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~~Card~~

AJ

INDUSTRIES, INC.

11454 SAN VICENTE BOULEVARD
LOS ANGELES, CALIFORNIA 90049

"Hal"

H. E. HOLMAN

VICE PRESIDENT AND CORPORATE SECRETARY

(213) 879-0370

Card



A. J. INDUSTRIES, INC.

11454 SAN VICENTE BOULEVARD
LOS ANGELES, CALIFORNIA 90049

ROBERT R. PEARSON

SENIOR AUDITOR

(213) 879-0370

(213) 826-5691

NUCLEAR DYNAMICS

P. O. BOX 20766

PHOENIX, ARIZONA 85036
2871 SKY HARBOR BLVD.

602/267-0581

KELSEY L. BOLTZ

CHAIRMAN

April 7, 1980

Mr. A. J. Puglizevich
226 West 17th Street
Merced, California 95340

Dear Mr. Puglizevich:

At Mr. Boltz's request, enclosed is the map of Princeton which you requested returned to you. We have had it photocopied and will be able to work from the copy.

Thank you very much for sending the information.

Sincerely,



(Mrs.) Sue Matteson
Secretary to Mr. Boltz

Enclosure

NUCLEAR DYNAMICS

P. O. BOX 20766

PHOENIX, ARIZONA 85036

602 / 267-0581

2871 SKY HARBOR BLVD.

KELSEY L. BOLTZ

CHAIRMAN

March 27, 1980

Mr. A. J. Puglizevich
226 West 17th Street
Merced, California 95340

Dear Mr. Puglizevich:

As you may know, Mr. Boltz will be away from the office until April 7. This is to let you know that we have received the report and maps. Mr. Boltz will be able to review them upon his return to the office.

Thank you very much.

Sincerely,



(Mrs.) Sue Matteson
Secretary to Mr. Boltz

A. J. PUGLIZEVICH, REALTOR (Retired)

226 WEST 17TH STREET • MERCED, CALIFORNIA • ~~PHONE~~ 1-209-922-6078

MESSAGE

TO

Helsey L. Baltz, Chairman
Nuclear Dynamics, Inc.
P.O. Box 20766
Phoenix, Arizona (85036)

DATE

March 24, 1980

Enclosed please find
Maps on the mines you
requested according to your
itemized list. I am also
sending you the 1906 Map
(Onion Skin) to check out.
Please return this Mine
map of Princeton as soon
as you have checked it out.
Thanks.

BY

A. J. Puglizevich

INSTRUCTIONS TO SENDER:

1. KEEP YELLOW COPY. 2. SEND WHITE AND PINK COPIES WITH CARBON INTACT.

REPLY

DATE

On 3-27-80, The maps
referred to in this note
and a copy of the report
received earlier were
given to Frank Connadrey
for his review. He

requested that they be
placed on the drafting
table in his office.

Sue M.

SIGNED

INSTRUCTIONS TO RECEIVER:

1. WRITE REPLY. 2. DETACH STUB, KEEP WHITE COPY, RETURN PINK COPY TO SENDER.

A. J. PUGLIZEVICH, REALTOR (Retired)

226 WEST 17TH STREET • MERCED, CALIFORNIA • ~~209-722-6078~~ 1-209-722-6078

MESSAGE

REPLY

TO [Henry J. Batts, Chairman
Nuclear Dynamics, Inc.
P.O. Box 20766
Phoenix, Arizona (85036)]

DATE March 24, 1980

Enclosed please find
Maps on the mines you
requested according to your
itemized list. I am also
sending you the 1906 Map
(Opion Skin) to check out.
Please return this Mine
map of Princeton as soon
as you have checked it out.

Thanks.

BY A. J. Puglizevich

DATE

SIGNED

RECIPIENT RETURN THIS COPY TO SENDER



LAND COMPANY

April 4, 1980

File: 21-78-06

Mr. Kelsey L. Boltz
Chairman
Nuclear Dynamics, Inc.
2871 Sky Harbor Boulevard
Phoenix, Arizona 85034

Re: Pine Tree Mine

Dear Mr. Boltz:

I enjoyed meeting with you on March 12, 1980. I told you at that time that the Board of Directors of A. J. Industries, Inc., the parent company of A. J. Land Company, had not authorized us to enter into any leasing arrangements relative to our mining properties. I also told you that I would advise you of any new developments.

I thought I should tell you that the Board of Directors of A. J. Industries, Inc. met on April 2, 1980 and reconfirmed earlier decisions to the effect that no actions are to be taken with respect to our mining properties for the present.

I will be pleased to let you know if and when we are in a position to resume our discussions.

Sincerely yours,



H. E. Holman
Vice President

HEH:sdem

APR 9 1980

NUCLEAR DYNAMICS

P. O. BOX 20766

PHOENIX, ARIZONA 85036

602/267-0581

2871 SKY HARBOR BLVD.

KELSEY L. BOLTZ

CHAIRMAN

March 19, 1980

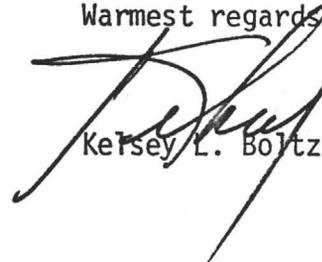
Mr. and Mrs. John Kelley
c/o Kelley Motors, Inc.
Fifth Avenue and Highway 108
Jamestown, California 95327

Dear John and Joyce:

It was certainly a pleasure to see both of you again--brought back many memories.

I am continuing to look at some properties in the Mariposa area; when I get back to your neighborhood again I hope to get a chance to return the very warm hospitality that you extended to me.

Warmest regards,



Kelsey L. Boltz

KLB:sem

A. J. PUGLIZEVICH, REALTOR (Retired)

226 WEST 17TH STREET • MERCED, CALIFORNIA • ~~██████████~~ 1-209-772-6078

MESSAGE

REPLY

TO [Helsey L. Batty, Chairman
Nuclear Dynamics, Inc.
P.O. Box 20766
Phoenix, Arizona (85036)]

DATE _____

DATE March 19, 1980

Enclosed please find
written material on the
mines requested by you
according to your itemized
list. I will send you
the maps as soon as
they are ready - (2 or 3 days).
Received your Ch # 21668 for
\$100.00 today dated 2/27/80. I am
returning this check.
Thanks.

BY A.J. Puglizevich

SIGNED MAR 21 1980

INSTRUCTIONS TO SENDER:

INSTRUCTIONS TO RECEIVER:

1. KEEP YELLOW COPY. 2. SEND WHITE AND PINK COPIES WITH CARBON INTACT.

1. WRITE REPLY. 2. DETACH STUB, KEEP WHITE COPY, RETURN PINK COPY TO SENDER.

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M A P S.

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MARIPOSA COMMERCIAL & MINING CO.

The Mariposa Commercial & Mining Company, incorporated under the state laws of California, own some 44,920 acres of mineral, timber and agricultural land in Mariposa County, California. Three hundred and twenty acres of this are detached and located in the timber belt at the top of Sweetwater Canyon which leads into the Merced River.

Mr. J. Ross Browne, in a report made March 15, 1868, for the United States Government on the "Mineral Resources of the States and Territories West of the Rocky Mountains", says the Mariposa Estate or Fremont Grant as it is often called was acquired from Juan B. Alvarde by John C. Fremont in 1847. The Grant was made when California was under the Dominion of Mexico and covered land suitable for grazing purposes along the Mariposa River. The Grant boundaries under the United States Government had to be fixed and Fremont swung his Grant around so as to cover those mines working on the south side of the Merced River and in peaceful possession of the miners.

Litigation ensued and the decision under the United States agricultural patent gave the right to the mineral. Fremont eventually took possession after several men had been killed in 1859 and thus acquired under the United States Government laws what the Mexican Government did not intend to grant.

The mines were successfully worked for three and one half years by Fremont with an average monthly yield of \$50,000 and for half a year the net profit had equalled that sum. The estate was then sold to an incorporated company in New York and

the ablest mining engineers were employed to report on the property. Owing to the favorable opinions of all the experts and the boom that existed at that time in California Mines, the shares of the \$10,000,000 company sold readily. The company was formed by Fremont creditors and Mr. Olmstead was appointed manager in 1864 and he found that every effort had been made to make the yield as large as possible for flotation purposes and it fell immediately afterwards from \$385,000 for the first five months of 1863 to \$186,993 during the last six months after the sale. The company had a mortgage of \$15,000,000 and with the smaller output it got into financial difficulties. A committee of shareholders was appointed in 1865 to investigate the condition of the company and eventually the company fell into the hands of the creditors, Dodge Bros., and finally a receiver was appointed in 1867.

Several attempts were made to work the mines and the company borrowed money from Mr. Donahue who brought suit for its recovery in 1874. The suit extended over a period of seven years and the money involved amounted to \$262,491. The property was sold at a sheriff's sale and Mr. Donahue became the owner. A new company, which is the present one, was formed in 1887 and incorporated under the state laws of California. The share issue amounts to 3,000 of a par value of \$100 each. New working capital was found in 1899 and work resumed on the "grant". The Princeton & Mariposa Mines were dewatered and mills were erected at each mine. A hydroelectric plant of 400 K. W. was installed on the Merced River. In addition to the work done on these mines considerable money was spent in opening up other mines on the Grant, and the ore obtained was milled at the Princeton or Mariposa Mills.

SUMMARY OF GOLD RECEIPTS FROM 1900 - 1911 (Inclusive)

MINE	TONNAGE	BULLION GROSS VALUE Recovered	VALUE PER TON MILLED (Exclusive of Concentrates)
Alice Mine	784.	9,792.58	12.49
Elizabeth Mine	132.	2,473.45	18.73
Green Gulch	9,243.5	103,464.11	11.19
Long Mary	7,991.	103,920.55	13.13
Louis Mine	1,232	27,589.83	22.39
Mariposa	112,614.	690,055.42	6.13
Mt. Ophir	2,250.	28,130.99	12.90
Pine Tree	3,411	60,127.06	17.63
Pine Tree & Jos.	13,004.8	189,499.41	14.58
Josephine	6,391.5	39,207.36	6.13
Princeton Mine	350,213.	1,227,107.28	3.50
River Tunnel	1,911.	1,580.22	.82
Miscellaneous	4,626	90,786.96	19.60
	<u>513,803.8</u>	<u>2,573,735.22</u>	<u>5.01</u>

A 5 stamp Mill was erected at the river to handle the rock mined from the Josephine, Pine Tree, and adjacent mines. Below is a summary of tonnage milled gold produced and value per ton milled from different mines from 1900 to 1910 (inclusive).

SUMMARY OF GOLD RECEIPTS FROM 1900-1910 INCLUSIVE.

MINE	TONNAGE	BULLION GROSS VALUE RECOVERED	VALUE PER TON MILLED (Exclusive of Concentrates).
Mariposa	111,945.00	685,571.49	6.12
Princeton	350,213.00	1225,471.08	3.50
Green Gulch	8,226.00	95,546.94	11.61
Mount Ophir	1,979.00	25,608.62	12.94
Louis	1,222.00	27,484.47	22.49
Pine Tree	3,411.00	60,127.06	17.63
Pine Tree & Josephine	9,984.00	153,296.61	15.35
Josephine	6,391.50	39,207.36	6.13
Log Mary	7,461.00	100,302.19	13.44
Alice	784.00	9,792.58	12.49
Elizabeth	132.00	2,473.45	18.73
River Tunnel	1,911.00	1,580.22	.82
Miscellaneous	4,486.00	79,896.58	17.80
TOTAL	508,145.50	\$2506,358.65	4.93

The above table does not include gold won from concentrates.

Bullion values only are shown, as the Sulphurets values are not available for all the mines.

Approximately \$436,000 has been spent on equipment since
681,551.06

1899. The details of the present equipment are given under the description of the respective mines. The total receipts for the period under review amount to \$2,667,748.00 and the disbursements \$2,637,919.00. The receipts include assessments amounting to \$452,850.00.

Prior to the active work started in 1899 the Grant was opened to public grazing and later this was prohibited and a large acreage was leased for agricultural and grazing purposes. The agricultural features of the Grant are dealt with in a report by Mr. Wilson attached hereto.

The hydro-electric power plant comprising dam on Merced River, 400 K. W. electrical generator driven by turbine, 15 mile transmission lines transformers etc. represents an expenditure of approximately \$140,000, and today is of great importance in the development of the grant. The low water of the Merced River during September and October does not permit generating more than an average of 50 horse power for these months, but there is ample water for power for the balance of the year.

The small amount of power produced does not warrant any expenditure in seeking a new market. The details of plant, etc., will be found as per annexure.

In addition to the report of Mr. Wilson, you will find a report by Mr. Maguire dealing with the work done on the Grant since February 1907, and also his report on the 320 acres of timber land.

Complete maps of the Grant showing the location of the different mines, position of pole lines, etc., accompany this report, and in addition maps are given pertaining to the most important mines. The following mines are herewith dealt with:

PRINCETON MINE.

According to Mr. J. Ross Browne, in a report made March 15th, 1868, for the United States Government on the "Mineral Resources of the States and Territories West of the Rocky Mountains", this mine produced \$4,000,000 prior to 1868. Since this date and up to 1899 no figures are available and evidently the mine was closed down for a considerable period, probably thirty years. The accompanying map of this mine shows the area worked by the previous owner and the area stoped by the present company since 1899.

The vein occurs in the characteristic slates of what is termed the "Mother Lode" in which belt there are at present several mines working at a profit.

The following table shows the tonnage milled for the different years and the gold recovered.

Year:	Tons Milled:	Total Net Yield:	Net Value Per Ton:	Residue Value Per Ton:	Gross Value Per Ton:
1900	2089	9296.30	4.45	Unavailable	Unavailable
1901	16594	113740.95	6.85	"	"
1902	38696	199613.21	5.16	.57	\$5.73
1903	74202	285106.33	3.84	.38	4.23
1904	58161	189611.04	3.26	.34	3.60
1905	67772	261965.49	3.87	.50	4.36
1906	48316	145797.62	2.98	.47	3.45
1907	23826	98564.11	4.14	Unavailable	Unavailable
1908	16744	57265.64	3.42	"	"
1909	3020	7370.89	2.44	"	"
1910	794	5208.73	6.56	"	"
TOTAL	350214	\$1,371,530.31	3.916		

Owing to a fire which burnt down the head frame and other buildings the mine was closed down from July 1904 to January 1905, and when these were re-erected the mine was dewatered and the underground work resumed. The results obtained from

the development work immediately afterwards was discouraging and the payable ore reserves gradually exhausted. Although the vein on the 1600 foot level is so strong the sampling value averaged only \$1.54 over a width of 4.89 feet for the entire length which was too low for profitable mining. Some \$6.00 ore was encountered in the south drive. The financial condition of the company was getting poorer and development had to be suspended. Some leasers took out the ore adjacent to the stopes in the upper levels and this with ore won on company account was milled during the last few years. I understand that nearly all of the rock from developing faces was sent to the mill and this had a lowering influence on the value of the yield. The sending of this rock to the mill was justified as there was not sufficient payable ore developed to keep the mill supplied with ore from the stopes alone, besides the fact that when once broken and hoisted the extra cost of milling would be less than the value of this rock. Finally the mine filled with water and all work stopped underground.

The vein on the 1100 foot level averaged 3.56 feet in width over a distance of 1684 feet. On the 1600 foot level the vein averages 4.9 feet in width over a distance of 1460 feet and both faces of this level are still in ore of a greater width as per photograph. The vein on this level is reported to be stronger and more uniform in width than on any other level. (See photograph No. 7 of face of south drift). The average dip of the vein is 50 degrees to the northeast.

The strong vein exposed on the 1600 foot level gives every assurance of continuity to a much greater depth and the his-

tory of other "Mother" Lode mines indicate the possibility of encountering profitable ore by further development in depth and laterally.

The mine prior to closing down made about 30 gallons of water per minute and was handled by air driven pumps. The water is now at the 300 foot level and by calculation from the tonnage milled plus the volume of the drives there is in the mine approximately 40,000,000 gallons. The gauge of the skipway is 28" and the mine can be dewatered by both bailing and pumping. Dimension of the skips are 6' x 2' x 2½'.

The shaft excepting that part from the 500 foot level down to the 1250 foot level was in good condition prior to the closing down, but the bad part between the 500 and 1250 foot levels gave considerable trouble and caused considerable expense. Mr. Maguire, the manager, suggests that this can be overcome as per his letter attaches herewith.

A large station with ore pocket was made at the 1250 foot level and an air hoist used for hoisting when sinking the shaft.

The equipment of the Princeton Mine is as follows:

MILL:

- 1 - 30 stamp mill stems 3 3/8" diam.
- 1 - 10 stamp mill stems 3 1/8" diam.
- 4 - Union Concentrators in good condition excepting belts.
- 1 - Ohman Compound Tandem Automatic Engine 12" x 16" Cylinder, 150 Rev. per min. - 100 H. P.
- 1 - 16" Union Iron Works rock crusher
- 1 - 9" Risdon Iron Works rock crusher.

WATER SUPPLY:

7920 - ft (Approx.) of 2" pipe leading from springs
 5000 - ft " of 4" Screwed casing leading to
 Green's Gulch and from Agua Fris pumping plant.
 1000 - ft. 3" Screwed Casing
 1 - Round Wooden Tank - 12,000 Gallons Capacity
 1 - " " " " 18,000 " "
 1 - " " " " 14,000 " "
 1 - " " " " 2,000 " "
 1 - " " " " 15,000 " "
 1 - Dean Duplex Pump, Steam, 10" x 5" x 12"
 1 - C. H. Evans Geared power pump 8" x 12"
 1 - " " " " " " 6" x 10"
 400 ft - 4" pipe line; to return water to mill
 200 ft - 3" pipe, Standard Size.

SAW MILL EQUIPMENT:

1 - Circular Saw Mill, main saw 52" diam. top 36" diam.
 1 - 60" Circular cut off saw
 1 - Small circular saw and boring table for 12" saw
 1 - 36" band saw
 1 - Plain Side Valve Engine 10" x 12"

MILL SHAFT:

1 - Double Cylinder, Single Drum hoist, cylinders 8" x 10"

AGUA FRIA WATER SUPPLY:

1 - Three throw single acting gearing (4 to 1) Power
 Pump 7" x 8" stroke
 5000 ft - 4" pipe, boiler tubes, with swedged flanges,
 laid to Princeton Mine.

MINE EQUIPMENT:

1 - Double cylinder, double drum, geared hoise 12" x 20"
 1 - Giant double cylinder air compressor, 15" x 30"
 1 - Vertical double cylinder air compressor, 17" x 20"
 1 - Ingersoll-Sergeant steam driven air compressor, 22"
 diam. by 24" stroke.
 5 - Horizontal tubular boilers, 54" x 16' - 40 H. P.
 1 - Mewell's Feed Water Heater, 40" x 8'
 1 - Snow compound duplex steam pump, 8" x 12", 4 1/2" x 12"
 water ends.
 2 - Cameron sinking pumps, 10" x 12", 5" x 12" water ends.
 1 - Snow duplex steam pump, 7" x 8", 5" water ends.
 1 - Snow duplex steam pump, 6" x 4" x 6"
 1 - American Blower Co. Fan 24"
 1 - Boston Blower Co. Fan 30".

MACHINE SHOP EQUIPMENT:

- 1 - Lathe, 22" Swing, 6' Bed
- 1 - Radial Drill Press, 4' Center
- 1 - Acme Belt Cutting Machine, Cutting from 3/8" to 1 1/2"
- 1 - Pipe Cutting Machine, Cutting from 1" to 4"
- 1 - Emery Wheel stand for 14" wheel
- 1 - Horizontal Plain Slide Valve Engine, 8 x 10
- 1 - Nagle Vertical Engine, 5" x 6"
- 1 - Word Drill Sharpening Machine.

In addition to the foregoing there are many small tools and equipment. According to the books of the company, without any depreciation but not including the equipment destroyed by fire in 1904, the initial cost in connection with equipment, electrical and mechanical, and water supply of the Princeton Mine and Mill amounts to about \$150,000.

The accompanying pictures show views as follows:

- No. 1 - General view of surface plant
 - a - Refinery and Assay office
 - b - Building containing Boilers, Compressors Machine Shop and Blacksmith Shop.
 - c - Carpenter shop and saw mill, and hoisting works
 - d - Head frame and ore bins
 - e - Part of mill building.
- No. 2 - Near view of Head Frame
- No. 3 - Mills buildings - View of South End
- No. 4 - Dam and Power Plant on Merced River, Bagby, Calif.
- No. 5 - Mill Buildings, View of North End.
- No. 6 - 1250 level, showing underground hoist.
- No. 7 - Face of 1600 ft. Level, South Face.

Electrical power is generated at the Merced River and power is supplied to the Princeton Mine for driving compressors, shops, mill, etc. The compressors supply air to the hoists, pumps and drills.

The mill was originally one of 50 stamps, ten having been removed to other mines of the company. Ten stamps of the present equipment are equipped independently with separate motors, vanners, crushers, etc. so that ^{they} ~~it~~ can be used independently for mill tests. The Princeton Plant is in good order and milling can be resumed at any time ore is found.

MARIPOSA MINE.

The Mariposa mine is located on eastern edge of the town of Mariposa. Mr. J. Ross Browne, in his report on the "Mineral Resources of the States and Territories West of the Rocky Mountains" mentions that there was considerable pocket mining done in the early days. One pocket realized \$20,000; another \$15,000, and sums ranging from \$100 to \$1000 were taken from others. \$200,000 is said to have been taken out before Fremont's possession. In 1864, \$84,948 was the gross yield and other amounts were recovered prior to this but no records of these were obtained. By reference to the map of this mine it will be seen that the Mariposa shaft is down to 1585 feet below the collar on an incline of about 60 degrees. The vein was exposed in the 970 level east drive for 362 feet, but no values were encountered. Owing to the disappointing values met with no stopping has been done below the fifth level, but a small amount of driving has been done on the sixth, seventh and eighth levels.

The period of greatest production was during 1901, 1902, 1903 and 1904. Mining operations were suspended in 1905, and soon afterwards the mill was completely destroyed by fire. All the ore mined since this has been mined under the supervision of Mr. Maguire on a leasing basis.

The following table is the record of the output:
THE TONNAGE MILLED AND GOLD PRODUCED:

YEAR	TONNAGE	BULLION VALUE	VALUE PER TON MILLED (Exclusive of Concentrates)
1900	313.72	6,228.07	20.17
1901	21,557.00	220,993.20	10.25

1902	25,426.00	195,740.74	7.69
1903	26,223.00	116,468.26	4.44
1904	27,303.00	97,341.26	3.56
1905	6,883.00	20,077.94	2.91
1906	15.68	919.44	58.64
1907	8.00	361.48	45.18
1908	563.00	3,045.84	5.41
1909	2,447.90	17,190.32	7.02
1910	1,205.00	7,104.94	5.90
TOTAL	111,945.24	\$685,571.49	6.124

The above table does not include gold from concentrates. Bullion values only are shown, as the Sulphurets values are not available for all the mines.

Since the fire of 1905, 5 stamps have been re-erected and used for milling leaser's ore. The water is now at the drain tunnel level and be calculation from the tonnage milled plus the volume of the drives and the shaft there is in the mine approximately 15,000,000 gallons, and the mine makes about 30 gallons per minute. The shaft is in good condition excepting the first 100 feet and can be used in reopening the mine.

The equipment of this mine comprises the following:

MARIPOSA MINE EQUIPMENT:

- 1 - Double cylinder, double drum, geared hoist, cylinder 10" diam, x 12" stroke.
- 2 - Horizontal tubular boilers (54" dia. x 16' long)
- 1 - " " boiler (58" dia. x 16' long)
- 1 - 5 stamp mill (no concentrators)
- 1 - 22xg 12" Union Iron Works rock crusher.

By reference to the map of this mine it will be seen that a tunnel was driven 280 feet from the Stockton Creek, on a vein in the direction of the Mariposa Shaft and at a level corresponding to the No. 1 level of the Mariposa Mine. The results obtained from this work were reported as discouraging, and it is probable that this tunnel is not on the Mariposa Vein. The intervening ground between the two places has been prospected and good values are now encountered in what is called

Payne's Lease.

This lease is about 1100 feet east of the Mariposa Mine and appears to be an extension of that mine. The Mariposa vein splits in some places in the Mariposa Mine and it is possible that this prospect may be on a spur that has not been followed or that it may be an extension that proved too low grade to work, where it was exposed in the Mariposa Mine.

The Payne shaft is 55 feet in depth. Near the surface a drift 200 feet to northwest was run and this vein stoped the first 20 feet from the shaft and for 40 feet at the end.

At 35 feet down the shaft, drifts 170 feet and 45 feet were driven northwest and southeast respectively. The results of sampling obtained for this level are:

Face N W Drift	25" vein	\$4.75
Stope 150' N W Drift 20' up	16" "	\$5.58
	40' " 42" "	\$1.21
Stope raise 100'		
N W Drift 35' up	39" "	\$1.39
	19" "	\$5.27

Nearly all the ground above the southeast drift has been stoped. The shaft below this level has disclosed good ore and the following excellent results obtained.

55 feet down, East end shaft	20 inches	\$41.34
" " " West " "	18" "	12.40
Average	<u>19 inches</u>	<u>\$27.63</u>

Immediately any quantity of ore is determined the third level of the Mariposa Mine can be extended some 300 feet to a point approximately 450 feet below this place and the vein can be easily and quickly developed and the ore then mined can be sent along this level to the Mariposa shaft and hoisted to this mill.

JOSEPHINE MINE.

This mine is located on a mountain side 1600 feet above the Merced River about a mile and a half south of Bagby. The vein strikes N. W. and S. E. and dips to the N. E. It varies from 5 feet to 30 feet in width, averaging more than 10 feet and is considered to be a branch of Main Mother Lode. According^{to}/the report of J. Ross Browne on the "Mineral Resources of the States and Territories West of the Rocky Mountains" the Josephine produced ore of an average of \$8.53 a ton in 1860. The workings up to 1898 consisted of three tunnels 100 feet/^{180 feet} and a third (Black Drift) totalling 500 feet of drifts in the lode and a perpendicular depth of working of 520 feet.

Work was resumed in September 1899, in the English Trail Tunnel and connections were made with old Ketton Stopes. A winze was utilized as a shaft and deepened to 522 feet; levels were run at the 100, 300 and 500 points. Some 112 tons of ore were stoped near the hoisting station above the English Trail Tunnel level and yielded \$11.34 per ton. Work was suspended in 1901, because the results of the development disclosed low values. Work was again started nine months later in the Shed Tunnel which was formerly the working tunnel for the upper stopes of the Pine Tree Mine and crossed the Josephine vein which has a width of 72 feet. 57.8 tons were stoped for a mill test which yielded \$1,905 per ton by amalgamation with a loss of \$0.30 in the tailings.

Two tunnels named December and April, 275 and 600 feet south of the Shed Tunnel and at the same elevation were driven into the hill and intersected the Josephine vein which show approximately the same large width as met with in the Shed Tunnel. Mill tests taken from these gave 72¢ with 31, loss in tailings, and 99¢ with

38¢ loss in tailings respectively.

Another tunnel named September was driven and connected with the English Trail Tunnel. Very little development has been done since 1902.

Recent samples were taken across the Pine Tree vein in the Black Drift North and over big widths of the Josephine vein as exposed in the south drive English Trail Tunnel. By reference to the accompanying map it will be seen that good values were found in the Black Drift North. The sampling results at the few places recently taken across the Josephine vein in English Trail Tunnel are recorded on the assay plan of this mine, as per accompanying map.

It appears that the Pine Tree and Josephine vein converge in the southern part of the Josephine Mine. Part of the English Trail Tunnel below the Black Drift cross cut was probably driven in the footwall and the red dotted line on the map shows the probable course of the Josephine vein, and the green dotted line the course of the Pine Tree vein.

The results obtained from tributary work are included in the summary of operations for this mine and it has been a source of good profit.

PINE TREE MINE.

According to J. Ross Browne in his report on the "Mineral Resources of the States and Territories West of the Rocky Mountains", up to 1868 the following work has been done, viz: The workings are 500 feet deep and 1000 feet along the vein. In three years previous to 1863 the Pine Tree and Josephine Mines produced 45000 tons of ore with an average of \$7.75 a ton. In 1863 to June 6000 tons of an average yield of \$5.83 was produced. In 1864 the Pine Tree yielded \$67,940.

The present company started work in September 1899. A shaft was sunk above north end of old stopes. A 7 foot vein with fair values was met with near the bottom of the old stopes, but the values 50 feet below were disappointing. The shaft was continued 493 feet below collar without meeting any encouraging results.

Drafts were run at the 453 foot level and the vein fully exposed by crosscuts at the station and in the south drive a cross-cut west from the station in the footwall at a distance of 153 feet intersected the Josephine vein and a short drift south was run on this vein but results were discouraging.

The south drift from the station on the Pine Tree was driven 450 feet and at 200 feet a crosscut of 19 feet to the hanging exposed its full width. The drive was continued in the foot wall and another cross cut at the ^{foot point} 450/was driven into the hanging and at the end of this cross cut drives of 32 feet north and 90 feet south were advanced and disclosed ore of a value of \$2.70. The result of the development as a whole was disappointing, and work suspended.

The Pine Tree vein in the Josephine workings was sampled recently in the Black Drift north and at the end of crosscuts from the drives in the English Trail Tunnel. Good values were found in the Black Drift North but the values over the large width up to 236 inches as disclosed in the crosscuts on the English Trail Tunnel level were less than \$1.00.

Considerable amount of tributing has been done on the Pine Tree and Josephine Mines with excellent results. The ore is sent down the hill in wagons to the 5 stamp Mill at the river. It appears that the tributing on this part of the Grant has been the most profitable.

The following summary gives the results obtained from the Pine Tree and Josephine Mines and also when the ore was mined jointly:

PINE TREE MINE:

Year	Tonnage	Bullion Value	Value per ton Milled.
1905	366.	\$ 7,680.45	20.98
1906	715.	12,741.90	17.82
1910	2,329.	39,704.71	17.04
Total	3,410	60,127.06	17.63

JOSEPHINE MINE:

YEAR	TONNAGE	BULLION VALUE	VALUE PER TON MILLED.
1900	126.	531.51	4.22
1901	115.	1,127.33	9.97
1902	278.	257.94	.93
1903	1.5	12.17	8.11
1904	99.	745.93	7.53
1905	1,242.	5,793.19	4.66
1906	3,616.	21,722.11	6.00
1910	916.	9,017.18	9.84
TOTAL	6,391.5	39,207.36	6.13

PINE TREE AND JOSEPHINE MINES.

Year	Tonnage	Bullion Value	Value per ton Milled.
1907	3,306.	\$50,837.86	\$15.38
1908	2,998.50	54,434.93	18.15
1909	3,539.	47,234.02	13.34
1910	140.	789.80	5.64
TOTAL	9,983.50	153,296.61	15.35

RIVER TUNNEL AND MILL.

A large tunnel scheme was projected in the early inception of the Grant to run from the Merced River to tap the above mines in depth. This tunnel has been driven for a distance of 3500 feet and has still to go a distance of some 4000 feet to reach a point about 1200 feet below the Pine Tree and Josephine Mines.

By reference to the map showing the position of the different mines, the relation of the River Tunnel to the Queen specimen Pine Tree and Josephine Mines may be readily observed.

The details of the tunnel and the veins intersected are given on the accompanying map and it will be seen that considerable work has been done, and some are taken out. The results obtained from the ore mined and milled in 1904 and 1905 are given in a table on the same map.

The 5-stamp Mill river is used for ore from Pine Tree, Josephine and adjacent mines. The mill is equipped with brushes, vanners, electrical motors, etc., and has a capacity of about 600 tons per month.

GREEN GULCH MINE.

The Green Gulch Mine is located in the vicinity of Mt. Bullion, and is the extension of the Princeton Vein. Before 1868 a 200 foot shaft had been sunk and 400 feet of drifts run. According to J. Ross Browne in his report on the "Mineral Resources of States and Territories West of the Rocky Mountains", the yield in 1864 was \$19509. From 1900-1908 there was practically no work done, the total tonnage being 1163 tons with an average value of about \$14.00 a ton. In 1908, Mr. Maguire opened the mine and extracted 2219 tons of an average value of \$14.98 a ton. The total tonnage to the present time is 8911.21 tons with an average yield

of \$11.24 a ton. All the ore of this mine was hauled to the Princeton Mill some 4000 feet distant. The small amount of ore left in the mine has been recently sampled. The best results obtained from this sampling was from the first level for a distance of 140 feet, averaging \$9.76 over a stoping width of 30.50". These good values were not found in the last 70 feet of the second level immediately below the face of which is still on the vein. The results obtained from this sampling did not offer sufficient encouragement to the company in its present financial position to do further work in this mine and work was stopped July of this year, and the mine subsequently let out to leasers.

The summary of the output for this mine is as follows:

GREEN GULCH MINE:

Year	Tonnage	Bullion Value	Value per ton Milled
1901	149.00	\$ 5,050.53	\$ 20.33
1902	97.50	1,291.55	13.74
1903	34.00	471.25	13.86
1904	58.00	1,263.16	21.77
1906	64.00	937.93	14.65
1907	750.00	10,215.10	13.62
1908	2,220.00	33,260.66	14.98
1909	1,559.00	13,757.04	8.82
1910	3,284.00	31,319.72	9.54
TOTAL	8,215.50	\$ 95,546.94	\$ 11.61

The equipment of the Green Gulch Mine consists of the following:

- 1 - Double cylinder, single drum, geared hoist, cylinder 6 $\frac{1}{2}$ " x 8"
- 1 - Horizontal tubular boiler 40" diam. 14' long
- 3 - Snow duplex steam pumps size 6 x 4 x 6"
- 1 - Round wooden tank 1500 gallons capacity.
- Compressed air pipe line to Princeton mine composed of
- 1700' of 4" standard pipe.
- 1000' " 3" " "
- 850' " 3 $\frac{1}{2}$ " Boiler tubes with swedged on flanges
- 600' " 4" " Tubes.

LONG MARY MINE.

The Long Mary Mine is situated near the center of $W\frac{1}{2}$ of N. E. $\frac{1}{4}$ of Sec. 17, T 5S R. 17 E.

This mine was worked continuously for $2\frac{1}{2}$ years and had reached a depth of 400 feet according to Mr. Derby's 1902 Annual Report. Work continued on through 1903 and 1904. From 1905 to 1909 no work was done, and Mr. Maguire reopened it in 1909 and erected a 5 stamp Mill. Prior to this all the ore was taken over to the Princeton Mill. During 1909 a considerable amount of dump rock averaging \$1.48 per ton was milled. The total tonnage from 1900-1910 (inclusive) was 7460.93 tons, which gave an average yield of \$13.72. Wall rock is slate which is firm, and little timber is required.

Since 1902 the shaft has been deepened only 40 feet and nearly all the ore taken out since the erection of the 5 stamp mill was mined from around the old stopes. Work was finally suspended in June 1911, on account of insufficient funds. The mine was sampled before cessation of work and the results obtained, are shown in accompanying assay plan. All the best ore had been taken out, and sampling could only be done on those places still left, which were naturally of low grade. The best encouragement from sampling is shown by results obtained in the 425 foot level, which shows 60 feet of ore assaying \$8.14 per ton over a stoping width of 24 inches. Good values were found in the West end of 350 level drive.

Summary of operations is as follows:

Year	Tonnage	Bullion Value	Value per Ton Milled.
1900	102.	\$ 1,842.13	\$ 18.01
1901	765.5	22,422.46	29.28
1902	943.5	18,116.18	19.20
1903	966.0	22,550.57	23.34
1904	1,110.5	17,051.26	15.43
1905	47.5	816.71	17.19
1908	68.0	732.36	10.77
1909	1,080.00	1,602.45	1.48
1910	2,277.00	15,168.07	6.38
TOTAL	7,460.00	\$ 100,302.19	\$ 13.44

The equipment of the Long Mary Mine consists of the following:

- 1 - Double cylinder, single drum, geared hoist, cylinder 6 $\frac{1}{2}$ x 8"
- 1 - Horizontal tubular boiler, 48" diam, 16' long.
- 1 - 5 stamp Mill
- 2 - Concentrators
- 1 - 9" "Union Iron Works" rock crusher
- 1 - Horizontal plain slide valve engine, cylinder 8 x 10"
- 1 - No. 4 Hooker steam pump.
- 1 - Snow duplex steam pump size 4 $\frac{1}{2}$ x 2 $\frac{1}{2}$ "
- 1 - Round wooden tank 4000 gallons capacity
- 1 - " " " 1600 " "

The above with headframe, boarding house, etc., could not be duplicated under \$10,000.

MOUNT OPHIR MINE.

The Mount Ophir Mine is situated in the N. $\frac{1}{2}$ of the S.W. $\frac{1}{4}$ Sec. 12, T. 5 S., R. 17 E.

Work was started under the present company in November, 1899, in the old Lower Tunnel. This was repaired and continued for the length of 233 feet on the vein making a total length of some 635 feet. At a distance of 490 feet from the mouth a crosscut was driven into the hanging wall and the vein was again cross-cutted at the end of the tunnel where a width of 24 feet was disclosed. The best values met with in this tunnel were \$2.00 per ton over a width of 4 feet for the last 75 feet. These results

PRODUCTION OF THE MT. OPHIR MINE.

<u>YEAR</u>	<u>TONNAGE</u>	<u>BULLION VALUE</u>	<u>VALUE PER TON MILLED.</u>
1901	169.	\$2,840.74	16.80
1902	607.	6,460.71	10.64
1903	335.	5,749.14	17.16
1904	285.	6,375.41	22.36
1905	147.	1,861.08	12.66
1907	103.5	235.42	2.27
1908	10.	80.18	8.02
1909	287.50	1,697.60	5.90
1910	35.	308.34	8.80
1911	271.	2,522.37	9.31
1912*	80.	709.93	9.00
TOTAL	2,330.	\$28,840.92	\$12.37

* Only to Dec.1st of 1912.

did not warrant further expenditure by the company at that time, and consequently the operations were suspended in July 1901.

Leasers have worked here intermittently from then up to the present day. Some good ore was stoped by the leasers near the old upper workings and some pillars were removed from the old stopes. The old Upper Tunnel and three shafts were used by the various leasers.

The yearly output has been recorded and is as follows:

Year	Tonnage	Bullion Value	Value Per Ton Milled.
1901	169.	\$2,840.74	\$ 16.80
1902	607.	6,460.71	10.64
1903	335.	5,749.14	17.16
1904	285.	6,375.41	22.36
1905	147.	1,861.08	122.66
1907	103.5	235.42	2.27
1908	10.0	80.18	8.02
1909	287.50	1,697.60	5.90
1910	35.00	308.34	8.80
TOTAL	1979.00	\$25,608.62	\$12.94

LOUIS MINE.

The Louis Mine is situated in the E. $\frac{1}{2}$ of S. E. $\frac{1}{4}$ of Sec. 11, T. 5 S., R. 17E., in the line with the Princeton and Green Gulch Mines. The surface here is noticeable for the absence of such gulches as occur near the Green Gulch Mine.

The Mine was worked by leasers until the latter part of September 1900, and the present company encouraged by the good values of ore exposed took charge. A two compartment incline shaft was sunk to intersect the vein near the old stopes. This shaft followed approximately the pitch of the ore shoot and the rock extracted was milled. The stoping produced 830.3 tons and the development of

work 224.4 tons. The company closed this mine in June 1902, because the probability of immediate returns for any money expended was not encouraging.

The summary of work done by the company follows:

Sinking shaft - 415 feet - Crosscuts, 156 feet.
Drifts (250) Level) 517 feet -(400 Levels) 424 feet.

TOTAL - 1512 feet.

A record of the output of this mine follows:

Year	Tonnage	Bullion Value	Value per Ton Milled.
1900	93.0	\$ 5,383.23	\$ 57.87
1901	566.	17,045.22	30.11
1902	487.	3,905.53	8.02
1903	32.5	519.97	15.99
1905	17.0	261.90	15.40
1906	27.0	308.62	13.65
TOTAL	1,222.5	\$ 27,484.47	\$ 22.49

FRENCH MINE.

The French Mine lies in Sections 9 and 10, Township 4 South, Range 17 East, on the slope of the Merced River. The strike is east and west and the dip is about 25 degrees to the south. This mine was worked at the time Fremont fixed the boundaries of the Grant.

The vein has been exposed in several places, but it is difficult to determine the average width, because the workings are covered or filled with water.

Samples taken in what is known as Ives Drift gave the following result:

Drift, 50 feet in, 12 inches quartz \$1.86

Drift 60 feet in	18 inches quartz	\$6.20
" 90 " "	26 " "	3.00
Raise, 10 " up	45 " "	1.65

This drift is on the vein for a distance of 90 feet.

At 80 feet a raise of 30 feet connects with the surface.

A vein apparently parallel to French Mine Vein has been exposed in a few places and a sample taken gave \$4.00 over 24 inches in width.

FRENCH CAMP.

Ives and Daniels prospect is situated near the old French Camp. A crosscut about 195 feet intersects the vein 50 feet below the outcrop, and at the end of this crosscut there is a drift on the vein of about 25 feet.

Three samples were taken and gave the following results.

1. N.W. end of drift	9 in. quartz	\$35.14
2.	9 " "	45.48
3. S.E. " " "	12 " "	10.75

The ore on the dump assayed \$23.57.

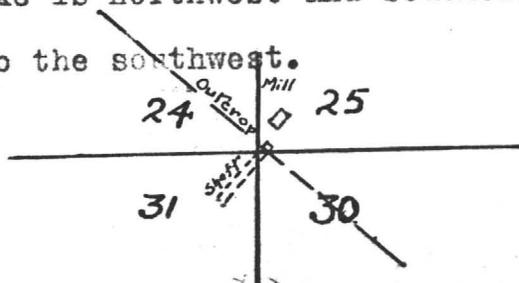
The amount of ore remaining above the drift is probably very small because of former stoping.

ORTEGA VEIN.

(Turner Vein) (Sarel Mine)

This vein is situated in Sections 24 and 30, Township 5 South, Range 18 East, which are on the Grant, and also cuts across Section 31 which is off the Grant.

The Strike is northwest and southeast and the dip is about 50 degrees to the southwest.



A company worked the mine a few years ago and sunk a shaft on the vein, and erected a 5-stamp Mill operated by a gasoline engine. The collar of the shaft is on the Grant, and the shaft soon passes off the Grant as the vein is followed along the dip.

Three surface samples taken in open cuts southeast of the shaft showed low values.

1. 8 in. \$3.10
2. 8 " Trace
3. 8 " .85

EVANS MINE.

The Evans Mine is located on the slope of the Merced River, in Section 9, T. 4 S., R. 17 E.

The strike is about 35 degrees East and the dip is nearly vertical. Several rich pockets have been found here but the vein is small and outside of possible pockets seems to have no great value.

SAMPLES:

Lower tunnel	20" quartz	\$2.89
Upper Cut	16" "	5.51
Rock on Dump (Grab)		19.84
Sample of about 200 lbs of tailing left after panning pockets-		\$181.91

ALICE MINE.

This mine is located in Section 16, T. 5 S., R. 17 E., and is similar to the deposit of the Long Mary some 2000 feet west in a straight line. The workings comprise 4 levels with 362 feet of drifts, a shaft of 201 feet in depth and stopes connecting with the surface, and a winze 27.5' deep below the 200 level. There is

another prospect shaft 38 feet deep with one level. The ore on the 200' level did not warrant further prospecting at that time so operations were suspended.

The output of the mine follows:

Year	Tonnage	Bullion Value	Value per ton Milled.
1901	328.	\$ 3,865.92	\$ 16.95
1902	480.	4,268.29	8.89
1903	63.	1,524.00	24.19
1908	12.	134.37	11.19
Total	785.	9,792.58	12.50

TEXAS MINE.

This mine is located one mile south of Princeton Mine, and is in the same formation. This was operated wholly by leasers who sank a 100' shaft and ran two levels. The prospects were not encouraging so the mine was abandoned, although in 1902-1903, 185.54 tons yielded \$2689.73 or \$14.50 per ton.

ELIZABETH MINE.

An attempt was made to open this mine by leasers, and given up because they did not have sufficient money to do the initial development.

By reference to the map results of sampling can be readily seen.

The tonnage milled for the Elizabeth and the yield amounts to the following:

Year	Tonnage	Bullion Value	Value per ton milled
1905	33.	425.10	12.88
1906	30.	1,017.82	33.93
1907	36.	385.74	10.71
1908	32.50	644.78	19.84
TOTAL	131.50	2,473.45	18.88

OSO MINE.

The Oso Mine was worked in the earliest history of the Grant, and when reopened about 1901, this mine proved disappointing and no work was done.

MOUNTAIN VIEW MINE.

This mine is located in the S. E. $\frac{1}{4}$ of Section 11, T. 5 S., R. 17 E.

Some very good ore has recently been taken out of this mine by leasers.

MAY ROCK.

May Rock is a remarkable outcrop of quartz standing 60 feet at highest point with maximum width of 18' and extends 280'. The accompanying sketch shows the results of recent sampling. Some work has been done but nother of any consequence.

MISCELLANEOUS MINES.

In addition to the mines mentioned there has been recovered 77,206.85 from a total of 4200.50 tons and represents largely the accumulation of gold won from pockets.

Often in the slates seams of quartz occur and these are mined by prospectors, and in many cases with profit. So far nothing of importance has been opened by such work, but it has been a source of revenue for the company. Some veins in the granite area of the Grant have been opened up and these also account for some of the gold won from miscellaneous mines.

M.M.

REPORT OF MR. F. T. MAGUIRE.

Mr. Hennen Jennings;-

In accordance with your request to give an outline of the work on the Grant, since February 1907, or during the time I have been superintendent, I report as follows:

1907

All work was stopped on company account, February 1, 1907, and the entire plant leased to Shira and Mitchell. They receiving 40% of the gross, Shira and Mitchell, to bear all expense of labor and supplies. This lease continued until May 1st, 1907, when I took over the plant, and ran it on Company Account.

At this time we were leasing above the 1250 level, water was filling the shaft. I immediately pumped the water out, down to the 1600 Level. It was late in the summer before reaching this level, and not having power to continue pumping, we had to abandon work until the fall rains set in.

During the year we milled from Princeton Mine, on leasing account approximately 20,000 tons of ore that averaged about \$3.75 per ton, 3000 of which came from the 800 Level, about 400' North of the shaft, averaging about \$5.00 per ton. 8000 tons from the 950 Level, near the shaft, averaging about \$4.75 per ton. 2400 tons from the 1100 North Level, averaging about \$2.25 per ton; 1200 tons from the 1100 South Level, averaging about \$1.10 per ton, and 5000 tons from 1250 North and South Levels averaging about \$2.40 per ton, making a gross output of about \$55,000 for the months of February, March and April. The Company only receiving 10% of the gross output, and after May, we received 50% of the gross. We to furnish all timbers and surface labor. The surface labor at this time for, Princeton Mine and Mill, amounted to about \$1250.00 per month. Our average clean-up for

the year being about \$7,500.00 per month. All concentrators were taken by the Company on July 1st, the Company agreeing to keep the shaft in repair. The net profit for the year on all "Grant" operations amounted to \$20,444.96.

1908.

When the power came in the fall of 1908, seeing that the upper levels in the Princeton, would not last any considerable time, and having faith of the values in the 1600 South Drift, I again commenced the unwatering of the lower levels. As soon as the water was lowered below the 1400 Station, a lease was let on this level, and a raise commenced, in the 1400 North Drift, about 250' North of the station, in hopes of encountering some of the values known to exist on the 1250 Level. The ore here was disappointing, only averaging about \$2.50 per ton for about 2500 tons. This was perhaps due to the fact that leasers got 50%, and did not attempt to keep their ore clean. The mine was unwatered as far as the 1600, in the latter part of July. August was spent in cleaning up and repairing the 1600 North and South Drifts. Meagher and Ham, stopping about 150' south of the shaft, as the parties leasing the 1600, had a lease also on the 1100, their rock was not milled separately, but from samples taken and the silver fed, we estimated a value of \$3.50 to \$4.00 per ton. Everything seemed favorable for the reopening of the level, but the river went down, and no power being available to run the compressor, I was compelled to take out the pumps in September 1908.

I have always thought, and still believe that had we been able to continue the work at the 1600, we should have had ore enough to run for many years. With the exception of about 60' at the station the vein was strong, averaging about 6' to 8' for the entire

1500'. The quartz on the North side was all ribbon or stratified, while on the South side there was an average of from 2' to 4' of ribbon quartz on the footwall, and from 2' to 4' of massive or solid quartz on the hanging wall. At times these would show a small strata of slate between and at other times would be separated by, or joined together by from 1" to 4" of iron pyrites. Where the pyrites appeared the rock was usually of exceptional value.

I will not attempt to give details as to values, as the assay map and sample sheets which are very accurate give the best information. About 275' south of the shaft the vein was too large to carry the entire width in a drift, so we only carried the foot-wall part for a distance of from 75' to 100', when we again carried the entire ledge, which averaged from 5' to 7' in width. On the North side we drifted 1000' and at present there is a horse or separation in the face about 3' of quartz on either wall, and separated by about 6' of slate or ledge matter. The quartz on this level presents the longest and unbroken shoot in the mine, a raise on the north side to the 1400. This raise was started about 650 ft. north of the station and is about 200 feet through to the 1400. In this raise not a single break occurred until within about 200 ft. of the 1400 Level and unlike most breaks in the mine this break made to the North. There was an almost entire absence of gouge on this level. On the north side of the shaft, while on the south side was about the same as in other parts of the mine. One of the peculiar features of this mine being that when the walls were very bad or an unusual amount of gouge, the values were better. The total tons milled for 1908 at Princeton Mine were 16744 tons of an average value of \$2.07 distributed as follows: 3685 tons from the 800 level, 1358 from the 950 level, 444 tons from the 1100 north

level, 1948 tons from the 1100 south level, 3229 tons from the 1250 north and south levels and 2553 tons from the 1400 north level. A new drift had been running during the year at the 600 level from which was taken 4334 tons, drifting and stoping. On company account I had started a drift at the 300 level and found the old stope still open, the vein averaged about 3 ft in width and a value of \$1.50 per ton; we milled 216 tons that proved the vein of no value. All the mill scraps and cleanings from old iron were melted with this bar and not segregated on the reports, which made the rock show a better value than really existed. During the year the 300 south drift was extended about 240 feet.

During the year 1908 there was milled at the River Mill about 3000 tons from the Pine Tree and Josephine and other smaller leases of an average value of about \$17.00 a ton.

I also erected at Mariposa a five stamp mill so as to enable prospecting on this portion of the "Grant". During the year we milled 563 tons of an average value of \$5.70 per ton.

We milled from Green Gulch during 1908, 2219 tons of an average value of \$14.98 per ton. In November of this year (1908) Wm. Sain released his 1/3 interest and took it on Company account. The mine paid well until December, when the collar of the shaft caved in for a distance of 70'. The mine filled with water and owing to the severe storms we were unable to proceed with the repairs, and did not get the mine reopened until June 1909.

At the Pine Tree, all rock was milled at the River Mill. We milled about 3000 tons, of an average value of \$15.50 per ton. Most of which came from the vicinity of the Blow-Out, or the Hunt & Oyler lease.

Net profit for year on all "Grant" operations amounted

to \$17,962.00 from which could be deducted \$6,101.90 expended on Princeton 300 Level development, or net profit of \$11,860.91.

1909.

During the year 1909, we milled from the Princeton Mine, 3020 tons of an average value of \$2.00 per ton distributed as follows: At the 800 level there was 1200 tons, of an average value of \$2.08 per ton, and from the 600 level there was 950 tons of an average value of \$1.30. From the Phillips and Turner Shafts, Shira and Youd milled 870 tons at an average value of about \$4.00 per ton.

During the year we milled from the Green Gulch Mine 1559 tons at an average value of \$8.08 per ton. During the first nine months, 15% of the gross was taken, and \$2.50 per ton for milling. In September, the leasers quit, and I took the mine over on Company Account. In October 204 tons yielded \$1092.96. In November 1909, 227 tons yielded \$1580.25, with a pay roll of \$1188.50, at an average value of \$14.00 per ton.

During the year we crushed at the River Mill, 3538 tons of an average value of \$15.35 per ton. Nearly all this ore came from the Pine Tree Vein.

From the Mariposa Vein and Stockton Creek, there was milled 2447 tons at an average value of \$7.00 per ton.

From the Long Mary Mine we milled 1080 tons, at an average value of \$1.48, all of which came from the waste dump. This yield was disappointing, as the assays of the dump showed a value of \$3.60 per ton, the trouble perhaps being that about 5% of the value lay in the concentrates, worth about \$20.00 per ton, and as the dump was mostly slate, slimes carried away most of the values. There remains about ~~2000~~ 2,000 tons of the dump that

that I do not intend to work. Net loss for year on all "Grant" operations was \$2,902.85 to which could be added amounts expended on 300-600-800 and Mill Shaft Princeton development aggregating \$6,276.55 or net loss \$9,179.40.

1910.

During the year there was milled from the Princeton Mine, 794 tons, at an average value of \$6.06 per ton, all of which came from the 600 Level North. 60 tons from the surface or Ludwig Extension averaging \$6.00 per ton.

From the Green Gulch we milled 3284 tons at an average value of \$9.54 per ton, and a pay roll of \$17,454.50 for the year. A considerable loss was sustained on account of the repairing of the old stopes and development work. Development work will be treated later in a separate sheet covering the entire 3½ years of my supervision.

During the year 1910, we milled from the Long Mary Mine 2373 tons, at an average value of \$6.38 per ton, or \$15114.46, with a total pay roll of \$11,679.80.

During the year 1910, I milled at the River Mill, 3385 tons at an average value of \$14.15 or a total value of \$49,350.63 most of which came from leasers.

From the Mariposa Vein, 1205 tons was milled at an average value of \$5.90 per ton, making a total yield of \$7,074.96, all of which was done by the leasers.

Net profit for year on all "Grant" operations - \$2,113.87 from which could be deducted \$10,226.01 expended on Princeton 800 Level development, or net loss \$8,152.14.

1911.

There was no work performed at the Princeton Mine. At the Green Gulch we milled 685 tons of an average

value of \$6.90 per ton, or a total value of \$4722.46, with a pay roll of \$7430.80, and a total expense to July 1st of \$8730.81. Green Gulch, has really cost more as most of the general and surface expense at Princeton Machine Shop is directly associated with each other. A great deal of this loss was due to the conditions existing on account of the severe winter. For several months I did only development work, and pump out the mine, and when ready to start have the rains come and fill it up. The water filling the stopes caused me to lose them, and it took the entire force of men to reopen. The shoot at the 260' Level did not come in as soon as I anticipated, and at present only seems to be coming in, and the leasers are developing this shoot now. The Company agreeing to mill their rock for the next 60 days, for \$2.50 per ton. Samples in the face of the Lower Drift, or 260' Level, at present shows a value of \$10.00 to \$12.00 per ton. Very little expense is being incurred on Company's account, other than the milling, and I hope to make a profit on operations the next few months. We have now on hand about 12 tons of Concentrates, which will net about \$400.00

During the present year, we have milled from the Long Mary Mine, 518 tons, of a value of \$2916.02, and have on hand a shipment of concentrates, that will net about \$500.00. Owing to the fact there would have to be an extra amount of development done, the mine was closed down. The assay map will show the condition of the mine at present,

To July 1st, I have milled at the River Mill 1556 tons at an average value of \$11.10 per ton. At the Garden Stope, I have run 4 test runs, on a vein averaging 15' in width, that has averaged about \$5.00 per ton, but owing to the expense of hauling to the mill and the fact that the mill will only crush 20 tons a

day, it has been necessary to close this stoping down.

From the Mariposa Mill, we have crushed to date 337 tons at an average value of \$14.42. At this Mill we are milling mostly for 50%. Most of this rock is coming from development work, which will be treated in a separate sheet.

SUMMARY OF DEVELOPMENT:

During the past four years most of the work done by leasing has been confined to stoping. Owing to the fact that ore was known to exist on the 800 Level South at Princeton Mine, 700' south of the shaft, I concluded that a body of ore might be found at the 300' level. I have driven a drift south, a total distance of 548'. For the last 300' there was no vein showing, but a good strong fissure from 3' to 5' filled with gouge. At the end of this drift I cross cutted to the hanging wall, but found no indications of quartz, and have no doubt now but that I was on the true fissure.

Leasers having given up development on the 600' Level, I then took up this level, and ran it to a total distance of 572'. When the vein pinched, and as the walls were more or less broken at this point, I ran a crosscut to the foot wall, and never reached the solid slate.

The shaft being a great expense both as to timber and labor, and as I was spending a great deal of money keeping it open and repaired, and the 600' Drift, being a further expense, I concluded to close it down.

I then tried drifting North along the vein at the Mill Shaft or 800' Level. This drift was driven until it had a total distance of about 200'. The formation was very hard and there was very little gouge. I then ran two crosscuts, one to the foot wall about 70' and one to the hanging wall of about 30'. As no sign

of a vein existed I concluded to quit all work at the Princeton Mine.

At the Pine Tree Mine, in the #1 cross out, I drove across the vein to the hard diabase and also along the vein north about 45'. The vein although very wide would not average more than about \$2.00 per ton. I then drifted south about 30', and although a good strong vein existed, no values sufficient to stope were found at this point. The vein would average about 12' to 15' and less than \$1.00 a ton over the entire width. I then carried north from the #2 crosscut, a good wide drift, on the hanging wall portion for a distance of 75'; the values seem to be coming in, in this drift.

This work on the Pine Tree Vein was done in 1909-1910. Owing to the fact that good values existed at the Blow Out, on the surface, I started a raise from the Old Cross Tunnel, to see if I could not reach some of these ore bodies. I have raised about 80', and while this raise has perhaps averaged \$3.00 per ton, for a width of 5 ft., no values exist to work it on a small scale.

On the upper level or Black Drift, there has been driven south along the vein a drift 100 ft. the face of which shows a value of \$2.50 over a width of 3'. On the north side the drift has been extended about 200 ft., and a winze or under-hand stope has shown a value of \$20.00 over a width of about 2 ft., making to the north as it goes down. The winze is about 200' north of the point where the Black Drift Cross-cut intercepts the vein.

I also ran a crosscut to the foot wall, from the South Black Drift, for a distance of about 50 ft., but never reached the slate, so I do not know if the Josephine vein has

joined the Pine Tree Vein, or if it is still in the foot wall. At present no development is being carried on at the Pine Tree.

About half a mile east of the Mariposa Shaft a lease had been let to Paine and etals., the company milling the rock for 50% of the gross, for which they pay for hauling, which costs 75¢ per ton, and also furnishing the timber. So far all the rock milled from this prospect has averaged about \$9.00 per ton, the vein averaging about 3 ft. in width and the ore body is about 150 ft. in length. An incline shaft is being sunk which is now about 80' deep. A 2 foot vein in the bottom of the shaft shows a value of \$15.00 to \$20.00 per ton. The prospects for making a shoot of ore is very favorable. An electrical hoist, pump, etc. has been installed. There are about 200 tons of ore on the dump to be milled.

Further east about half a mile on Stockton Creek, a shaft has been sunk to a depth of 130 feet. There is no ore in sight, although both east and west on the vein good rock has existed. Leasers are now drifting. This mine is also fully equipped with electric power.

Long Mary during the two years we have drifted about 700'. On the west side of the shaft at the 350' level, an 18" vein shows a value of \$4.00 per ton. The shaft was sunk 15 ft when the vein pinched and as this mine showed that pinches were of frequent occurrence, and as not enough ore was in sight, we closed the mine down in June 1911.

At the Green Gulch Mine, I have extended a drift south along the vein for a distance of 500 feet. The vein on this level (Adit) showed very strong in places, as much as 7 feet in width. While values occurred in different portions, they were not of sufficient value to work. A drift was run on the 260' Level, to the

south for a distance of 140 ft., and is now being pushed ahead by leasers. This vein at present shows good values. During the time I have had Green Gulch on Company Account, I have done about 1900 feet of development work.

At the Elizabeth, on the north end I in partnership with leasers sunk a shaft 100 feet deep. The vein at this shaft averaged about 5 ft. in width, and as far as worked would show a value of about \$10.00 per ton. The last 40' of the shaft was in the hanging wall. A crosscut was run towards the foot wall, and had to be abandoned on account of the winter rains. The leasers not being able to maintain ^{their} $\frac{2}{3}$ of the expense. 100 ft. North of this shaft the vein is about 30 feet wide, and shows some values where exposed. At the shaft I have never cut the vein. The formation is in Diabase. The rock contains about 2% concentrates, which average about \$200.00 per ton, and some shipments have yielded as high as \$1000.00 per ton. I believe this mine to be of great value, and would justify an expenditure of \$10,000.00.

The shoot is about 2500 feet long, and 1800 feet from the #1 shaft I sank a 60' shaft. At this point the vein was pinched in the bottom, but I have no doubt of it coming in at a depth of from 100' to 150', and from surface indications it should have value. In the early days, the Mexicans worked this portion to water level and had about twenty arastras, when driven away by Fremont. We milled from the Elizabeth 32.5 tons of an average value of \$19.84 per ton.

I have given as best I can the results of my labor for the past four years. Figures are perhaps not an absolute check, but are approximately correct. We have had no bookkeeper at the mine office, all accounts being kept at the City office, where report as to profits and losses are on file.

There are a number of miscellaneous small mines or veins from which ore has been taken. Among these I will mention the Evans Mine, situated on the east side of the Merced, on the North-east end of the Grant. One pocket taken from this mine in 1910, yielded about \$5000.00. The vein has an average value of from \$5.00 to \$7.00 over a width of from 18" to 24" and is in porphyry. I believe that mine and the French Mine, that is the immediate vicinity are both deserving of a trial, and unless a sale to good advantage, or of a good price, I would try to get leases extending over a period of years, and try to induce new capital to take hold.

I think that with renewed effort at leasing, the Grant can again be made to show a profit.

Yours very respectfully,

"F. T. Maguire."

REPORT ON MOTHER LODE MINES
(Particular reference to holdings of Mariposa Commercial
& Mining Co.)

By. MR. W. H. STORMS.

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PART I. THE MOTHER LODE OF CALIFORNIA AND ITS PROBABILITIES IN DEPTH.

Obviously, every mine must depend for its success upon the conditions, geological, physical, and economic, obtaining within itself. While no two mines are alike, further, perhaps, than to be similar, yet, by comparison of various mines we are enabled to learn much that is of interest, and in this way more safely make our deductions from observed facts.

If there were but one or two mines developed throughout the length of the Mother Lode, we would scarcely dare assume that these were indicative of the possibilities of all other undeveloped mines on the Lode, as our examples might be unfortunately chosen, for at several places on the Lode large sums of money have been spent in a fruitless, and I may say in some instances hopeless search for profitable ore. While it is not given to any one, no matter how experienced, to "see far into the ground", yet, observing geologists and mining engineers have learned by experience that on the Mother Lode there are localities where the hope of developing a profitable mine is slender, to say the least, while in other places the conditions are such as to invite exploration with a reasonable probability of success in the development of a valuable mine. In this the ore-deposits of the Mother Lode are peculiar. The generally recognized limitations of the extent of the Mother Lode are from the vicinity of the old village

of Bridgeport, in Mariposa county, and extending in a northwesterly direction to near the northern boundary of El Dorado county, a distance of about 120 miles.

If, in traveling the length of this great Lode, we find every mine that has been largely profitable is accompanied by a noticeable condition, or set of conditions, and we also observe that every unprofitable property is environed by another set of conditions, opposed to the first, we must conclude, whether willingly or not, that in undeveloped ground where the conditions which have been recognized as unfortunate are present, the proposition to undertake the development of this piece of ground would naturally be looked upon as extremely risky, or, at any rate, as involving a risk greater than might be anticipated in a locality where the physical conditions were of that type known to be constantly associated with those mines which have been profitable.

Since certain physical conditions are known to be the accompaniment of valuable mines, a pertinent question is: What are these desirable condition? Briefly, every profitable ore-shoot outcropping on the Mother Lode is situated either on a smooth unbroken hill, or on a nearly level tract of land, not cut by transverse ravines. In contemplating this phenomenon it is necessary to distinguish between ore-shoot and mine, for a mine may have several ore-shoots. It has been noted by myself and others, that on the Mother Lode no ore-shoot appearing at the surface crosses a gulch or depression, though an ore-shoot outcropping on a hill, may, in its downward trend along the plane of the fissure in which it occurs, pass in depth beneath a neighboring ravine. The only explanation I have to offer for this phenomenon is, that gulches, ravines and depressions at the surface are usually the physical expression

of geological disturbances beneath the surface, the primary cause having been a fault or foil; or it may be due to the fact that the rocks have been crushed by compressive stress, this rendering them somewhat softer and therefore more susceptible to the influences of erosion.

Thus far throughout the length of the Mother Lode no very profitable mine has been developed in a locality where the surface is cut by a series of short ridges- by ravines crossing the strike of the Lode. It is needless to mention the mines on the Mother Lode that are characterized by the "Favorable indications," as every largely profitable property, beginning with the Princeton, in Mariposa county, and as far north as the Union Mine in El Dorado county, is, without exception, situated on a hill or in a flat, uncut by gulches or transverse depressions, or, if such occur, then the ore-shoots lie between them. Careful investigation fails to find a profitable mine in a locality where the lode passes through a series of short, broken hills. Ore-shoots may, and do, occur in such localities, but they are short and generally do not justify the extensive equipment and development necessary to their exploration.

The accompanying tabulated description of a number of the more important mines of the Mother Lode supplies interesting comparative data. For instance, it will be noticed that the range of elevation of the collars of the several shafts does not vary greatly, being generally from 1000 to 1600 feet, with the exception of Princeton, which is at an elevation of about 2250 feet, a fact which some may construe as to the advantage of that mine rather than otherwise. Some of the mines have vertical shafts, these in every instance having been sunk long after the inclined

shafts had proved the value of the mines in depth, and were provided for economic reasons.

For years an effort has been made to determine, if possible, whether there is any uniformity, or system, in the distribution of ore-shoots in the great fissures of the Lode, but I have been unable to discover any regularity whatever in the occurrence of bodies of payable ore. However, it may be said that in most of the mines the profitable ore was first found some distance below the surface, though there are several notable exceptions. Generally the zone of profitable ore was entered at from 100 to 600 feet below the surface, and in one instance, at least, that of the Central Eureka Mine near Sutter Creek, the shaft was sunk in the fissure to a depth of 1000 feet before pay ore was found. At the Union mine in El Dorado county, the first pay-shoot occurred at the surface, though there were several shoots, or zones of pay, down to the 1700 foot level.

At the Plymouth Consolidated mines, in Amador county, the first pay zone outcropped at the surface, but within 100 feet became poor again, the shaft passing through an impoverished zone to a depth of 400 feet, where rich ore was found that continued to a depth of 1600 feet, the shoot producing, it is reported, \$10,000,000. The depth of the shaft is 1700 feet, the lowest level being at 1600 feet. A disastrous fire in the lower levels about 1889, caused the suspension of all operations in these mines and work has never since been resumed, though there has recently been much talk of a renewal, which report says is fully justified by the condition of the lower workings at the time of the fire, which unquestionably did much damage to timbers, resulting in extensive caves.

At the Gover Mine of the Fremont Consolidated Company,

* Indicates Vertical Equivalent of Inclined Shaft.

93A

NAME OF MINE	Elevation		Depth of Shaft		Elevation of Bottom Workings. -Datum- Sea-Level	Formation
	:above Sea at Collar of Shaft.	:	Vertical:	Incline		
Union	1400 Ft.	:	*1450 Ft	1700 Ft	--50 Ft	Black Clay-Slate with Dikes
Plymouth	1150 "	:	1700 "	1290 "	-450 "	Clay-slate Diabase in
Fremont Con.	1100 "	:	*1280 "	1650 "	-130 "	Clay-slate Greenstone Schist
Bunker Hill	1175 "	:	*1650 "	1900 "	-475 "	" "
Keystone Con.	1150 "	:	*1200 "	1575 "	--50 "	Principal pay in slate-clay
Lincoln	1225 "	:	*1700 "	2050 "	-475 "	Clay-slate Foot Schist Hanging
Wildman-Mahoney	1150 "	:	*1250 "	1450 "	-100 "	Clay-slate and Greenstone schist (Variable)
Eureka Con.	1350 "	:	*2100 "	2200 "	-750 "	Clay-slate Foot Greenstone Tuff Hanging
Central Eureka	1600 "	:	*2250 "	2600 "	-650 "	Clay-slate and Schist (Variable)
South Eureka	1600 "	:	*2550 "	2950 "	-950 "	Pay vein in clay slate. Old work in Schist & Slate
Oneida	1500 "	:	2200 "		-700 "	Clay-slate and Greenstone schist (Variable)
Kennedy	1500 "	:	3553 "	4000 "	2053 "	" "
Argonaut	1550 "	:	*2950 "	3350 "	1430 "	" "
Zeila	1200 "	:				" "
Gwin	1100 "	:	2650 "		1500 "	Clay-slate in upper part Schist in lower levels
Rawhide	1600 "	:				Clay-slate, Gabbro, Serpentine Ankerite Promi
Princeton	2250 "	:	*1250 "	1660 "	1000 "	Clay-slate top to bottom. Also dikes.
APP CON.	1500 "	:				Clay-slate, Serpentine, Schist.

Distribution of Pay Zones These figures only approximate :	Reported Production :	Remarks
Paid from surface		An old and very profitable mine which paid from the surface, but has had varied career. This mine resembles Princeton somewhat.
Surface to 100' Rich below 600'	\$10,000,000	Paid from surface to 100 ft. then became low grade but rich below 600. Fire closed mine.
Paid from surface	5,000,000	A large low-grade mine, but has paid in late years since properly equipped.
Old Mine Erratic		New development of past few years has opened a very valuable mine. New vein found by x-cut in hanging at 1750 ft. level.
Mostly in upper part	17,000,000	One of the oldest and most successful. Pay mostly in slate. Requires deeper development.
Paid from the surface to 350 feet	2,500,000	Rich pay shoot from surface to depth of 350' where it was cut by a fault and not since re-discovered.
Paid at surface and in depth Very uneven	3,500,000	Vein large at surface worked by open cuts. Very large vein on 1400 level. Low grade.
Poor first 200' Rich below that level to 1750	20,000,000	The largest producer on the Lode. A remarkable pay-shoot. Should be and probably will be reopened. No near the depth of Kennedy.
Main shoot 1100 feet below surface	2,000,000	Two shoots. One at surface quite at few hundred ft. below. Main shoot was found 1100 ft from surface and has continued to bottom.
Pay Zones in old works erratic		Old workings rarely profitable. New vein discovered by x-cut in foot at 2750' level. A very valuable mine.
Pay at surface (Also some in depth)		This mine has had a variable career. It was very profitable in early days, but has been closed and reopened several times.
Pay zones are large but irregular	8,000,000	Deepest gold mine in American, and as profitable in lowest levels as ever known above.
" " "	3,000,000	The Kennedy fissure and that of the Argonaut are identical, and therefore similar otherwise.
Several pay shoots		An old and profitable mine, worked steadily for many years. Definite information unavailable.
Several pay shoots		Resembles Princeton in upper part. Very profitable first 1700'. Erratic below. Improving in bottom at 2650 ft vertical depth.
One shoot from 150 to 600 Also others	5,370,000	Not much information available. Mine was reopened after long idleness and proved to be very rich. At present idle.
One shoot from 150 to 600 Also others		This mine resembles some of the best on the Mother Lode and fully justifies development at greater depth.
One shoot from 150 to 600 Also others		A mine repeatedly closed and reopened. The past few years it is said to be very profitable.

near Drytown, in Amador county, the pay rock began at the surface, and has extended to the present lowest level, at 1650 feet, (1280 feet vertical). Sinking is in progress to 1900 feet in the inclined shaft. This property has produced in excess of \$5,000,000. It has had a varied career, having been repeatedly closed in its earlier history, never having been properly equipped before coming under the present management.

The Bunker Hill property, near Amador City, has also had an interesting career. For years it was opened and closed by one company after another, none of which did well, assessments being far more conspicuous than dividends, until about 1904, when the present manager took control, and drove a cross-cut into the hanging wall country, and there found a vein not previously known to exist. Fortunately he cut the vein in pay ore and the Bunker Hill mine soon thereafter became one of the most important producers, as well as one of the most profitable, on the Mother Lode, and it still continues to be so. The mine is about 2,000 feet deep, with every indication of continuing to much greater depth.

The Keystone mine in Amador City, was among the first to be operated in California. It was first known as the Ministers' mine, in 1851, being owned by a number of clergymen, but they were unable to make it pay. It passed from one owner to another with varying fortune, until it came into the ownership of James McDonald, who worked it successfully for many years, the mine producing, according to what is believed to be competent authority, upwards of \$17,000,000. The greater portion of this large sum came from the veins in the black clay-slate. The shaft is 1575 feet in depth, (1200 feet vertical), and all who are familiar with the geological conditions of this famous old mine agree that

it should be explored to greater depth.

The Lincoln mine, at Sutter Creek, with a record of production exceeding \$2,500,000, paid from the surface to a depth of 350 feet where the vein was intersected by a fault below which the vein has not, as yet been re-discovered, notwithstanding the extensive development work to a depth of 2,000 feet. This fault in the Lincoln mine is the most important that has thus far been discovered on the Mother Lode.

The Wildman-Mahoney mine joins the Lincoln mine on the south. In this ground the vein splits into two branches, one of which passes into the Lincoln ground. On the Mahoney, and on the north end of the Wildman, the pay ore came to the surface where it was worked in large open cuts. This pay zone extended to a depth of 300 or 400 feet. Between this and the lowest level at 1400 feet, (1200 feet vertical), were found several shoots, or masses of ore, some of them of large size, though for most part low in grade. In the south end of the 1400 foot level, it is stated on what I believe to be reliable authority, that there is a mass of low grade ore 170 feet in width, though its dimensions otherwise are unknown. This property is said to have produced \$3,500,000, and if properly equipped to operate on a large scale would, no doubt, still prove to be a very valuable mine.

The Eureka Consolidated mine at Sutter Creek, has been the richest, or at all events, the most productive mine thus far on the Mother Lode. It was discovered in 1850 and a few years later passed to the ownership of Alvinza Hayward, who unaided undertook its development, but for some time it proved to be a disappointment, as the ore within 200 feet of the surface was too low in grade to pay expenses, at that time. However, he persevered, and at about

200 feet the ore improved and Hayward was soon thereafter working the most profitable mine in California. The payable ore continued to a depth of about 1750 feet, this single shoot producing over \$20,000,000. The deepest workings in this property are at 2200 feet, this being the bottom of a 200 foot winze sunk from the 2000 foot level, south of the main shaft. The hanging wall of this vein is a rather massive greenstone tuff, the footwall is black clay-slate. The pay shoot was 500 to 600 feet long in the vicinity of the 1100 foot level. It is reported that the ore down to the depth of 500 feet did not mill over \$10 per ton, but much of that below the 500 level averaged \$30 per ton and over.

The Central Eureka adjoins the last mentioned property on the south. In its early history it was known as the Summit mine. Near the north end of the mine was found a small shoot of ore, which in its downward course pitched across the end line into the adjoining Badger claim of the Eureka Consolidated Company. This ore did not go to great depth, according to report. (See 10th Report State Mineralogist of California, p. 104). This shoot is described as low grade at the surface, but at 165 feet was worth \$25 per ton. The vein became so small in depth that it was finally abandoned. After an idleness of many years the mine was reopened by an incorporated company known as the Central Eureka Gold Mining Co. in 1894. A shaft was started several hundred feet south of the workings above described, and was sunk in the fissure to a depth of 1000 feet before any ore of value was discovered, but at the 1200 foot level it was found that three short shoots out on the 1000 foot level had overlapped to form one continuous shoot, and from this level downward, to below 2500 feet it constituted a large and profitable body of ore, from which substantial dividends were paid for several years.

The end-lines of this property, as originally located, were convergent in the direction of ~~kk~~ dip, thus limiting the area and extent of operations in great depth, but the company has recently acquired additional territory adjacent to the original holdings and has resumed operations on a liberal scale, though somewhat hampered by the present need of extensive repairs to the shaft, which are now under way.

Joining the Central is the South Eureka, now one of the noted mines of the Mother Lode -- noted for the reason that after years of unprofitable existence, and the levy of 50 consecutive assessments, a fortunate discovery was made of a very valuable body of ore, the existence of which was previously unknown. This discovery was made in a cross-cut run westward on the 2750 foot level, and at a distance of 200 feet from the shaft. The work of its development was at once undertaken and has been successfully continued until the present, level after level having been opened by means of cross-cuts driven at various levels, both above and below the point of discovery. The extent of this shoot of ore has not yet been determined.. It may go to the surface, though, should it be found to do so it will prove to be the anomaly of the Mother Lode. One important fact in this connection points a lesson. During the term of management of the late J. F. Parks, who at one time was also manager of the Princeton mine, in Mariposa county, and also later of the Keystone and Kennedy mines as well, he caused a crosscut to be driven into the west country from the main workings of the South Eureka, on the 500 foot level. This cross-cut passed through a fissure in the clay-slate which was characteristic of the Mother Lode, but which at that point contained no ore. No lateral development was under-

taken. The lesson to be learned from this circumstance is that pay-shoots are not without limitations, either as to length, height, or depth. In Mother Lode mines, as elsewhere, it is quite possible to drive levels above and beneath pay ore, and to sink or raise beyond their horizontal limits, thus surrounding the pay-shoot in the plane of the vein, and yet, without disclosing the proximity of profitable ore. They who cross-cut and find a fissure which at the place of intersection shows no ore, but which fissure is otherwise of promising appearance, are fully justified in drifting, sinking and raising in the fissure in search of a payable shoot of ore. Indeed, in my opinion, it is a serious mistake to fail to do so. Both the South Eureka and the Bunker Hill mines are unique, in that their pay-shoots are being developed from great depth upward -- the South Eureka from 2850 feet, the Bunker Hill from about 1900 feet. Ordinarily the development of a mine proceeds from the surface downward.

The Oneida mine is situated between the South Eureka and the Kennedy mines and has recently been acquired by the former company. The Oneida was extensively worked in early days, having been discovered in 1851. J. Ross Browne reported, (U. S. Mineral Resources West of the Rocky Mountains, 1868, page 74 - 75,) that the ore-shoot was 300 feet long at the surface, and 400 ft long at the depth of 400 feet, and that the average yield of the ore was \$17.50 per ton. The mine has seen several periods of prosperity and of idleness, and although not at present in operation, it is highly probable that the Oneida mine will again yield a large amount of gold, as the South Eureka Company will undoubtedly drive its levels southward into the Oneida ground, and

I anticipate with satisfactory results, for the reason that there are two or more veins of promising appearance on which little or no development has been done. In this property as in the others mentioned, the pay-shoots are not continuous in depth, but succeed each other to the lowest level, about 2200 feet from the surface. In this connection the following remarks concerning the Kennedy mine adjoining the Oneida on the south, will be of particular interest, as indicating the possibilities of the latter mine in greater depth.

The Kennedy mine is one of the most noted gold mines in the world, not because of its richness, but from the simple fact that its management has been sufficiently progressive to sink the shafts through barren or unprofitable zones, after leaving those of largely profitable ore at higher levels, until these shafts have reached a depth greater than has been attained in any other gold mine in America. The present lowest level is 3450 feet vertically below the collar of the shaft, which is about 150 to 200 feet lower than the outcrop of the vein on the hilltop, half a mile distant. The main shaft has a present depth of 3553 feet. The result of this enterprise on the part of the management of the Kennedy Company, which, as indicated above, has seen its dark days the same as other mines on the Mother Lode, has been to demonstrate not only that the fissures of this great Lode persist to great depth, but that pay ore-- as profitable as any ever found at higher levels of the mine, has been developed in the lowest workings, at depths ranging from 2500 to 3450 feet vertically below the surface, (equivalent to 4500 feet on the vein). As previously stated, the Kennedy mine has seen its vicissitudes. In its early history, during the sixties, work was confined to that

portion of the vein within 700 feet of the surface. A quartz outcrop extends along the summit of the hill, marking the course of the vein, but this outcropping quartz is poor in gold and may still be seen in place. Somewhat deeper, however, pay ore was found, and the early miners exploited the vein to a depth ranging from 500 to 700 feet, the former depth being near the north shaft, the other near the south shaft, (both inclined). At these depths and along a line connecting them, the quartz disappeared leaving only a fissure filled with gouge. This fissure was strong, and continuous in its course, both longitudinally and in depth. At 950 feet in the south shaft, quartz again appeared in the fissure and continued for many hundreds of feet downward, forming a very valuable shoot of ore. Near the north shaft the quartz did not reappear in the vein until a depth of 1400 feet had been reached, but from that level it continued downward for several hundred feet, making an ore-shoot distinct from that to the southward, and unlike it in appearance as well as mineralogically. Notwithstanding this dissimilarity both shoots were very profitable. In the vicinity of the 2000 foot level the condition of the mine was far from satisfactory. There was always some ore, but much of it was too low in grade to meet the expenses of mining and milling it. However, on the 2100 foot level a vein was found that was a great surprise, as it came in from the westward, from the massive foot-wall greenstone, in which direction nothing was expected. It was quite flat and unlike any other ore-body in the mine. This vein proved to be profitable, and was perhaps, the salvation of the mine, as it gave the company the much needed courage as well as the means to continue the exploration of the great vein in still greater depth, the zone of impoverishment being at length passed.

it being found that below the 2400 foot level the ore was again quite as good as at any place above. The fact that during the month of July 1911, the output of the Kennedy mine was nearly \$1,000,000, and all from these deep levels, is far more significant than any other argument that can be advanced in favor of deep mining on the Mother Lode of California.

The Argonaut mine joins the Kennedy on the south and is similar to it geologically and otherwise. The upper part of the vein was not profitable in this mine above 400 feet from the surface, but from that level downward for 1000 feet or more the mine paid handsomely, but like its neighbor the Kennedy, it had its zones of low grade ore, and through these the workings had to be driven, in depth as well as horizontally. At present the Argonaut is working a splendid body of ore in the vicinity of the 3300 foot level (inclined depth), being the next deepest mine to the Kennedy on the Mother Lode, as well as one of the most profitable.

The Gwin mine in Calaveras county, is one of the most interesting of the Mother Lode mines, having produced several millions of dollars. The statement is made in the 6th Report of the State Mineralogist of California, p. 32, that the value of the ore in the early history of the Gwin mine was \$8 per ton in free gold, besides which there were about 2 per cent of sulphides worth \$100 per ton, making a \$10 ore. The ore-shoot discovered in the mine outcropped at the surface, and was worked to a depth of about 1500 feet by the original company. The second shoot was discovered in driving north on the 1200-foot level, and proved to be a more important ore-body than the first. It seems, from what can be learned of the early history of the mine that the management was, if not incompetent, at least improvident, and after a number of years of

successful operation the mine was closed and remained idle for a long time, being reopened in 1892-93, when a vertical shaft was sunk to reach the vein below the old workings. For several years following, this enterprise was successful, after reaching the vein, but in time, like the others, a zone of ore too low in value to be profitable, was entered, and then the struggle for existence began which ended in the mine being once more closed indefinitely, notwithstanding a decided improvement in the value of the ore in the lowest level at 2650 feet vertically beneath the surface. It is my belief that the Gwin mine with deeper development will again become a very valuable mine.

The group of mines at Angels, in Calaveras county, has been operated and closed in turn, some of them many times, though in the aggregate they have produced many millions and have been among the most profitable mines of the State, the most noted being the Utica-Stickle. However, the geology of these mines is so distinctly different from the Princeton that they are simply mentioned here as among the great mines that have had a varied history, but which nevertheless, through the courage and persistence of their owners have yielded handsomely.

Another of the noted mines of the Mother Lode is the Rawhide, in Tuolumne county, but as I have never been given the opportunity to inspect the mine, my knowledge of it is limited. It is one of the mines that have been worked and closed a number of times. In early years it was fully equipped with hoisting machinery and a 40-stamp mill, proved profitable for a time and was then closed, remaining idle for years. It was reopened about 1892 by Ballard, Martin and Neville and at a depth of 800 feet, as I have heard, very profitable ore was found. The mine thereafter

is reported to have produced several millions of dollars. Geologically the Rawhide is wholly unlike the Princeton, but is similar to the Mount Ophir and the Pine Tree veins on the Mariposa Grant, consisting of a large mass of ferro-dolomite in which occurs many veins (stockwork) of quartz. At one place in the Rawhide mine the dolomitic mineral was extremely rich in gold.

At Quartz Mountain, three miles south of the Rawhide is the App-Heslep mine, also owned by Neville of the Rawhide. The App vein is similar to the Rawhide, and like it, in the App mine some of the Ankerite is rich in gold, a somewhat unusual thing. The Heslep vein is in the hanging wall of the App and the vein occurs in the clay slates, similar to those at Princeton. The App-Heslep has been opened and closed down time and again, but it is doubtful if the property has ever seen a more prosperous period than the present, all of the rich ore coming from depths approximating, I have been told, 1600 to 1800 feet in depth. It seems that in every instance where the geological conditions are favorable that deep mining has proved to be profitable, quite as much so as at any level near the surface.

One of the most famous mines in California in the early days, and remembered still for its large output, was the Princeton, in Mariposa county. In many respects the Princeton resembles the Union, the Plymouth Consolidated, the Gwin, the vein in the foot-wall of the South Eureka which has brought fame to that property in recent years, and also the App vein, and each of these mines has been wonderfully successful. The Princeton vein occurs in a ridge of clay-slate, striking in a northwesterly direction. On the highest part of the ridge the vein outcropped for several hundred feet, but the ore was of only moderate grade -- too low to afford

a profit in those early days. At a depth of 100 to 150 feet, however, the ore was found to be much improved, and from that level to a depth of 600 feet the Princeton output according to official report, was over \$4,000,000. The work was not carried at that time far below the zone of profitable ore, and indeed, did not even pass through it, but the levels were extended some distance beyond it. The mine was closed and remained idle for many years, but was reopened in 1900, when it was fully equipped with mining and milling machinery. Since that time the output of the Princeton mine has been swelled by a sum in excess of \$1,370,000, making a total output considerably over \$5,000,000. The operations of the past ten years have shown the presence of much very good ore, which has occurred here and there throughout the mine, but the average grade of which has been disappointing, so much so that the mine was closed, though, as it appears, not by unanimous consent of all interested. The Princeton vein possesses to a marked degree many of the distinctive features of the great mines of the Mother Lode. It occupies a fissure of great persistence, both horizontal and vertical extent; there are occasional branches into the walls, a feature quite common in these mines; it has its zones of rich ore and those that are poor; a gouge is commonly present on one wall or the other, and there are many minutia of its occurrence which stamp it as a fissure of the Mother Lode series. To me the thing that appeals most strongly is the unbroken continuity of the vein in the lowest (1600-foot) level. Here the vein is from 6 to 8 feet wide for a distance of \$500 feet-- an unmistakable evidence of the strength and probable extensive continuity of the vein. The depth reached in the lowest workings, 1600 feet,

is almost shallow as compared with the workings of several of the most successful mines in Amador county. This depth is only 1250 feet vertically below the surface at the bottom of the main shaft which was stopped at 1650 feet. Compare this with the Kennedy lowest working level at 3450 feet vertical depth vertical depth, and it will be seen that the Princeton is, scarcely more than one-third as deep as the former. The Princeton vein at the 1600-foot level, from all of the most trustworthy evidence available, seems to be very near the bottom of a zone of low-grade ore. That the Princeton vein has shoots of pay ore the same as other mines, I have no doubt, but the limitations of these shoots are not at all sharply defined. A close inspection of the assay map, however, discovers some interesting facts. The limitations of the "bonanza" shoot in the upper part of the mine, and to the northwestward of the shaft, are well known to those who have had an intimate knowledge of the mine, but beyond that no definite conclusions seem to have been reached. Referring to the assay map, it will be seen that on each level east of the shaft, except on the 1250, the 1400, and the 1600, there has been found a vein of fairly good ore, this ore on the 800 level running from \$1 to \$10 per ton, with an average of \$5 or \$6 and a width of 3 to 5 feet. On the 950 level we find the vein from 3 to 5 feet or more in width, and the ore assaying from about \$2.50 to \$9 per ton, continuing for a distance of 600 feet, this length being about the same as on the 800 level. Again, on the 1100 level, it is seen that this shoot continues to the southeastward, being on this level about 750 feet in length, with nearly the same conditions as above repeated. That is, we find the vein to have been from 3 to 6.5 feet wide, and the rock to assay from \$1.00 to \$7.50 per ton, with an average value

of perhaps, \$5, as the narrower places in the vein were of the least value. There seems to have been a decided trend to the southeastward in this shoot, and a glance at the map indicates, or at least suggests, that neither the 1250, the 1400, nor the 1600 foot levels were driven southeastward far enough to have reached the zone of profitable ore. This conclusion is entirely aside from the very reasonable probability of the recurrence of rich ore in somewhat greater depth, and which would be wholly independent of ore-shoots that have been found at higher levels.

I regret greatly that I was unable to personally inspect the lower workings of the Princeton mine, as they were under water at the time of a recent visit to the property, but I made an examination of the geological conditions at the surface, as far as they could well be seen at this time, and I was impressed with some simple facts, which appear to have also been noticed years ago by the late William P. Blake, who published the result of his observations in the Mineral Resources West of the Rocky Mountains, 1868, page 26, in which he is quoted as saying:

"It is evident on a careful examination of the surface that there is a want of conformity in the direction between the vein and the slates. The slates on the west side are curved towards the vein in the form of a bow, the ends of the curve appearing to abut against the vein at both ends, the vein forming in its line of outcrop, with respect to the slates, the chord of an arc. There is also a want of conformity in the direction between this body of curved slates on the west side of the vein and those on the east side of it, showing with great distinctness at the north end, near the mouth of the upperdrift. On the east side the trend of the slates is seen to vary at different places, from north 45 degrees

west to north 95 west. They are nearly east and west at the north end of the vein. * * * There is also a want of conformity between the body of curved slates on the west side of the vein and the slates still further to the west, as if the curved body of slate had been broken from some other place and forced into its present position. The line of contact is not very distinct, but just in the position we would expect to find it we see a quartz vein which seems to mark the place. It is approximately parallel with the Princeton vein, and is also gold bearing.

"This want of conformity in the direction of the slates on the opposite sides of the vein and with the course of the vein itself, and the fact that the ends of the layers of slate abut against the vein, or in other words, that the vein does not coincide with the plane of the bedding or stratification of the slates, justifies the conclusion that it is a fissure vein rather than a bedded mass, as has heretofore been generally supposed. It evidently occupies the line of break between the two distinct bodies of slate.

"The mineralogical character of the slates on the opposite sides of the vein is also different. The slates on the west side are much more sandy than those on the east, which are argillaceous and in very thin layers of uniform composition, presenting the well known appearance and character of roofing slates. There are several layers in the series on the west side which might be called sandstones rather than slates. There are also in connection with these sandy bars a hard argillaceous rock, with an obscure slaty structure which resists weathering more than the surrounding portions and stands out in well defined outcrops. These two bars of rock are each from six to eighteen inches in thickness, and are

about 170 feet apart. * * * * *

"It is a curious fact that the gold-bearing part of the vein appears to have a certain relation to these peculiar argillaceous rocks or strata, for it does not extend beyond the line of contact of these strata with the plane of the vein. So also in the northern extension of the Princeton vein, half a mile to the northwest at the Green Gulch mine, where the vein was productive, the same peculiar rock is found in connection with the vein on the west side."

* * *

It seems unfortunate that the entire report of Professor Blake is not now available, as he was a close observer and examined the mine at a time when the workings were accessible, as well as the surface, where rock exposures adjacent to the vein were much more numerous than now, they having since been covered by buildings, dumps, etc., and become much obscured by brush. On the same page of the report above quoted, Mr. J. Ross Browne says: - - - -

"The pay was distributed rather in irregular mass than in a chimney, but Professor W. P. Blake expressed the opinion, in his report of 1864, that there was a chimney, (shoot) and that its dip was eighteen degrees to the horizon."

In the quotation from Professor Blake, above given, no mention is made of a pay-shoot, nor does Mr. Browne give any inkling of its direction, but the assay-map seems to me to clearly indicate that there is a pay-shoot, and that its direction is southeastward along the vein, but as to its being as flat as 18 degrees below the horizon I am in doubt. I incline rather to the belief that there are two separate pay-shoots in the upper part of the mine; one extending from the vicinity of the surface to 950-foot level, and situated almost wholly northwest of the shaft; the other extending

from a short distance above the 800-foot level, and trending at about 40 degrees downward to the southeastward, and being entirely southeast of the shaft.

To me the Princeton mine seems to hold every encouragement to further, and particularly to deeper exploration, of one of the richest and most persistent veins ever worked on the Mother Lode of California. Every one of the rich mines further north on the Lode was profitable to a greater depth than has yet been attained in the Princeton mine, and to my thinking there is no reason, physical or otherwise, why the Princeton may not once more become a large and very profitable mine in greater depth.

I wish to here direct particular attention to the vein lying to the southwestward of the Princeton shaft -- the vein known as the Ludwig extension. In the first place, I do not consider this vein an extension of the Princeton vein, but it is evidently a vein of the same series. Its development thus far consists of a number of surface pits and shallow shafts, none of which are over 150 feet in depth. The vein is strong, well mineralized, and is auriferous. It seems true that thus far the value of the ore even after sorting by lessees, as I have been informed by the manager, Mr. F. T. Maguire, has been rather low in grade, but if the Princeton vein be a criterion, this should not be too discouraging, as good ore was not found at the surface, even in that famous vein. Moreover, the surface conditions ~~xxx~~ at the Ludwig are encouraging, there being but one ravine crossing the strike of the vein in a considerable distance after crossing to the south side of Mill creek. An idea of the extent of the development of the Ludwig may be gained from the fact, as I am informed, that all of the work up to the present has been done with a windlass.

In reviewing the facts herein presented, I think we may safely arrive at the following conclusions:

1.. All of the profitable mines of the Mother Lode of California have had zones of profitable ore, and zones that were too low in grade to be payable, and that these several zones were not uniformly distributed.

2.. That there is not a great difference in the elevation of the collars of the shafts of the various noted mines, these occurring at from 1100 feet to 1600 feet above sea level, with the exception of the Princeton, which fact may be thought by some to be in its favor, being at 2250 feet above the sea, or from 650 to over 1000 feet higher than the other great mines of the Lode.

3.. The upper zone of payable ore has been found to occur at any level between the surface and 600 feet -- in one instance, that of the Central Eureka, at 1000 feet, but there seems to have been established no definite depth at which payable ore has been replaced by that which was poor, nor at what level poor ore may be expected to be replaced by that which is rich. In fact, it has been demonstrated that payable ore occurs at all depths between the surface and the depth of at least 3450 feet vertically below it, as amply proved in the Kennedy mine.

4.. Proper geological conditions seem to be more important than all other considerations, and where these are present there is every reason to anticipate the recurrence of rich ore in the fissure to a depth as great as lies within human possibility and mechanical means to reach.

5.. A mine having once been profitable may be expected to become so again in depth, (provided the vein be not lost by faulting as at the Lincoln mine), as has been instanced by the

development of nearly every important mine on the Mother Lode.

6.. Applying these data and principles to the Princeton mine, we find that it occupies what may be considered an unsurpassed topographical situation; that it has had one shoot of rich ore besides much that was medium and low grade; that the fissure is strong, persistent and unbroken, and particularly so in the lowest or 1600 foot level, which may be taken as an indication that the vein will continue to great depth, that there has nowhere appeared in its development any reason to anticipate that it will not again become largely profitable, and that, being on the Mother Lode of California, it will repeat the history of the other great mines, and in the future, if reopened, will become again as famous as in its early history. When the mine is reopened, I believe a zone of profitable ore is likely to be discovered above the 1600 foot level by driving along the vein in a southeasterly direction beyond the present faces of the three lowest levels, for the assay map indicates the ore-shoot to lie in that direction. In addition to this, I fully expect to see profitable ore developed in greater depth in the vicinity of the present main shaft, such shoot having no connection with those that have been worked above.

7.. In conclusion, I wish again to call attention to the accompanying tabulated statement, which I have compiled from the most dependable sources of information at present available, principally either from personal knowledge of the facts or from the statements recently made by the managers of the several mines or from others who were interested and in a position to know.

(Signed) "W. H. Storms"

Mining Geologist.

PART II--- GENERAL REPORT.

The large tract of land in Mariposa county, known variously as the Fremont Grant, the Mariposa Grant, and the Mariposa Estate, contains nearly 45,000 acres. Within its limits is found the southern end of the great Mother Lode. In the early days of mining in California the pioneers were not long in discovering that rich gold deposits existed in this region, and several populous towns came into existence there. Among these were the town of Carson, the first county seat, but now merely a memory; Mariposa, Bear Valley, and Princeton. These were each towns of considerable importance, but besides these there were numerous smaller settlements and villages scattered about the Grant, each and every one of which was the center of prosperous mining activity. The richness of the mines and the success of their operation attracted much attention and among others that of General John C. Fremont. The "Pathfinder" was evidently a firm believer in the old saying, "Might makes right", for he swung the lines of a land grant he had acquired down in the plains of the San Joaquin, until it, like a blanket covered nearly all of the best mines in this mineral province.

Naturally, the discoverers and rightful owners of these valuable properties objected to this high handed proceeding and fought vigorously to maintain their rights, but Fremont with his soldiers were too strong for the miners and the mines were taken from them, many lives being lost in the various sanguinary encounters which resulted from these evictions. The title to the Grant now claimed by Fremont, was confirmed by the Government of the United States, and the new owner proceeded to interest capital in the equipment,

development and operation of the best known mines on the Grant. Things were done on a liberal scale, and a large amount of gold was produced, though at great expense, as mining at that time was not the science it has since become. All operations were then conducted under many disadvantages, and at a cost far greater than would now be necessary. It seems strange that exploration and development were confined almost entirely to the first mines known -- among them the Pine Tree and Josephine, The Mariposa, Green Gulch and Princeton. There are, however, a number of smaller mines which have been since worked, in a desultory way with small equipment, and generally by lessees, but prospecting has been confined almost entirely to a search for high-grade ores and pockets -- those deposits which would quickly and amply reward the small miner and leaser. Nor has their quest been fruitless, for in the aggregate a very large sum has been taken from the Grant by pocket hunters and the lessees of numerous small mines, which are scattered over the entire region.

At the time of a recent visit to the Mariposa Grant, I was impressed by what seemed to me to be the many neglected opportunities. By this I mean the frequent occurrence along the line of the Mother Lode of strong, continuous veins, splendid topographical situation, good geological formation -- usually contacts of the famous black clay-slates of the Mariposa Beds with diabase or serpentine -- together with the very evident presence of gold, for the early placer miner has, in many places carried his work up to the crossing of the vein, and here his work has been discontinued, indicating the vein to have been the source of the gold. Moreover, I am informed that very encouraging assays of vein quartz may be obtained almost anywhere that the

veins are exposed. Some of these outcrops are several hundred feet in length, and may be seen at intervals for a distance of several miles, as one rides along the main road between Princeton and Bear Valley. Notwithstanding all of these facts the veins remain untouched, except in rare instances, where a shallow pit or two has been dug. A moment's thought finds a ready explanation for this anomalous condition on the Mother Lode, where one who expect more evidence of the miners' faith and energy. Although the Grant has for many years been in strong hands, yet, it must be remembered that 70 square miles of territory, throughout the greater portion of which these gold bearing veins may be found, is a very large area over which to scatter machinery and development. The Grant has never, since it came into the possession of Fremont, been open to the public, in the same sense as the unoccupied lands of the United States, and therefore the same incentive which actuates the ubiquitous prospector to explore the lands of the Public Domain is absent in this case, the lands of the Grant being private property. The prospector will venture much, but he claims as his reward, if he be successful, "all there is in it", and this he could not, and does not expect on private property, such as the Grant.

If the Mariposa Grant were today thrown open to public settlement, there would ensue such a stampede to that region as California has not witnessed in fifty years. Thousands of claims would be staked out, and as a final result, many valuable veins would be discovered and great mines developed, which today are wholly unknown. I know of no other part of California offering such opportunities as are here found, and which have received so little attention. To my thinking it is one of the most promising regions for intelligent prospecting on the entire line of

of the Mother Lode, and it is my opinion that there are numerous places, particularly between Princeton and Bear Valley, where properly directed effort will be rewarded by the development of largely profitable mines. It is true that pay rock does not always outcrop in these neglected veins, though the same can truthfully be said of nearly all the great mines of the Mother Lode, but the conditions here are as favorable as they can be found elsewhere along the line of the Mother Lode, and they certainly justify development. There are on the Grant a number of very promising properties, not on the Mother Lode and these too, would be most attractive in any region, but all effort thus far directed towards their development has been in a small way, usually by lessees with insufficient capital. For the most part the ores of these veins are surprisingly high grade, but it requires good ore to pay the expense of mining with small, and often sadly inefficient machinery and to then haul the ore in wagons a distance of ten miles, to be crushed in a custom mill at a cost far in excess of what it would be in a mill on the property. Notwithstanding this, some of these small mines have yielded a substantial profit to the lessees.

As indicating the possibilities of prospecting on the Grant, it is only a few weeks since a wood chopper noticed some small pieces of float quartz on the summit of the hill, near Princeton. He found that the quartz contained gold, and by a careful search discovered a vein the existence of which had not even been suspected. He obtained a lease, and the day I was at his prospect, he had a shaft down 50 feet, and was following a vein of fine appearance, in the clay-slate accompanied by a dike. This vein was about a foot in width and was running \$25 per ton and over. That there are many such opportunities on the Grant I

firmly believe, as must anyone who makes an inspection of this wonderful mineral region, the Mariposa Grant.

(Signed) "W. H. Storms".

Nevada City, Calif., Oct., 3rd, 1911.

Mr. Hennen Jennings,

San Francisco, Calif.

Dear sir,-

Regarding the proposal to reopen the Princeton Mine on the "Mariposa Grant", for further exploration in depth, my opinion is favorable to such a venture.

While the vein as exposed by the 1400 and 1600 drifts, both north and south of the shaft was of too low a grade to be profitably mined at the time of the suspension of operations in 1907, I have always considered that we were simply in a more or less barren zone, similar to that encountered in the "Mother Lode" mines to our north, or sinking through which, the valuable contents were found to increase and to be again in commercial quantities. My impression is that the ore found on the lower levels of these northern mines was of an higher average value than that mined throughout the upper levels. This is especially to be noted in the Kennedy Mine of Amador County and the Gwin Mine in Calaveras County, the barren zone occupying a position above sea level from about 200 to 500 feet.

While considerable ore was mined from the 1400 level of the Princeton Mine, the grade was so low as to offer little incentive to continued stoping at that point. The 1600 level, both north and south of the shaft, disclosed a vein of good appearance and about 5 feet in width, having all the characteristics of the more valuable quartz on the upper levels. The work on the 1400 and 1600 levels disclosed no reason, geologically, why the valuable contents should not repeat themselves in depth.

sinking a new vertical shaft to tap the vein at, say, the 2000 foot level, instead of re-opening the present incline shaft. This would call for a vertical depth of about 1700 feet, if located on the small ridge in rear of the Company's Office, and would be in the dry hanging wall slates requiring only light timbering for the entire depth. The present incline is in bad shape, in heavy swelling ground from the 500 level to the 1250 level, would be costly and unsatisfactory to re-open and a constant expense to keep in repair. From the reports for 1903-1904-1905 the repair cost of the Princeton Incline Shaft were \$6762.35-\$20234.72 and \$12109.58 respectively. I have no figures for the year 1906, but my recollection is that the charges were heavy.

Your idea of selling off portions of the "Grant" in connection with certain of the mines, as outlined in conversation with me, should be attractive to people desiring partially developed mining propositions, especially in consideration of the cheap power you may be able to furnish them while they are further prospecting and developing the ground.

Yours very truly,

signed (C has. C. Derby)

NUCLEAR DYNAMICS

P. O. BOX 20766

PHOENIX, ARIZONA 85036

602/267-0581

2671 SKY HARBOR BLVD.

KELSEY L. BOLTZ

CHAIRMAN

March 19, 1980

Messrs. Lloyd E. Pearson and Dale Doshack
20124 Chateau Drive
Saratoga, California 95070

Dear Lloyd and Dale:

As per our discussion last week, I am outlining in this letter the basic plan and procedure which we would propose to you regarding the exploration and, if warranted, the development of and production from the Louisiana Property in Mariposa County, California.

Generally there are three basic phases that must be followed in bringing a property into production:

- A. Exploration Phase
- B. Development Phase
- C. Production Phase

The Exploration Phase would consist of several steps: (1) examination and evaluation of all existing data that may have been developed previously (2) geological, geochemical and geophysical surveys of the surface and accessible workings, and (3) drilling and/or extension of existing or new underground workings. Some preliminary metallurgical testing may be included in the Exploration Phase. Of course, the purpose of this is to determine whether there exists ore of sufficient grade and tonnage to support a mining operation and that the ore does not have adverse characteristics which would inhibit recovery of the gold. While one would hope that the Exploration Phase could be done within one year, it is most probable that two "field seasons" would be required. In this area, the "field season" would extend from around the end of April to early December.

If data developed during the Exploration Phase establishes the presence of economic ore bodies, the Development Phase begins. This phase consists of mine development and mill design and construction along with installation of the ancillary surface facilities. Mine development consists largely of driving underground workings (shafts, drifts, crosscuts, etc.) to gain access to the ore.

NUCLEAR DYNAMICS

Messrs. Lloyd E. Pearson and Dale Doshack
Page 2
March 19, 1980

The design of mill facilities is based upon metallurgical tests of the ore to determine the appropriate processes required to extract the gold. A new factor affecting schedules has been introduced within the last several years: the permits and licenses required for environmental considerations from the various state and federal agencies. For example, in our uranium operations in Wyoming, the time required by the Wyoming Department of Environmental Quality and Nuclear Regulatory Commission to conduct these studies is greater than that which we project for the actual construction of the facilities.

In underground operations, production usually begins slowly and increases steadily as more openings into the ore bodies are developed. It generally takes from one to three years to achieve optimum production rates, depending upon the size and number of ore bodies being developed and produced. It is the operator's objective, of course, to achieve optimum production as quickly as possible in order to maximize the return on his invested capital.

In applying this generalized plan to your property, we would propose the following schedule to be incorporated into an Exploration and Lease Agreement:

A. Exploration Phase

1. To begin immediately
2. To have a two-year period
3. and in consideration for such exploration phase, Nuclear Dynamics would pay to you an annual rental of \$6,000 per year, such payment to be considered as advanced royalty and be credited to production royalty if production is achieved. If Nuclear Dynamics relinquishes the property without getting into production, all payments made by Nuclear Dynamics to that time will be forfeited by Nuclear Dynamics and retained by you as liquidated damages.

B. Development Phase

1. Two-year period
2. Nuclear Dynamics to continue the annual minimum royalty payment as described in A.3. above.
3. Copies of all geologic data related to the property during the term of the lease will be delivered to you.

C. Production Phase

1. A royalty on production to be paid to you at the rate of 5% of the net revenue from the metal produced.

NUCLEAR DYNAMICS

Messrs. Lloyd E. Pearson and Dale Doshack

Page 3

March 19, 1980

2. You may elect to take your royalty "in kind"; that is, in gold metal equal to the dollar value of the royalty at the time produced.
3. Term of the lease shall be for the economic life of the property.
4. Nuclear Dynamics will hold you harmless from any liabilities arising from Nuclear Dynamics' operations on the property.
5. You will have access at any reasonable time to the production records for the purposes of verification of royalties paid to you.

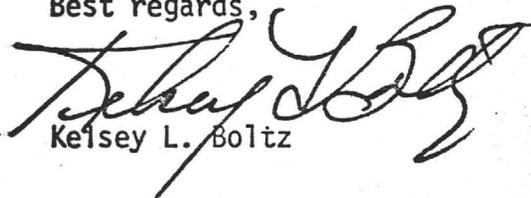
A definitive lease agreement will have numerous additional provisions regarding payment schedules, duties of lessee, default provisions, etc.; however, the above outline sets forth the principal points of our proposal.

If you have further questions or wish to suggest alternative considerations, please call me and I will be happy to discuss this further and, if necessary, to meet with you for more definitive discussions leading to a final agreement.

I will be traveling outside the United States from the 22nd of March through the 6th of April. If you wish to contact me, please leave word with my secretary as I will be calling in from time to time.

I have enjoyed meeting with you, Lloyd and Dale, and look forward to hearing from you.

Best regards,



Kelsey L. Boltz

KLB:sem

bcc: J. F. Walton
H. W. Reynolds
E. C. Pendery

NUCLEAR DYNAMICS

P. O. BOX 20766

PHOENIX, ARIZONA 85036
2871 SKY HARBOR BLVD.

602 / 267-0581

KELSEY L. BOLTZ

CHAIRMAN

March 19, 1980

Mr. A. J. Puglizevich
226 West 17th Street
Merced, California 95340

Dear Tony:

As per our discussion last week, I am outlining in this letter the basic plan and procedure which we would propose to you regarding the exploration and, if warranted, the development of and production from your Mt. Ophir and associated properties in Mariposa County, California.

Generally there are three basic phases that must be followed in bringing a property into production:

- A. Exploration Phase
- B. Development Phase
- C. Production Phase

The Exploration Phase would consist of several steps: (1) examination and evaluation of all existing data that may have been developed previously (2) geological, geochemical and geophysical surveys of the surface and accessible workings, and (3) drilling and/or extension of existing or new underground workings. Some preliminary metallurgical testing may be included in the Exploration Phase. Of course, the purpose of this is to determine whether there exists ore of sufficient grade and tonnage to support a mining operations and that the ore does not have adverse characteristics which would inhibit recovery of the gold. While one would hope that the Exploration Phase could be done within one year, it is most probable that two "field seasons" would be required. In this area, the "field season" would extend from around the end of April to early December.

If data developed during the Exploration Phase establishes the presence of economic ore bodies, the Development Phase begins. This phase consists of mine development and mill design and construction along with installation of the ancillary surface facilities. Mine development consists largely of driving underground workings (shafts, drifts, crosscuts, etc.) to gain access to the ore.

NUCLEAR DYNAMICS

Mr. A. J. Puglizevich
Page 2
March 19, 1980

The design of mill facilities is based upon metallurgical tests of the ore to determine the appropriate processes required to extract the gold. A new factor affecting schedules has been introduced within the last several years: the permits and licenses required for environmental considerations from the various state and federal agencies. For example, in our uranium operations in Wyoming, the time required by the Wyoming Department of Environmental Quality and Nuclear Regulatory Commission to conduct these studies is greater than that which we project for the actual construction of the facilities.

In underground operations, production usually begins slowly and increases steadily as more openings into the ore bodies are developed. It generally takes from one to three years to achieve optimum production rates, depending upon the size and number of ore bodies being developed and produced. It is the operator's objective, of course, to achieve optimum production as quickly as possible in order to maximize the return on his invested capital.

In applying this generalized plan to your lands, we would propose the following schedule to be incorporated into an Exploration and Lease Agreement:

A. Exploration Phase

1. To begin immediately
2. To have a two-year period
3. and in consideration for such exploration phase, Nuclear Dynamics would pay to you an annual rental of \$6,000 per year, such payments to be considered as advanced royalty and be credited to production royalty if production is achieved. If Nuclear Dynamics relinquishes the property without getting into production, all payments made by Nuclear Dynamics to that time will be forfeited by Nuclear Dynamics and retained by you as liquidated damages.

B. Development Phase

1. Two-year period
2. Nuclear Dynamics to continue the annual minimum royalty payments as described in A.3. above.
3. Copies of all geologic data related to the property during the term of the lease will be delivered to you.

C. Production Phase

1. A royalty on production to be paid to you at the rate of 5% of the net revenue from the metal produced.

NUCLEAR DYNAMICS

Mr. A. J. Puglizevich
Page 3
March 19, 1980

2. You may elect to take your royalty "in kind"; that is, in gold metal equal to the dollar value of the royalty at the time produced.
3. Term of the lease shall be for the economic life of the property.
4. Nuclear Dynamics will hold you harmless from any liabilities arising from Nuclear Dynamics' operations on the property.
5. You will have access at any reasonable time to the production records for the purposes of verification of royalties paid to you.

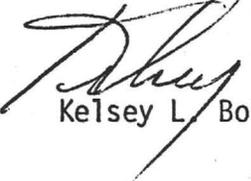
A definitive lease agreement will have numerous additional provisions regarding payment schedules, duties of lessee, default provisions, etc.; however, the above outline sets forth the principal points of our proposal.

If you have further questions or wish to suggest alternative considerations, please call me and I will be happy to discuss this further and, if necessary, to meet with you for more definitive discussions leading to a final agreement.

I will be traveling outside the United States from the 22nd of March through the 6th of April. If you wish to contact me, please leave word with my secretary as I will be calling in from time to time.

I have enjoyed meeting with you, Tony, and look forward to hearing from you.

Best regards,


Kelsey L. Boltz

KLB:sem

bcc: J. F. Walton
H. W. Reynolds
E. C. Pendery

P.S. You are a good influence; since meeting with you, I've resumed my running routine!



NUCLEAR DYNAMICS

P. O. BOX 20766

PHOENIX, ARIZONA 85036
2871 SKY HARBOR BLVD.

602/267-0581

KELSEY L. BOLTZ

CHAIRMAN

March 18, 1980

Mr. Robert L. Barron
2171 St. Andrews Road
Half Moon Bay, California 94019

Dear Bob:

As per our discussion last week, I am outlining in this letter the basic plan and procedure which we would propose to you and your associates regarding the exploration and, if warranted, the development of and production from your "Bondurant" and associated properties in Mariposa County, California.

Generally there are three basic phases that must be followed in bringing a property into production:

- A. Exploration Phase
- B. Development Phase
- C. Production Phase

The Exploration Phase would consist of several steps: (1) examination and evaluation of all existing data that may have been developed previously (2) geological, geochemical and geophysical surveys of the surface and accessible workings, and (3) drilling and/or extension of existing or new underground workings. Some preliminary metallurgical testing may be included in the Exploration Phase. Of course, the purpose of this is to determine whether there exists ore of sufficient grade and tonnage to support a mining operation and that the ore does not have adverse characteristics which would inhibit recovery of the gold. While one would hope that the Exploration Phase could be done within one year, it is most probable that two "field seasons" would be required. In this area, the "field season" would extend from around the end of April to early December.

If data developed during the Exploration Phase establishes the presence of economic ore bodies, the Development Phase begins. This phase consists of mine development and mill design and construction along with installation of the ancillary surface facilities. Mine development consists largely of driving underground workings (shafts, drifts, crosscuts, etc.) to gain access to the ore.

NUCLEAR DYNAMICS

Mr. Robert L. Barron
Page 2
March 18, 1980

The design of mill facilities is based upon metallurgical tests of the ore to determine the appropriate processes required to extract the gold. A new factor affecting schedules has been introduced within the last several years: the permits and licenses required for environmental considerations from the various state and federal agencies. For example, in our uranium operations in Wyoming, the time required by the Wyoming Department of Environmental Quality and Nuclear Regulatory Commission to conduct these studies is greater than that which we project for the actual construction of the facilities.

In underground operations, production usually begins slowly and increases steadily as more openings into the ore bodies are developed. It generally takes from one to three years to achieve optimum production rates, depending upon the size and number of ore bodies being developed and produced. It is the operator's objective, of course, to achieve optimum production as quickly as possible in order to maximize the return on his invested capital.

In applying this generalized plan to the Bondurant lands, we would propose the following schedule to be incorporated into an Exploration and Lease Agreement:

A. Exploration Phase

1. To begin immediately
2. To have a two-year period
3. and as consideration for such exploration phase, Nuclear Dynamics would carry the annual property payments that you have in connection with your purchase of the property which, I understand, are approximately \$12,000 per year. Such payments to be considered as advanced royalty and be credited to production royalty if production is achieved.

B. Development Phase

1. Two-year period
2. Nuclear Dynamics to continue to carry the property payments as described in A.3. above.
3. Copies of all geologic data related to the property during the term of the lease will be delivered to you.

C. Production Phase

1. A royalty on production to be paid to you at the rate of 5% of the net revenue from the metal produced.

NUCLEAR DYNAMICS

Mr. Robert L. Barron
Page 3
March 18, 1980

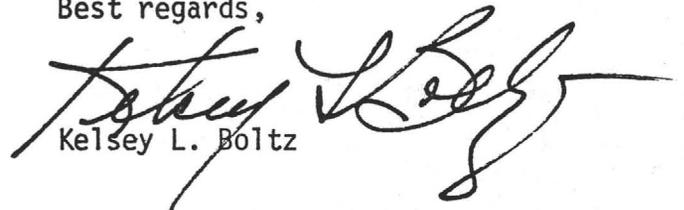
2. You may elect to take your royalty "in kind"; that is, in gold metal equal to the dollar value of the royalty at the time produced.
3. Term of the lease shall be for the economic life of the property.
4. Nuclear Dynamics will hold you harmless from any liabilities arising from Nuclear Dynamics' operations on the property.
5. You will have access at any reasonable time to the production records for the purposes of verification of royalties paid to you.

A definitive lease agreement will have numerous additional provisions regarding payment schedules, duties of lessee, default provisions, etc.; however, the above outline sets forth the principal points of our proposal.

If you and your associates have further questions or wish to suggest alternative considerations, please call me and I will be happy to discuss this further and, if necessary, to meet with you for more definitive discussions.

I have enjoyed meeting with you, Bob, and look forward to hearing from you.

Best regards,


Kelsey L. Boltz

KLB:sem

AMC Eagle, 4-wheel drive

Call Bob Frueling, (602) 757-4041

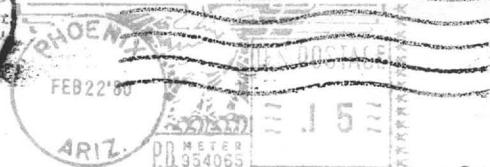
Rucker Motors or E&R Leasing (Toyota, AMC dealer)
3350 North Evans
Kingman, Arizona

Across from McDonalds and Husky Truck Stop, off the
interstate to the north.

Mr. Boltz,

Please note that P. O. Box 8485 is rented to
KTF Electric Company in Stockton, California.

NUCLEAR DYNAMICS



Nyman Consolidated Mines Co.
P. O. Box 8485
Stockton, California 95208

KTF Electric Co.

*No telephone listing in
Stockton for Nyman*

POST OFFICE BOX 20766 · PHOENIX, ARIZONA 85036

*P.O. Box 8485 is rented
to KTF Electric Company*

Stockton 209

*US Post Office
209 - 946-6317*



Ph. (209) 984-5272

Res. 532-4385



KELLEY MOTORS INC.

KELLEY JUNCTION

5th Ave. & Hwy. 108

Jamestown, CA 95327

JOHN E. KELLEY

NUCLEAR DYNAMICS

P. O. BOX 20766

PHOENIX, ARIZONA 85036

602/267-0581

2871 SKY HARBOR BLVD.

February 25, 1980

Nyman Consolidated Mines Co.
P. O. Box 8485
Stockton, California 95208

Gentlemen:

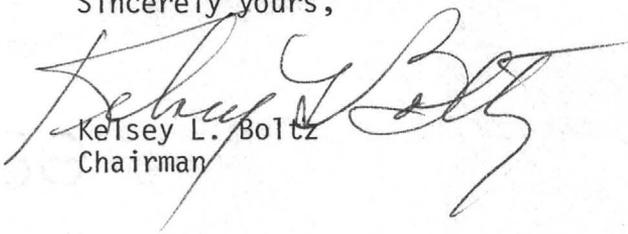
During our investigation of potential gold properties in the area near Sonora, California, we find that your company is the owner of the Santa Ysabel Group; Nyman Consolidated Claims.

Our company is presently producing coal in Kentucky (approximately 400,000 tons per year), is developing uranium deposits in Colorado and Wyoming, and is acquiring an oil producing and drilling company. We have been active since 1971 in the exploration for base and precious metals deposits.

In conjunction with our study of the Mother Lode District, we would like to discuss with you the possibility of optioning, leasing and/or purchasing your claims with the objective of bringing them to production if they prove to have economically extractable mineral.

If such arrangements would be of interest to you, please let me know, and I would be pleased to meet and discuss these possible arrangements with you.

Sincerely yours,


Kelsey L. Boltz
Chairman

KLB:sem

Ms. Mercedes Bach Fattel
18686 Horace Street
Northridge, California 91324

Horace Meyer
Star Route
Catheys Valley, California 95306

Mr. A. J. Puglizevich (Elinora)
226 West 17th Street
Merced, California 95340

Mr. Lloyd E. Pearson
20124 Chateau Drive
Saratoga, California 95070

Mr. Robert L. Barron
2171 St. Andrews Road
Half Moon Bay, California 94019

Mr. Robert R. Pearson
Senior Auditor
A. J. Industries, Inc.
11454 San Vicente Boulevard
Los Angeles, California 90049

March 13, 1980

Mailed to the following the most recent quarterly report
and most recent Diamond Back news release of March 12, 1980:

Mr. Lloyd Pearson

Mr. A. J. "Tony" Puglizevich

Mr. Robert Pearson

Mr. Robert Barron

Mailed to Harvey Sobel a 1979 Annual Report, quarterly report,
news releases regarding Superior Oil, Hunt Oil and two releases
about Diamond Back including the most recent of March 12.

MEMORANDUM

To: File of Portland Mine
From: Kelsey L. Boltz
Re: Reconnaissance of Area
Date: March 7, 1980
Location: Sec. 14, 15, 22, 23, T23N, R21W. Mohave County, Arizona
Access: NE from Kingman on Highway 93, 22 miles to Cottonwood Road;
thence west 8.5 miles on a dirt road leading southerly along
and in Lost Cabin Wash. Thence 12 miles southerly to
Portland Mine Area.

General Description: Old workings consist of two open cuts along what appears to be the same vein. Vein strikes N-S and dips generally 30° - 35° east. Two open cuts expose the vein(s?) which outcrops on a low knoll. The cuts are approximately 700 feet apart. The vein resembles a quartz dike lying concordant with the andesitic and rhyolitic flows enclosing the dike. The vein material has been fractured and recemented several times. The thickness of the vein material varies from approximately 10 feet to 20 feet thick. Several (possibly 14) holes have been drilled (probably by ASARCO, Inc.) in the area east of the vein outcrop, obviously to intercept the vein. The holes were drilled vertically, probably by down-hole percussion method.

Title: A Location Notice was found which contained this information:

Re: Locator: ASARCO, Inc.
Date: 30 September 1970

Two groups of claims: (1) Better Luck
(2) Portland Mine

RED BANK

19 Febraury 1980, Tuesday

Merced, California

At approximately 8:00 p.m. called Horace Meyers in Le Grande (small town east of Merced). Horace Meyers said he is not interested in leasing his claims out. He said he is not interested in talking with anyone who can't buy his claims for \$500,000 cash. Says he has some "surveys" of his claims. Says if we don't believe his claims are worth \$ $\frac{1}{2}$ mil we can ask Jack Wildt who worked "in the mine" when it was operating "years ago". Wildt lives in Bear Valley-Mt. Bullion area. Meyers' ex-wife (Millie Meyers) is part owner of the claims. Her lawyer is William Young in Fresno--she would have to agree to any "deal on the claims"

Called for: William Young, Attorney, (209) 445-1500 - not in today
929 L Street, Suite A, Fresno, California 93721

Fresno information has two "M. Meyers" - (209) 264-9200 (called, no answer)
- (209) 264-4085 (called, no answer)

I will write to Mrs. Meyers c/o her attorney.

NUCLEAR DYNAMICS

P. O. BOX 20766

PHOENIX, ARIZONA 85036
2671 SKY HARBOR BLVD.

602/267-0581

KELSEY L. BOLTZ

CHAIRMAN

March 6, 1980

Mr. Robert Pearson
Senior Auditor
A. J. Industries
11454 San Vincente Boulevard
Los Angeles, California 90049

Dear Mr. Pearson:

Since our conversation on 13 February, my travel schedule has caused a delay in sending you information on our company and an outline of our ideas concerning your company's holdings in Mariposa and Tuolumne Counties. Enclosed are:

1. Nuclear Dynamics, Inc. Annual Report for Fiscal Year July 1, 1978 to June 30, 1979.
2. Press Releases re:
 - a) Superior Oil Company Joint Venture
 - b) Ferret Exploration Company Joint Venture
 - c) Hunt Oil Company Joint Venture
 - d) Diamond Back Drilling and Supply Company Merger Proposal
 - e) Coal Sales Agreement
3. Morgan Olmsstead Kennedy and Gardner Research Report

Our company has been quite active and very successful in the field of minerals exploration since its inception in 1967, and has managed joint ventures with such companies as:

Bethlehem Steel Corporation
Cleveland Cliffs Iron Company
Sohio Petroleum Company
Phillips Petroleum Company
Northern Energy Resources Corporation (Subsidiary
of Pacific Power and Light)
Hunt Oil Company
Continental Oil Company
Public Service of Oklahoma

We are considered to be quite competent in our field and are capable of fulfilling any commitments we may undertake.

NUCLEAR DYNAMICS

Mr. Robert Pearson
Page 2
March 6, 1980

The properties which your company holds in which we are most interested are the Harvard and Pine Tree-Josephine Claims. Exploration of properties such as these would consist of several progressive phases each successive phase depending upon the results of the preceding phase. In the case of your properties, sufficient data is available from published sources to suggest that, although much ore has already been extracted from the properties, a good potential exists for the development of additional reserves.

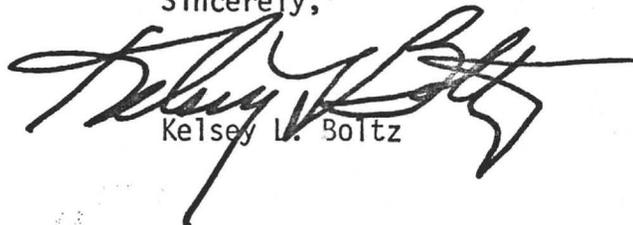
We would like to obtain an option to explore and, if warranted, carry the investigation through a feasibility study with the ultimate objective of leasing or purchasing the claims on terms mutually acceptable.

Also, we would hope that your files may contain additional detailed data that we may study; this study could be very helpful in enabling us to lay out a more specific plan in the evaluation of these properties. Further, I would like to meet with you to discuss these matters prior to my submitting to you and your Board of Directors a specific proposal so that we may determine whether we are even in the right ballpark.

I plan to be in Los Angeles during the week of the 10th of March at which time I will call you to determine if you could fit a meeting with me into your schedule.

We certainly appreciate your consideration and are hopeful that we can work a mutually beneficial plan.

Sincerely,



Kelsey L. Boltz

KLB:sem
Enclosures

NUCLEAR DYNAMICS

P. O. BOX 20766

PHOENIX, ARIZONA 85036
2871 SKY HARBOR BLVD.

602/267-0581

February 27, 1980

Mr. A. J. Puglizevich
226 West 17th Street
Merced, California 95340

Dear Mr. Puglizevich:

Enclosed is our check for \$100.00 to cover the cost of the copies of mining data which you have discussed with Mr. Kelsey Boltz.

Sincerely,



(Mrs.) Sue Matteson
Secretary to Mr. Boltz

Enclosure

NUCLEAR DYNAMICS

P. O. BOX 20766

PHOENIX, ARIZONA 85036
2871 SKY HARBOR BLVD.

602/267-0581

February 25, 1980

Mr. A. J. Puglizevich
226 West 17th Street
Merced, California 95340

Dear Tony:

Enclosed is a copy of the Map of Mariposa County showing the location and tabulation of the known gold mines.

Also, I have ordered a copy of the geology book that I told you about.

I will be talking with you within the next few days to discuss possible mutually acceptable arrangements for the exploration, development, and, hopefully, production of gold from your properties.

It was a pleasure meeting you, and I appreciate your taking the time to show me the area.

Best regards,



Kelsey L. Boltz
Chairman

KLB:sem

NUCLEAR DYNAMICS

P. O. BOX 20766

PHOENIX, ARIZONA 85036

602/267-0581

2871 SKY HARBOR BLVD.

February 25, 1980

Mrs. Horace Meyers
c/o William Young, Attorney
929 L Street, Suite A
Fresno, California 93721

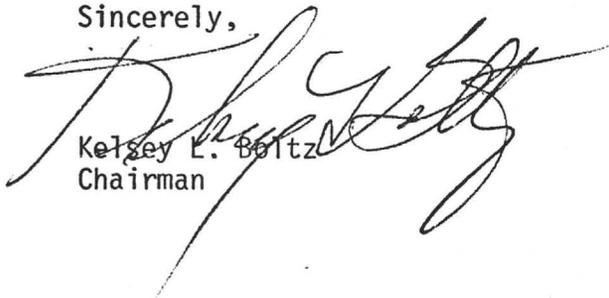
Dear Mrs. Meyers:

During our investigation of potential gold properties in Mariposa County, California, I found that Mr. Horace Meyers, et al owned the Red Bank Claims. I contacted Mr. Meyers and after some discussion in which he indicated his willingness to sell the claims, he suggested that I contact you through your attorney, Mr. William Young.

Our company is presently producing coal in Kentucky (approximately 400,000 tons per year), is developing uranium deposits in Colorado and Wyoming, and is acquiring an oil producing and drilling company. We have been active since 1971 in the exploration for base and precious metals deposits.

If you would be interested in pursuing this matter with us, I would be most pleased to meet and discuss this possibility with you or your representative.

Sincerely,



Kelsey E. Boltz
Chairman

KLB:sem

NUCLEAR DYNAMICS

P. O. BOX 20766

PHOENIX, ARIZONA 85036

602/267-0581

2871 SKY HARBOR BLVD.

February 25, 1980

Nyman Consolidated Mines Co.
P. O. Box 8485
Stockton, California 95208

Gentlemen:

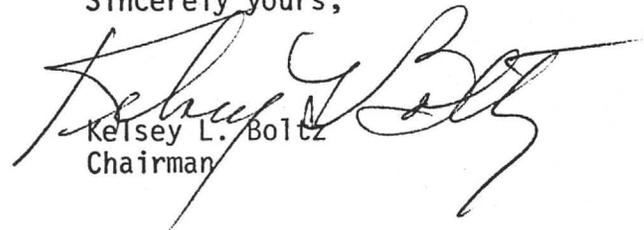
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Our company is presently producing coal in Kentucky (approximately 400,000 tons per year), is developing uranium deposits in Colorado and Wyoming, and is acquiring an oil producing and drilling company. We have been active since 1971 in the exploration for base and precious metals deposits.

In conjunction with our study of the Mother Lode District, we would like to discuss with you the possibility of optioning, leasing and/or purchasing your claims with the objective of bringing them to production if they prove to have economically extractable mineral.

If such arrangements would be of interest to you, please let me know, and I would be pleased to meet and discuss these possible arrangements with you.

Sincerely yours,


Kelsey L. Boltz
Chairman

KLB:sem

NUCLEAR DYNAMICS

P. O. BOX 20766

PHOENIX, ARIZONA 85036
2671 SKY HARBOR BLVD.

602/267-0581

February 25, 1980

Jumper Land Corp.
c/o R. E. Fitzgerald
209 Post Street, Room 905
San Francisco, California 94108

Dear Mr. Fitzgerald:

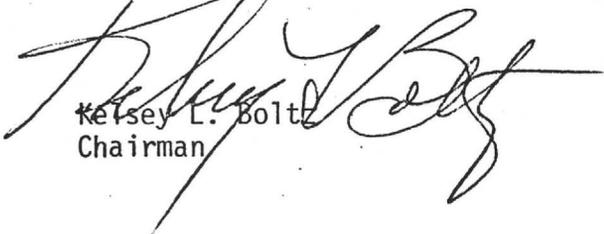
During our investigation of potential gold properties in the area near Sonora, California, we find that your company is the owner of the Jumper (Golden Rule) Claims.

Our company is presently producing coal in Kentucky (approximately 400,000 tons per year), is developing uranium deposits in Colorado and Wyoming, and is acquiring an oil producing and drilling company. We have been active since 1971 in the exploration for base and precious metals deposits.

In conjunction with our study of the Mother Lode District, we would like to discuss with you the possibility of optioning, leasing and/or purchasing your claims with the objective of bringing them to production if they prove to have economically extractable mineral.

If such arrangements would be of interest to you, please let me know, and I would be pleased to meet and discuss these possible arrangements with you.

Sincerely yours,


Kelsey L. Boltz
Chairman

KLB:sem

NUCLEAR DYNAMICS

P. O. BOX 20766

PHOENIX, ARIZONA 85036
2871 SKY HARBOR BLVD.

602/267-0581

February 25, 1980

Ms. Mercedes Bach Faitel, et al
18686 Horace Street
Northridge, California 91324

Dear Ms. Faitel:

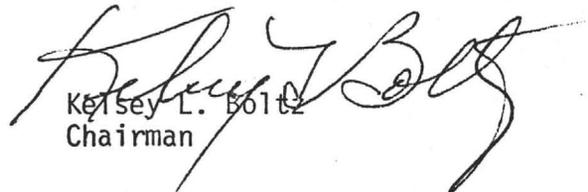
During our investigation of potential gold properties in the area near Sonora, California, we find that you are the owners of the Cloudman, Erin-go-Bragh Claims.

Our company is presently producing coal in Kentucky (approximately 400,000 tons per year), is developing uranium deposits in Colorado and Wyoming, and is acquiring an oil producing and drilling company. We have been active since 1971 in the exploration for base and precious metals deposits.

In conjunction with our study of the Mother Lode District, we would like to discuss with you the possibility of optioning, leasing and/or purchasing your claims with the objective of bringing them to production if they prove to have economically extractable mineral.

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Sincerely yours,



Kelsey L. Boltz
Chairman

KLB:sem

Report on Courthouse Search of Property Ownerships in
Mariposa and Tuolumne Counties, California
by F. X. Cannaday

The following notes were taken during a trip through Mariposa and Tuolumne Counties along and near the Mother Lode in California from December 15 through December 19, 1979. During this trip the names and addresses of owners of a number of mining properties were obtained at the Assessor's offices in the courthouses of Tuolumne and Mariposa Counties, located in the towns of Sonora and Mariposa respectively.

These names and addresses and other pertinent information are included in this report.

Notes

- Mariposa: Inhabitants, 3000, ± on Highway 140 to Yosemite. Commercialized; Town houses along both sides of road into town, of the inexpensive? "summer" type on irregular-shaped lots, etc.
- Mt. Bullion: On Highway 49, (200 to 300? inhabitants) 5 miles northwest of Town Mariposa; decreasing number of houses leaving Mariposa; some around Mt. Bullion, decreasing to none going NW from Mt. Bullion.
- Mt. Ophir: Wooded, brushy; some open workings on top of Mt. Ophir; you Mine have to look hard to find old dumps, etc; brass plaque commemorates earliest California mint.
- Bear Valley: Very small, less than 200 inhabitants; very rundown buildings-- Town depressed; NW of town along Highway 49--nothing.
- Hornitos: Very small, off Highway 49, out of the beaten path; extremely Town rundown; depressed--shacky, etc.--adobe saloon looks like the kind Murrieta (the bandit) could be going to if he were still alive. Nothing evident left standing of the numerous mines that once operated in that valley. Paved road from Bear Valley to Hornitos very mountainous, crooked, narrow--shelf road, almost, in places; sparsely populated area. Cattle in the valley; woods in the mountains (oaks, brush, etc.).
- Bear Valley to Bagby - Highway 49, no population.
- Josephine & Pine Tree: Remnants of mine dump, etc. on Pine Tree, grown over-- Mine nothing left of installations; Approach to dump partially blocked. Spectacular drop into Merced River canyon from observation pullout on highway (near transformer substation)--hairpins and switchbacks; good highway--no traffic on Sunday afternoon.

Bagby:
Town? Insignificant "recreation" area on Merced River. No visible houses where Bagby used to be. Some small old houses for "marina", on S. bank of river. Sharp grades on both sides of river.

Red Bank:
Mine Turnoff to Red Bank mine has steel gate; road little used-- maybe fishermen--Fences--

Continuing on Highway 49; some trailers and shacks possibly on the Mother Lode structure occasionally; very depopulated brushy woody mountainous country. Fences.

Coulterville:
Town Inhabitants: 200+?; depressed--Mostly old small frame houses. NW of Coulterville some dilapidated small frame houses or small house trailers on either side of the road here and there, needing paint, etc. Nothing around Penon Blanco--just brushy mountainous country--Fences--

Jacksonville:
Town Very small--off the road--some habitations: Very unimpressive, rundown. Fences--some cattle country.

Approaches? to Eagle-Shawmut Mine with gates; no gates left open. Hilly (large country now--not many people. Fences.

Golden Rule (Jumper):
Mine South of mine a few very shabby, rundown structures (two hatted "mountain boys" sitting on porch railing, staring at highway). Mine open pit and old rusty equipment to west side of highway; all fenced; all roads gated or clearly posted as private. Small hills and dales with scattered live oaks; rural. Fences, some very old, some newer, generally in good repair.

Stent & Quartz:
Towns Very small, very rundown, some very old buildings--nothing new, that was visible.

Quartz Mt. and Dutch App mine area west of Quartz--scattered shacks and lowly buildings here and there; could have been mine building facilities of various mines in area at one time--Fences--All rural looking.

Harvard:
Mine Fenced off with gates--no open access; sizable shaft head frame top visible among trees; some old rural houses in vicinity.

Crystalline:
Mine Paved road from southeast ends at gated fence; no clear access from South; no clear access from North and Rawhide; seemed to be wooded country. Seems isolated.

Rawhide:
Mine Part of dump by paved road--some houses to north by Rawhide school (still in use); more inexpensive houses on both sides of road; houses look better as we go north. Still many are on the shabby side--mostly by the road--otherwise rural although on both sides of the paved road the impression is that the fenced lots of odd shapes are smaller and that a few hundred feet away from the road the tracts are much larger and used for ranching.

Jamestown: On Highway 108, 2700 inhabitants. Mostly old type western town with some life, and some new buildings and homes--doesn't look so dead or dying. The Sierra Railroad headquartered here, is a standard gage dieselized commercial freight hauler which connects Sonora and the Southern Pacific mainline at Oakdale near Modesto. In the summer it operates scheduled passenger train tours as well, headed by steam locomotives.

Sonora: County Seat of Tuolumne, 10,000 inhabitants in immediate area. Center of activity of the region--on Highways 108 and 49 and not a flat spot in town. The main street runs up the bottom of the narrow valley, the town is up and down both sides. A Chamber of Commerce publication states the unemployment rate to be 10%. Nevertheless, during daylight hours, there seemed to be much activity, with near traffic jams down the main street, most any time. Yet Highway 108 which leads east over Sonora Pass over the Sierras, is not a main access through the Sierras, and it is closed for the winter months, and was closed at the time.

List of Properties with Names and Addresses of Owners.

The following pages give such information on:

In Tuolumne County

Crystalline & Alabama
Harvard
Dutch-App
Santa Ysabel group (Nyman Consolidated)
Cloudman, Erin-go-Braugh
Golden Rule (Jumper)

In Mariposa County

Pine Tree-Josephine
Red Bank; also Crown Peak
Mt. Ophir (& Green's Gulch and Extension)
Louisiana (and others adjacent including Bondurant)

Crystalline & Alabama

Owners: Dec '79; Tuolumne County Assessor's Office;
CAMERON, Robert L. & Wanda V.
19835 Peppermint Falls Rd.
Jamestown, Calif. 95327
Address by Tel. Directory is:
CAMERON, Robert L.
Yosemite Junction, Jamestown, Tel. 984-5116

Property Assessor's Office designation: 58-060-03-0
Bk. 58, page 06, Parcel 3 (approx. 68 ac.)
Lots or claims or millsites: Shore, Alabama, & millsite,
Crystalline, & millsite, Crystalline #2, Harris & Olive,
Ophir-Crystalline, Junieta placer.

Little Alabama, adjacent & east of Alabama, between Ala. millsite
& Shore, designation 58-060-04-0 Bk 58, pg 6, parcel 4 (approx 4.9 ac.);
ownership not looked up.

Hooker, (north of Alabama and south of Rawhide, generally at Table
Mt.) may be part of Omega or in conflict with Omega (placer?);
designation of Omega 58-050-32-0 Bk 58, pg. 5, parcel 32; ownership
not looked up.

Harvard

Owners: Dec '79; Tuolumne County Assessor's Office:
HARVARD GOLD MINING CO.
c/o 11454 San Vicente Blvd.
Los Angeles, Calif. 90049

Note: The above street address is the same as that of the A. J. Land Company owners of Pine Tree-Josephine in Mariposa Co. A. J. Land Co. is probably a successor to Alaska-Juneau (through A. J. Industries?)

Property: Assessor's Office designation: 58-210-28
Bk 58, pg. 21, Parcel 28 (approx. 43 ac.)
Lots or claims or millsites:
Trio (Harvard), McCann, Mooney.
(Status not clear? on Sobrante; Vulture is under different parcel no. or may be gone?). Pacific Gold (3.71 ac?) and Pacific Gold extension immediately north of Sweeney of Dutch-App group are different designation 59-080-32-0 (Bk 59, pg. 8, parcel 32); owner not looked up.

Dutch-App

Owners: Dec '79; Tuolumne County Assessor's Office:
SEGERSTROM, Charles H., Jr.
Sonora, Calif. 95370
Addresses by Tel. Directory are:
SEGERSTROM, Charles H. Jr., mining, 85 Church; Tel 532-7417
Residence, 240 Church Lane, Tel. 532-4213
Sonora, Calif.

Property: Assessor's Office designation: 59-150-25-0
Bk 59, pg. 15, Parcel 25 (106.69 ± acres)
Lots or claims or millsites:
Sweeney, & millsite, Dutch & millsite (part of m.s. gone
Bk 59, pg. 17), Heslep & millsite (part of m.s. gone Bk 59, pg. 17)
App. & millsite (part of m.s. may be gone?), Hitchcock.

Santa Ysabel Group; Nyman Consolidated

Owners: Dec. '79; Tuolumne County Assessor's Office:
NYMAN Consolidated Mines Co.
P. O. Box 8485
Stockton, Calif. 95208

Property: Assessor's Office designation: 59-200-13-0
Bk. 59, pg. 20, Parcel 13 (approx. 65 ac.)
Lots or claims or millsites:
Knox & Boyle, Knox & Boyle 2, Nyman Consol. Nyman Consol. 2,
Gray Eagle Gold, Miller & Holmes.

Cloudman, Erin-go-Bragh

Owners: Dec. '79; Tuolumne County Assessor's Office:
FAITEL, Mercedes Bach et al
18686 Horace St.
Northridge, Calif. 91324

Et al:
Bach, James
Bach, Randolph
Bach, Rene
Bach, Mercedes

Note on QD 567/OR/317 Bach to Bach

Property: Assessor's Office designation: 59-200-07-0
Bk 59, pg. 20, Parcel 7 (approx. 35 ac.?)
Lots or claims or millsites:
Cloudman, Erin-go-Braugh

Jumper (Golden Rule)

Owners: Dec. '79; Tuolumne County Assessor's Office:
JUMPER Land Corp.
c/o FITZGERALD, R. E.
209 Post St. Rm 905
San Francisco, Calif. 94108

Property: Assessor's Office designation: 59-300-19-0
Bk. 59, pg. 30, Parcel 19 (approx 64 acres)
Lots or claims or millsites:
Golden Rule, New Era, Jumper.

Mazeppa (immediately south of Jumper) designation 59-300-04-0,
Bk. 59, pg 300, parcel 4; ownership not looked up.

Pine Tree - Josephine.

Owners: Dec. '79; Mariposa County Assessor's Office:
A. J. LAND Company
11454 San Vicente Blvd.
Los Angeles, Calif. 90049

Note: A. J. Land Co. is probably a successor to Alaska-Juneau.

Property: Assessor's Office designation: 008-01-0-004-0, 008-01-0-005-0
Bk 8, pg. 10, Parcels 4 and 5
Tracts or claims in fee land:
Pine Tree, Josephine, Queen Specimen, River Tunnel, All in fee land
owned by above, (mostly in Sec. 8, T4S, R17E MDM, and some
surrounding, all owned by above)

Red Bank (Stevenson Group)

Owners: Dec. '79; Mariposa County Assessor's Office:
MEYER, Horace et al
Star Route
Catheys Valley, Calif. 95306

Property: Assessor's Office designation: 003-35-0-005-0, 003-35-0-007-0,
Bk. 3, pg. 350, Parcel 5
Daisy, Jubilee, Steveson
Bk. 3, pg. 350, Parcel 7
Syndicate, Crown Lead

Crown Peak (adjacent to and east of above groups)

Owners: CAVAGNARO, Louis L. & Catherine M.
869 Oracle Oak Place
Sunnyvale, Calif. 94086

Property: Assessor's Office designation: 003-35-0-008-0
Bk. 3, pg. 350, Parcel 8
Crown Peak.

Note: Land on east of above properties is BLM. Land on west is part of a
river reservoir withdrawal.

Mt. Ophir (& Green's Gulch & Extension)

Owners: Dec. '79; Mariposa County Assessor's Office:
Area South of Highway 49 (the bulk of the known mining zones)
PUGLIZEVICH A. J. & Elinora.
226 W 17th St.
Merced, Calif. 95340

Property: Assessor's Office designation: 011-25-0-007-0
Bk. 11, pg. 250, Parcel 7 (comprises Sec. 12 & SE $\frac{1}{4}$ Sec. 11;
S $\frac{1}{2}$ NE $\frac{1}{4}$ Sec. 11; N $\frac{1}{2}$ Sec 13; N $\frac{1}{2}$ S $\frac{1}{2}$ Sec. 13)
Mt. Ophir situated mostly if not wholly in Parcel 7
Green's Gulch & Extension situated mostly if not wholly in Parcel 7

Those portions of Mt. Ophir and possibly Green's Gulch which may
extend on the North side of Highway 49 are owned as follows:

Owners: MEYER, Horace et al
Star Route
Catheys Valley, Calif. 95306

Property: Assessor's Office designation: 011-25-0-005-0
Bk. 11, pg. 250, Parcel 5 (comprises lands north of Highway 49)

Louisiana

Owners: Dec. '79; Mariposa County Assessor's Office:
PEARSON, Lloyd E.
20124 Chateau Drive
Saratoga, Calif. 95070

Property: Assessor's Office designation: 004-22-0-008-0
Bk. 4, pg. 220, Parcel 8
Louisiana

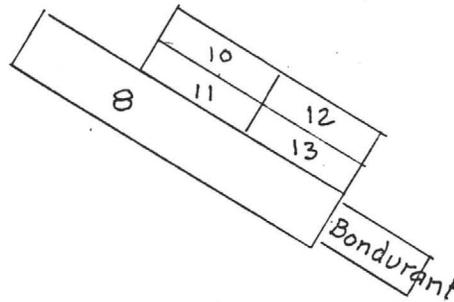
The following tracts without name? are adjacent to the Louisiana
as shown on the sketch not to scale

004-22-0-010-0; Bk. 4, pg. 220, Parcel 10
Owner: ROBINSON, Thomas
1817 Rosa Ave. Modesto, Calif. 95355

004-22-0-011-0; Bk. 4, pg. 220, Parcel 11
Owner: MOORE, R. Douglas & Karen
1914 La Villa Rose Court, Modesto, Calif. 95350

004-22-0-012-0; Bk. 4, pg. 220, Parcel 12
Owner: TOEPFER, James D. & Darcy L.
1420 Gary Lane, Modesto, Calif. 95355.

004-22-0-013-0; Bk. 4, pg. 220, Parcel 13
Owner: GRGICH, Stephen N.
P. O. Box 12374, San Francisco, Calif. 94112



Bondurant (Hathaway)

Owners: Dec. '79; Mariposa County Assessor's Office:
BARRON, Robert L.
2171 St. Andrews Rd
Half Moon Bay, Calif. 94019

Property: Assessor's Office designation: 004-22-0-014-0
Bk. 4, pg. 220, Parcel 14
Bondurant (Hathaway): adjoining and end to end southeast of
Louisiana

Santa Ysabel Group; Nyman Consolidated

Owners: Dec. '79; Tuolumne County Assessor's Office:
NYMAN Consolidated Mines Co.
P. O. Box 8485
Stockton, Calif. 95208 209

Property: Assessor's Office designation: 59-200-13-0
Bk. 59, pg. 20, Parcel 13 (approx. 65 ac.)
Lots or claims or millsites:
Knox & Boyle, Knox & Boyle 2, Nyman Consol. Nyman Consol. 2,
Gray Eagle Gold, Miller & Holmes.

916

445-7205 (916)

445-2900

Jumper (Golden Rule)

Owners: Dec. '79; Tuolumne County Assessor's Office:
JUMPER Land Corp.
c/o FITZGERALD, R. E.
209 Post St. Rm 905
San Francisco, Calif. 94108 (415)

334-7652 ← No answer
~~731-7345~~

Property: Assessor's Office designation: 59-300-19-0
Bk. 59, pg. 30, Parcel 19 (approx 64 acres)
Lots or claims or millsites:
Golden Rule, New Era, Jumper.

Tax Rate Area # 63-015

Mazeppa (immediately south of Jumper) designation 59-300-04-0,
Bk. 59, pg 300, parcel 4; ownership not looked up.

Ralph
Harry Fitzgerald

Jameson, Javier Baker on 5th Ave
→ 984-5367
is brother of Mrs. Lewis Bach in Sonoma -
may know the Fitzgeralds

Cloudman, Erin-go-Bragh

Owners: Dec. '79; Tuolumne County Assessor's Office:
FAITEL, Mercedes Bach et al
18686 Horace St.
Northridge, Calif. 91324 (213)

no telephone listed

Et al:
Bach, James
Bach, Randolph
Bach, Rene
Bach, Mercedes

Note on QD 567/OR/317 Bach to Bach

Property: Assessor's Office designation: 59-200-07-0
Bk 59, pg. 20, Parcel 7 (approx. 35 ac.?)
Lots or claims or millsites:
Cloudman, Erin-go-Braugh