



CONTACT INFORMATION

Mining Records Curator
Arizona Geological Survey
1520 West Adams St.
Phoenix, AZ 85007
602-771-1601
<http://www.azgs.az.gov>
inquiries@azgs.az.gov

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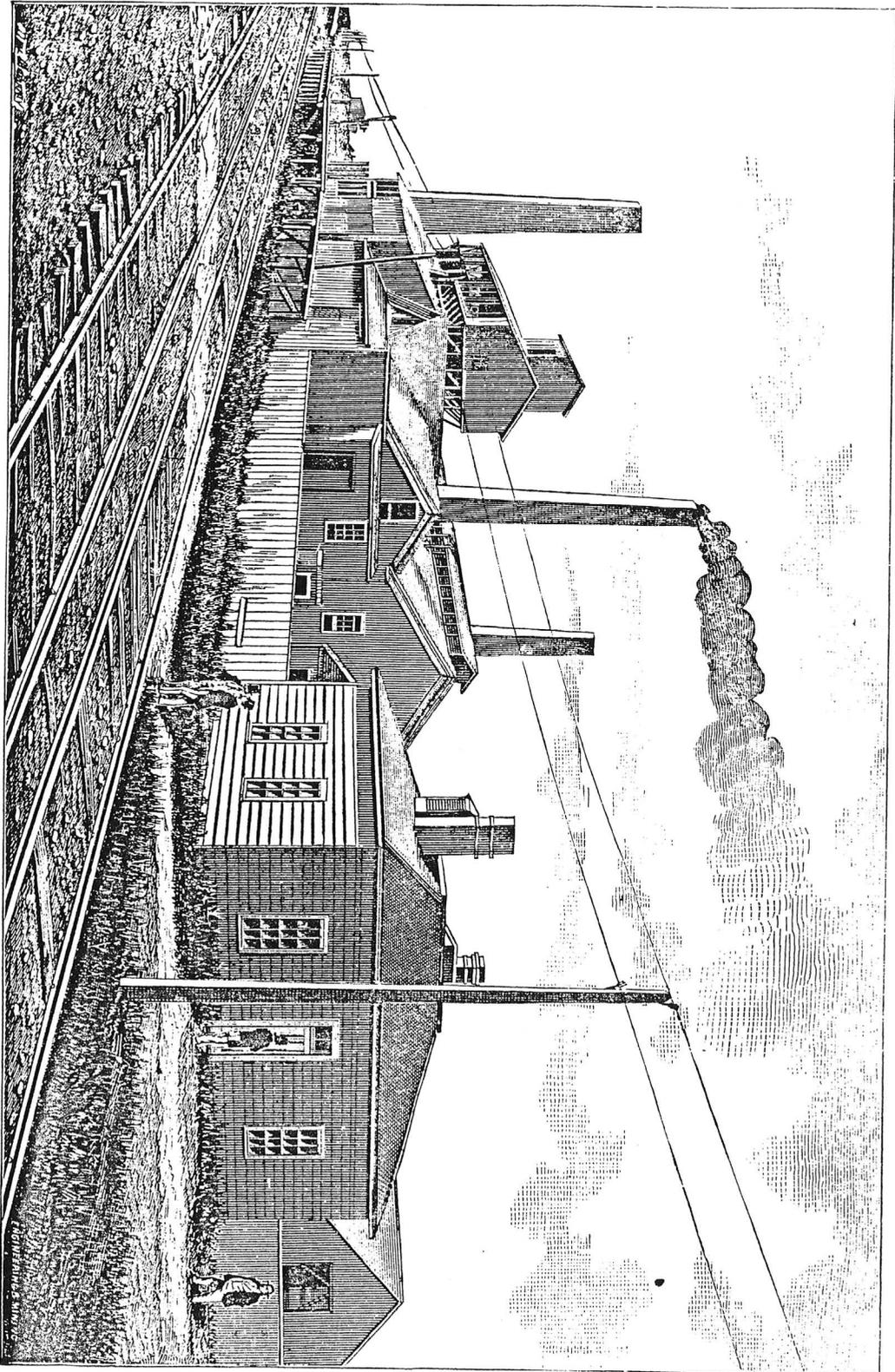
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CASTLE DOME
MINING AND SMELTING
COMPANY.

ORGANIZED UNDER THE LAWS OF THE STATE OF NEW YORK.

MINES, IN ARIZONA ;
SMELTING WORKS, IN CALIFORNIA ;
PRINCIPAL OFFICE, IN NEW YORK.
(ROOM 46, NO. 18 WALL STREET.)

NEW YORK :
JULY, 1880.



View of the Company's Smelting Works at Melrose, California. (From the railway.)

CASTLE DOME
MINING AND SMELTING COMPANY.

Incorporated Feb. 21st, 1880, under the General Laws of the State of New York.

CAPITAL STOCK,

\$1,000,000.

100,000 Shares,

- - - - -

Par value \$10.

SHARES UNASSESSABLE.

Tuttle, Morehouse & Taylor, Printers, New Haven

CASTLE DOME MINING AND SMELTING COMPANY.

President.

WM. P. BLAKE.

Vice President.

H. K. SOUTHWICK.

Treasurer.

JOHN W. WELLS.

Secretary.

A. H. CARGILL.

Superintendent.

WM. P. MILLER.

Board of Trustees.

WM. P. BLAKE.....	CONNECTICUT.
H. K. SOUTHWICK.....	NEW YORK.
JOHN W. WELLS.....	NEW YORK.
GEO. A. MINER.....	BOSTON.
A. H. CARGILL.....	NEW YORK.
JOHN S. KING.....	NEW YORK.
W. F. MORGAN.....	NEW YORK.

TO THE
BOARD OF TRUSTEES
AND THE STOCKHOLDERS OF THE
CASTLE DOME MINING AND SMELTING COMPANY,
NEW YORK.

GENTLEMEN:—

I present, herewith, a Descriptive Report on the property and objects of
the Company, prepared in accordance with your request.

Respectfully,

Your obedient servant,

WM. P. BLAKE,

President.

JULY, 1880.

CASTLE DOME MINING AND SMELTING COMPANY.

[Organized under the Laws of the State of New York.]

SYNOPSIS OF REPORT.

OBJECTS OF THE ORGANIZATION.

To mine and smelt silver-lead and other ores and to conduct a general smelting and refining business.

LOCATION OF MINES.

In Yuma County, Arizona, near the great Colorado River, consisting of twenty claims aggregating 27,350 feet of argentiferous lead veins in Castle Dome District, and 4,500 feet of silver bearing veins in Silver District.

ORES AND VEINS.

The Silver-Lead ores are in regular veins and are abundant. They are very clean and pure and are easy to smelt. They yield superior soft lead, and the silver is easily separated from it.

The yield of the Castle Dome ores ranges from twenty (20) to thirty-three (33) ounces of silver per ton of ore and from sixty (60) to seventy-five (75) per cent. of lead.

The yield of the Silver District ores is from fifty to one hundred dollars a ton, but the mines are not yet as fully opened as those of Castle Dome.

The usual selling price of Castle Dome ore in San Francisco has been \$50 per ton, but by smelting it in the Company's works, alone, or with other ores, the amount realized is much greater.

STORES AND LANDING.

The Company has a store and a stock of goods at the Landing on the bank of the Colorado, and also at the mines. These mines are eighteen miles distant from the Landing by a remarkably fine and level wagon road. The Landing being protected by a high rock from the wash of the river is secure and safe at all stages of the water.

ACCESS AND TRANSPORTATION.

The ores are carted to the Landing by the wagons and teams of the company, and are thence taken by the railroad company to the smelting works, for eleven (\$11) dollars per ton.

The mines are accessible from San Francisco, by rail and palace cars to Yuma in forty-two hours or less, and thence by carriage about forty miles over a good road.

SMELTING WORKS.

The Company's Smelting Works, including six acres of land in fee, are at Melrose Station, Alameda County, California, opposite San Francisco, and are accessible by

rail or by water. There are three large water-jacket furnaces for smelting, and the adjuncts for refining and melting bullion, besides an assay and chemical laboratory, an office, and other buildings.

SUPPLY OF ORE.

Besides the regular supply of ore from the mines of the Company, a variety of silver and gold ores is obtained by purchase, and these ores are smelted in proper mixture with Castle Dome ore.

Rich silver and gold ores are offered in the San Francisco market from Nevada, California, Mexico and Arizona, and from other places.

MARKET FOR LEAD.

There is an active demand on the Pacific Coast for superior soft lead to the extent of 150 or 200 tons per month, for the manufacture of white lead for paint. This ensures a ready market for a large part of the lead produced. Lead can also be readily shipped at San Francisco to any part of the world.

FUEL AND FLUXES.

Coke and coal are procurable in San Francisco from various sources, and many of the fluxes and materials used in smelting are abundant and cheap.

CASTLE DOME MINING AND SMELTING COMPANY.

DESCRIPTIVE REPORT.

OBJECTS OF THE COMPANY.

The Castle Dome Mining and Smelting Company is formed for the purpose of mining silver and lead ores in Arizona, and carrying on a general smelting and refining business in California, using not only the ores from the mines of the Company but other ores obtained by purchase. The established railway communication with Arizona permits of the transportation of the ores to the works at such rates of freight that it is more economical to treat the ores upon San Francisco Bay than to smelt them at the mines, especially as the cost of fuel and other necessary materials is less and the supply and variety of ores is greater than it can be in the interior.

LOCALITY OF THE CASTLE DOME MINES.

The silver-lead ores of the Castle Dome District in Arizona have long been favorably known and worked.

The mines are upon a rolling plain or mesa at the base of the Castle Dome Range, a very rugged and picturesque range of mountains trending northwest and southeast and rising near the center to a remarkable dome-shaped summit with vertical sides, looking like a huge round castle surmounted by a dome, whence the name.*

* This name was originally given by the officers at Fort Yuma as "Capitol Dome," from the resemblance of the summit to the dome of the Capitol at Washington, but it is now universally called "Castle Dome."

They are upon the eastern side of the great Colorado River, about thirty miles above Fort Yuma and Yuma City, at the junction of the Gila and Colorado rivers. Yuma City is on the left or east bank of the Colorado where the Southern Pacific Railway of Arizona enters the Territory from California. It is one of the chief stations on the line of the railway and is reached from San Francisco by regular daily trains in forty-two hours. From this point there is a line of steamboats up the Colorado River carrying freight and passengers. The Castle Dome Mines may be reached from Yuma City either by these steamers as far as the Landing, or by stage or private conveyance. It is usual to proceed to the Landing and drive thence to the mines, sixteen to eighteen miles back from the river.

THE DISCOVERY, AND HISTORY.

The mineral veins of this Castle Dome District were re-discovered in the year 1863. They may truly be said to have been "re-discovered" for it is evident that the veins were opened and worked at a remote period, probably by the first Spanish padres, who made their way northward from Mexico into this country. Traces of ancient excavations on many of the veins were very plainly to be seen by the prospectors in 1863, and there were, and still remain, heaps of débris consisting of the vein-stone with small fragments of ore. The metal had been taken from many of the veins by these ancient miners down to a depth of from six to fifteen feet, following the vein sometimes for fifty to one hundred feet or more. The excavations appeared to have been made with long bars, and to have followed the best outcrops of metal. These old workings thus were sure guides to good metal-bearing ground a short distance below

the surface. Well-worn trails leading from the mines to the banks of the Gila, only some eighteen miles distant, and the ruins there of some rude smelting furnaces, go to show that the ores so mined at Castle Dome were packed on the backs of Indians to the Gila and that they were there reduced to metal, possibly being used to mix with, and to flux the more refractory but richer ores of silver from districts further east. The explorations of the veins made since 1863 have obliterated the traces of the old workings for the greater part, but they can still be seen in several places. That they are ancient is abundantly shown by the growth of the peculiar slow-growing hard-wood trees of that region, such as the *palo verde* and iron wood, which were found growing in the old pits and on the piles of refuse thrown out.

MODERN EXPLOITATION.

Since the re-discovery of the veins they have been worked almost continuously. In fact, the district of Castle Dome is well known upon the Pacific coast amongst miners as one of the oldest and most reliable of all the mining districts for a constant yield of ore of uniform quality. While many other districts of great promise and brilliant prospects of rich ores have been worked for a short time and then abandoned, Castle Dome has been found, if not so brilliant, more enduring and reliable. The ores not being extremely rich have never been sought for with the expectation of sudden enrichment, but their exploitation has always returned a fair profit to the industrious miner. Much excitement followed the first discovery. The ore being extremely heavy and brilliant galena, with which the first prospectors were not familiar, led many of them to believe that they had found veins of nearly pure silver, and it was

not until they had obtained much independent and confirmatory evidence by assays and returns from shipments that they were willing to accept the fact that the bulk of the ore was lead, carrying, however, about thirty ounces of silver to the ton of ore.

When this was fully ascertained and proved to be the general average value of the Castle Dome ores, it became evident that to realize large profits from them it would be necessary to work on a large scale with the aid of capital, and to ship the ores to San Francisco or abroad to be smelted. Some of the early locators sold out their claims to those better able to cope with the difficulties, and the process of consolidation of properties commenced and has since been going on, and for some ten years past chiefly through the exertions of Mr. William P. Miller, for some time U. S. Deputy Mineral Surveyor for Arizona, who has done more, perhaps, than any other single person to develop and work the veins profitably.

TRANSPORTATION OF THE ORE.

From Castle Dome Landing to the mines there is a very hard and smooth wagon roadway, over a gently ascending plain, covered with pebbles firmly bedded, giving a remarkably smooth and hard road-bed without the necessity of any grading or banking. The ore is taken to the Landing in large wagons over this natural roadway, and the grade being a gradual descent the hauling is comparatively easy and cheap.

Until the construction of the Southern Pacific Railroad all the Castle Dome ores were sent out of Arizona by way of the Colorado River and the Gulf of California, a long and tedious sea-route, to San Francisco. The ores being carted to the river

were shipped on barges, or steamers, and taken down the river to the head of the Gulf where they were transferred to sailing vessels. Since the completion of the railroad all this has changed. The ores are taken by the railway company on the river bank and are loaded on their trains at Yuma, where they have a dock and stationary engine for the transfer, and are delivered by rail at the works of the Company at Melrose, on San Francisco Bay, for eleven dollars per ton (\$11). The ores being very heavy and containing from 60 to 75 per cent. of lead would not be greatly reduced in bulk if smelted at the river. And if reduced to lead and silver the freight on these constituent products would be much more than on the ore. It is therefore more economical and better, for many reasons, to ship the ores at once to tide water at San Francisco, and to reduce them there, where fuel and labor are cheaper and where materials for fluxes and other ores can be readily obtained. It is believed that when the Company is working systematically on a large scale by the aid of sufficient capital, and a regular and large output of ore is assured from month to month, arrangements can be made for materially lower rates of freight. This expectation is justified by the exceptional regularity of the supply and the conveniences which the Company provide for loading at the Landing on the river and for unloading on the siding at the Smelting Works. At present, also, the railroad company send two steamers a month up the river, taking with them each trip a barge which is left at the Landing to be loaded. When loaded it is floated down the river by the current to Yuma. When the mines are fully worked, four steamers per month at least will be required to transport the ores.

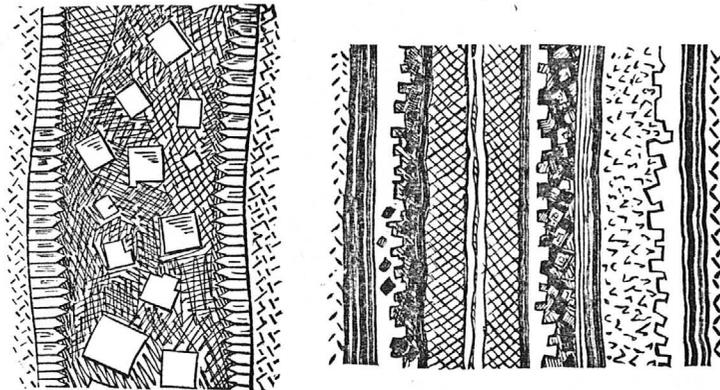
THE VEINS.

The veins in which this argentiferous lead occurs are true fissure veins, remarkably regular and well defined. They are in this respect notable typical examples, interesting not alone to the miner but to the close observer of mineral deposits of whatever form. A somewhat detailed description will therefore be given, especially as the facts indicate that these veins may be relied upon for metal in depth and far beyond any point yet reached by the workings.

The rocks of the district are compact, fine-grained mica and clay slates, standing nearly on edge and traversed by numerous compact, chocolate-colored, porphyritic dykes or intrusions which apparently bear some close relation to the mineralization of the veins. These veins have a general northwest and southeast course, following the direction of the mountain range. Their outcrops are made evident chiefly by outlying masses and fragments of crystals of rose-colored fluor-spar, which constitutes the chief veinstone accompanying the galena and is a remarkably good flux for the ore, desirable to mix with it in smelting. This is the only known instance of the general occurrence of fluor-spar in lead-bearing veins in the United States.* The mineral is an accompanying mineral of galena in Derbyshire, England, but has not before been found in quantity as the dominating gangue, or veinstone, in galena-bearing veins in this country. Calc-spar and gypsum are other accompanying minerals, and in some of the veins quartz

* This mineral is a compound of fluorine and lime, and is much used as a flux in smelting and as a source of fluorine for etching glass. It is a soft cleavable mineral, splitting up freely into octahedral masses, and occurs in translucent cubical crystals, of a pale green color which by exposure become rose red or nearly white.

constitutes an important part of the gangue, being arranged in sheets or "combs" along the walls, or forming distinct sheets in the midst of the vein-filling, as shown in the annexed sketches, the first of which represents a cross-section of a small vein adjoining the William Penn, in which there is a layer of quartz upon each wall with the crystals pointing inwards towards the vein-filling of calc-spar with oxide of iron and disseminated crystals of fluor-spar.



The next illustration is a section of one of the veins about one-eighth natural size, exhibiting successive layers of crystalline minerals carrying galena in some places. There are three or four distinct layers of fluor-spar and as many of quartz, the latter being in thin sheets, but firmly united. The central portion consists of a double filling of quartz with dolomitic spar on each side. There is also another layer of calcareous filling along side of a broken mass of manganiferous spar. The galena is found with the fluor-spar and not in the quartz. The section differs however in different parts of the same vein, some of the layers becoming very thin or disappearing and others being enlarged. Sulphate of barytes and gypsum are also found associated

with these minerals. The whole gives satisfactory evidence of the fissure-filling character of the vein-stuff.

The veins are also remarkably straight and are in the main nearly parallel and can be followed continuously through the entire length of several successive claims, as for example on the Buckeye lode for a distance of some five or six thousand feet or more. There are a few cross veins, and some with oblique intersection, but they all have, in the main, the same characteristics and appear to have had a contemporaneous and similar origin. In width they vary from a few inches to several feet, generally being about four feet wide and sometimes eight feet to twelve feet wide. They are generally well filled with ore. This ore occurs in sheet-like masses or in disseminated bunches scattered here and there through the vein-stone, and commonly known among the miners as "ball metal," from its nodular and ball-like form. Where it occurs in this form it is easily separated from the adhering gangue and is easily mined. This is the character of the ore found in the chief opening of the Railroad Mine, where the vein is twelve feet thick, eight feet of which is highly charged with metal. In another claim in the district sheet-like masses of ore eight feet thick and nearly solid have been found. There are of course parts of the veins where the ore is replaced by vein-stone only, but this leads to ore and in general the veins give unusually satisfactory results in working.

COMPANY'S CLAIMS IN CASTLE DOME DISTRICT.

The Company owns twenty-one mining claims in Castle Dome District, aggregating 28,850 feet of silver-lead veins, and three claims in Silver District of 1500 feet each, making 4,500 feet in Silver District and a total in

both districts of thirty-three thousand three hundred and fifty feet (33,350), as shown in detail in the annexed list:—

List of Mines in the Castle Dome District, Arizona, property of the Castle Dome Mining and Smelting Company.

	Feet.
<i>mls #</i> 15 Miller,	1500 x 600
15 William Penn,	1500 x 600
15 Caledonia,	1050 x 600
15 Norma,	1000 x 200
15 Hopkins,	800 x 200
Little Dome,	1500 x 600
17 Flora Temple,	2000 x 200
Empire City,	1000 x 200
Fraud,	600 x 200
Danville,	1500 x 600
South Dome,	1500 x 600
Little Willie,	1400 x 200
Conglomerate,	1500 x 600
19 Railroad Mine,	1500 x 600
Douglass,	1500 x 600
19 Chief of Dome,	1500 x 600
Galena Chief,	1500 x 600
Pennsylvania,	1500 x 600
Wide Awake,	1500 x 600
Gondola,	1500 x 600
Wedge,	1500 x 600

Claims in Silver District.

Hamburg,	1500 x 600
Mountainside,	1500 x 600
Ironsides,	1500 x 600

The map accompanying the Report will serve to show the relative position of some of these claims, the principal line being upon the Buckeye Lode¹⁵ towards which the Flora Temple Lodes converge.

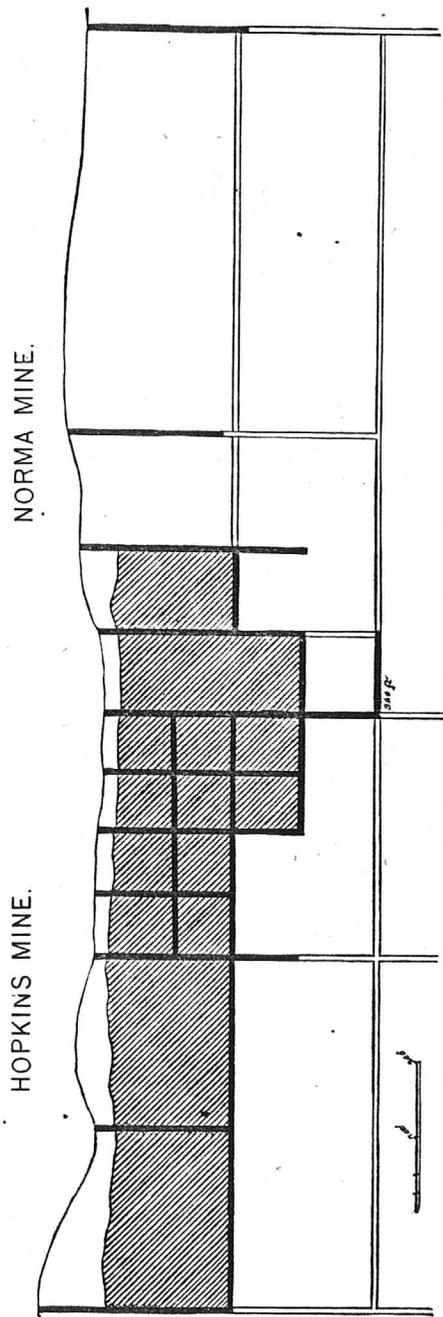
THE DEVELOPMENT.

No machinery has yet been erected for hoisting ore at these mines. There is but one horse-whim in the district. The extraction since the discovery has been by hand-windlass chiefly, and in consequence has been slow and limited. The work which has been done may in all cases be regarded as superficial. The mines heretofore have been worked without capital. The claims have been opened sufficiently to show their value and to secure the title under the mining laws, and from some of them considerable ore has been taken, as for example, from the Buckeye Lode, one of the largest and most productive of the veins. It has been worked at different points upon the Norma, Hopkins, William Penn and the Miller.

HOPKINS AND NORMA.

The accompanying section, page 18, shows a part of the workings and ground stoped on the Hopkins and Norma. The lowest point reached is 364 feet below the surface, but there has been little or no extraction below the 300 feet level, this being too great a depth for profitable hand-hoisting.

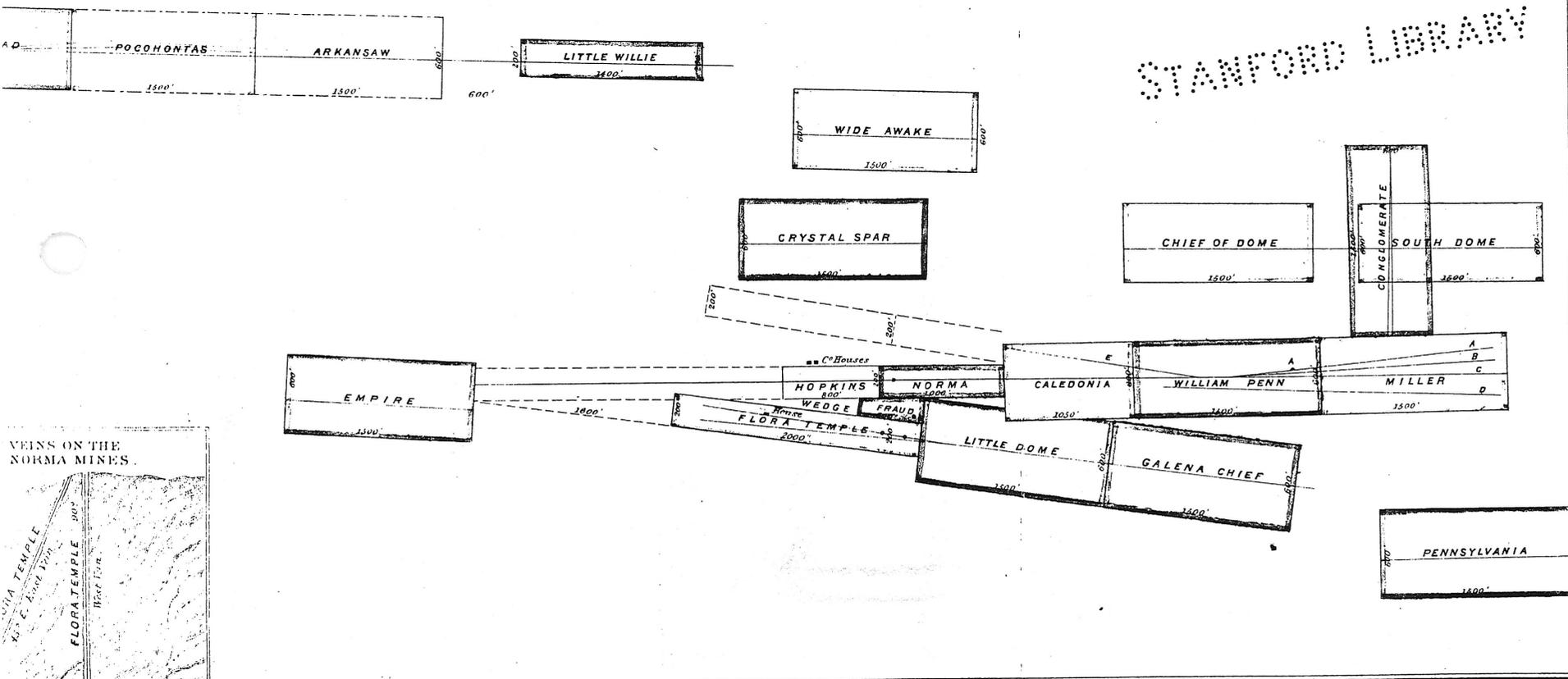
It will be seen that the ground has been stoped out continuously for a distance of 1000 feet, and to a depth of from 200 to 250 feet. This work was chiefly upon the Hopkins claim. The deep shaft is near the Norma line.



Longitudinal Section of the Hopkins and Norma Mines.

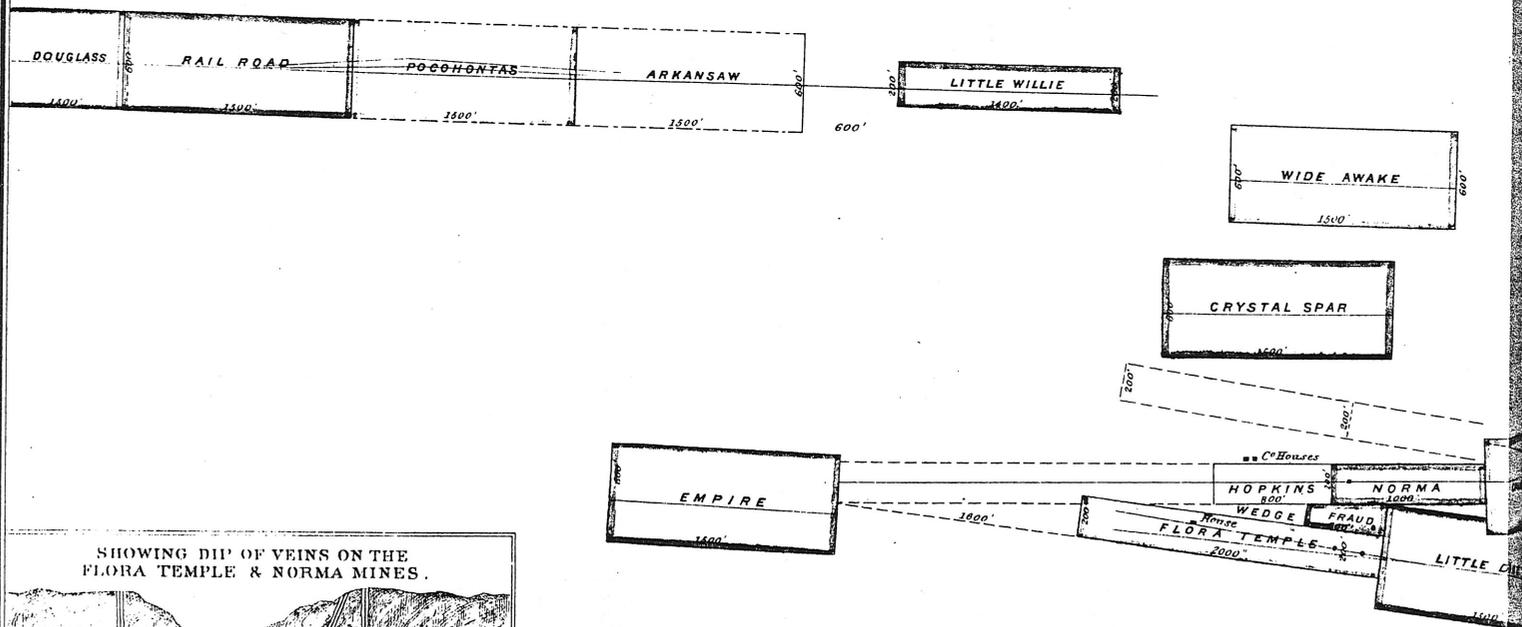
MINES OF THE CASTLE DOME MINING & SMELTING CO., CASTLE DOME, YUMA C^o A. T.

Scale: 1000' to 1 inch.

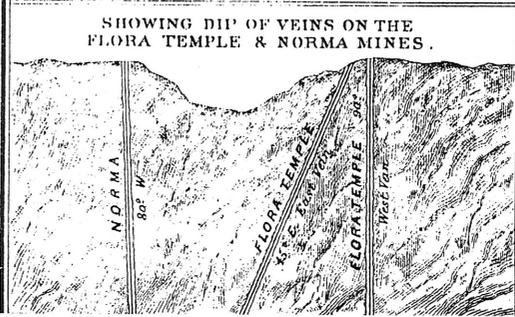


MINES OF THE CASTLE DOME MINING & SMELTING CO., CASTLE DOME

Scale: 1000' to 1 inch.



SHOWING DIP OF VEINS ON THE FLORA TEMPLE & NORMA MINES.



THE RAILROAD MINE.

On the Railroad claim, which has also furnished a large amount of ore, the extraction has been above a depth of 165 feet. The workings on this claim are shown upon the annexed longitudinal section, which also represents the work upon the adjoining Pocahontas mine leased by the Company. The Railroad vein near the main shaft is twelve (12) feet thick, and is well filled with ore.

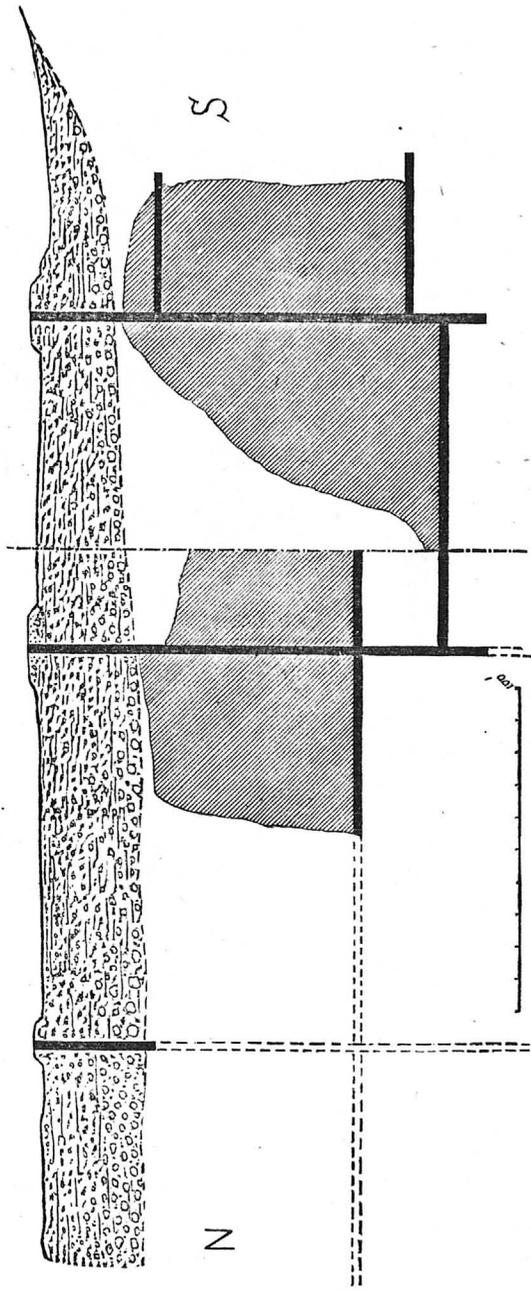
The ore ground appears to be strongest towards the north end and to plunge downwards there to a greater depth. It is proposed to sink a new shaft further north to intersect the ore and to give better ventilation. The wash gravel at this point is very deep and covers the outcrop of the vein from view.

This Railroad claim has supplied a large amount of ore since Jan. 1st, 1880, and is a promising mine for a large product at a greater depth. The stopes of the old workings are partly filled with refuse ore and waste containing a large amount of galena which could be saved by concentrating machinery at the surface. So also there is considerable galena left in the waste heaps around the mouth of the shaft, which can be collected by jigging in the usual manner.

The Douglass is a claim on the same lode further north, but it has not yet been developed so as to produce any ore. The Company's claim, the Little Willie, is on the same lode further south.

POCAHONTAS

RAILROAD MINE



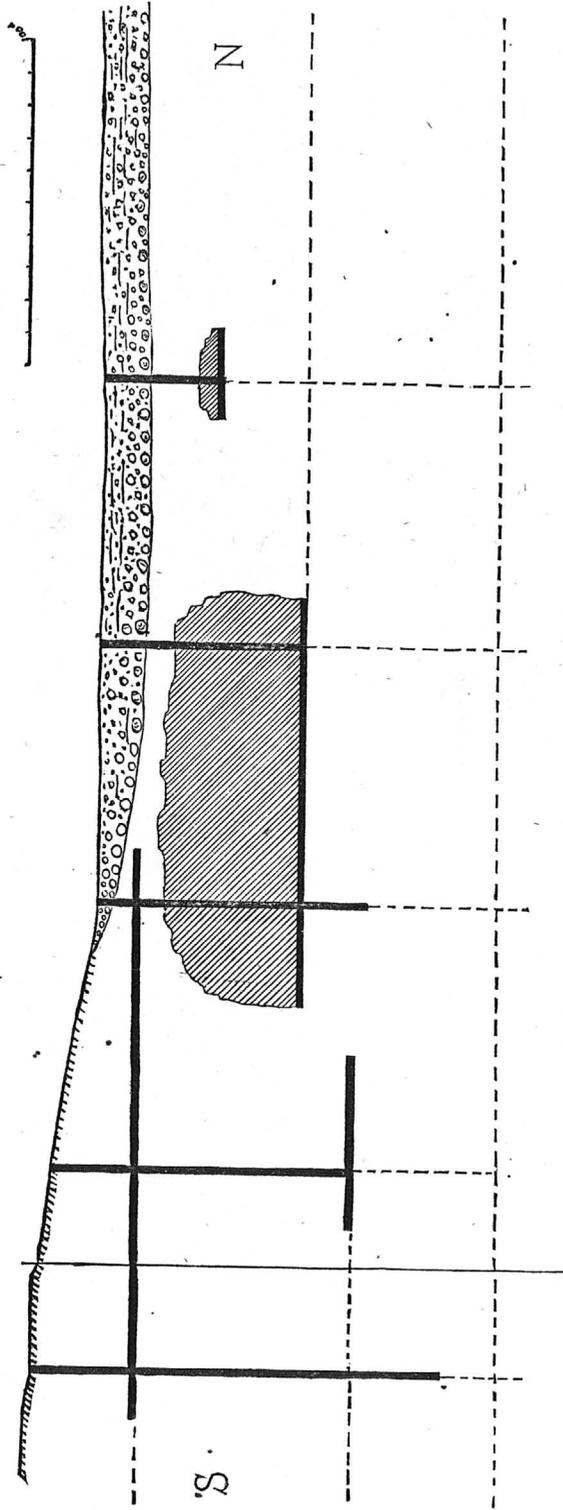
Section of the Railroad and Pocahontas Mines.

THE FLORA TEMPLE.

This claim, on a lode converging towards the Hopkins, is one of the most important of the mines of the district, and has furnished a large amount of ore for several years. It is two thousand feet in length and is secured by Patent from the United States. Some of the old shafts near the north end have been abandoned for a few years past, but according to the miners who worked in them there is a large amount of ore remaining not only in the bottom but in the old stopes. Preparations are now making to re-open and work this ground. Within the past year important discoveries of ore have been made at the south end. A large body of it was uncovered there and some two hundred tons have been taken out since January last. This part of the mine is shown in longitudinal section, page 22. The vein continues and is ore-bearing in the next claim—the Little Dome—on the south. The section shows the line between the two claims, and the shaft which has been sunk on the Little Dome. The broken lines indicate the possible levels in the future, when the reserves above have been stoped out. The vein varies from six inches to two and four feet in thickness.

There are two convergent veins upon this claim, both apparently equally ore-bearing. The shading in each of the sections indicates the amount of ground which has been stoped out.

FLORA TEMPLE MINE



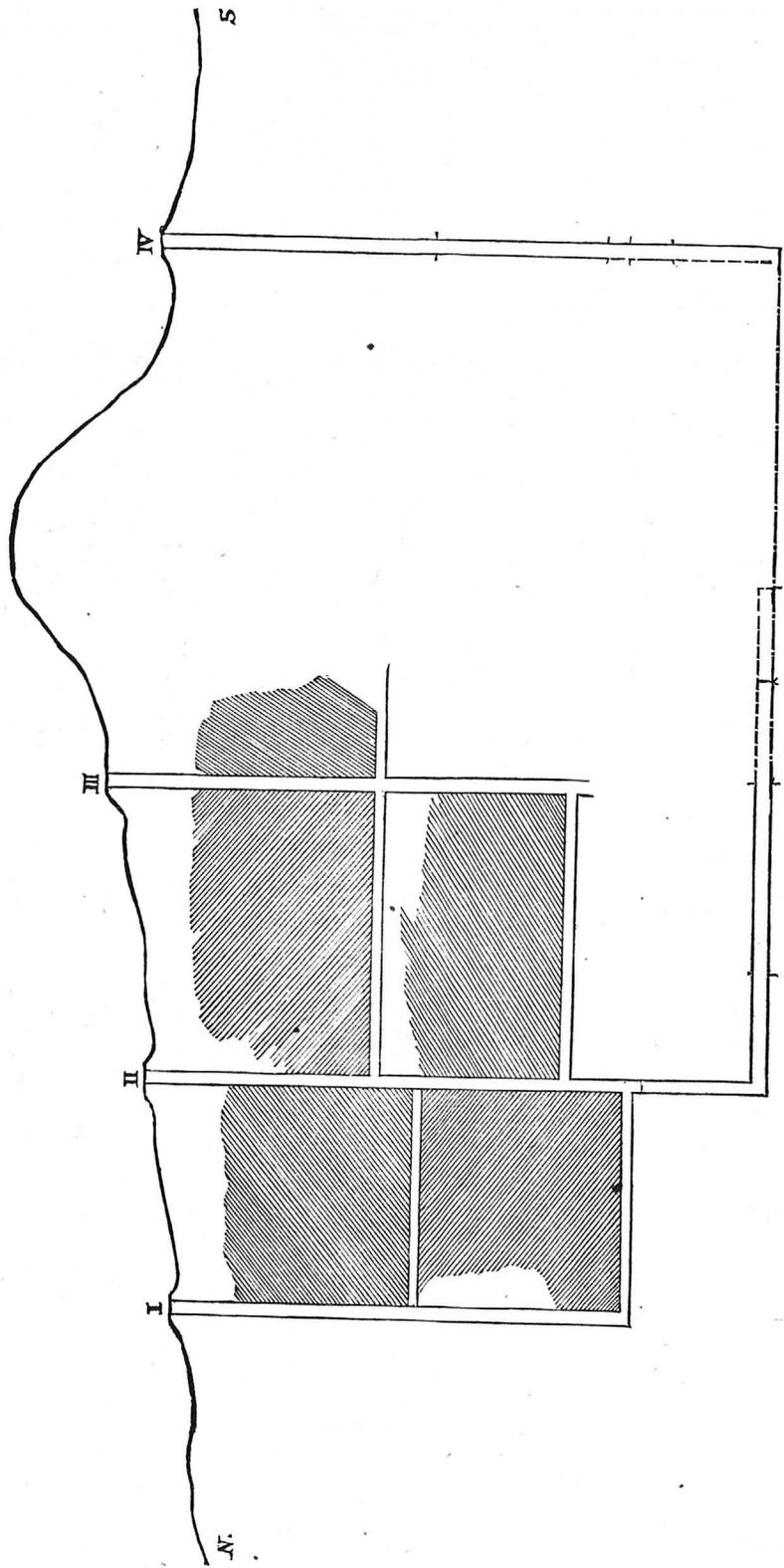
Section of the Flora Temple and Little Dome Mines.

THE WILLIAM PENN.

This, one of the chief claims towards the south end of the Buckeye Lode, has been opened to a depth of 225 feet at the deepest point, and has yielded considerable metal. There are four shafts: No. 1, 180 feet deep; No. 2, 210 feet deep; No. 3, 170 feet deep; No. 4, 225 feet deep. Contracts are let to connect these shafts by a drift below, a distance of 304 feet. It is expected that this will open up a fine body of pay ore below the old stopes above, from which good ore was extracted. The relative position of the shafts on this claim, and the extent of the drifting are shown on the longitudinal section, page 24.

MINES AT SILVER DISTRICT.

Silver District includes a group of silver-bearing lodes about eighteen miles above Castle Dome Landing and five miles from the Colorado River. The three claims belonging to the Company are known as the Hamburg, Ironsides and Mountainside. The district being new there has not been time for much development, and the value of the claims has not yet been ascertained. The ores are, however, much richer in silver than the ores of Castle Dome and are desirable to combine with them. The lodes are well-defined and are extensive, the outcrops of quartz extending through the whole length of the claims and varying in thickness from four to fifty feet and more. On the Silver-Glance for example, the croppings cover a breadth of over one hundred feet.



Longitudinal Section of William Penn Mine.

HAMBURG.

The Hamburg is the only one of the Company's claims in this district which has been explored. On this a shaft has been sunk for sixty feet following the vein, which at this point is fifteen or twenty feet wide. It carries ore and decomposed vein-stuff for the entire distance and is a promising development but does not yield largely at present. The ore occurs in nodules and bunches of compact argentiferous galena, which are surrounded by solid carbonates and sulphates.

These ores yield by assay:

Lead	40 to 82 per cent.
Silver	150 to 306 ozs. per ton.

In addition to the carbonates of lead there are beautifully formed crystals of wulfenite and of vanadate of lead.

In the adjoining claim, known as the "Princess," a shaft sixty feet deep has developed a continuous layer of solid carbonate of lead from three to six inches thick, showing that the vein is well mineralized, over a considerable distance. Ore has been shown to exist also at other points along the vein. The croppings consist of quartz in layers, showing true vein structure.

The Ironside claim also shows rich ores at the croppings and may develop into a valuable mine. The upper croppings consist of quartz, oxide of iron and interlocking crystals of heavy-spar. The only development so far on this claim is a pit a few feet in depth, from which excellent ore has been taken.

SHIPMENTS OF ORE.

The following tabular statement of shipments for the first six months of 1879, taken from the account of sales, will show the amount in pounds, the contents in silver and lead, and the amount realized for the ore as sold to smelting works. This value is based upon the lead at $1\frac{3}{4}$ cents per pound, and the silver at ninety cents an ounce.

During the first six months of 1879 the shipments to San Francisco amounted to 877,068 pounds of ore or $438\frac{1}{2}$ tons, yielding $\$21,367\frac{28}{1000}$, or an average of $\$48\frac{73}{1000}$ net per ton of 2000 pounds. The average percentage of lead was $69.\frac{018}{1000}$, and the ounces of silver $26.\frac{47}{1000}$. The value of the lead per ton of 2000 lbs. at $1\frac{3}{4}$ cents was \$25.61; value of the silver at 90 cents per ounce per ton of ore, \$23.89; making a total of forty-nine dollars and fifty cents per ton of the ore at the above rates, which allow of a large profit to the smelter, a profit which the Company expects to enjoy by working its own ores rather than to sell them, besides having the advantage of working other ores in connection with the Castle Dome ore.

Account Sales Castle Dome Ores, for 6 months—Jan. to Aug.—1879.

Weight of ore, lbs.	Lead, per cent.	Silver, ozs.	Value lead at 1½ cts.	Value silver at 90 cts.	Total value.
28,495	66½	24.24	\$23.19	\$21.82	\$636.37
12,154	65	24.97	22.75	22.47	271.09
10,586	64	25.54	22.40	22.08	233.38
15,886	70½	24.83	28.20	22.34	398.86
23,128	70½	26.29	28.28	23.66	595.69
17,318	61	21.18	24.40	19.06	362.78
8,054	70	24.54	28.	22.09	200.23
9,648	70½	24.68	28.10	22.21	240.93
9,172	72¾	26.97	29.10	24.27	242.99
7,884	69¾	25.27	27.90	22.74	198.13
16,438	69¾	25.41	27.90	22.87	414.41
22,834	69	25.41	27.60	22.87	572.38
5,472	71½	32.99	28.60	29.69	158.37
20,690	59½	19.14	23.70	72.22	416.05
12,852	63¾	18.85	25.50	16.96	269.34
15,912	69½	24.83	27.80	22.35	374.02
22,636	70	25.12	28.	22.61	566.12
22,666	71½	25.99	28.50	23.39	581.73
11,646	60¾	20.45	24.30	18.40	245.61
20,736	71½	32.95	28.50	29.65	599.09
3,740	75	29.64	30.	26.68	105.08
2,110	75½	26.43	26.42	23.79	524.19
20,568	74	26.14	25.90	23.52	505.07
14,314	62½	24.54	21.88	22.08	312.35
3,844	62½	27.89	21.87	25.10	89.68
4,502	73	29.20	25.55	26.28	115.94
17,856	74½	27.02	25.99	24.32	446.35
6,954	69½	32.12	24.32	28.91	183.67
4,400	71¾	26.72	24.76	24.05	106.70
4,950	72½	30.08	25.29	27.07	127.75
2,890	73	25.99	25.55	23.39	70.27
4,088	73	26.58	25.55	23.92	100.45
118	75½	30.91	26.34	27.82	3.19
3,440	62	30.81	21.70	27.73	84.03
4,350	66¾	31.97	23.36	28.77	112.65
6,082	67½	20.45	23.54	18.40	126.57
13,000	66½	24.39	23.19	21.95	290.88
18,896	66½	24.54	23.27	22.09	425.25
26,264	74	26.87	25.90	24.18	653.41
40,548	71½	26.29	24.94	23.66	978.75
8,500	66	32.85	23.10	29.56	223.72
16,626	71	30.66	24.86	27.59	433.15
17,077					384.65
8,497					223.72
5,018					122.59
25,602					437.53
3,765					89.58
13,990					362.55
24,588.					584.03
27,824					547.71
17,410					429.15
192,000		Total for August (gross)		\$4,588.00	

* 2 cents per pound was paid for the lead in these lots.

Since the first of January last (Jan. 1, 1880) over three hundred tons have been extracted and sent to the smelting works from the Company's claims. This has all been taken out by hand windlass. But few men have been employed and the claims have not been worked to their full capacity. The labor of raising the ore with a hand windlass is tedious and difficult. Power whims and steam hoisting works are required. When these have been erected and the mines are opened deeper, the production can be increased, and at less cost per ton. In several of the claims the openings are such that there are important reserves of ore which can be drawn upon when the shafts and levels have been put in good order. The great extent of the mining ground and the many points at which the veins are opened permit of the employment of many miners simultaneously and render a constant supply of ore more certain. While one vein is being opened by shafts and levels ore can be taken from the others by stoping.

The ore is very heavy, and when a sheet of ore is found in drifting the production is very rapid. The veins are extremely favorable for mining, being very regular, nearly vertical, and very well filled. The even distribution of the ore and the number of claims ensures regularity of production, there being so many points from which ore can be taken. There are, of course, parts of the veins where the ores are lean and are pinched in thickness, but these can to a great extent be avoided and the work can in general be confined to the ore-chutes or the better mineral portions of each claim. The number of claims near together gives a great opportunity for choosing the ground to be mined.

It is probable that one engine shaft well located will serve for hoisting ore from two, three or more contigu-

ous lodes. Cross cuts in depth would in some places intersect two or three parallel veins, as for example at the Norma or the Hopkins, through which mines the Flora Temple could be worked.

IMPORTANCE OF LEAD ORE IN SMELTING.

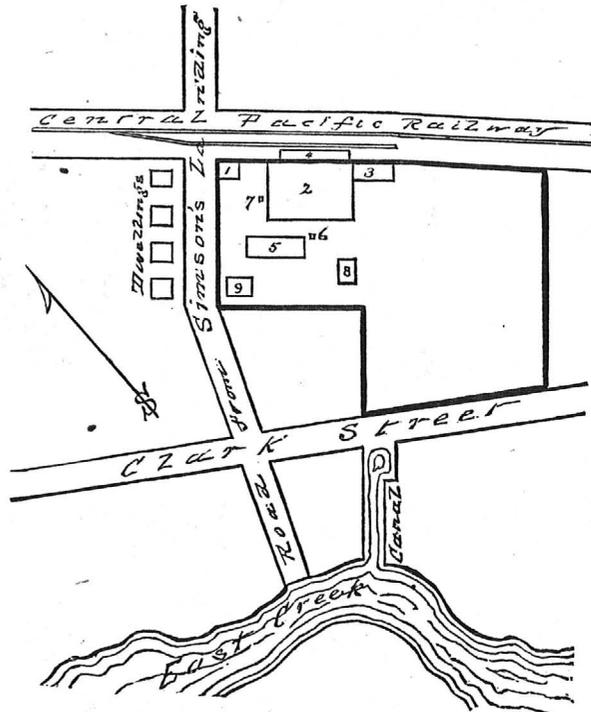
The possession of so much argentiferous lead ore is a controlling power and enables the holders to purchase and work other and more refractory silver ores with confidence, when smelters who may not be able to command a constant supply of lead ore will not be justified in purchasing. Lead is the natural and most economical solvent for many of the ores of the precious metals. In its liquid state by fusion it will wash silver from its matrix and concentrate it in the lead bullion, from which it is easily separable by well-known processes. The lead ore in fusion, especially when so clean as the Castle Dome ore and free of arsenic and antimony, exerts a powerful solvent action upon other ores. In the glowing heat of the furnace it attacks and dissolves quartz and will make a liquid, easily flowing slag, with silicious ores that cannot be smelted alone. It is thus an essential ore to smelting works, and is the basis of the most profitable and simplest metallurgical processes. Smelted alone or with other ores it gives a lead bullion containing the precious metals which existed in the ore of the charge. This product is then refined by the separation of the silver and the purification of the lead. The product and the processes are not unlike those at Leadville, or at Eureka, Nevada, and Utah. Lead smelting is a well-known business in which the western metallurgists and miners have now had large experience. New and valuable improvements are constantly being made, increasing the product and lessening the

cost, and the margin of profit is thus made larger. The smelting of the Company's ores is not an experiment or an unsolved problem. It is thoroughly understood. Well-known methods are followed; the experience of years is utilized, and trained workmen can be found as needed. Probably there is no point where skilled laborers who have had experience in smelting can be so readily procured as in San Francisco. The materials needed about smelting works are also abundant there. Scrap iron, fluxes, coke, fire-brick and apparatus can be had there at low rates. All these advantages combine to render the shore of the Bay of San Francisco the best and most desirable point for the smelting works to receive and treat the Castle Dome and other ores.

THE SMELTING WORKS.

The Company's smelting works are on the waters of San Francisco Bay, opposite the city, in the suburbs of Oakland, at Melrose, Alameda County, one of the stations on the railroad extending southward from Oakland to Hayward's, Niles and San José. This railway also connects with a branch of the Central Pacific railway, which, crossing the Coast Range at Livermore's Pass, extends southeasterly to Yuma. The Company's ore is brought direct by this route to the works. This Melrose station is $11\frac{1}{2}$ miles from San Francisco, and 874 from Ogden, is a telegraph station and there are four trains a day each way. It takes three-quarters of an hour to reach the works from the city. It is accessible also by street cars from Oakland or Brooklyn within half of a mile. The Company has at this place six acres of land in one body lying between the railroad track on one side and the navigable water of East Creek, a branch or estuary of Alameda Bay on the

other side. Bay avenue, leading down to Clark's Landing, forms another boundary, as shown on the sketch plan. The works are thus admirably situated as respects access and the receipt and delivery of ores, fuel, and the products. Supplies are brought by water from across the bay in tugs and barges and landed at the wharf, or are delivered by rail. The total frontage along the railway is 680 feet. Trains arriving with



Location of Smelting Works at Melrose.

ore are switched off upon the siding adjoining the platform of the works, and the ores are wheeled on trucks directly into the main building. The position of the works relatively to the railway and the water is shown on the accompanying outline plan.

The frontispiece illustration, from a photograph, gives a general view of the works as seen from the railroad. There are several buildings, and furnaces with flues, condensing chambers and high brick chimneys. The principal buildings are for the furnaces and refining department, and for the storage of ore and fuel. There is also an independent structure for the storage of coke, a large office, an assay and chemical laboratory, a house for the foreman and a lodging house for the men.

Water is obtained in unlimited quantity from three artesian wells, from which there is a continuous flow. There are three large cupola water-jacket furnaces and one small one, all connected with a brick condensing chamber with several partition walls by which any dust or fumes are condensed and saved before reaching the main stack chimney.

In the refining department there are kettles for the zinc process and two large English cupel furnaces. The works are well supplied with tools and fittings for carrying on a large smelting and refining business.

Fuel, consisting chiefly of coke, is obtained from the gas works or is imported. It is probable that in the near future coke of excellent quality will be procurable from the coals of Carbon River, Washington Territory, now being developed for the supply of San Francisco.

PURCHASE OF ORES.

It is the intention of the Company to purchase silver and gold ores as offered in the San Francisco market for the purpose of mixing them with the free smelting Castle Dome ore and smelting them together. By this mixture of diverse ores the best and most economical results can be obtained. One ore helps the other in smelting, when properly combined, and it is highly ad-

vantageous to have a variety of ores on hand to select from. These important conditions give smelting works upon tide-water a great advantage over those located in the interior.

The supply at the present time is large, and is chiefly drawn from Arizona, Mexico, Lower California, Nevada and Utah. From California there is a considerable supply of gold-bearing sulphurets, which are now worked chiefly by chlorination. It is the expectation of the Company to be able to work these sulphurets with great economy, and on a large scale, by a novel method, using in connection with the sulphurets the free smelting ores of Castle Dome to take out the gold, which will afterwards be found combined with the silver after cupellation.

It is probable that a much larger supply of ores will soon be received in San Francisco from Mexico than heretofore, owing to the construction not only of the Southern Pacific road, but to the Sonora and Tucson railway crossing the State of Sonora and having its terminus upon the Gulf of California at Guyamus. These, and other roads soon to be built, will, by providing greatly increased facilities of access and of transportation of supplies, greatly stimulate prospecting and the working of mines. That the ores will gravitate to San Francisco is certain when the facilities for smelting are extended, and good prices for ores are paid in competition with European and other smelting works. It is a well-known fact that ores can be smelted to best advantage where a variety of ores from different sources can be brought together. San Francisco will have this great advantage, for, owing to its central position, and its connection by rail and water with the whole Pacific coast and the interior, ores will be taken to it from all sections of the country, and the more successful and

extensive the smelting works become the more capable they will be of successfully treating all kinds of ore, whether "docile" or "rebellious," or rich or poor in the precious metals.

SUPERIOR LEAD.

The refined lead produced from Castle Dome ores is remarkable for its purity and softness, and its special adaptation to the wants of the manufacturers of white-lead. It is in great demand in San Francisco for that purpose, being found far superior to lead which has been smelted from arsenical and antimonial ores. It is thought to be better than the celebrated Missouri and Wisconsin lead. It is desilverized with great ease; an advantage not only of economical importance, as respects ease of working and product of silver, but as giving a lead which is almost chemically free of silver, and therefore much better adapted to the manufacture of white-lead, and much more valuable for that purpose than it could be if it contained silver. The presence of a dollar's worth of silver in a ton of lead affects its corrosion in no slight degree. Lead which corrodes easily and completely is the best for making white-lead. Lead carrying silver does not corrode so rapidly and completely as pure lead, and the white-lead contaminated with silver darkens on exposure to sunlight. Hence it is very important to white-lead manufacturers to have pure lead. The lead produced from the Company's ores has been tried with most satisfactory results. It is in demand and commands a higher price than any other. The local consumption of lead in California for the manufacture of white-lead is about two hundred (200) tons a month. Some of it has heretofore been obtained from the furnaces of Utah.

LANDING ON THE RIVER.

The Landing on the Colorado River is exceptionally well situated, being just below a bold rocky point against which the main current of the river washes, thus keeping the channel deep and open and at the same time holding it so as to prevent its changing its place or cutting out the banks. Boats here find a secure landing at all stages of the water, and even at times of high water there is a firm high bank on which to land. The Company's store is located at this point facing the river. It is a substantial adobe building with massive walls and a good roof. A stock of miscellaneous merchandise, chiefly provisions, is kept here for sale to the miners and to travelers and prospectors on their way up or down the river. As all goods for the mines are landed at this point, the store serves also as the chief warehouse of the Company from which supplies are sent to the mines as needed.

All the ore from the mines is sent in sacks to this landing by the teams, and is piled up on the bank until the steamer stops to take it on. The book-keeper at the store keeps the record of ores shipped and of goods received, sold, and sent to the mines. There is also a store at the mines for the convenience of the miners; at which the sales during the winter when the miners' families are there are larger than at the Landing. The teams on the return trip from the Landing to the mines take back a supply of water in casks for the use of the miners. Drinking water is also procurable at large natural tanks a few miles from the mines. The absence of water in the mines is an important advantage in mining. No expense for pumps or fuel to run them is required. Some water has been tapped in the lowest level of one of the claims in the district, but it is not yet certain whether

it is a permanent supply or a local tank-like reservoir which may soon be exhausted. It is clear, potable water, and is used for drinking-water in the camp.

TIMBER AND FUEL.

The Colorado river valley furnishes an inexhaustible supply of cotton-wood and willow timber. It is cut along the bottom lands and is floated down by Indians and sold at the Landing. The mezquite tree is also abundant and can supply a large amount of excellent charcoal if it is needed. Since the completion of the railway the superior lumber of the north coast can be laid down at the Landing at prices which cause it to compete with the cottonwood for mining timbers and other purposes. The mines do not require extensive and expensive timbering. The ground being dry stands very well. For lagging, the straight willow sticks from three to four inches in diameter are extensively used and are very cheap.

The fuel at the Smelting Works consists chiefly of coke either imported from England or Australia or obtained at the works of the Gas-Light Company at San Francisco, or the gas companies of Oakland or Stockton. Since the discovery of the caking and coking coals of Carbon river, Washington Territory, the prospect of obtaining quantities of excellent and cheap coke at San Francisco are increased. The completion of the Guyamus and Tucson Railway may add the anthracite coal of Sonora to the list of available fuels on the Pacific Coast, and thus add to the already numerous advantages in favor of San Francisco Bay as a smelting and metallurgical center.

EXTRACTS FROM THE OFFICIAL REPORTS OF THE
UNITED STATES COMMISSIONER OF
MINING STATISTICS.

I append some extracts from official government reports to show the estimation in which the Castle Dome mines have been held for many years past by different persons. These notices might be greatly extended, as the district has been frequently referred to and described by persons who have traveled upon the Colorado River.

[REPORT FOR 1868, PAGE 452.]

“Castle Dome, 50 miles above Arizona City [now Yuma], is a well-known mining district, so-called from an isolated mountain bearing a close resemblance to a dome. * * * * Mr. Gird values the ores at 60 per cent. [lead], with \$40 in silver to the ton, making the value of a ton of ore - - - - \$90.00
He allows for mining and sacking, . . . - \$12.00
Carting to the Colorado River, - - - - 15.00
Freight to San Francisco, - - - - 18.00 45.00

Leaving a profit per ton of - - - - \$45.00

“The bottoms and ravines furnish cottonwood, mesquit and ironwood, but not in sufficient quantities to supply fuel for reduction works upon a large scale, and hence, as most of the Colorado River ores are such as to require a smelting process, it will probably be found most profitable to ship them to San Francisco. Lately a price has been offered in that city for lead ores from the Eureka and Castle Dome districts which is sufficient to warrant their shipment even at the present rates of transportation.”

[It will be noted that since then the freight has been reduced to \$11 per ton, and that the cost of mining and carting to the landing has been reduced to less than one-third of Mr. Gird's estimate.]

[REPORT, 1870, PAGE 270.]

“Castle Dome District.—This district is situated opposite a point on the Colorado River 30 miles above Arizona City and inland to the east about 20 miles. It was organized in 1863 and 1864 and some of the mines have been in operation more or less ever since. * * *”

[REPORT, 1873, PAGE 344.]

"In Yuma County several of the older mines in Castle Dome district have been worked, and one or two discoveries of very rich argentiferous galena are reported. Much money is reported to have been expended in this district during the year in explorations. The shipments of galena by the Colorado Steam Navigation Company during 1873 were 270 tons, by far the greater part of which came from Castle Dome. The silver value of this ore in San Francisco was about \$75 per ton.

[REPORT, 1876, PAGE 353.]

"The principal mines in Yuma county, which comprises the southwestern part of the Territory, are those of the Castle Dome district, upon the Colorado River. They have so often been referred to in these pages that it will now suffice to say, that recent work upon them has abundantly confirmed their permanency and value. Much ore has been shipped to San Francisco, where it has an established reputation and finds a ready market."

FROM THE REPORTS OF U. S. GEOGRAPHICAL SURVEYS.
LIEUT. G. M. WHEELER, U. S. ENGINEERS.

[ANNUAL REPORT, 1876.]

"Castle Dome district lies in the foot-hills and on the western slope of a range of mountains in Arizona, 18 miles east of the post-office of Castle Dome Landing on the Colorado River. The eastern side of these mountains has not been prospected. The general trend of the range is N. 25° west. The district as already traced, is two miles in width and seven in length, following the trend of the mountains."

"It was discovered and organized in 1863 by Messrs. Snively and Conner. Except a portion of 1872 it has been worked constantly since that time. * * *

"A geological investigation has been made by Professor Blake of Connecticut. The lodes are found to run N. 25° W. Some follow and others intersect the stratification." The rich veins * * * [carry galena with fluor-spar and calc-spar.] "The wall rocks are slate and porphyry." * * * "Fissure-veins are found at a depth of 350 feet." [These fissure-veins are worked, in places, to a depth of 350 feet.]

7

CASTLE DOME
MINING AND SMELTING
COMPANY.
SUPPLEMENTAL REPORT

SHOWING THE PROGRESS MADE TO JULY 1st, 1881.

MINES IN ARIZONA ;
SMELTING WORKS AT MELROSE,
IN CALIFORNIA ;
PRINCIPAL OFFICE IN NEW YORK.

(ROOM 46, NO. 18 WALL STREET.)

NEW YORK :
SEPTEMBER, 1881.

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7

CASTLE DOME MINING AND SMELTING COMPANY.

SUPPLEMENTAL REPORT.

July 1, 1881.

THE SMELTING WORKS.

The Company's Smelting Works at Melrose, described in full in the Report of July, 1880, have proved to be highly satisfactory as respects location and conveniences for the delivery of ores and supplies. The branch track or siding of the railway has been put in order and trains of freight cars deliver the ores upon the platform of the works with ease and regularity.

Extensive additions and repairs to the works were found necessary soon after starting the furnaces. Amongst the added improvements are a new six-ton wrought iron water-jacket cupola furnace, made to order; a new tubular boiler, new steam water-pumps and a new and higher brick chimney-stack for the refining kettles. The refining kettles have also been renewed and the flues changed; so also with the

cupelling furnaces and their flues. These, with other minor improvements and changes, have not cost the Company more than \$10,750 in direct cash outlay, but the effectiveness and value of the works have been greatly increased.

The many interruptions and delays incident to the starting of a new enterprise, involving not only smelting but mining and trading at the Company's stores, together with the want of sufficient cash capital, have interfered with the regularity and extent of the smelting work and have prevented having such a large supply of ores on hand, of the proper composition for mixing with the Castle Dome Silver-Lead Ore, as is essential to keep the furnaces running steadily upon the most approved and economical mixtures of ore. For these reasons only one of the furnaces has been kept in blast and this not constantly, as it should have been.

Altogether there have been 260 days running time since the work commenced, and 2,344½ tons of ore, matte, and bullion have been smelted. Of this amount 1,300 tons, in round numbers, were the superior Silver-Lead ore sent from the Company's mines at Castle Dome, and the remainder was obtained by purchase in San Francisco, and from consignments.

The metals resulting from these smelting operations consisted of—

Lead,	1,882,425 pounds=941+ Tons.
Silver,	142,625 ounces.
Gold,	860.7 ounces.

and their total combined value was \$256,361. Over 110 dore bars of silver have been turned out, ranging

in weight from 1,185 to 1,200 ounces, their aggregate net value being \$144,698. These bars have been uniformly of high grade of fine silver, free from base metals, and they are favorably known amongst the bullion dealers, the banks and the mint as always up to the represented fineness as stamped by the Company's assayer at the works.

THE LEAD.

The lead produced during the year, and which is now being turned out by the Company, is remarkably pure and soft. It fully sustains the high reputation which the lead properly made from Castle Dome ores has always had. Its purity and freedom from silver, after refining, and its fine corroding properties, ensuring the best quality of white lead, cause this product to be in demand amongst the white-lead paint manufacturers. The Company's lead has, therefore, found a ready sale in San Francisco and at a higher figure per pound than common lead.

A sample of 160 tons forwarded to New York was tested by the best makers of white lead and was pronounced to be not only superior in quality but the best which has been produced for corroding purposes. It is even sought for by assayers who require very pure lead free of silver and gold.

A sample of the refined lead sent to Berlin was analyzed by Dr. D. Ziurck with the following results:

Analysis of Castle Dome Refined Lead.

Lead,	99.9937
Copper,	0.0011
Antimony,	0.0015
Silver,	0.0003
Bismuth,	0.0006
Iron,	0.0021
Zinc,	0.0007
	<hr/>
	100.0000

The attainment of such a degree of purity in a commercial product of this kind is rarely seen. Much credit is due for this success to the Managing Director, Mr. W. P. Miller, and to his assistant, Mr. Darwin.

The price of lead during the year past has ruled low, and it is believed will be higher in the future. The bulk of the Company's lead has been sold at from 4½ to 5 cents, but when put up in 100-pound boxes, for the retail trade, it commands 6 cents per pound. The sales of lead during the month of July last, including some litharge, amounted to over ten thousand dollars (\$10,000). The litharge prepared for assayers' use is unusually "pure" and is in demand.

THE LANDING.

The full and complete title to the Landing, covering eighty acres along the bank of the Great Colorado of the West has been obtained from the United States during the year. This, practically, gives the Company a town-site upon the river where there is an unusually good and permanent landing-place at all stages of water. The old store, though a very large

and substantial structure for that region, was inadequate to the increased business of the Landing, and a new one of adobe, and several smaller buildings have been erected.

The river steamers, though somewhat irregular in their trips at times, are now conforming better to the schedule time and take the ore to Yuma as often as necessary. The Company's store and office is the chief stage station on the route north from Yuma, and a regular tri-weekly stage service has been well maintained and improved during the year by the Douglas Brothers. Their stages run also beyond the Landing to Silver District. This line has become a part of an extended stage route up the Colorado Valley to Ehrenberg and the travel in that direction is increasing. At the last session of the Legislature of Arizona an appropriation of \$10,000 was made for the opening and improvement of a wagon road from Yuma to Ehrenberg by way of Castle Dome Landing, and the work is now progressing. This adds to the value of the Company's property at the Landing and justifies considerable expenditure for its improvement.

THE MINES.

Several claims in Castle Dome District have been added by location and purchase.

A considerable amount of prospecting has been done upon the upper portions of the claims; some dead work has been carried forward upon the William Penn and the Railroad Claims, but the chief work of mining

has been upon the Norma, Flora Temple, and Railroad. I inspected the latter thoroughly, as well as the Flora Temple, on the 13th of May last and found that the vein was about twelve feet in width with well defined clay walls and a central vein-stone of fluor spar and broken rock holding galena in sheets and masses, very promising in appearance for a large yield at a greater depth. The lower workings of the Flora Temple were also promising in their appearance. Upwards of \$20,000 have been expended by the Company in dead-work, improvements, and assessment work upon these and the other claims in Castle Dome and in Silver District.

The production of ore at the mines since the Company took possession has been satisfactory considering the primitive way of mining, the slight depth obtained, and the absence of hoisting machinery. Most of the ore is hoisted by a hand-windlass at several different shafts and necessarily costs more per ton than it will when machinery is supplied.

A deep engine-shaft, centrally located so as to reach several of the veins by cross-cuts, is very important to the success of the mining part of the enterprise. Such a shaft should be equipped with hoisting machinery of capacity sufficient to work to a depth of not less than 1,000 feet. By means of cross-cuts and drifts at intervals of 100 feet a large amount of ore could be drawn through such a shaft from several distinct veins and at a much lower average cost per ton than if the

same ores were drawn through many different openings by hand-windlass or whims.

The striking of water in the bottom of the Railroad mine is a favorable feature. This water would afford a supply for the boiler of steam-hoisting works.

The ores taken from below the water-level have proved by trial to be richer in silver than they were above. This is another incentive to deeper mining in addition to the fact that the best veins have, as a rule, been stripped of their ore near to the surface—as deep as they could be conveniently worked by hand.

At the water-level, also, some new and beautifully crystallized specimens of carbonate and molybdate of lead, together with mimetite and vanadinite have been taken from grotto-like spaces partly filled with these minerals on a basis of galena and fluor spar.

SILVER DISTRICT.

At Silver District the work of developing the Hamburg mine and the other claims has been suspended until the Company becomes able to carry forward a general and well-sustained plan of opening these large veins. Other claims in the District, upon which considerable money has been expended, are doing well; notably, the Red-Cloud, the Silver-Glance and the Princess, this last being the next adjoining claim to the Company's Hamburg mine. The rare mineral, vana-

danite, occurs in the Hamburg in beautiful red hexagonal prisms.*

REDUCTION OF RATE OF FREIGHT.

Upon the completion of the Southern Pacific Railroad of Arizona the rates of freight on ores from the distant stations in Arizona and New Mexico were greatly reduced and at the same time the rate upon the Company's first-class ore from the Castle Dome mines was reduced from \$11 to \$9, and upon the second-class ores to \$7.50. This reduction is greatly to the advantage of the Company and will be more evident and important whenever the output and shipment of ores shall be increased to the amount contemplated.

The reduction of freight upon ores from other districts is also advantageous to the Company by drawing ores toward San Francisco and making that city the chief metallurgical center of the Pacific Slope.

The completion of the railway to connect with the Eastern system in the Southwest greatly extends the area of mineral country tributary to the Bay of San Francisco. The branch road leading down into Sonora will also largely add to the ore supply.

Another and important feeder is projected southward from Yuma into Sonora to Port Isabel, on the Gulf. This will provide an outlet to San Francisco by rail of the many ores known to exist along and near

* For a notice of these, and of the mimetite at Castle Dome, see a notice, by W. P. Blake, in the Min. and Sci. Press, Aug. 13, 1881.

the shores of the California Gulf. Similarly in California and at the north, in Idaho and Montana, Oregon and Washington Territory, the extension of railways leads to an increase of ore production and transportation in all those regions and largely increases the quantity of ore sent to the San Francisco smelters.

INCREASED SUPPLY OF ORES.

By reason of this increase of the railway system in various directions, and the greater development of mines in Mexico, the quantity of rich silver ores sent to San Francisco on sale has already greatly augmented. Ores now offer in large lots of high grade from Mexico as well as from Arizona. The newly-opened region of Wood River, in Idaho, will supply large amounts of high grade galena ore which no doubt can be more profitably smelted at the Bay of San Francisco than at the mines. Such ores arrive in large lots and require a considerable amount of cash capital to purchase and hold them until smelted.

It is of great importance to the success and profit of the Company's operations to have a large stock and a great variety of ores on hand so that the most economical mixtures can be made for the charges to the furnaces and so, also, that a uniform amount may be worked from month to month without stoppages and with a nearly uniform production. It is the custom at all well-appointed smelting establishments to have such a large stock of ores on hand, and it is the great neces-

sity of the Company's enterprise at the present time, requiring of course a large amount of cash capital, as well as the exercise of the utmost prudence and intelligence in the purchase of ores. These qualities have, I believe, been exercised in a rare degree by the Managing Director, Mr. Miller, who has conducted the operations at Melrose, since the commencement, with economy and profit. It is manifestly the duty and interest of the Company to strengthen and sustain him by raising sufficient cash capital to carry forward the work on a more extended and advantageous scale both at the smelting works and at the mines. It must not be forgotten that in the Smelting Works the profits are cumulative and that the elements of risk which attend mining do not exist. Capital may therefore be safely used and to great advantage. It is my opinion, however, that the mines of the Company, though not offering brilliant and rapid profits, are permanent and reliable in their nature and have a special value and importance in their relation to the smelting branch of the business.

In conclusion, I congratulate the Company upon the degree of success which has been attained, the evident profitableness of the enterprise, and the excellent prospects for the future.

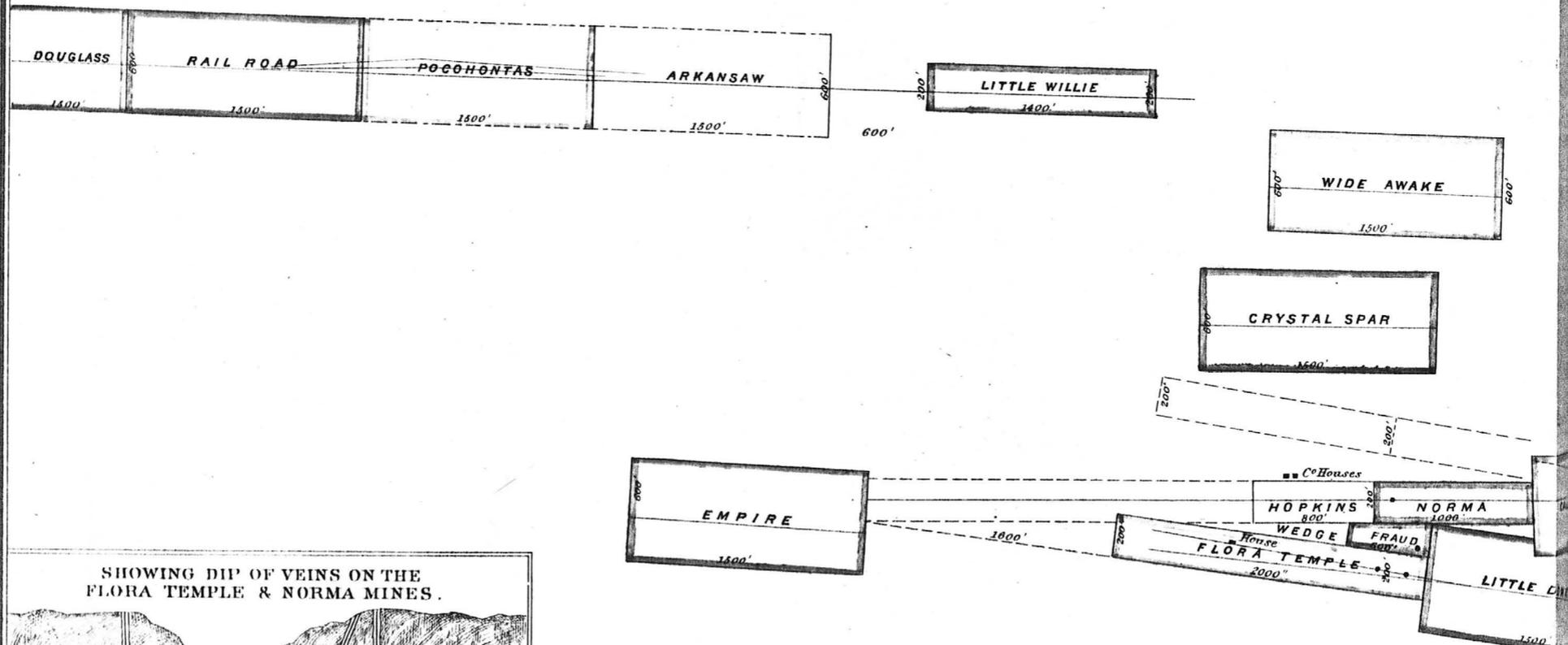
Respectfully submitted,

WM. P. BLAKE,

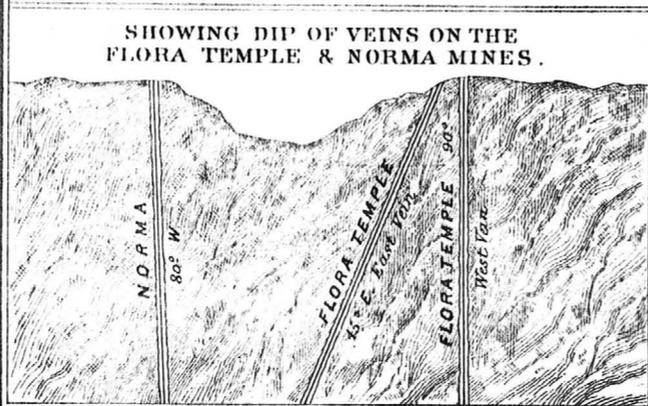
Consulting Engineer, C. D. M. & S. Co.

MINES OF THE CASTLE DOME MINING & SMELTING CO., CASTLE DOME

Scale: 1000' to 1 inch.



SHOWING DIP OF VEINS ON THE FLORA TEMPLE & NORMA MINES.



MINES OF THE CASTLE DOME MINING & SMELTING CO., CASTLE DOME, YUMA CO, A.T.

Scale: 1000' to 1 inch.

