEAK.—The Silver Peak and Red Mountain Gold and Silver Mining Company started up successfully ten stamps of their 30-stamp mill on Monday morning last, and thereby hangs a tale. Many years ago this company expended a sum of money estimated in round figures at a million of dollars, in purchasing, opening up and developing mines in the Silver Peak and Red Mountain districts. The gross return from their enterprise aggregated about a quarter of a million dollars. The work was then temporarily abandoned, and Mr. J. H. Lyon, the "keeper" of the property, and the late Wm. Harker, of whose pitiful taking off his many friends are too well aware, were the only occupants of the dreary solitude—the deserted camp. From year to year, Mr. Lyon employed help from the neighboring camps, and kept up the assessment work required by the mining laws. In the Spring of 1875 a claim was made against the company by A. L. Pritchard for the sum of $49,000 with interest and costs. Judgment was obtained in Nye county on this claim, while the county lines were in dispute, and execution is ued in this county in June of the same year on the Nye county judgment. The property was sold under this execution. Soon after this sale one or two suits of minor importance were had against the company in this county upon which judgment executions and sales followed. Nearly all of the valuable personal property of the company, which had cost thousands upon thousands of dollars, was squandered in these sales and scattered through the country. Meanwhile the leading owners in New York were in blissful ignorance of these proceedings, resting under the belief that Pritchard was acting for their joint benefit. Upon learning the true condition of affairs, the company sent out an attorney from New York to examine into the legality of the proceedings, and report. In the work of Mr. Niles, the attorney, was exemplified one of those strange combinations of events wherein present disaster is the moving cause of a permanent success. During Mr. Niles' sojourn here he made use of every possible means of arriving at the value of the mines belonging to the company, and learned that their magnitude and importacne was far beyond the estimates of the owners. Upon his report immediate steps were taken to recover the realties, which we believe was effected by compromise. This rugged experience awakened the interest of the owners in the property which had been dormant for years, and which would naturally have remained so for an indefinite number of years to come, and Mr. J. R. Young, Vice President of the company, who is himself a party in interest, arrived here some months since. took charge of the property as local Superintendent, and went methodically to work to secure title by United States patent, and at the same time to open up the mines and demonstrate by actual mill work the value of the different claims. Here he met the difficulties which are experienced by almost every one who has tried to start up old quartz machinery. Having secured the services of Mr. Alex. Palm as foreman of the mill, the work of overhauling he machinery commenced. Two five-stamp batteries were put in repair and enough amalgamating pans and settlers, with the accompanying machinery and connections to complete the outfit. A [illegible] difficult run was then

MARIETTA ITEMS.—The Endowment mill and mine are steadily at work. The result for August was highly satisfactory. The mill crushed 361 tons of ore, yielding $15,100 in bullion. Shipments from 1st of Septamber to 13th were $7,200. An important strike has been made in the Endowment mine, in a drift from the shaft at the east end of the ledge from the present workings, and about 300 feet from the mouth of the tunnel, cutting a five-foot vein averaging $82 per ton. This proves the continuation of the ledge through the entire length of the claim, and also adds to the value of the Combination claim, which is on the same lead. The Independent mine is taking out rich galena ores at a depth of 92 feet, assaying 55 per cent. lead and carrying an average of $162 per ton in silver. This company is loading teams te ship to the reduction works at Sacramento, California. Other companies are vigorously prospecting, and the outlook is full of promise. The town of Marietta is steadily improving. Many Columbus people are here. The irrepressible Jakey Stock is putting up a chop house. The Smith Brothers are erecting a store 20x75 feet, of stone. C. S. Mott, who has manifested an undying energy in building up and looking out for the interests of this new and thriving mining camp, is enlarging his building to accommodate his increasing trade, the Postoffice, Wells, Fargo & Co.'s and the stage offices. Mr. Mott is also Notary Public and Mining Recorder for the district. See his business card under the head of New Advertisements. There are now in Marietta five saloons, two blacksmith shops, three boarding houses, ten families and about eighty voters; total population about one hundred and eighty-five persons. A petition is numerously signed, and will doubtless be granted by the Board of County Commissioners, asking the appointment of M. Burrell as Justice of the Peace—an officer very much needed for the preservation of order. Mr. McMasters, who is the presiding genius at the Endowment mill, takes a justifiable pride in exhibiting the well appointed and well cared for reduction works of the company to all visitors. It is a thoroughly ascertained fact that "Mc" is the right man in the right place, and Dr. Webber has cause to congratulate himself and his company in the possession of so excellent and zealous an officer.

THE FISH LAKE SURVEY.—D. H. Barber, Deputy United States Surveyor, has completed the survey of agricultural and saline lands in that portion of Fish Lake Valley lying in Esmeralda county. He informs us that there are 115,200 acres of agricultural lands in this survey, at least two-thirds of which could be irrigated and made productive by the economical use of the water from the many little streams running into the valley from the surrounding mountains, large quantities of which is now wasted. As soon as the plats of this survey are filed in the Land Office at Carson, notices will be served on the settlers in the valley and they will then have an opportunity to perfect their pre-emption claims. But little attention has been given to these farming lands during the long years of inactivity which have prevailed in the surrounding mining camps, but with the development of Columbus, Silver Peak, Red Mountain, Montezuma, Lida, Cold Mountain, Palmetto and Sylvania mining districts, all in the immediate future, and all looking to Fish Lake as the main base of supplies for hay, grain and all agricultural products, the value of these lands will assume an importance little dreamed of to-day, and the valley will be as thickly

DISSOLUTION OF CO-PARTNERSHIP

THE CO-PARTNERSHIP HERETOFORE existing between JAMES M. CALDWELL and R. E. DOREN, carrying on the iron foundry business at Columbus, Esmeralda County, Nevada, under the firm name of DOREN & CALDWELL, is hereby by mutual consent dissolved. All persons holding claims against the late firm are requested to present the same to

the machinery commenced. Two five-stamp batteries were put in repair and enough amalgamating pans and settlers, with the accompanying machinery and connections to complete the outfit. A short and very difficult run was then made, when it was found that the steam boilers were so badly used up that they were utterly unfit for service, and the mill was shut down. But the bullion result was satisfactory, and the energy and faith intact. A comparatively new and excellent boiler was purchased from Mr. James ... and put in position ... the cy... so worn that it would not perform. The engine was brought to the foundry here, bored out, a new set of packing-rings made and fitted, and returned to its bearings on Saturday night of last week. On Monday morning the mill again started on regular work this time with perfect success. A gentleman who returned from the Peak on yesterday evening informs us that the boiler steams easily and the engine runs along smoothly and carries its load without difficulty. The ore running through the mill is of high grade, and one of the probabilities is that Silver Peak district will soon take her place as a leading bullion producer. We have spun this story to considerable length, in extenuation whereof we have only this to offer: There are multitudes of men on this coast more or less interested in mining, who have no real knowledge of many difficulties to be surmounted in the management of these enterprises—the amount of patience, faith, forecast and grit required, and it is only by occasionally showing up the vicissitudes and real difficulties of such enterprises that the absentee owners of stocks and mining interests can get an insight into the "true facts."

NORTHERN BELLE.—The annual election of the Northern Belle mining company was held on Monday last, resulting as follows: I. C. Bateman, President; George T. Lawton, Vice President; H. H. Allen, A. J. Holmes and Henry Sweetapple, Trustees; William Willis, Secretary; P. S. Buckminster, Superintendent, Bank of California, Treasurer. Bullion production during the year, $1,592,021, all silver. Dividends during the year, $600,000. Cash on hand, $86,000, of which the regular monthly dividend of $50,000 was declared.

THE DISTANCE.—From the township lines run by U. S. Deputy Surveyor Barker, we learn that the exact distance from the town of Columbus to Candelaria, "as the bird flies," is four and six-tenths miles.

NORTHERN BELLE BULLION.—No report received.

... and Sylvania mining districts, all in the immediate future, and all looking to Fish Lake as the main base of supplies for hay, grain and all agricultural products, the value of these lands will assume an importance little dreamed of to-day, and the valley will be as thickly settled as the most favored localities of California. Churches and school houses will spring into existence, and all the advantages of a better civilization will grow up around you. Look to your titles, set out orchards, plant timber forests, improve your meadows, subscribe for the ... Mines ... prepare for the ...

M... D... has been running this mill steadily since the start-up, which we mentioned last week, on ores from the Washington and Loughrae mines, both of which are developing handsomely. Mr. Hanke thinks he will be able to work the Washington ores raw, having made experiments to that end during the week. The week's shipments aggregate $3,363.

FINANCIAL.—Thursday, Sept. 13th.—Gold in New York, 103½. Greenbacks, 97½. Trade dollars, 96. Silver, discount, 4.

STOCKS.—Thursday, September 13.—415 shares Northern Belle, $18¾, $19. 2215 Endowment, $2½, $2 70.

THE CO-PARTNERSHIP HERETOFORE existing between JAMES M. CALDWELL and R. E. DOREN, carrying on the iron foundry business at Columbus, Esmeralda County, Nevada, under the firm name of DOREN & CALDWELL, is hereby by mutual consent dissolved. All persons holding claims against the late firm are requested to present the same to JAS. M. CALDWELL for immediate payment, and all persons indebted to them will please settle at once. JAS. M. CALDWELL will conduct the business from this date until further notice.

R. E. DOREN,
JAS. M. CALDWELL.

Columbus, Nevada, June 5, 1877. je9-1m

MINING TAX NOTICE.

NOTICE IS HEREBY ... TO ALL ... it ... all State and County Taxes le... assessed upon Proceeds of Mines in this Co... for the quarter ending June 30th, 1877, are no... and that the laws in relation ... of the same will be strictly enforced. All taxes due for said quarter (if not sooner paid) will be delinquent on the third Monday of September, 1877, after which the legal penalty for non-payment will be enforced.

C. J. DUNLAP,
Assessor of Esmeralda County, Nev.

Aurora, August 15th, 1877. au18-td

DISSOLUTION OF CO-PARTNERSHIP

THE CO-PARTNERSHIP HERETOFORE existing under the firm name of D. W. EARL & CO., at Wadsworth, is this day dissolved by mutual consent, D. W. EARL retiring. M. RAPHAEL will answer all liabilities of the late firm and collect all outstanding accounts of the same.

D. W. EARL,
M. RAPHAEL.

Wadsworth, Nevada, March 22, 1877.

☞M. RAPHAEL will continue the business of the late firm under the name of
my5-1m M. RAPHAEL.

NOTICE TO CREDITORS.

Estate of Mateo Mersich, Deceased.

NOTICE IS HEREBY GIVEN BY THE undersigned, Administrator of the estate of MATEO MERSICH, deceased, to the creditors of, and all persons having claims against the said deceased, to exhibit them with the necessary vouchers, within ten months after the first publication of this notice, to the said Administrator, at Belleville, Esmeralda County, Nevada.

C. R. EDWARDS,
Administrator of the Estate of MATEO MERSICH, deceased.

Dated: August 20, 1867. au25-4t

DISSOLUTION OF CO-PARTNERSHIP

THE CO-PARTNERSHIP HERETOFORE EXISTING between NORVELL & McGLEW is this day mutually dissolved. MR. N. B. NORVELL retires and Mr. T. McGLEW continues the business, assuming all the liabilities of the late firm of NORVELL & McGLEW, and collecting all accounts due them.

N. B. NORVELL,
THOS. McGLEW.

Columbus, May 11, 1877. m12-1m

FASHIONABLE DRESS MAKING

AND PLAIN SEWING.

LADIES OF COLUMBUS WILL PLEASE take notice that fashionable dress making and plain sewing will be done to order by

MRS. D. C. LATHROP.

At her residence, corner of C and Candelaria streets. m19-tf

sucking colt; th... blaze in the fac... and vented. Sa... horse, with a b... right hip. Thir... white feet and a... left hip with a la... Fourth. An old... on the left shoul... described anima... erty and t... according...
au18-1m

NOTICE

NOTICE IS H... sed proposals... Nev... Specifications... County Clerk a... up to said first... Board of Coun... s8-td

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WATCHM...
At Abr...
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Particular ... an...

4.6m

Jas. Johns, | D. J. Ross.

Departures.

Mr. Carlen, | J. H. Barker,
Frank Lemieux, | Joe. Bunchoux,
O. Foots.

MINERS' MEETING.—According to previous announcement, the miners of Columbus District held a meeting at the General Thomas Company's office on Thursday afternoon last. The meeting was largely attended and the greatest interest and harmony prevailed throughout. A. M. Thatcher was elected President and Wm. W. Barnes Secretary. The District laws heretofore enacted were read by the Secretary, and on motion of Mr. N. B. Norvell, the United States mining laws of 1872 and subsequent amendments were adopted, excepting that portion relating to the width of ground claimed, which was limited to one hundred feet on each side from the centre of the lode. The fee for recording was increased from $5 to $7 50. A committee of five, consisting of McDenna, Barker, Norvell, Cartee and Sutton, were appointed to revise the District Laws and frame a new code, to be reported at a subsequent meeting. The Committee are busily engaged on their work, and have named Thursday, 29th inst. at one o'clock P. M. at the General Thomas office, to report. J. L. Callison and D. M. Sutton were placed in nomination for the office of Recorder, made vacant by the expiration of the term of Fred'k. A. Hanks. Callison received 133 votes and Sutton 34. Callison was therefore declared elected. Both candidates were well qualified and worthy gentlemen, but the miners on the hill were too heavy for us, and easily elected their man. It is to be hoped that all interested in the future of the district will be present on next Thursday, to take part in the proceedings on the question of adopting the new code—a most important matter.

SILVER PEAK.—Mr. J. R. Young, Superintendant of the Silver Peak and Red Mountain Company, was in camp during the first part of the week, and purchased provisions to supply miners whom he has employed to take out ore for reduction at the Gen. Thomas mill. He expresses himself highly pleased with the appearance of the mines of the company, and at some day in the near future it is probable the company will take hold of their property and resume work in earnest. Other parties are beginning to look after interests in that camp. This afternoon a team loaded with miners with their tools and provisions went out for the purpose of commencing work there.

WORKING SHAFT.—Mr. M. Holland and others are working three 8-hour shifts on a double compartment shaft on the eastern side of Candelara hill, for the purpose of prospecting a number of locations in that vicinity. This is the first regular working-shaft ever started in the district, and may give an impetus to a more thorough and systematic method of development. The shaft is progressing downward at the rate of from four to six feet per day.

GOOD RESULT.—Mr. Wm. Shay, of Montezuma, brought in a working sample of 3,700 pounds of ore from the Canada mine in that District this week. The ore was crushed at the General Thomas mill, and netted the owner 300 dollars after all charges were paid. A mine of that sort of grit would soon make a small company rich. Mr. Shay has returned to get out forty or fifty tons more for reduction.

OLD TIMERS.—Geo. Craven and Sam. Hillhouse returned to camp this evening. They have been absent nearly a year, during which time they have visited Eureka, Elko, Cheyenne, Tybo, Belmont and other points of interest, where they

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Old Timers.—Geo. Craven and Sam. Hillhouse returned to camp this evening. They have been absent nearly a year, during which time they have visited Eureka, Elko, Cheyenne, Tybo, Belmont and other points of interest, where they have been 'gamboling on the green' and working the alkali out of their systems in devious and sundry ways.

Gold Mountain.—Mr. O. Foote and J. H. DeVol, went out to Gold Mountain last week to examine the mines of that district, returned last evening. Mr. Foote went out on this morning's stage to the East. He did not give his opinions concerning the district, but the fact of his having made purchases of mines there is significant.

Almost a Fire.—The kitchen of Mrs. Chrisry's boarding house took fire this afternoon, and burned one corner out to the roof. The cook and some passers by discovered the fire and succeeded in ex-

Unpub. Rep. by Fulton & Smith

" From 1860-1870, when the price ranged around one dollar per pound, a number of marshes were profitably worked for borax. Chinese & Mexican labor was largely employed. Salt & borax both were usually prod. from the marshes at the same time. Large quan. of salt were used by the silver mills of V.C., Austin, Belm., Unionville & Tus.

Deposits Marsh & Sand Springs marsh in Chur. Co., Teels M & Rhodes M. in Min., Col. M in Esm. have in the past contributed large amounts of borax prod. principally from ulexite (hydrous sodium calcium borate). From 1874 to 1873 the leading prod. was F M Smith ("Borax" Smith) until the Pac. Coast B Co. was formed. After 1883 Smith expt. his op. into Calif., where a much better ore, colemanite (calcium borate) had been disc.

Borates

From Unpub. Report - Nonmetal Occurences in Nevada by John A. Fulton and Alfred Meredith Smith Aug. 1932

See Lincoln pp. 261 - 263

Raymond R.W. - R. 1872
R 1875
~~R 18~~

Rep. of St. Min. & Re. 1867 - 68, 95
1869-70, 108
1871-2, 15, 17
1873-4. 17
1875-6, 24, 25

Min. Res. of US - USGS. 1882 567-70
1883-4 861-2
1889-90 503
1911

Hanks, H.G. Rep. on Borax d. Cal & Nev 46-8, 53, 76
4 5-53, 78-9

Spurr - USGS - PP 55 - 1906 -
Young, G.J. - Potash Salts & other Salines in G.B.
US Dept G. B. 61 (1914) 33

8537
10856

10856 Aug 21 1942
apn to Ch.
B&B Quick Co. Trad Co. of Apr. 21 1943 ~~1943~~
P.D. - NENW 11 ~~Sec SE~~ 1S R33E when NE ~~SE~~ Cor
Sec 1 ~~2~~ T1S R33E bears - ~~S67 40E 13777'~~ S55 33E 10364

Wa Cons h 420' 8" 360' 4" 9121' 2"
Pl Just NWNW Sec 6 T1S R34E
= Priority of 1914 -

Candelaria

Dis. 1864 alt. 5665

Largest mine – Northern Belle

Columbus 5 mi. SE of Can.

Candelaria founded 1876

1st 20-st. mill at Belleville
8 m. W in 1873

2nd 20-st. same.

1892 – stopped
1918 . revival.

Prod. $20 M silver

Turquoise also

400 ton cyanide mill 1922

W.L. Cook – Coaldale via Tonopah
— custodian – of prop.: —

Cook Caretaker

Pipe to Redlich – 4"

Metallic City ½ above Rocker Bell mine hd.

Two 4" pipe lines built from Springs
dumped into Res. head [illegible] –
over hill to Candelaria ←
one branch went to Mack Bradshaw
on Lucky hill & to Weber –
one br. to Metallic City –
one to Bradshaw also second
Diablo mine

Another pipe line went
fr. Bradshaw pump under road
followed old mine car railroad
to approx 350' above Northern Belle –
then pipe line went 200' around
spur – down hg back to Redlich.

[illegible]

Thos. M^c Grath Bishop Cody
Box 2854

Tom M^c Graft
on Columbia - red hotel -
Send - Tenguins rep: -

docks father - at Helena
Strengite = van. + moly. -
Tenguins
variscite -

Pine Grove, Western
Ghost Towns, Joseph
Wilson

Western Ghost Towns
Lambert Florin

The Rejuvenation of Candelaria

Famous Nevada Silver Mines of Forty Years Ago Again Producing — Separate Sand and Slime Leaching Practiced in New 300-Ton Cyanide Plant

BY EDWARD H. ROBIE
Assistant Editor

THE ORE-TREATMENT PLANT of the Candelaria Mines Co., in Mineral County, Nev., was placed in operation around the first of October, 1922: thus are the old mines of this district, which produced millions of dollars' worth of silver thirty or forty years ago, again in the ranks of producers. Again have the dumps and low-grade deposits of the old days become of economic value through the lower costs now possible largely through improvements in metallurgical treatment. No longer are the operators faced with the high mining and treatment costs of around $20 per ton, as was the case when the Argentum and Mount Diablo mines, operating on $50 to $75 ore, were attracting attention all over the country.

The present operating company was organized in 1918 as the Candelaria Mines Co. A large acreage was acquired of old workings in the Candelaria district, which is not far from Mina, Nev. Many old dumps of low-grade ore were included. Some of the properties were purchased outright, such as the Lucky Hill group, the Badger group, the H. & G. group, Blanch claim, and H. & G. millsite, and the Lake and Doris Lode mining claims. Others were leased, including the Mount Diablo group, the Argentum group, and the Esmeralda Water & Milling Co., which included a 27-mile pipe line for bringing water from the White Mountains.

When the company was first organized, William H. Barnard, of New York, treasurer of the International Salt Co., was president, and the directors included, besides Mr. Barnard, James W. Salisbury, of Bristol, R. I.; Frederick C. Hunter, of New York, and J. C. Peebles, of Reno, of the Western Ore Purchasing Co. About two years later, control passed to interests connected with the International Nickel Co. and the Dome Mines in Ontario. At present, Charles D. Kaeding, formerly manager of the Dome, is president and manager of the Candelaria; S. Rossiter, vice-president; Vivian Wimberly, secretary; J. C. Peebles, assistant secretary; with Frank M. Manson, and O. W. Jones, of Chicago, as additional members of the directorate.

The Candelaria or Columbus mining district of Nevada began to be the seat of mining operations in 1878. Large profits were made on the high-grade ore. Anything assaying less than 25 oz. per ton was passed by, the recovery being about 80 per cent. Silver in those days was always above $1 per oz. too. The cyanide process was of course unknown. The possibilities of further developing the old mines and treating the waste rock of the early days by modern processes appealed strongly to Mr. Kaeding, and the present plant is the result.

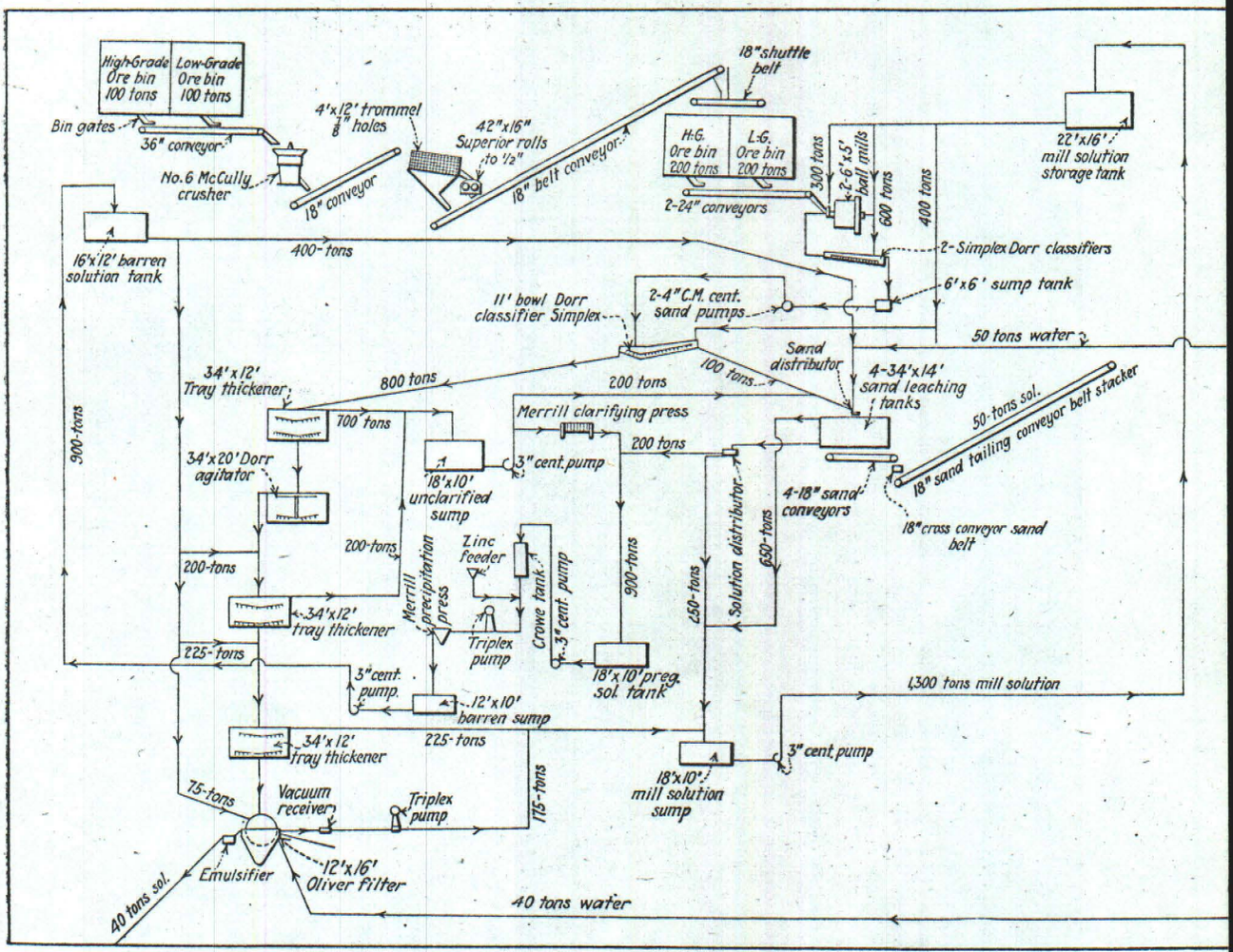
The district was described in Bulletin 735-A, recently issued by the U. S. Geological Survey. According to the Survey, the ore deposits are highly oxidized manganiferous silver veins, mostly several hundred feet in length and a few feet wide, broken up by complex fissuring. No silver minerals can be seen, and the only way the value of the ore can be determined is by chemical analysis. Zinc is present as calamine, possibly with some carbonate, and an antimonate of lead is also found. Sulphides are uncommon. The deepest workings are 1,353 ft., vertical. At this depth, which is still above water level, the ores are not so thoroughly oxidized, pyrite, resinous zinc blende, and minute needles of what is probably jamesonite being recognized. That silver is present as the chloride to any appreciable amount, as has been stated, is disputed. Tests on samples from the Lucky Hill mine failed to show any chloride whatever, and it is significant that chloridizing roasting was practiced in the early days. The gold content of the ores has always been negligible. The ore containing 60 oz. of silver, which was about the average in former days, is no more, that now available running about 10 to 15 oz., although in the last few months of 1922 some veins of the old rich ore have been found. There is said to be little hope at depth, either in grade or quantity of ore; the original grade of the hypogene ore probably decreased at depth, and also there was less enrichment from oxidation. So the new company must depend probably on material from the upper levels—on low-grade ore which was formerly considered not to be worth treatment, plus what high-grade ore further development will show. A large amount of sampling has been done, which has resulted favorably, though, from the nature of deposits, tonnages are exceedingly difficult to determine.

Ore is now being hauled from two mines, the Lucky Hill and the Northern Belle. The Lucky Hill ore is drawn about 2,600 ft. on a surface tramway by a gasoline locomotive, and is dumped into a raise which connects with the main haulage system on the eleventh level of the Northern Belle. The ore is hauled on this level to the crusher bin by a four-ton electric trolley locomotive, in two-ton Granby type cars.

THE FLOW SHEET OF THE NEW MILL

Reference to the accompanying flow sheet will make plain the various steps of the cyanidation treatment by which the silver is extracted. The crusher bin is of 200 tons' capacity, divided in the center for high- and low-grade ore. From the bin the ore is fed by belt conveyors through gyratories, trommels, and rolls as shown, and delivered to the mill bin. From the mill bin, belt conveyors take the ore to the ball mills, which are of Bethlehem Steel Corporation make. There are two chutes to each belt, so that high- or low-grade ore can be fed to either ball mill. The classifiers in closed circuit with the mills overflow at about 30 mesh, this overflow, after passing to a sump tank, being elevated 35 ft. by a 4-in. Campbell and Kelly sand pump to the Dorr bowl classifier (3 ft. x 21 ft. x 11 ft. bowl). A duplicate pump is kept in reserve.

The bowl classifier overflow goes to the slime plant



Flow sheet of the 300-ton cyanide plant of the Candelaria Mines Co., showing solution tonnages

and the rake product to the sand-leaching plant. The success of sand leaching of 30-mesh material will be of considerable interest. The ore as it reaches the bowl classifier contains about one-third of what is termed slime, and two-thirds sand, so that the respective capacity of the two plants is 100 and 200 tons per day.

The slime plant consists of one 34 x 12-ft. Dorr tray thickener, with 4-in. Dorrco diaphragm pumps, one to each tray, pumping to a 34 x 20-ft. Dorr agitator. One pump is held in reserve. From the agitator, the pulp flows by gravity to a second 34 x 24-ft. tray thickener, and is elevated by 4-in. pumps to a third thickener, with one pump to each tray, and a third held in reserve. The pulp flow from No. 3 thickener is by gravity to a 12 x 16-ft. Oliver filter, the filter cake being emulsified with water, 1 to 1, and discharged to the tailing launder.

The sand plant consists of four 34 x 14-ft. leaching tanks, each tank being fitted with four plugs. The sand is discharged through 12-in. holes in the tank bottom, after the plugs, which are 12 ft. long and tapered, have been pulled by a hand winch. The plugs leave a clear hole in the sand, and discharging can start right away without poking from beneath being necessary. Each line of two tanks has two 18-in. conveyor belts, on which the sand falls

also used. At present the precipitate is melted i Case crucible furnaces, but later a reverberatory f will be provided for this purpose.

The plant has so far not operated sufficiently l secure representative data on metallurgical r These will no doubt be forthcoming later. I a debted to Mr. W. Dunn, resident engineer at the erty, for the accompanying flow sheet and data.

The Gordon Process for Lead-Zinc O

Among the processes that have recently att attention for the treatment of complex lead-zin is the Gordon, or the ammonia process. Early was carried on by Bretherton and Wilson durir development of the metallurgy of the Afterth ores in California. It consists of an oxidizing followed by an ammonia leach. The leach liquo treated to remove base metals other than zinc a zinc is precipitated as a basic carbonate on disti of the liquors. The ammonia is reabsorbed and in the leaching unit. The carbonate produced ha calcined and burned for high-grade oxide by the W ill process. The merit of this process lies in the fa

BORAX

On Esmeralda's Vast Desert Flats a New Industry was Founded

South of Mina and west of Tonopah, almost touching the longest arm of the California border, a triangle-shaped block of highways looms prominently on the Nevada map.

The base of this triangle is formed by an east-west stretch of U. S. 6 between the desert outposts of Basalt and Coaldale, while the sides of the isosceles figure are defined by U. S. 95 and State Route 10. The triangle is centered, like a bull's-eye on a target, over hundreds of remote square miles where once transpired a fascinating but little-known chapter in western history—founding of the borax industry in the United States.

In the same area, at the same time borax was causing excitement, one of the most colorful mining episodes in Nevada's past was taking place.

The country in which these events were recorded contains some of the emptiest, most awesome scenery in all of Nevada. The landscape here is characterized by vast, seemingly limitless white desert flats set apart by sand hills and small mountain ranges, some of which are remarkable for their brilliant and varied colors. Looming like a high wall over all of this is the snowcapped range to the west, the White Mountains. This mighty range is linked to the Sierra system and one of its prominent peaks, 13,145-foot Boundary Peak, is the highest point in Nevada.

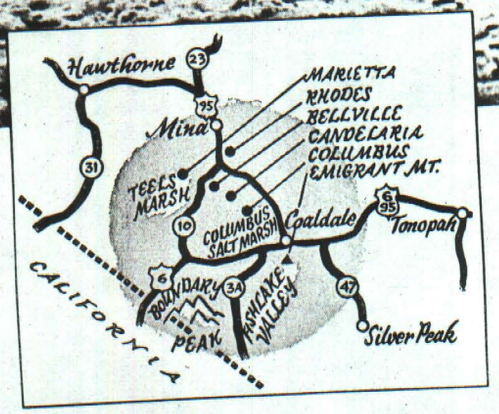
It was against this impressive backdrop some 90 years ago, on these white, level marshes (also called flats) that the borax industry was born. In its later phases the scene shifted from Nevada to a geologically related area—to Death Valley, California where the outlandish 20-mule-team wagons were invented and where originated the tales of men in the borax trade that have since taken a place in American folklore.

Silver, not borax, was the magnet which first attracted a thin trickle of humanity to the Nevada marshes. Miners disappointed with their luck in Virginia City had opened up the rich camps of Bodie and Aurora in 1860, and others of the disgruntled had gravitated further south into Esmeralda in search of silver.

Early in the 1860's, promising deposits had been found near Columbus Flat. Simultaneously, rich stores of salt were identified at Columbus and at nearby Rhodes (then called Virginia) Flat and

FROM: NEVADA HIGHWAYS & PARKS #2 1959

Country



TEEL'S MARSH

a thriving salt trade began. Loads were hauled to the mills at Virginia City, Austin, and later to Belmont, to be used in processing ore. Transportation of the mineral posed a serious problem which was solved when mining officials obtained a fleet of camels to cross the 100 miles of arid land to the mills. The camel experiment eventually proved unsuccessful, but for many years strings of camels would loom into sight on these deserts like graceful, gray apparitions.

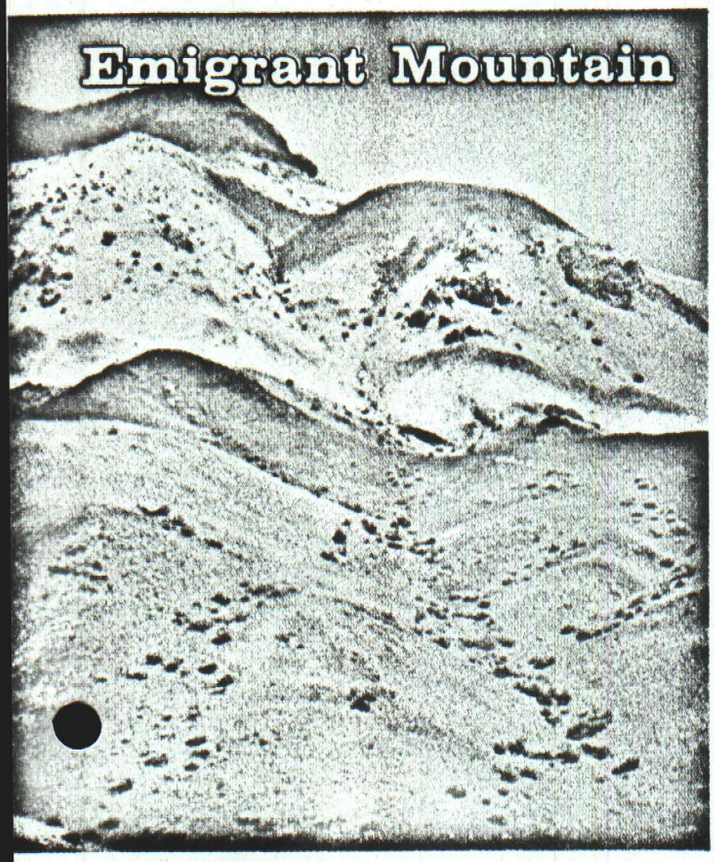
By 1865 the towns of Columbus and Candelaria were established and during the next decade an entire galaxy of hopeful, hardworking camps sprang up—Bellville, Metallic, Marietta and Rhodes being among the noteworthy. Inhabitants were mainly foreign-born miners, half-civilized Indians and dozens upon dozens of Chinese coolies imported to perform the drudgery. To live in any of these crude communities demanded optimism, stamina and a total disdain for all the niceties. Life in the borax country would have been completely impossible, in fact, had it not been that the challenge of the West was contagious and everyone had caught the fever.

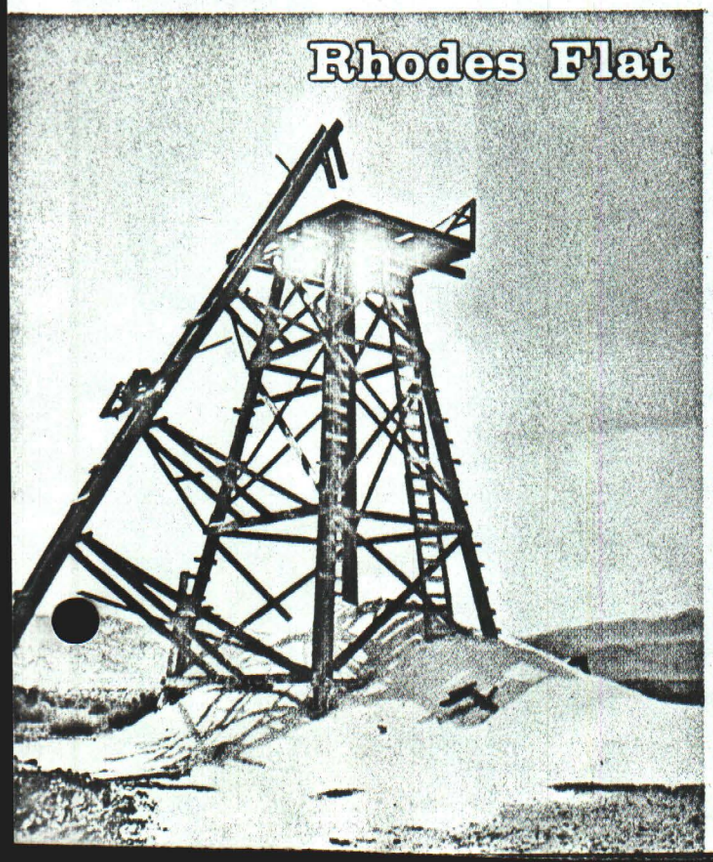
In the early 1870's, Columbus claimed a population of 450 and Candelaria, about twice this number. Both towns had newspapers and each boasted a cluster of business houses consisting of bars, sporting houses, stables, stores and a hotel or two. Drinking water was hauled in from the foothills of the White Mountains and peddled at a dollar a gallon, while scrub timber from the area was carted down to run the stamp mills.

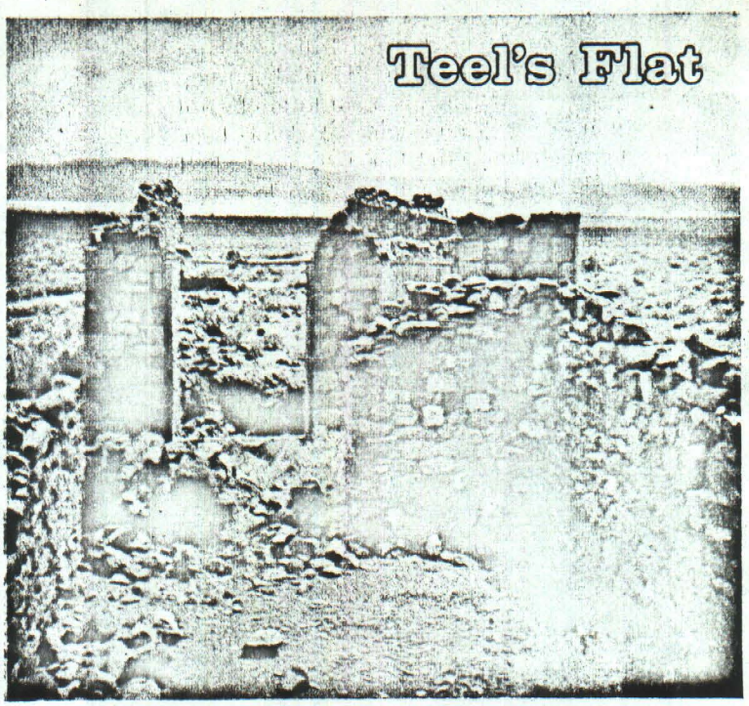
One of the mills at Columbus, the first in fact, had been moved in from Aurora by Samuel Youngs who formed a partnership with A. J. Holmes. Had the merger lasted, Columbus probably would not have faded from the scene as rapidly as it did. As it was, though, the two men quarreled and went to court and Holmes was forced out of the company. He got even. He managed slowly to gain control of the rich Northern Belle mine at Candelaria and then cut off shipments of ore to Youngs' mill at Columbus.

Meanwhile, a few miles to the north, on one of the alkali-encrusted flats called Teel's, the borax

Smith Triggered a Rush







story began in 1872. Actually, borax deposits had been identified the year before at Columbus and at Salt Wells and small shipments of cottonball borax were being sent to a company in California which for several years had enjoyed spasmodic success in processing the mineral in that state.

But it was on Teel's Flat that F. M. ("Borax") Smith found the deposits on which the industry was founded. Smith, a young man of 26, was eking out a living by prospecting and hauling scrub wood to the Columbus mills when he spotted borax at Teel's. Soon thereafter he and his brother, Julius Smith, obtained backing from a Chicago firm and set up a borax plant. By 1873, the works at Teel's were bigger than operations at Columbus, Rhodes and Fish Lake Marshes and, indeed, soon became the most important in the world.

Prior to the Nevada operations, borax was regarded mainly as a drug for which the demand was relatively limited, with supplies coming entirely from abroad. Following the discoveries in California, and those immediately afterward in Nevada, the price of the mineral took a fast nosedive, and the sudden availability of borax put the international market into a turmoil from which it did not recover for years. The secret—if it may be called that—of Frank Smith's success in borax was that he created a new market. He was one of the first American industrialists to recognize the value of a full-scale advertising campaign—one

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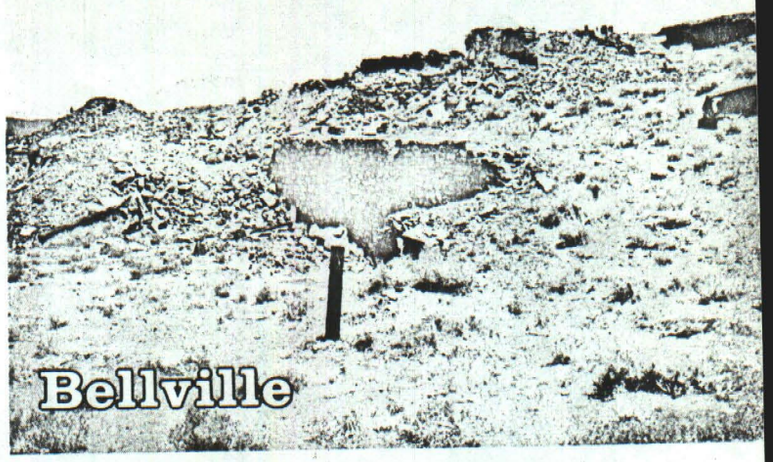
Center pages—Boundary Peak, most prominent landmark in the borax country and highest point in the state.

Setting for Mean Mining Camps



of the ways by which the American housewife learned about the powdery product Smith was selling and decided that she could no longer do without it.

Shortly after the Teel's plant was set up, Frank Smith and his brother assumed control of the company and remained in partnership until 1884. In the years intervening, Frank Smith supervised the expansion of his company during a period when the smaller companies in the area were feeling the pinch and slowing or closing down operations. By thus swimming against the tide, Smith strengthened his position and emerged in 1885 as the head of the two biggest companies there.

In spite of a degree of stability that the borax firms provided, the mining towns of Esmeralda were experiencing a dizzy period of ups and downs. The town of Columbus had practically folded in 1875 as a result of the war Holmes had declared on his former partner's mill and the diversion of ore away from it. When he boycotted Columbus, Holmes set up a new mill west of Candelaria and it was here, about 1873, that Bellville materialized out of nothingness.

Holmes was something of a visionary for those times, it appears, and spent vast sums in installing a water system to Candelaria and Bellville from a source in the White Mountains 13 miles away. Arrival of water in bone-dry Candelaria in 1882 was greeted by a celebration almost as hearty as the one which ushered the first train into camp just one week later.

The railroad into Candelaria was a branch of the ill-fated Carson and Colorado which neither began at the Carson nor ended at the Colorado and which, in fact, seemed to go nowhere in particular for no reason at all. William Sharon, one of the Virginia City tycoons who helped pay for the line between Moundhouse and Keeler, California, took a ride on it after the last section was put down in 1883, then told his partners bluntly what he thought about the project. "Gentlemen," he said, "We either built it three hundred miles too long or three hundred years too soon!"

Having both running water and running trains was for the residents of Candelaria a really heady experience. To Bellville, however, water meant the beginning of the end because with water, ore could now be milled closer to the mines in Candelaria.

For the borax operations in Nevada, the year 1882 also spelled doom; for this was the year that another, more profitable type borax—colemanite—was identified in California. Because it required a different, more complex refining technique, colemanite had no immediate effect on the marsh operation in Nevada. But it set off a series of events which climaxed when Frank Smith in 1890 formed the Pacific Coast Borax Company, predecessor of the present organization. Although this firm was soon to expand its influence to all major markets in the world, it kept an eye on Nevada and, in 1903, built the Tonopah and Tidewater Railroad which for many years was a powerful factor in the state's mining industry.

To all extents and purposes, though, the Nevada chapter in the borax story ended in 1890 when Smith closed down the marsh operations here.

At the same time, declining health of the silver mines spelled serious trouble and in the 1890's several of the former booming, lively camps failed altogether. And so, as it had earlier happened to Columbus and Marietta, it happened to Candelaria and all the towns in the area within a short time—silence, the utter silence which fell and remains today over all of the Nevada borax country.

TRAVEL TIP

To those who may want a close-up look at the borax country described in the above article, a note of caution is advised: Treat the desert roads here with the respect they deserve. Before turning off any of the hard-surfaced highways, inquire locally—at Mina, Coaldale or Tonopah, for example—to get directions and to verify that roads are in safe condition.

The remains of Candelaria are well worth seeing and the dirt road to the camp is marked at its junction with U. S. 95. You will cross intersecting roads before you reach the town—note carefully the turns you make.

The road into Columbus is unmarked and sandy. Since the old town has all but disappeared, a drive there is not recommended.

Remnants of Bellville can be seen on your left as you travel southwest on State Route 10, about five miles from the junction with U. S. 95. The dirt road to Marietta turns off to the north just before you get to Bellville.

Again, remember to check locally before trying these and other dirt roads into this scenic and historic borax country!

property in order to obtain a loan in order to purchase the interest of her said niece. * * "

It is doubtful if such allegation is a sufficient pleading of fraud, but in view of the evidence we need not pass upon this question.

11. The lower court found that on March 23, 1935, Mrs. Cavanagh had on deposit in a bank the sum of $5,793.24 and Mr. Cavanagh the sum of $3,623.71; that at the time of her death (November 25, 1946) she had on deposit the sum of $4,283.07 and at the time of his death (October 25, 1947) he owned stocks and bonds of the value of $37,083.71 and cash and cash items of the value of $19,345.64. It also found that for many years Mr. Cavanagh had been employed at a small salary and that for some years prior to his death he had been retired on a pension of approximately $100 per month. There is also evidence in the record that both Mr. and Mrs. Cavanagh promised appellants that they would "take care" of them.

This evidence falls far short of proof of fraud.

The fact that Mrs. Cavanagh had a bank balance of $5,793.24 does not mean that this sum or any portion thereof was not subject to prior commitments or that she was required to use her own funds to protect the interest of the other five owners of the property.

12. This phase of the matter is a perfect example of the necessity for requiring the strongest, clearest and most convincing evidence to establish fraud in this class of cases. There may have been reasons why Mrs. Cavanagh did not feel that she could use her funds to settle the Bernard action and these may have been known only to herself and her husband. It would have been extremely difficult for respondent to show what they were more than thirteen years after the transaction in question, with the lips of both decedents sealed. Certainly fraud cannot be imputed to her by showing that her husband had funds at the time in question and at the time of his death.

Since fraud was not established, parol evidence of agreements at variance with the written instruments, was clearly inadmissible.

While there are certain other assignments of error they are without merit and a discussion of them would unduly prolong this opinion.

For the reasons given the judgments and orders appealed from are affirmed, with costs.

HORSEY, C. J., and BADT, J., concur.

ESMERALDA WATER COMPANY, A CORPORATION, APPELLANT, *v.* MARTIN MACKLEY, CHAS. R. HAMMOCK, ET AL., RESPONDENTS.

No. 3569

July 25, 1949. 208 P.2d 821

1. MINES AND MINERALS.
   Tailings from treatment of ore by custom mill becomes property of the custom mill in absence of contract or other showing to contrary. St.1877, p. 90; N.C.L.1931–1941 Supp., sec. 9047.07, subds. 11, 12.
2. MINES AND MINERALS.
   Tailings deposited by a milling company from its own and custom ores upon open and unappropriated public domain and there impounded in a tailings pond by a dam or retaining wall remained property of mill, in absence of evidence of an abandonment, as against a subsequent placer locator of ground including the tailings pond. N.C.L.1929, sec. 9026; N.C.L. 1931–1941 Supp., sec. 9047.07, subds. 11, 12; St.1877, p. 90.
3. QUIETING TITLE.
   Plaintiff's possession of tailings deposited by milling company, from its own and custom ores, upon open and unappropriated public domain and there impounded in a tailings pond by dam or retaining wall under color of title for some 20 years, unless abandoned, afforded plaintiff sufficient warrant to maintain action to establish its title to the tailings as against a subsequent placer locator of ground, including the tailings pond, even if there was a break in plaintiff's chain of title from milling company. N.C.L.1929, sec. 9026; N.C.L.1931–1941 Supp., sec. 9047.07, subds. 11, 12; St.1877, p. 90.

APPEAL from Fifth Judicial District Court, Mineral County; *Taylor H. Wines,* Presiding Judge.

Action by Esmeralda Water Company against Martin Mackley and others involving question of ownership of tailings. From adverse judgment, the plaintiff appeals. **Judgment affirmed in part and in part reversed, and cause remanded with instructions.**

Cooke & Cooke and *Oliver C. Custer*, all of Reno, for Appellant.

Carville & Carville, of Reno, for Respondents.

OPINION

By the Court, BADT, J.:

This appeal presents for our chief consideration the question of the ownership of tailings deposited by a mining and milling company, from its own and custom ores, or from custom ores alone, upon open and unappropriated public domain and there impounded in a tailings pond by a dam or retaining wall, as against a subsequent placer locator of ground including the tailings pond. Lest this seem over simple in view of the well-recognized rule sustaining the title to and possession of such tailings (unless abandoned) as against a subsequent location, we must add that the trial court limited this protection to the operator of the mill, "*Who also supplied the ore from the mine owned by him,*" in the absence of allegation and proof of a "custom" in the district that title to the tailings should vest in the mill. The trial court's application of this limitation resulted in a judgment for the subsequent locators, the defendants below, which we are called upon to review. Other questions of importance are presented, but they are all incidental to such main question.

Appellant Esmeralda Water Company filed its complaint in the court below, alleging that about 1870 its predecessors in interest engaged in the mining and

extraction of ores from certain lode mining claims owned and possessed by them, and milled and reduced the same in a quartz reduction mill owned by them situate adjacent to its mining claims; that the tailings from said operations, at the price and under conditions then existing, were not of sufficient value to warrant further treatment, but to keep and conserve them for future treatment under more favorable conditions the tailings were deposited upon open and unoccupied mineral land of the United States in a tailings pond in Columbus mining district in what was then Esmeralda county; that its predecessors built a stone wall or embankment around the same and that at the close of its mining and milling operations the pond contained about 7,000 tons of said tailings; that the plaintiff and its predecessors had thereafter maintained continuous peaceful possession of the tailings pond, repairing the stone wall from time to time to keep the tailings from being washed down the canyon and lost, and that for many years prior to 1947 plaintiff and its predecessors continually kept a watchman on the mine, mill and tailings premises to guard and conserve the same, and paid all taxes levied and assessed thereon; that about 1929 plaintiff acquired title and ownership of the said tailings and of the Dorris and Lake placer claims located by its predecessors in 1896, which placer claims embraced the tailings pond; that the land is valuable only for the tailings, alleged to be of a gross value of about $15 a ton and of a net value of from $2.50 to $3; that on January 23, 1947 the defendants wrongfully entered upon the tailings reservoir, locating certain placer claims named the Victory and the Victory Fraction over the same for the sole purpose of appropriating the tailings, and removed and marketed about 1,000 tons and threatened to remove the remainder. Plaintiff prayed for an injunction and that its title be quieted to the tailings and reservoir premises, for the value of the tailings removed and for costs and further relief.

The defendants answered and denied the material allegations of the complaint and alleged that if plaintiff had any title to the ground it had forfeited the same for failure to perform assessment work or to file notice of its desire to hold its claims under the acts of congress relieving the owner from such assessment work. Defendants then alleged their location of the ground as the Victory and Victory Fraction placers, and prayed that plaintiff take nothing, that the temporary restraining order theretofore issued be set aside, and for costs and further relief.

Plaintiff replied and denied the forfeiture, denied the relocations asserted by defendants, and as new matter alleged that for a period of seventy-five years prior to 1946 "the custom existed with ore reduction mills, operating in the State of Nevada and more particularly in what is now Mineral county, and including the adjoining round-about area, of the custom mill crushing or otherwise reducing ores delivered to it by divers persons, deducting its charges, and the tailings and slimes being carried out by the custom mill operator, and the ownership thereof vested in such custom mill operator;" and that the title to the tailings became vested in plaintiff's predecessors and later in plaintiff. The trial court sustained a demurrer to such new matter saying: "The two basic facts which must appear in such a pleading are the existence of a custom and the facts which would entitle the pleader to claim under such a custom so as to vest in that person certain property or other rights. These, I think, have not been alleged and I hold, therefore, that the reply is not good as against the demurrer filed by the defendants." The learned trial judge further explained that the reply received no aid from the complaint because the theory of the complaint was that plaintiff's predecessors treated in the mill the ores produced from their own mines, resulting in the tailings in question, while the reply was concerned "with the idea of ores being delivered to plaintiff's predecessor in interest as a custom mill."

Appellant claims that the record is devoid of any testimony to the effect that the tailings resulted from any ores mined by third persons and reduced by the mill as custom ores. Respondents, on the other hand, claim that advertisements in local papers published at the time and admitted in evidence in the case show clearly that the mill owner at the time was operating a custom mill and advertising for ores to be treated. The sustaining of the demurrer to the reply is one of the errors assigned by the appellant.

Respondents insist that the tailings lost their character of personalty and become part of the real estate occupied by the tailings pond; that the public domain upon which the tailings pond was situate was subject to placer location after appellant had forfeited the ground by failing to perform its assessment work or to file notices of desire to hold; that the relocations of the defendants were lawfully made and entitled them to the tailings, as well as the ground embraced within the exterior boundaries of their relocations; that in any event plaintiff had failed to prove that the tailings were deposited as a result of the treatment of ores mined and owned by plaintiff's predecessors; that such tailings were the property of the original person who mined the ore; that they were milled by plaintiff's predecessors (although the deraignment of title to plaintiff is denied) as custom ores; that in the absence of proper pleading and proof of a custom that title to tailings from custom ores vested in the mill, such title remained in the original mine owners.

The trial court found (1) the plaintiff's corporate status since 1929; (2) that commencing about 1870 sundry persons were engaged in mining in the district; "that a custom milling process was located upon the above-described premises, and custom ores from several mining properties were milled in said custom mill and the tailings therefrom were *by the mine operators* permitted to flow from said mill into a gulch which is situated on the north side of the mining camp known as

Candelaria in said Columbus Mining District, and which gulch is embraced within the above-described legal subdivisions; that in said gulch at a point some 1,500 to 1,000 feet below said milling operations above referred to, there was constructed a rock wall of some 8 or 10 feet in depth at the deepest point which followed the contour of the ground across said gulch; that this rock wall was constructed some time prior to the year 1896, apparently for the purpose of retaining the tailings from said mill. Evidence does not disclose by whom said rock wall was constructed. Overflow and driftings from said tailings, due to wind and storm, was checked by a smaller rock wall from 70 to 100 feet below the main rock wall, which also followed the contour of said land at this last mentioned point; that said lower rock wall had been constructed some time prior to the year 1896.

"That during the years between 1870 and the early years of 1880 the town of Candelaria came into existence and was occupied in connection with an active mining camp which embraced several large and a few small mining operations in this area. A spur railroad line extended from the nearest main line railroad into Candelaria which spur railroad had a schedule of regular runs; that a water line extended for a distance of some 27 miles, heading in the White Mountains area and furnished water for the mining and milling operations in said Candelaria mining district, as well as for the town of Candelaria; that by the year 1900, and not later than the year 1903, the said mining camp had become inactive; that at this time the mill was not operating, nor was there any evidence that the mines were operating in said mining camp, and the mining camp to a great extent had been closed down."

(3) That J. A. Corkill located the Dorris placer, and Fred Corkill located the Lake placer in 1896 and that "no connection was shown to exist between any of the producers of said tailings and the above named locators" (by "producers of said tailings" the court was referring to the miners and not to the mill); that proofs of labor

were filed on the Dorris and Lake placers each year from 1901 to 1908 "by various claimants of said mining claims; that for 1910 proof of labor was filed by Esmeralda Water and Milling Company, which same company filed a notice of desire to hold the same in 1917; that one Jarmouth filed such notice in 1918 for the Candelaria Mines Company; that from 1922 to 1926, inclusive, similar proofs were filed on behalf of Esmeralda Water and Milling Company and the Candelaria Mines Co.; (4) that the Corkills in 1899 conveyed the Lake and Dorris to one Sutherland, who in 1900 conveyed to one Bonbright, who in 1907 conveyed to Esmeralda Water and Milling Company, which company, through its trustees in 1929, conveyed to plaintiff; that no assessment work was performed or proofs of labor or notices of intention to hold filed after 1926, by reason whereof they became subject to relocation; (5) that Mackley and Hammock validly relocated the ground in 1946 and 1947 as the Victory and Victory Fraction placers; (6) that the plaintiff had forfeited its rights to the Dorris and Lake long prior to the time that the Victory and Victory Fraction were located, and that the latter relocations "were and are valid and subsisting relocations of portions of the Dorris and Lake placer mining claims forfeited by the plaintiff herein"; (7) "that plaintiff failed to substantiate by proof the allegations of its complaint and defendants have shown by proof the relocation of valid and subsisting mining claims known as the Victory Placer Mining Claim and the Victory Fraction Placer Mining Claim."

Appellant insists that the evidence is insufficent to show a forfeiture. We feel it unnecessary to review the testimony on this point. It is quite lengthy and contains many controverted facts. There was, however, ample testimony to justify the court's conclusion that the land upon which the tailings pond was situate had become forfeited by appellant, was subject to re-entry and was properly relocated by defendants.

It will be noted from the findings quoted above that

this is the only issue upon which the court made findings, except for the single finding that plaintiff had failed to prove the allegations of its complaint. Such blanket finding is of little assistance.

As hereinafter indicated plaintiff undoubtedly stated a cause of action for the recovery of the tailings irrespective of the ownership of the ground.[1]

The only conclusion of law drawn by the court from the foregoing findings was "that the defendants must prevail in this action, and it is ordered that the plaintiff take nothing by reason of its claim." The court made no findings on the question of the ownership of the tailings, or whether the title thereto, if vested in plaintiff and its predecessors, had been retained, disposed of or abandoned. It did not *find* that there had been any abandonment, nor did it *conclude* that there had been an abandonment. In ruling on objections to the proposed findings, it struck out the statement that the tailings had been abandoned. The reasons for this appear in the twenty-page "Decision on the Merits" filed by the learned district judge. After recognizing the rule of Ritter v. Lynch, C.C., 123 F. 930, and Goldfield Consolidated Milling & Transportation Co. v. Old Sandstorm Annex Gold Mining Co., 38 Nev. 426, 150 P. 313, that title to tailings is not lost by their deposit upon open and unoccupied public domain if the owner manifests an intention to retain title and control of the tailings, the learned district judge restricts this principle to a case in which a miner extracts ores from his own mines and treats such ores in his own mill, and holds that the proper application of the principle of such ownership of tailings "requires a showing in this instance at least, of production of the tailings from the operation of the

[1] "§ 9026, N.C.L. An action may be brought by one or more persons against any other person or persons for the purpose of determining an adverse claim which the latter makes against the former, for money or property, upon an alleged obligation or liability of any nature or kind, or upon any claim for an accounting, or for any other legal equitable relief."

mill owned by the mine owner, who also supplied the ore from the mine owned by him." After finding that there was no proof of custom in the district which would make the mill the owner of the tailings, the learned district judge repeated: "The plaintiff must in some manner connect itself with the producer of these tailings in order to succeed on the theory that these tailings are personal property which has not been abandoned."[2] As we have seen, the court did not pass on any issue of abandonment. Respondents likewise insist that, "The question of abandonment does not enter into this case." This is later emphatically repeated, and it is again stated by respondents: "The lower court eliminated the theory of abandonment on the evidence taken as a whole and rendered its decision upon the theory of forfeiture for failure to protect the Dorris and Lake claims through proper assessment work." We agree that this is a proper analysis of the lower court's theory in its written opinion, its findings, its conclusion, its judgment, and its order denying the motion for a new trial. With this theory, however, we are unable to agree.[3]

In Ritter v. Lynch, C.C., 123 F. 930, 932, plaintiff laid claim to certain tailings on the basis of his location of

[2] The learned district judge further stated: "For a case on this point see Stanley v. Sierra Nevada Silver Mining Company, [C.C.], 118 F. 931." The reference is apparently in error. That action was one for the conversion of a deposit of tailings of the value of $5,000, and the opinion referred to held the complaint good as against a demurrer which attacked the sufficiency of the allegation of ownership of the tailings. Judge Hawley, citing a number of cases, held that the allegation that plaintiff was *lawfully possessed* of the property was sufficient. Citing Rogers v. Cooney, 7 Nev. 213, as a similar case, the federal court quoted the holding of this court that it was only necessary "for the plaintiff to prove a rightful possession in himself. It is not incumbent on him to establish any title beyond that." The authority is not even remotely in point on the proposition of law stated, and it is the only authority cited in support of such point.

[3] Respondents say further: "Abandonment plays no part in this case except insofar as the action of the miners who delivered the ore to the mill did not claim the tailings therefrom after they were discharged through the mill."

the land on which the tailings had been impounded. The defendants claimed that the tailings were their personal property at the time of plaintiff's attempted location. Judge Hawley said: "Did the defendants, or those under whom they claim, prior to and at the time of the location of the ground by plaintiff as a placer mining claim, have any valid right of ownership and possession, or right of possession, to the tailings situate on the land in controversy, and, if they acquired any such right, has it been maintained, and was it valid at the time the plaintiff attempted to acquire the title to the ground, and at the time he was ousted therefrom? The defendants were not seised in fee of the title to the land. Their ownership and right to the tailings and possession of the land covered by the reservoir in which the tailings were impounded is not necessarily dependent upon their having the legal title to the land. It rests upon other grounds. It appears from the testimony on behalf of defendants that Michael Lynch, prior to 1868, obtained the title to about six acres of land known as the 'Hoosier State Millsite,' situate above the land in controversy in this action; that he was the owner of a mill upon said land, and operated the same for the crushing and reduction of ore from the Comstock lode; that in the natural working of said mill the tailings therefrom, unless restrained, would run down the canyon, and become lost to the owner thereof; that, in order to impound the same, he constructed a reservoir or bulkhead, situate in the canyon or ravine a short distance below the mill on the ground in controversy, of such size and dimensions and in such manner as to confine the tailings conducted by him from said mill, and enable him to keep and preserve the same from waste or destruction until such time as they could profitably be worked or sold. The reservoir was principally built of the tailings, banking them up in a wet state at the lower end so as to become solid enough to keep the tailings running down the ravine in the reservoir. This reservoir was built upon vacant, unoccupied public land of the United States."

The learned district judge for the District of Nevada then quoted with approval Jones v. Jackson, 9 Cal. 237, to the effect that when a place of deposit for tailings is necessary for the fair working of a mine, there can be no doubt of the miner's right to appropriate such ground as may be reasonably necessary for this purpose, provided he does not interfere with pre-existing rights. It is true that in Jones v. Jackson reference is made to the deposit of the tailings by "the miner," but the Ritter case is patently not so restricted, as it is stated definitely that the Lynch mill was operated "for the crushing and reduction of ore from the Comstock lode." If there is any indication in the case one way or the other, it is that the ores of various mines on the Comstock lode were treated in the Lynch mill. It is interesting to note that in the Ritter case, as in the present case, two distinct issues were raised, one growing out of the possessory right to the ground, the other growing out of the ownership of the tailings. In the Ritter case, however, the court (inversing the order of the instant operation) disposed of the issue of the possessory right to the ground and decided the case upon the issue of the ownership of the tailings, holding that such ownership persisted unless there had been an abandonment. The court then reviews the factual situation at length, which is astonishingly similar to the state of facts in the present case—the deposit of the tailings on public domain; the construction of a bulkhead; the solidifying of the tailings, which maintained them fairly intact even without the bulkhead; the employment of an agent to look after the property "including the ground in controversy"; the testimony of the agent as to activities to prevent the tailings from being washed away; the doing of some work on the reservoir; the granting of permission to other parties to sample the tailings with a view to lease or purchase; the occurrence of a high freshet which washed away a portion of the tailings; the location of the tailings pond below the mill site, etc. There was a total absence of any reference to a custom as to the

ownership of the tailings. The placer location over the tailings pond was ostensibly to obtain the tailings, although, the ground itself may have been otherwise somewhat mineralized. The court then devotes itself to the question of abandonment and, in holding there was no abandonment, says: "Abandonment is a question of intent, to be determined by the special facts in any given case. In order to constitute abandonment of the right of possession which the defendants had acquired, there would have to be shown a clear and unequivocal act or acts of the parties, showing a determination on their part to surrender their right to the property. There must be the concurrence of the intention to abandon and the actual relinquishment of the property, and of their right, dominion, and control over it. The record clearly shows—independent of the testimony of Mrs. Lynch that she had never in any manner, shape, or form intended to abandon or release her claim to the tailings—that the property was never abandoned by the defendants. The facts disclosed by the record are, in my opinion, sufficient to show that the defendants have preserved their ownership of the tailings and possession of the land upon which they were impounded, and that plaintiff did not, by his acts, acquire any right or title thereto as against the defendants."

In Goldfield Consolidated Milling & Transportation Co. v. Old Sandstorm Annex Gold Mining Co., 38 Nev. 426, 150 P. 313, 315, we are left with no uncertainty as to the fact that the tailings resulted from ores milled by a custom mill. Said this court, through COLEMAN, J.: "The respondent alleges in its complaint that it is organized for the purpose of milling, and reducing by other methods, gold, silver and other ores, and that it now is, and for a long time past has been, engaged in the carrying on of the said business of milling and reducing ores; * * * that in the operation of the said mill there are discharged therefrom large quantities of pulverized rock and earth, commonly known as 'tailings,' * * *

valuable and are being conserved by respondent for re-treatment." The tailings were deposited within retaining dams on the respondent's own property, but had overflowed the same and respondent sought to condemn a portion of appellant's property for the storage of tailings. Among other defenses, the appellant alleged that respondent had abandoned the tailings and that the same had become the property of appellant. This court said: "* * * the lower court found it necessary to determine also the question of the ownership of the tailings deposited thereon. It appears from the evidence that respondent, after treating the ores *which it had purchased*, deposited the tailings upon a portion of its own land which lies in a gulch, through which water flows at times in great volume and with great force. It also appears from the evidence that it was necessary for respondent to keep a man employed at all times to dam up the tailings so that they would not wash away and be lost, and as a consequence of this damming process the tailings eventually were forced upon the land of appellants. It also appears that these tailings are valuable and can be re-treated profitably. Respondent seeks to re-treat these tailings, and to do so finds it necessary to erect a tram to convey them to its mill. Appellants claim that they are now the owners of the tailings. *Having purchased the ores from which the tailings came*, respondent was the owner of them at the time they were deposited upon the lands of appellants." (Italics supplied.)

The court then quotes at some length from Mallett v. Uncle Sam Gold & Silver Min. Co., 1 Nev. 188, 90 Am. Dec. 484, to show that there has been no abandonment—"the intention is the first and paramount object of inquiry; for there can be no strict abandonment of property without the intention to do so." See cases therein cited, including Ritter v. Lynch, supra. Deciding then that the lower court had properly held that

there was no abandonment,[4] the court in introducing its discussion of the question of the right to condemn the land in question, says: "Being, then, the owner of the tailings, * * *." There was no proof of custom as to ownership of the tailings. They were the property of the custom mill, although they were the direct result of the treatment of ores supplied to the mill by the mine operators. The milling company was apparently not even authorized by its charter to engage in mining. See, also, Rhodes Min. Co. v. Belleville Placer Min. Co., 32 Nev. 230, 106 P. 561, 118 P. 813, in which, as in the present case, conflicting claims were asserted to certain tailings, and the titles asserted grew both out of ownership or possessory right to the land and out of ownership of the tailings as personal property. Ritter v. Lynch is there characterized by this court as upholding the title to tailings in the owner, who had retained them in a reservoir against the locator of the placer claim. The "owner," as we have seen, was the owner of the mill.

In Guild Gold Min. Co. v. Mason, 115 Cal. 95, 46 P. 901, the plaintiff mine owner sued the chlorination works on an alleged contract to reduce plaintiff's ore for $17 a ton and to return to plaintiff at least 90 percent. Plaintiff maintained that less than 90 percent was recovered and estimated that there was still $350 in the tailings. After holding that the plaintiff could possibly recover if a large amount had been lost in the tailings by reason of fraud, lack of skill, carelessness or neglect (which was not pleaded by the plaintiff) the court said: "Nor is there any allegation or evidence of any custom or agreement

[4]In holding that the district court properly found that there was no abandonment this court said: "It conserved the tailings by having a man on hand to keep a dam built up so as to prevent their being washed away, which it is not likely it would have done had it intended abandoning them. The testimony was to the effect that respondent did not intend to abandon the tailings." The testimony against the theory of abandonment is stronger in the instant case than in the Goldfield Consolidated case. In re Waters of Manse Spring, 60 Nev. 280, 108 P.2d 311.

that the tailings should belong to or be delivered to the plaintiff." The intimation to the contrary would seem to be clear, namely, that without such allegation or evidence the tailings would be the property of the reduction plant. In O'Keiffe v. Cunningham, 9 Cal. 589, it was recognized that open ground used as a place of deposit for tailings by another was subject to location, but that such subsequent location would be subject to the prior right of deposit.

In 1939 most of the important questions raised in the present appeal and discussed in the foregoing authorities were brought before the supreme court of Montana in Conway v. Fabian, 108 Mont. 287, 89 P.2d 1022, 1024. Conway and another sued Fabian and others "to try title to mill tailings deposited on placer mining ground claimed by defendants, recover damages for entry on, removal of, and waste of, such tailings, and enjoin trespasses on plaintiff's property by defendants, who filed a cross-complaint to quiet title to placer mining claims on which the tailings were situated." It will be noted that in general this was the issue presented by the plaintiff's complaint here. Conway and his predecessors were the owners both of the mining properties and of the mill that concentrated the ores, for which reason respondents insist that the case is not in point. It is, however, not so lightly disposed of. As in the present case, the tailings contained mineral values, which fact was known to the owners, but the metallurgical processes and primitive milling machinery of the time (1881 to 1898) did not permit recovery of such values, and the tailings were impounded for possible future working, bulkheads being constructed and maintained for the purpose. The trial court found that since the depositing and impounding of the tailings, plaintiffs and their predecessors had been in actual open, continuous and exclusive possession, *and that they had not at any time abandoned the same.* As in the present case, some had been washed away by rain and storm but were otherwise intact. The claim of the

defendants to the tailings was predicated upon their location of certain placer claims embracing the tailings dump. These placers had been regularly located and the annual representation work kept up. The supreme court of Montana approved the finding of the trial court that, although the placers of the defendants were their property, the defendants were nonetheless "not the owners nor in possession of the tailings * * * impounded on the claims * * *, the plaintiffs and their predecessors in interest having retained possession and ownership thereof at all times as personal property." Recognizing the fact that some of the tailings, not included in the tailings pond proper, had spread over the ground or had become imbedded in the soil, such part of the tailings was held to have become a part of the real estate included within the defendants' placer claims, citing Rogers v. Cooney, 7 Nev. 213. The Montana court stated: "The most important question in this suit is undoubtedly the property classification to be given to the tailings * * *," and holds definitely that tailings placed on the ground from milling operations by their owner prior to a placer location and which have not been abandoned are not within the rule or principle of Rogers v. Cooney; but that the owner of a subsequent location takes subject to the right of this prior deposit. Throughout the opinion it is emphasized that the ownership or right of possession of the tailings maintains unless abandoned. The building of the barriers, the subsequent repair thereof, the exhibiting of the dump to prospective purchasers or lessees, the taking of samples, are all cited as evidence that the dump was personal property and that it had not been abandoned. The Montana court cites as authority O'Keiffe v. Cunningham, 9 Cal. 589; Jones v. Jackson, 9 Cal. 237; Ritter v. Lynch, C.C., 123 F. 930; and Goldfield Consolidated Milling & Transportation Co. v. Old Sandstorm Gold Mining Co., 38 Nev. 426, 150 P. 313, all of which we have discussed, supra.

1. If Ritter v. Lynch and Goldfield Consolidated Milling & Transp. Co. v. Old Sandstorm Gold Mining Co. are not enough to establish the conclusion that in this state at least the tailings from the treatment of ore become the property of the custom mill (in the absence of contract or other showing to the contrary), other things strengthen this conclusion. The construction and maintenance of the impounding dam, negotiations for sale or lease, the sampling and other acts appearing in the record, some of which are referred to herein, all were, as we have indicated, sufficient to show possession in appellant. They undoubtedly show the exercising of acts of ownership. Such possession and acts of ownership are by our statute presumptive evidence of title. Among the disputable presumptions provided by our statute are: "That things which a person possesses are owned by him; that a person is the owner of property from exercising acts of ownership over it, or from common reputation of his ownership." Stats. of Nevada 1931, p. 61, sec. 558g, subds. 11 and 12, N.C.L.1931–1941 Supp., sec. 9047.07, subds. 11, 12. In effect since its enactment in 1877 has been the following provision in this state:

"Preferred Lien on Ore.

"Sec. 1. Where ore is delivered to a custom mill or reduction works, and either sold to said mill or reduction works, or worked at a percentage, the party or parties so furnishing ore to mill or reduction works shall have a preferred lien upon the bullion product and upon the ore not reduced, as against attachment and other creditors." Stats.1877, p. 90.

The preservation of such a lien in the miner furnishing the ore to the mill is inconsistent with any theory other than that the title passes to the mill. If still further evidence is needed on this point, it is supplied by the record itself.

The learned district judge's written opinion referred to the ownership of the water as well as the ownership

of the mill by Candelaria Water Works & Milling Company, Ltd., which in 1886 and in 1891 advertised in local papers, seeking business in the reduction of ores. There were introduced in evidence contracts entered into in those years by such Candelaria Company with the Georgene Mining Company of New York and with the Holmes Mining Company of San Francisco.[5] In these contracts we find that the mining companies agreed to "*deliver*" at the mill daily certain specified tonnages of ore; that none of their ore would be "*sold or disposed of* to any *other* person." The mill agreed to reduce the ore on a sliding scale of charges depending upon the assay value of the ore. The mining companies agreed that none of the ore should "be *reduced or otherwise treated elsewhere.*" The agreement provided for arbitration "on any question or difference as to the construction or meaning" of any terms of the agreements or the rights, duties or liabilities of the parties thereunder. The apparent interchangeable use of words in these contracts whereunder the miners "delivered" their ore to the mill and agreed that no ores should be "sold or disposed of" to any other person and should not be "reduced or otherwise treated elsewhere," with no reservation of any interest in the tailings, with no claim ever made by these or any other mining companies to any part of the tailings, with no application for arbitration of any claim to ownership of any part of the tailings, with the long lapse of time without any such claim, with the impounding and continuous possession of the tailings by the mill, the ownership of such tailings by the mill would seem well and substantially indicated. This is strengthened by the advertisements themselves published in 1886 and 1891, introduced by the defendants, entitled

[5]The Georgene and Holmes properties were later operated under the management of Argenta Mining Co., or combined to own the Argenta. From prior to 1922 to 1946, a watchman and caretaker looked after these properties as well as the waterworks, tailings pond, etc., of Esmeralda Water and Milling Co., and later, Esmeralda Water Co.

"Custom Ores" and advertising that the mill would "*pay for* silver ores" under a specified sliding scale and that the silver would be "*settled for*" at New York quotations. Further the defendants themselves also introduced their report of "net proceeds of mines" under which they were required to pay taxes on the proceeds of the tailings they had shipped. This report, submitted on a printed form supplied by the Nevada Tax Commission showed, among other things, that the tailings were "*sold*" to the American Smelting & Refining Company. This recalls, to all who have had occasion to look, pictures of the vast slag and tailings dumps, embracing hundreds of thousands of tons, resulting from the treatment by the large smelting and refining companies of ores from mines scattered throughout the west.

This apparently universal custom, considered in connection with the physical and realistic aspect of transactions between the miner and the mill, may account for the total lack of any adjudicated cases dealing with the ownership of tailings in any controversy that raised the question as to whether the producer or the mill owned the tailings. In all cases, as in the present case, the tailings resulting from the reduction by the custom mill of the ores of the various producers are hopelessly confused. Segregation of the tailings for return to the various producers would be virtually impossible. Instead of a sale to the mill, each transaction would involve a most complicated bailment. The confusion and commingling of the tailings would be both in lateral layers or strata and also in distribution over the area of the tailings pond. Nor would the statement of one of defendants' witnesses that different colors of the tailings indicated the reduction of ores from different mines be of much assistance in segregating portions of the intermingled mass.

As a matter of fact during the period from 1940 to 1942 plaintiff leased the tailings pond to people who were interested in extracting only the quicksilver. This

quicksilver was not the product of any ores supplied to the mill for treatment, was apparently not mined at all in the district, but was purchased, furnished and used by the mill itself in the process of recovering values from the ores that it treated.

2. Respondents contend, and it was apparently the holding of the trial court, that because the Corkill locations of the Dorris and Lake placers were not contested and the Corkills and their successors in interest (eventually the plaintiff herein) filed proofs of labor thereon for many years, this is in some way a recognition by plaintiff and its predecessors that the tailings, embraced within the exterior boundaries of these two placers, were part of the realty and belonged to the owner of the placer location. This is not necessarily so. The Corkills did not attempt, so far as anything in the record shows, to remove any of the tailings. The owner of the tailings could well have been justified in concluding that these placer locations were made subject to its rights to remove its tailings. Conway v. Fabian, 108 Mont. 287, 89 P.2d 1022; O'Keiffe v. Cunningham, 9 Cal. 589. The mill company might, as suggested by Judge Hawley in Ritter v. Lynch, C.C., 123 F. 930, have desired to pursue the safer course in actually acquiring the possessory right to the placers and for such reason have purchased or otherwise acquired the Corkill locations.[6]

It is important to note the following paragraph of the

[6]The Corkills' possessory rights growing out of their location of the Dorris and Lake claims in 1896 lasted only till they conveyed to Sutherland in 1899, who, the following year, conveyed to Bonbright. (Sutherland was the treasurer and general manager of Georgene Mining Company, all of whose ores were processed at the mill under the contract of 1886, and was president of the Holmes Mining Company, all of whose ores were processed through the mill under the contract of 1891. The mill on those dates operated as the Candelaria Water Works and Milling Company, Ltd., whose registered office was at Drapers Garden, Throgmorton Street, London.) Although the Georgene Mining Company, the Holmes Mining Company and the Candelaria Water Works and Milling Company, Ltd., were separate corporations, their stock was owned by the same people. Though Bonbright and Company (a partnership, comprising

learned district judge's opinion (Italics supplied): "In connection with this mill and its operation it should be noted that as originally there was in Candelaria no reliable or sufficient source of water, it was necessary in order to provide water for the operation of the mill and for the camp to bring water some 27 miles by means of a pipe-line from the White Mountains where certain water rights had been acquired previously. The testimony and other proof indicate that the title to the water

some ten partners, residing, respectively, in London, New York, and Colorado) did not quitclaim to Esmeralda Water and Milling Company till 1907, proofs of labor were filed every year from 1901 to 1910, and later. In 1902 one A. G. Draper, when filing proof of labor for the Lake and Dorris, did so as agent of the Calendaria Water Works and Milling Company, Ltd., whose ownership of the mill, as we have seen, long antedated any title attaching by reason of the acquisition of the Corkill locations. Again in 1903, in filing proof on the Lake claim, he did so as agent for the same Calendaria Water Works and Milling Company. F. G. Grube, in filing proof of assessment work for 1904, likewise did so as agent for the same company. For the assessment work for 1905 Grube acted as the agent for both the Calendaria Water Works and Milling Company and Bonbright and Co., and the same the following year. His proof in December 1907 for the work that year was as agent only for Bonbright and Co., but his proof in 1908 was as agent for Esmeralda Water and Milling Co., likewise repeated in January 1910 for the assessment work of 1909. During the 1920's, proofs seem to have been filed indiscriminately for Esmeralda Water and Milling Company and for Candelaria Mines Company. In 1912, when about 2,000 tons of ore were run through the mill in a six months' period, the tailings from which were discharged into the same tailings pond, Grube was in charge as "general manager of the Argenta Mining Company and the Esmeralda Water Company." In this capacity he actually lived in Calendaria from 1903 to 1922, and made monthly trips from his new residence in California to Calendaria from 1923 to 1942. The two corporations were under one management, and the mill and tailings pond of Esmeralda Water and Milling Company was the same that had been operated before his time by the old Calendaria Mining Company. We see in the derivation of plaintiff's title from the Corkill placer locations nothing inconsistent with the claim to, and possession of, the water works, water rights and tailings pond (which covered a period prior to and at the time of and continuing beyond the Corkill locations) independently thereof or in addition thereto, and deriving, whether directly or indirectly, from Calendaria Water Works and Milling Co. in 1886. The official Mineral county tax list for 1947 assessed to the appellant herein, improvements, pipe lines, etc., still identifiable with the original properties owned by Calendaria Water Works and Milling Company.

works which as above stated included a pipe-line, a reservoir, and water rights, *was in the operators of the mill.* As the mining activities at Candelaria began to drop off, the water works remained a valuable property and it was necessary to employ men to keep it in a condition of repair. The plaintiff finally succeeded to the ownership of the water works in 1929 from the Esmeralda Water and Milling Company and kept the water works operating until 1942 when its agent Mr. A. R. Nelson ceased living in Candelaria. In 1944, 12 miles of the pipe-line was sold to the State of Nevada together with water rights, with the right reserved in the vendor to re-purchase the same on specified terms at any time within 10 years from the sale."

As noted by the district judge, the Esmeralda Water and Milling Company owned the water rights. It also owned the mill, under the deed from Bonbright and others in 1907. But the deed from the trustees of Esmeralda Water and Milling Company to the Esmeralda Water Company, the plaintiff herein, also included the water rights *and the mill "and also the pile or bed of tailings located on the Lake and Dorris placer mining claims."* When Esmeralda Water and Milling Company leased the property to Jarmouth in 1918, including the mill, mill site, buildings, etc., it expressly reserved the tailings. Other instruments in the record likewise treated the tailings as personal property segregated from the real estate. It is also significant that plaintiff still is the owner of an option, running into the year 1954, to buy back from the state the water rights and twelve miles of pipe line sold to it in 1944.

3. Respondents at some length attack the deraignment of plaintiff's title, not only with reference to ownership of the ground in question but also with reference to ownership of the tailings, even if the same are considered personal property. We think it clear from the opinion of the trial judge that appellant's claim to the tailings traces back to the original mill, but even a break

in that chain of title would not destroy appellant's possesory right under color of title for some twenty years. Such possession, unless abandoned, affords it sufficient warrant to maintain this action. Risch v. Wiseman, 36 Or. 484, 59 P. 1111, 78 Am. St.Rep. 783; Schuman v. Venard, 110 Colo. 487, 136 P.2d 289; Stanley v. Sierra Nevada Silver Mining Co., C.C., 118 F. 931.

Respondents contend that "the lower court did not accept plaintiff's proof which sought to establish that it and its predecessors impounded the tailings upon the ground or preserved them against being lost * * * the proof on the part of defendant and plaintiff in this respect was conflicting and the court chose to adopt the proof submitted by defendants as carrying the greater weight in this respect." A careful examination of the record, however, shows that this is not the case. The trial court made findings only as to the forfeiture of the plaintiff's Dorris and Lake claims and the lawful relocation of these claims by the defendants as the Victory and the Victory Fraction. It made no findings or conclusions whatsoever as to the preservation by the plaintiff and its predecessors of the tailings as personal property. In its opinion, however, the court definitely stated that the tailings came from the mill, that the retaining wall had been constructed for the purpose of containing the tailings, that overflow and driftings over the retaining wall were checked by the lower retaining wall and that the tailings, except for some that were lost by wind, erosion and storm waters, are still concentrated in the tailings pond. It was largely in view of this situation that we were moved to state that the court's general finding No. 7, "that plaintiff failed to substantiate by proof the allegations of its complaint and defendants have shown by proof the relocation of valid and subsisting mining claims * * *" was of meager help. In view of findings one to six, having to do entirely with the location, forfeiture and relocation of the claims, this finding must be considered as attaching only to that

feature of the case. The court did not find that the plaintiff had not maintained its possession of the tailings pond. It did not find that the plaintiff had abandoned its possession or ownership of the tailings pond. It *refused* to find an abandonment of the tailings as personal property, and confined itself entirely to the question of forfeiture of the Dorris and Lake claims, and respondents, in seeking to uphold the judgment in their favor, under the trial court's theory, still insist that the question of abandonment is not in the case. There being no abandonment of the tailings by plaintiff and its predecessors, plaintiff is still the owner and entitled to the possession thereof.

The final disposition of the case on appeal involves some difficulty, as it is not the province of this court to make original findings. On the other hand no purpose could be served by directing a new trial for the purpose of permitting the trial court to make findings which it has already clearly indicated. It is clear that the judgment must be reversed on account of the trial court's erroneous decision that plaintiff's title to the tailings fails because the tailings were owned by the producers of the ores from the mines and not by the mill. It is our understanding from the record, however, that the trial court did not find, in fact refused to find, that plaintiff and its predecessors even abandoned the tailings or abandoned their claim of ownership of the tailings, other than through the court's erroneous conclusion that the tailings lost their character of personal property and became real estate, by reason of the so-called recognition by plaintiff of the Corkill locations. With our conclusion that the tailings were personal property belonging to Candelaria Water Works and Milling Company, and that plaintiff's title, or at least its possessory rights, attached thereto prior to the Corkill locations, and that such possessory rights were not destroyed by the Corkill locations in 1896, and in the absence of a

finding by the trial court, as a result of clear and convincing proof, that the tailings and plaintiff's possessory rights thereto had been abandoned, the case ends.

The trial court's findings to the effect that the Dorris placer mining claim and the Lake placer mining claim became forfeited by reason of failure of the owners to perform the annual assessment work thereon or to file notice of intention to hold said placer mining claims under the provisions of the acts of congress, for the years 1926–1945, and that said claims thereby became subject to relocation, and that the defendants Martin P. Mackley and Charles R. Hammock validly located the Victory placer mining claim and the Victory Fraction placer mining claim and that the same were at the time of the filing of the complaint herein valid and subsisting relocations of portions of the forfeited Dorris and Lake placer mining claims, are hereby approved. The judgment insofar as it adjudges that said defendants are the owners of the said Victory and Victory Fraction mining claims and that the same are valid and subsisting placer mining claims, is hereby affirmed. The judgment insofar as it fails to adjudge that the defendants' ownership of the Victory and Victory Fraction placer mining claims is subject to plaintiff's ownership and right to the possession of the tailings pond described in the complaint, is reversed. The case is remanded to the district court with instructions to modify and add to its findings and to enter judgment accordingly. Appellant will be allowed its costs in this court.

HORSEY, C. J., and EATHER, J., concur.

ON PETITION FOR REHEARING

September 26, 1949.

Per Curiam:

Rehearing denied.

chapter 38, Statutes of Nevada 1949, is hereby amended to read as follows:

Section 2. No presidential electors shall be nominated at the primary election. The names of the presidential elector nominees chosen at the state convention, as provided in section 1 of this act, shall not be placed upon the general election ballot; provided, the presidential elector nominees of the party whose candidates for president and vice president of the United States *receive the highest number of votes* shall be deemed the elected presidential electors and thereafter they shall perform the duties of presidential electors required by law and the constitution of the United States. The governor upon the said election of such presidential electors shall grant each of them a certificate and commission of election.

SEC. 2. This act shall become effective upon passage and approval.

Assembly Bill No. 259—Messrs. Carlson and Castle.

CHAPTER 129

AN ACT authorizing and directing the State of Nevada, acting through its department of highways to execute and deliver to the Esmeralda water company, a Nevada corporation, a good and sufficient deed for certain lands and property.

[Approved March 18, 1953]

WHEREAS, On the 31st day of December, 1942, the Esmeralda water company, a Nevada corporation, did by a deed grant, bargain, sell and convey to the State of Nevada, acting through its department of highways, the following described lands and premises in the county of Esmeralda, State of Nevada:

The southwest quarter (SW¼) of the southwest quarter (SW¼) of section 14; also the northeast quarter (NE¼) of the southeast quarter (SE¼), and the northwest quarter (NW¼) of the southwest quarter (SW¼) of section 15; also the southwest quarter (SW¼) of the southwest quarter (SW¼) of section twenty-three (23); also the southwest quarter (SW¼) of the northeast quarter (NE¼), and the north half (N½) of the southwest quarter (SW¼) of section twenty-seven (27); also the northwest quarter (NW¼) of the southeast quarter (SE¼) of section twenty-eight; all of said land being in township one (1) north, range thirty-three (33) east, Mt. Diablo base and meridian.

Together with all and singular the tenements and hereditaments and the appurtenances thereunto belonging or in anywise appertaining, and the reversion and reversions, remainer and remainders, rents, issues and profits thereof; and also all the estate, right, title, interest, possession, claim and demand whatsoever, as well in law as in equity, of the Esmeralda water company, of, in or to the said premises and every part and parcel thereof with the appurtenances.

Also, all springs upon said lands, or any of them, all water flowing or to flow therefrom, and all water rights and privileges appurtenant to said lands or any of them and formerly belonging to the Candelaria

waterworks and milling company
the Esmeralda water and millin
water pipe, as originally convey
held by the company from the
Canyon (known also as Pinsho
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Mountain in the county of Mine
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its maintenance station at Basal
and together with all the reser
tools now owned and used by th
and repair of said line of water

WHEREAS, As a part of the
State of Nevada expressly agr
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The People of the State of Neva
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SECTION 1. The State of N

waterworks and milling company, limited, and its successor in interest, the Esmeralda water and milling company, together with the line of water pipe, as originally conveyed, and rights of way therefor legally held by the company from the springs in Trail Canyon and Pinchot Canyon (known also as Pinshower Canyon and Pinchower Canyon), the sources of the company's water supply in said canyons to a point on said line of water pipe at the base of Rattle Snake Hill near Miller Mountain in the county of Mineral, State of Nevada, which said point is approximately three miles northerly of the so-called highway valve box on said line of water pipe, said highway valve box being located at the junction of said line of water pipe with the line of water pipe now owned by the state's department of highways and used by it to supply its maintenance station at Basalt, county of Mineral, State of Nevada, and together with all the reserve supply of pipe, fittings and special tools now owned and used by the State of Nevada in the maintenance and repair of said line of water pipe, and

WHEREAS, As a part of the consideration of said conveyance the State of Nevada expressly agreed with said Esmeralda water company that said company, at any time during the period of 10 years after the date of said deed, should have the right and option to repurchase the real estate, water rights, pipe line, and rights of way so conveyed by said company to the State of Nevada, together with such reserve supply of pipe, fittings and special tools that may be at the time of such purchase owned and used by said State of Nevada in the maintenance and repair of the water pipe line, for the sum of $4,000, together with interest thereon from December 31, 1942, to the date of the repurchase of said property at the rate of 4 percent per annum, plus such reasonable and proper amounts, if any, as may have been theretofore expended by the State of Nevada in proving title to and protecting its interests in the water rights thereby conveyed; and it being agreed that the option of said Esmeralda water company would constitute a lien upon the property herein described and be a covenant running with the land; and

WHEREAS, The said Esmeralda water company did exercise its option to repurchase said property from the State of Nevada in the manner and within the time provided in said option agreement, and the said Esmeralda water company did deposit with the state highway engineer of the State of Nevada and the board of highway commissioners of said state the said purchase price stipulated in said option, with interest, in order to complete the exercise of said option; and

WHEREAS, Said option is conditioned upon the agreement of said Esmeralda water company with said State of Nevada to furnish water to the Basalt maintenance station of the state highway department located in Esmeralda county, Nevada, as charged said State of Nevada for similar service prior to the sale of said property to said State of Nevada by the Esmeralda water company; now, therefore,

The People of the State of Nevada, represented in Senate and Assembly, do enact as follows:

SECTION 1. The State of Nevada acting through its state highway

department is hereby authorized and directed to execute and deliver to said Esmeralda water company, a Nevada corporation, a good and sufficient grant, bargain and sale deed, duly signed and executed, conveying to said Esmeralda water company, the following property:

The southwest quarter (SW¼) of the southwest quarter (SW¼) of section 14; also the northeast quarter (NE¼) of the southeast quarter (SE¼), and the northwest quarter (NW¼) of the southwest quarter (SW¼) of section 15; also the southwest quarter (SW¼) of the southwest quarter (SW¼) of section twenty-three (23); also the southwest quarter (SW¼) of the northeast quarter (NE¼), and the north half (N½) of the southwest quarter (SW¼) of section twenty-seven (27); also the northwest quarter (NW¼) of the southeast quarter (SE¼) of section twenty-eight; all of said land being in township one (1) north, range thirty-three (33) east, Mt. Diablo base and meridian.

Together with all and singular the tenements and hereditaments and the appurtenances thereunto belonging or in anywise appertaining, and the reversion and reversions, remainder and remainders, rents, issues and profits thereof; and also all the estate, right, title, interest, possession, claim and demand whatsoever, as well in law as in equity, of the State of Nevada, of, in or to the said premises and every part and parcel thereof with the appurtenances.

Also all springs upon said lands, or any of them, all water flowing or to flow therefrom, and all water rights and privileges appurtenant to said lands of any of them and formerly belonging to the Candelaria waterworks and milling company, limited, and its successor in interest, the Esmeralda water and milling company, together with the line of water pipe, as originally conveyed, and rights of way therefor legally held by the company from the springs in Trail Canyon and Pinchot Canyon (known also as Pinshower Canyon and Pinchower Canyon), the sources of the company's water supply in said canyons to a point on said line of water pipe at the base of Rattle Snake Hill near Miller Mountain in the county of Mineral, State of Nevada, which said point is approximately three miles northerly of the so-called highway valve box on said line of water pipe, said highway valve box being located at the junction of said line of water pipe with the line of water pipe now owned by the state's department of highways and used by it to supply its maintenance station at Basalt, county of Mineral, State of Nevada, and together with all the reserve supply of pipe, fittings and special tools now owned and used by the company in the maintenance and repair of said line of water pipe, and, conditioned upon the undertaking of the said Esmeralda water company to furnish water to said Basalt maintenance station at the same rate as charged by said company for similar service to said maintenance station when the original deed and agreement were executed between the said company and the State of Nevada.

SEC. 2. This act shall become effective upon passage and approval.

Assem

AN ACT to amend an act
dates for public office
amended.

The People of the State

SECTION 1. Section
chapter 29, Statutes of
follows:

Section 5. The name
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CANDELARIA

The Candelaria Silver District - Nevada by Adolph Knopf
USGS Bull. 735-A
1922

The silver veins in the Candelaria Mountains were discovered by a company of Spaniards in 1863, and a mining district was organized in the same year. The veins themselves crop out in a particularly barren and inhospitable part of Nevada, and the town that grew up, called Columbus, was situated where water was obtainable, 5 mile southeast of the principal mines, on the western edge of a great alkali flat, the Columbus salt marsh. In 1867 the town had 200 inhabitants, many of whom were doubtless dependent on the salt industry, for in those days the metallurgic plants of Nevada consumed a large quantity of salt; but the work that had been done to prove the silver veins of the district was small.

Two, 20-stamp mills, erected 8 miles west of the mine at Belleville, where water is available, were put in operation, one in 1875 and a second in 1876.

The sucess of the Northern Belle mine led inevitably to the growth of a town near the mine, the present Candelaria, which was started in 1876.

A water system was completed in 1882, which brings water from the White Mountains through a pipe line 27 miles long. The camp still benefits from this system. In March of the same year the Carson to Colorado Railroad, a narrow-gage line projected in 1880, reached Candelaria by a branch from the main line near Belleville and gave the camp much needed transporation facilities.

The district has produced about 20,000,000 chiefly in silver. Estimates ranging as high as 55,000,000 are current, but like those other old camps they rest upon tradition and err greatly upon the generous side.

Candelaria - from Tales of the Pioneers - by W.A. Chalfant p. 38

"Water was hauled to Candelaria from Columbus at one & 1/2 cents a gallon, until Holmes made enough from his mine to have a pipe line laid from Mt. Montgomery some 13 miles away. The same line supplies the people and mills at Belleville.

?

Candelaria - - From State Engineer's Report 1963

The Candelaria pipeline receives water from two sources, Dike Spring in Trail Canyon and Pinchot Springs in Pinchot Canyon.

Trail Canyon originates on the east slope of Boundary Peak of the White Mountain Range and the water course flows slightly northeasterly approximately four miles, then southeasterly approximately two miles where it enters onto the floor of Fish Lake Valley.

Dike Spring rises on the south side of the canyon 3 1/2 miles from the head of the canyon and is located within the SW ~~1/4~~ NE sec. 10 T. 15 R 33 E., MDB&M unsurveyed. All of the waters of Dike Spring are contained in a granite rock basin 10 ft. by 6 ft. by 4 ft. Water is diverted from this rock basin by a 4-inch pipeline. The pipeline runs down and across the canyon 3/4 of a mile, then up the northern slope of the canyon in a northeasterly direction. The pipeline continues in a northeasterly direction for 1 1/4 miles, then northwesterly for two miles where it descends into Pinchot Canyon and to a concrete junction box located within the SW SE Sec. 22, ~~T 11 Y.~~ T 1N., R 33 E.

The pipeline from Dike Spring to the junction box is in very good repair. The flow from this pipeline into the junction box was 60 gallons per minute.

Pinchot Canyon originates on the northeast slope of Mustang Mountain of the White Mountain Range and its water course flows northerly four miles, then easterly and northeasterly five miles where it dissipates onto the desert. Pinchot Springs are a series of interconnecting springs located within the SW NW Sec. 27, T 1N., R. 33 E., 1 1/2 miles northeasterly from Mustang Point.

The pipelines in this area were reportedly broken and destroyed by cloudbursts. There is evidence, however, that indicates that the water of six springs were either developed and conveyed, or if not developed, simply conveyed by various size pipe lines to a common 4-inch line that carried the water to the concrete junction box mentioned above. It is possible that the waters of other springs in this area were also conveyed to the 4-inch pipeline, but the evidence of such diversion has been destroyed.

A 6-inch pipeline rediverts the water from the junction box in a northerly direction following the floor of Pinchot Canyon for 2 1/2 miles, then northeasterly 4 miles to a terminus. A 2-inch pipeline conveys water 2 miles easterly to the Great Lakes Carbon Corporation Dicalite Plant, where it is used to serve ~~10~~ ten dwellings and a Diatemaceous Earth Processing Plant. Excess water is stored in a pond and used for sprinkling roads near the plant. Water is also stored in a five thousand gallon tank.

There is a junction box 300 yards above the terminus that diverts a portion of the water in a westerly direction through a 3-~~mile~~ inch pipeline one mile in length to Basalt, where it is used by the traveling public.

The main pipeline apparently, at one time, continued in the northeasterly direction from the terminus to the town of Candelaria, a distance of 9 miles. The water conveyed by this pipeline apparantly entered a hand grouted reservoir 100 ft. x 100 ft. and ~~10~~ 12 feet deep, then was pumped through a distribution system to the town of Candelaria. It was reported that this pipe line from the terminus

to the reservoir was removed by the Department of Highways, State of Nevada, to replace broken pipes between the sources and the terminus when the Department was responsible for the maintenance of the pipe line. The Great Lakes Carbon Corporation is presently responsible for the maintenance of said pipelines.

At the time of the investigation, there were several lengths of unconnected pipe laying from the reservoir toward the terminus.

All distances referred to in this report are approximate airline distances, and not traverse distances following the contours of the land.

There were no permanent residences and no active mine operations at Candelaria at the time of the investigation. There are remains of many old rock houses and some comparatively new sheet metal buildings, housing mining machinery. The roads to Candelaria are in good repair and were being maintained by the County Road Department of Mineral County. (dated Feb. 3, 1964)

By Thomas J. Smales , Ass't. Off. Eng. Investigated by L. E. Parmenter and Tom J. Smales) (Inv. made: Aug. 6-8, 1963) Rec'd a petition from Frank Seminario, Inc. requesting a determination of the relative water rights of the Candelaria (formerly Esmeralda Water Co.) pipe line. Later May 31, 1963, requested the determination of the relative right of various claiments to the water of the Esmeralda Water co., and of the Candelaria pipe line.

Old mpa (map) of White Mountain and Candelaria Water Company's pipe line, Esmerald Co., Nev. Horiz. Plan - shows that the pipe lines joined about 1 mile above Res. No. 1 (200, 000 gal.) then through 20. 63 miles of pipe line to Candelaria. At 19 miles Metalic City. At about 11 1/2 miles from Res. no. 1 -

pipe line entered Res. No. 2 of 50,000 gal cap. At about mile 19 entered Res. no. 3 of 200,000 gal. Vertical plan shows two branches falling about 1,000 feet in the approx. 2.2 miles of pipe line from Trail Canyon branch and about 700 ft. from the upper springs on Pinchot Canyon. From Res. no. 1, water flows by gravity to Res. no. 2 in an inverted syphon with a grade of 41.06 ft. per mile.

From Res. No. 2 to Res. No. 3 the grad. is 185.16 feet per mile. From Res. No. 3 the fall is about 570 feet.

Total length of pipe line Res. No. 1 to Candelaria 20.63 miles from Spring in Pinchot Canyon to Res. No. 1 about 2 miles and for Res. No. 1 to Dike Springs.

Candelaria - from Rocky Trails of the Past by Charles Labbe 1960

This silver camp was founded in 1874 by a group of Mexicans traveling from Aurora on Christmas Day, hence the name Candelaria. — Check

In 1882 Candelaria was the biggest town in Esmeralda County. The water was brought from the White Mountains through a 4-inch pipe line 24 miles long, before that, the water was hauled from a spring and "reported" sold at a dollar a gallon.

A small spring south of the town but nine miles away proved for a time to be the best paying mine; a pipe line ending at Pickhandle Gulch reduced the water price to five cents a gallon. The production of the mine is reported at fifty millions dollars; mostly silver.

For all the mines, the ~~Treatmet~~ treatment plants of Belleville, eight miles west, were the easiest and most important. The ores were hauled from Candelaria on the Nevada-California railroad to two 20-stamp mills, crushed, roasted and treated by pan analgamation. The first mill of 4 stamps was hauled from Aurora.

A small town of 30 houses grew near the mills that employed 140 men. There were 12 families and 7 saloons.