

REPORT XV OF THE STATE MINERALOGIST, Mines and Mineral Resources OF PORTIONS OF CALIFORNIA, Biennial Period 1915-1916

PLACER COUNTY, By Clarence A. Waring, Field Assistant, 1915.

INTRODUCTION.

North of the "Mother Lode" region lies a district rich in mineral resources which needs only the stimulus of capital and stable, interspersing men to further develop its latent resources. Hydraulic mining, which occupied the early workers, is now "tied up" as it were, by federal antidebris legislation, which disheartened the operators and caused stagnation of the mining industry in general. Drift mining is still being carried on and offers a few good opportunities. Quartz mining, with a few exceptions, is rather dormant and in need of capital to open up the prospects and old shafts, idle following a considerable period of depression.

Dredging is now one of the principal means of recovering gold in this region and holds considerable promise for the immediate future, the diversity of mining methods has made the work particularly interesting.

The writer has endeavored to obtain accurate information on prospects, as well as on operative mines, realizing that in the future our greatest resources lie in the many undeveloped and only partially respected properties. It is to be regretted that time did not permit visits to many prospects which are no doubt worthy of note.

An attempt has been made to make this report a directory of all the mines in the counties covered, as well as reports on those which are active. Acknowledgment is here made of the uniform courtesy and assistance of operators, employees and prospectors who made this report possible and made the work unusually pleasant.

Extending as it does, from the Sacramento Valley to the summit of the Sierras, Placer County offers a diversity of mining interests as well as a diversity of climate. In the middle fifties this county, with an estimated annual production of over \$6,000,000 in gold, produced nearly one-tenth of all the yellow metal taken from the entire state. In 1914, with a production of \$600,000 in gold, the county claims only about one-thirty-fifth of the total production. It is true that we had no dredgers in the early days, and these have maintained the high yearly state production. Considering, however, the fact that state production is only one-third what it was in the middle fifties, we see that the Placer County production has fallen off abnormally. The only reason, seen for this slump in production is the marked inactivity of the drift and quartz mines which await only capital and enterprising, stable men to open them up and give a general feeling of confidence to the whole populace. The production table does not show a sudden decline in gold output; the decrease has been gradual but steady since 1894, and has fallen from \$1,850,000 to \$600,000, or to less than one-third in the last twenty years. Together with the decrease of gold production has been the shifting of population. Iowa Hill, which in 1859 claimed a voting population of 1249, now has only 69, and other mining towns have dwindled to small villages or disappeared entirely. Over 500 mining claims were recorded in 1887. Only 135 properties are now active, i.e. being worked or having assessment work done. These are distributed as follows: 40 quartz, 44 drift, 15 placer, 3 dredge, 3 hydraulic, 1 asbestos, 2 chrome, 2 clay, 3 copper, 20 granite, and 2 magnesite. Of the 135 active properties, 64 were said to be producing in 1916 and are distributed as follows: 6 quartz, 18 drift, 12 placer, 2 hydraulic, 3 dredge, 2 chrome, 2 clay, 1 copper, 18 granite.

A revival of interest in mining is coming, in fact, many of the old properties are now being leased and work begun. This new activity! will, no doubt, be more permanent than that of the old hydraulic days

and the mining industry will be on a firm foundation for years to come

#### DESCRIPTION.

Name, derivation of.

Placer County derives its name from the Spanish word "placer," meaning a place where gold dust is found mixed with sand, earth or gravel.

Location and boundaries.

It was organized in 1851, and extends from Bear River and the north line of T. 17 N, southward to the American River and its middle fork. It is bounded by Yuba and Nevada counties on the north, by the state of Nevada on the east, by El Dorado and Sacramento counties on the south, and by Sutter County on the west.

Area.

The county embraces 1484 square miles, and has an average length of over ninety miles, and an average breadth of about 13 miles.

Population.

The census of 1910 placed the county thirty-first in rank with a population of 18,237. Auburn, the county seat, is a city of the sixth class, with a population of 2376 in 1915.

Valuation.

The assessed valuation of the county properties in 1915 was \$14,947,936.

Topography.

The topography varies from a low valley land of 100 feet or more above sea level, about Roseville and Lincoln, to rolling foothills in the neighborhood of 1000 feet about Newcastle and Auburn, and rugged mountainous slopes about Alta and eastward which reach an elevation of over 7800 feet at Summit.

Vegetation.

The vegetation and forestry vary with the elevation. In the low western region the valley oaks predominate, while in the foothills the live oak and digger pine are plentiful. In the higher territory laurel oaks, bull pine, sugar pine and cedars predominate. Deciduous fruits and grapes do particularly well as high up as Colfax.

Drainage.

The county is well drained by the Bear River to the northwest, and by the American River with its numerous forks to the south, east and central parts. The extreme east drains by way of Lake Tahoe into the Truckee River, which flows into the state of Nevada.

Power.

The river system of Placer County is particularly well placed to furnish water capable of producing an enormous amount of hydroelectric power, besides being afterwards available for irrigation purposes. In the days of hydraulicking many large flumes and ditches were constructed to carry water for monitors,

besides smaller ones for running water wheels to operate stamp mills and arrastras. At present the principal flumes have been taken over by the Pacific Gas and Electric Company which, with a system of artificial lakes, furnishes a constant water supply to its many power houses which transmit electricity to the many cities of the Sacramento-San Joaquin Valley and San Francisco Bay regions. The northern and western portions of Placer County are thus well supplied by branches of the main power lines, one of which follows the railroad from Alta to Sacramento with power houses at Drum, Alta, Auburn and Newcastle; another line from Colgate power house in Yuba County runs southward to Sacramento, crossing the county through Van Trent and Lincoln.

The eastern part of the county is less fortunate, but private capital has installed a small plant in Volcano Canon which supplies electricity for lighting at Forest Hill and for the mines in that vicinity. A branch line of the Pacific Gas and Electric Company connects at Alta and passes eastward through Damascus and Forks House to the Black Canon Mine near Westville.

#### Transportation.

The county is perhaps more fortunate than many others, since the main line of the Southern Pacific Railroad crosses its western end and follows along the full length of its northern side. A branch of the Southern Pacific from Roseville through Loomis, Lincoln and Sheridan to Marysville furnishes excellent transportation for the extreme western portion of the county. The Nevada County Narrow Gauge Railway from Colfax to Nevada City furnishes transportation in Placer County for a small region southeast of the Bear River and north of Colfax. Automobile and wagon roads traverse the county and follow the principal valleys and ridges, making most of the mines fairly accessible.

#### GEOLOGY.

Placer County furnishes an excellent field for geologic work, and although geologic maps<sup>1</sup> have been published of the whole region, there are many problems in geologic history which are open to discussion and intensive work. It is to be regretted that more detailed work has not been carried northwestward beyond the "mapped" limits of the Mother Lode (Folio No. 63) to determine more surely the possibilities of certain veins carrying mineral of commercial value with depth. It does not seem reasonable that a lode so persistent should hold out such excellent opportunities as far north as 120° 30' and then disappear so suddenly or become barren, especially since the same granodiorite formation which underlies the Mariposa slates, diabase and amphibolite, is yielding such excellent returns in the region about Grass Valley. The fact is that veins do occur that have not been systematically mapped. Although the main "Mother Lode" is apparently shattered in the region north of 120° 30', the main lode formations continue northward from Enterprise, Amador County, through Placerville and Georgetown, El Dorado County; Colfax, Placer County; Grass Valley and Nevada City, Nevada County, and northwestward towards Challenge, Yuba County. The special report on the Grass Valley and Nevada City region is the only detailed area covered by the work done north of the area covered by the Mother Lode Folio, excepting that on the Ophir District which can not, strictly speaking, be considered on the main lode. During the twenty odd years since the publication of these reports, the industry seems to have been left to take care of itself, and no detailed maps of the interlying vein systems have been made. To be of greatest economic value, geological reports should precede and point out opportunities rather than follow up development work which often depends on some accidental find which creates popular interest. Detailed reports on new territory should create an interest and lead to development work, should conditions warrant.

The reader is referred to the aforementioned Geologic Folios and Annual Reports for the geology of the county.

#### MINERAL PRODUCTION.

The mining industry in Placer County is confined at present to the production of gold, silver, copper, lead, clay and stone. The greatest value is obtained from the gold production. The silver and lead are derived from the refining of the gold and copper. The copper production for 1915 showed a decided increase over that for 1914 because of renewed activity by leasers.

Granite is quarried extensively in the region about Rocklin and furnishes building stone, monumental stone, and paving blocks. Clay is produced principally near Lincoln.

#### MINING DISTRICTS.

Since few well defined mining districts exist in Placer County the following twenty-two districts have been selected from names in common usage throughout the region, together with those used on the books of the County Recorder of Placer County. Additions and changes have been made to a recent list compiled from geographical names. The properties in italics are producing.

The **Blue Canon** (Emigrant Gap) district includes all quartz, drift, and placer mines in the region about Blue Canon. Slate and andesite are the prevailing formations. *Active properties: Red Rock Quartz, Von Avery Quartz, Wild Yankee Drift and Lost Camp Hydraulic.*

The **Butcher Ranch** district includes all quartz and placer mines in the region extending from Sheridan's and Oregon Bar, to and including Mammoth Bar on the middle fork of the American River. Diabase and slate are the prevailing rocks of the district. *Active properties: Christmas Hill Quartz, Dewey Quartz, El Dorado and Placer Dredge, and Pacific Dredge.*

The **Canada Hill district** includes all quartz, drift, and placer mines in the region about Canada Hill, Sailor Canon, Secret Canon, and Westville. It lies about 40 miles by wagon road about N. 78° E. of Colfax, which is the nearest railroad station on the Southern Pacific. Slate and andesite are the prevailing formations. *Active properties: Black Canon Quartz, Herman Quartz, Gold King Quartz, Golden Reward Quartz, La Trinidad Quartz, Prairie Flower Quartz, Canada Hill Drift, Fulton Drift, Monumental Drift, Reed Drift, and Park and Brown Hydraulic.*

The **Cisco** district includes all quartz and placer mines in the region about Cisco. Slates, schists and granodiorite with andesite capping in places, are the formations represented. No operative properties. The Colfax district (recorded as the Illinois district and includes the Capehorn district) includes all quartz mines and quarries in the vicinity of the town of Colfax, on the Southern Pacific Railroad, and placer mines on the Bear River and North Fork of the American River. Gabbro, diabase, serpentine, slate and amphibolite are the principal formations. *Active properties : Big Oak Tree Quartz, Red Bird Quartz, Collins Placer, Esley Placer, Gillett Placer, Thenis and Adams Placer and Zelma Bell Placer.*

The **Dairy Farm** (Van Trent) district includes the copper-gold mines in the region about eight miles east and northeast of Sheridan, which is on the Oregon branch of the Southern Pacific Railroad. Amphibolite and diabase are the prevailing formations. *Active properties: Dairy Farm Copper, Valley View Copper, and Bobtail Gold Copper.*

The **Damascus** (includes Pioneer district) district includes all quartz mines in the canon of the North Fork of the American River, north of Damascus, and all placer mines in the region of Damascus and Red Point. The district lies about 18 miles N. 75° E. of Colfax. The automobile route is by way of Forest Hill, since the Iowa Hill wagon road is very steep. Slate capped in places by andesite are the

prevailing rocks. *Active properties: Pioneer Quartz, North Star Quartz, Eureka Drift, Jarvis or Bob Lewis Drift, Outhouse Consolidated or Sellier Drift, Potato Flat iron Placer, West Chrome.*

The **Deadwood** district includes all the quartz, drift and placer mines on Deadwood ridge and in Indian Creek and the North Fork of the Middle Fork of the American River. The district lies east of Colfax and is reached by auto road, in dry season, by way of Westville, a total distance from Colfax of about 45 miles. A pack trail from Michigan Bluff cuts the distance from Colfax to 30 miles. Slate with andesite capping are the prevailing formations. *Active properties: Rip Van Winkle, or Page and Buckman Quartz, and Devil's Basin Consolidated Drift.*

The **Dutch Flat** (Gold Run, Towle) district, includes the drift and placer gold mines, the chrome mines and the asbestos mines in the region of the towns of Dutch Flat, Gold Run, Shady Run and Towle, all on the Southern Pacific Railroad. Gabbro, serpentine, slate and amphibolite, capped by andesite, are the predominating formations. *Active properties: Rawhide Quartz, Federal Drift, Dyer Drift, Dutch Flat Drift, Haub Drift, Indiana Hill Drift.-Moody Ridge Drift, Stewart Drift, Towle Magnesite, Morgan Asbestos.*

The **Forest Hill** district includes all quartz, drift and placer gold mines on the Forest Hill divide, including those about the region of Bath, Baker Divide, Mayflower, Yankee Jim's, Spring Garden Camp, Todd's Valley and Paradise. The divide is reached by a 15-mile stage road from Colfax, or 30 miles from Auburn. Serpentine, slate and amphibolite, capped with andesite, are the prevailing formations. *Active properties: Dry Hill Quartz, Eureka Consolidated Quartz, International Quartz, Mitchell Quartz, Dardanelles Drift, Excelsior Drift, Florida Drift, Grey Eagle Drift, Maus Drift, Mayflower Drift, Paragon Drift.*

The **Gold Hill** district includes all quartz and placer mines and dredging ground in the region of Gold Hill and Virginia, 6 miles east of Lincoln. It includes the Belmont and Three Stars properties. Granodiorite is the country rock. *Active property: Gardella Gold Dredge.*

The **Hotaling** district includes the iron and limestone deposits in the region about Hotaling, 5 miles by road northwest of Clipper Gap, the nearest railroad station. Diorite, granodiorite and slate are the formations represented. *No active properties.*

The **Iowa Hill** district includes all the quartz, drift and placer mines north to the North Fork of the American River and along Shirttail Canon and Indian Creek in the region about what is known as the Iowa Hill Divide, including Succor Flat, Wisconsin Hill, Independence Hill, Strawberry Flat and Monona Flat camps. The district lies about eight miles by road east of Colfax. Slate and amphibolite with andesite capping are the prevailing rocks. *Active properties : Blue Wing Quartz, Carey Drift, Dewey Drift, Mohawk Drift, Penn Valley Drift, Santa Fe Drift, Union Drift, Waterhouse or Big Dipper Drift, Welcome Drift, Booth Placer, Kinder River Placer, Pine Avenue Placer, San Francisco Placer, Placer Counties Magnesite, Turner and Butler Chrome.*

Bibl. : Rep. X, 1890, p. 419.

The **Last Chance** district includes all quartz, drift and placer mines in the region about Last Chance, Bald Mountain (Duncan Peak), and Duncan Canon, including the Blue Eyes property, and the French Meadows region. The district is reached by trail 14 miles from Michigan Bluff, or by wagon road about 50 miles from Forest Hill and Bald Mountain. Slates with andesite capping are the principal formations. *Active properties : Hermit Quartz, Dixie Queen Drift, Glenn Consolidated Drift, Hometicket Drift, Jack Robison Drift, Pacilc Slab Drift, Placer Gravel or El Dorado Drift, Red Star Drift, Park and Brown Hydraulic, and Pine Nut Hydraulic.*

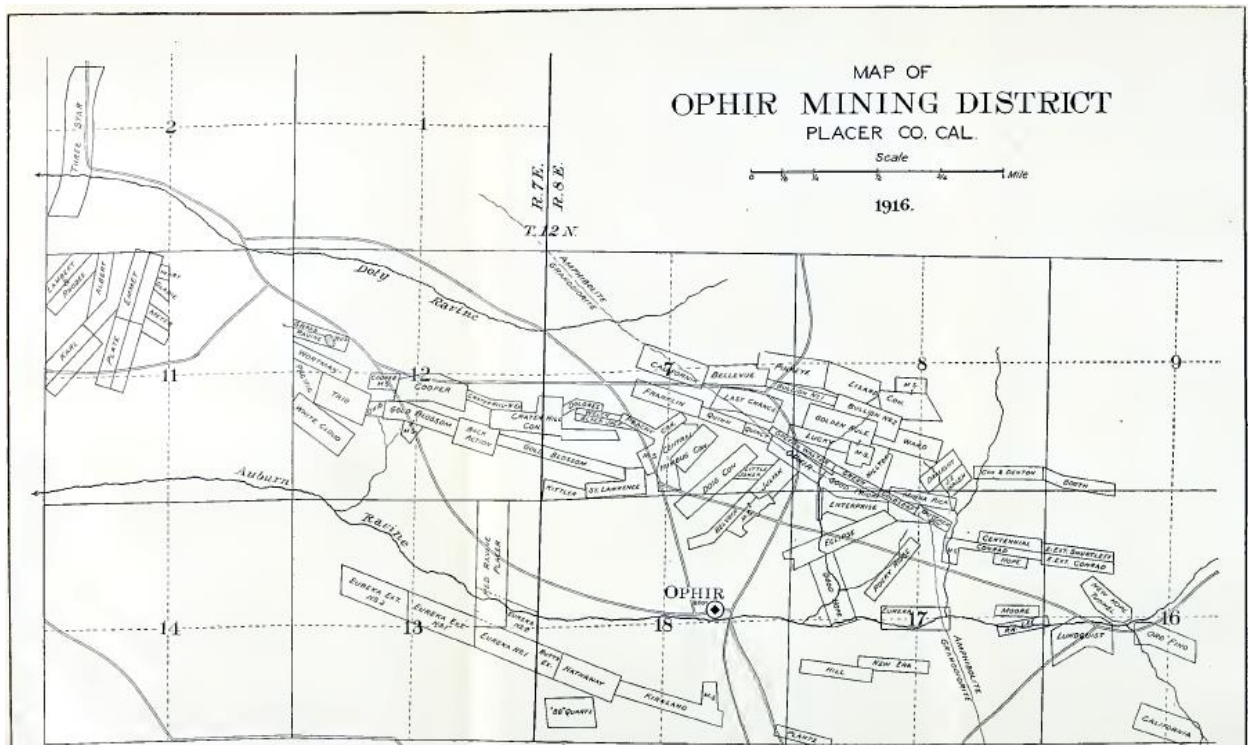
The **Lincoln** district includes the region about the city of Lincoln, where clay and building stone are quarried. Eocene sedimentary rocks and andesite prevail. *Active properties: Gladding-McBean Clay, Lincoln Clay.*

The **Michigan Bluff** district includes all quartz and placer mines in the region of Michigan Bluff, Baker's Ranch and American Bar mine, near the Middle Fork of the American River. Serpentine, amphibolite and slate, with andesite capping are the common rocks. *Active properties: Bunker and Nihill Quartz, Champion Quartz, Daniel Webster Quartz, Franklin Drift, Golden Sheaf Drift, Gorman Drift, Marian Drift, Swift Shore Drift, Turkey Hill Consolidated Drift, Bogus Thunder Placer, De Maria Placer, Lehigh Placer, and Pleasant Bar Placer.*

The **New England Mills** (Weimar) district, includes all quartz mines in the region south of Powell Hill and about Weimar and Applegate. The mines lie chiefly east of the Southern Pacific Railroad. Placer deposits along the American River are also included. Slate and some intrusive serpentine are the principal formations. *Active properties: Alameda Quartz, Annie Laurie Quartz, Big John Quartz, Black Oak Quartz, Ruby Quartz.*

The **Ophir** (includes Auburn) district lies south and west of Auburn and north of Newcastle. It includes all quartz and placer mines about Ophir and Duncan Hill. Granodiorite and amphibolite are the common country rocks. *Active properties: Crandall Quartz, Eureka Quartz, Hathaway Quartz, Hope Quartz, Little Banner Quartz, Oro Fino or Bullion Quartz, Spanish Quartz.*

Bibl. : Rep. X, 1890, pp. 427-430; Annual Rep. XV, U. S. G. S., Pt. II, 1892-3, pp. 243-284.



The **Ralston Divide** district includes all drift and placer mines along the divide between Long Canon on the south and the Middle Fork of the American River on the north. The district is very inaccessible and is reached only by a steep trail 15 miles from Michigan Bluff or by a circuitous road via

French Meadows, about 50 miles from Soda Springs Station near the Summit. Slate and andesite are the principal formations. *Active property : Ralston Divide Drift.*

The **Rock Creek** district includes all quartz mines north of Auburn, in the region south of the Hotaling district. Serpentine, diabase and amphibolite are the principal formations represented. *No active properties.*

The **Rocklin** (Loomis) district includes all granite quarries and placer deposits in the region about Rocklin. Granodiorite and andesite are the formations. *Active quarries : Alexson, Anderson, Andrews, California, Delano, Escola, Griffiths, Hebrick, Hendrickson, Huhtala, Leed, Oscar Kesti, Kesti, Liikola, Maki, Pacific, Pisila and Alio, Union and Wickman.*

The **Tahoe** district includes all the eastern part of the county adjacent to Lake Tahoe. It includes all gold and molybdenite prospects and mineral springs scattered throughout a large area of varied formations, chief among which are granodiorite and slate overlain by andesite and basalt. *Active properties: Chicago Quartz, Joe Dandy Quartz, Lost Emigrant Quartz.*

#### GOLD, SILVER AND PLATINUM, DISTRIBUTION.

Gold and silver in Placer County occur in quartz veins and in gravels. The quartz veins occur generally in three belts, in which they are irregularly scattered. The belt which lies in the main line of the "mother lode" follows the Mariposa slates, the continuity of which is broken north of Garden Valley, El Dorado County, where the Middle Fork of the American River cuts across it. These slates, however, reappear in considerable area north of the river, especially east of Weimar, and continue unbroken northward to Colfax. The same enriched belt in diabase granodiorite and amphibolite, may be traced northwestward through Grass Valley, Nevada County, and Challenge, Yuba County.

East and west of the main belt are two offshoots of the main vein system which, so far as present development shows, are more productive than the "mother lode" in Placer County. The eastern branch diverge southeast of Georgetown, El Dorado County, and is traced by a belt of serpentine, gabbrodiorite and amphibolite, which pass under the Forest Hill and other divides and reappear along the line of the following localities: Drummond Mine; Succor Flat; just west of Hayden Hill south of Towle; west of Washington, Nevada County; and throng) Alleghany, Sierra County.

The western branch begins to diverge southwest of Placerville, El Dorado County, and passes northwestward through Ophir, Placer County, and Albin Hill and Brown's Valley, Yuba County.

Considering this vein system as a whole, one is impressed with the variations of country rock in which the enrichment occurs. These range all the way from the very basic peridotites and serpentines, through the less basic diabases and more acid granodiorites. The concentrated occurrence of the yellow metal seems to be due more to some little known process of magmatic segregation rather than to influences of the country rock through which it is disseminated. The only influence that the country rocks seem to have had has been the later secondary enrichment or impoverishment of the original ore bodies.

The original source of the platinum has not been definitely ascertained, although it is thought to occur disseminated in the more basic rocks. It is found, thus far, only as placer along with the gold and silver.

The gold in the gravel deposits was originally washed from the quartz veins during the process of erosion. It became concentrated in the river channels by long periods of stream erosion and re-erosion as the mountains were being uplifted and reshaped during periods of crustal movement of the earth. When the Sierra Nevada Mountains were finally uplifted, these river beds were raised high and dry and were covered over in many places by volcanic flows of lava, mud and tuff, which have served to cap large

deposits of the gravels and prevent their erosion. Modern streams have cut through these lavas and ancient river channels and have gone on concentrating the gold just as it was concentrated before the uplift. These ancient gravel channels have been worked successfully both by hydraulicking and by drifting, the latter method being used where the capping is hard and thick. The former method can now be carried on only when suitable restraining dams are built for storing the tailings to prevent injury to navigable streams or their adjacent lands.

#### QUARTZ MINES.

**Adams Mine.** Ophir district. Sec. 20, T. 12 N., E. 8 E., M. D. M. 2½ miles southwest of Auburn. Elevation 1,050 feet. Fifteen-inch vein of quartz with galena and sulphurets in slate. Strike E.-W., dip 60°. 200-foot shaft. Idle. Owned by Calvin T. Adams, Newcastle.

**Alameda Mine.** New England Mills (Weimar) district. Sec. 25, T. 14 X., R. 9 E., M. D. M. Elevation 1400 feet. 120-foot dike in slate, carrying disseminated quartz, galena and iron. Strike N.-S. Dip 45° E. Open cut 600-feet and tunnel 275 feet. Assessment work only. The Long Point mine adjoins it to the south. Owned by J. F. Wise and Martin Partridge, of Colfax.

**American Bar Mine.** Michigan Bluff district. Sec. 33, T. 14 N., R. 11 E., M. D. M. Elevation 1800 feet. Two miles SW. of Michigan Bluff. Quartz with galena and pyrite in slate. Strike N.-E., dip S.-E. Shaft forty feet and tunnel 1950 feet. Water ditch three miles from Stitchner's Gulch. Idle for past 15 years, except a little prospect work. Owned by J. A. Shields, Josephine Mine, El Dorado County.

**Annie Laurie Mine.** New England Mills (Weimar) district. Sees. 24 and 25, T. 14 N., R. 9 E., M. D. M. Elevation 2000'. One hundred-foot dike, carrying free gold and sulphurets in quartz stringers. Strike NW.-SE., dip 40° E. Tunnel 50 feet. Assessment work only. Alameda Mine adjoins to the south. Owned by R. H. Young and E. Vore, of Weimar.

**Bazacoo Mine.** Butcher Ranch district. Sees. 22 and 26, T. 13 N., R. 9 E., M. D. M. Elevation 1700 feet. Eighteen-inch vein of ribbon quartz in slate. Strike NW.-SE., dip NE. Shaft 40 feet. Tunnel 400 feet. Patented. Idle. Owned by Sheridan Bros., Butcher Ranch.

**Beauty Mine.** Canada Hill district. Sec. 9, T. 15 N., R. 13 E., M. D. M. Elevation 6200 feet. A 2-foot quartz vein in slate, carries free gold with some galena and pyrite. The vein can be traced for 130 feet on the surface. It strikes N. 45° E. and dips 70° W. A 180-foot tunnel crosscuts the vein and 50 feet of drifting on the vein has been done. Equipped with hand outfit, windlass and shed. Ore averages \$10.00 per ton. Claims called the Beauty and Big Beauty. Assessment work only. Owned by Henry Snyder, of Grass Valley, Cal.

**Belle Union Mine.** New England Mills (Weimar) district. Sec. 35, T. 14 N., R. 9 E., M. D. M. Two miles SE. of Weimar. Elevation 2000 feet. Eight feet of broken slate and quartz along a fracture in slate. Strike NE.-SW. Dip 80° SE. Tunnel 295 feet. Water power. Idle. Owned by D. Jones, Clipper Gap.

**Belvoir Mine.** Ophir district. Sec. 18, T. 12 N., R. 8 E., M. D. M. Elevation 1000 feet. Quartz vein carrying free gold and pyrite in granodiorite. Strike NE.-SW., dip 45° SE. Shaft 180 feet. Tunnel 800 feet. Steam power. Idle. Owned by J. Kaiser, Ophir.

**Big Blue Mine.** Dutch Flat (Gold Run) district. Sec. 3, T. 15 N., R. 10 E., M. D. M. Two miles NE. of Gold Run. Elevation 3050 feet. Five-foot quartz vein with galena and sulphurets. Strike N.-S., dip E. Shaft 170 feet. Idle. Owned by Moody and Garety, of Gold Run.

**Big John Mine.** New England Mills (Weimar) district. Sec. 25, T. 14 N., R. 9 E., M. D. M. Three miles east of Weimar. Elevation 2,200 feet. Claims Tiger, Buena Vista, Ruby and Blue Bell. Twenty-foot



dike with amphibolite footwall and slate hangwall. Strike N.-S., dip 45° E. Development consists of 50-foot open cut and 75-foot tunnel, also 20-foot shaft and 90-foot incline. Take out enough gold each year to pay for assessment work. Owned by Ed. Bigley, E. B. Odell, M. L. Odell and E. EL, J. A. and M. A. Hinchey, of Weimar.

**Big Oak Tree Mine.** Colfax district. SE. ¼ of Sec. 33, T. 15 N., R. 9 E., M. D. M. One mile west of Colfax. Elevation 2300 feet. Eighteen-inch vein of quartz, carrying free gold and pyrite, in diabase. Strike NE.-SW., dip 80° N. Incline shaft 180 feet. Drift of 40 feet on 120-foot level. This mine was closed about 1888 by an injunction obtained by the Rising Sun Mine, the owners of which claimed that the Big Oak Tree vein was a fork or spur of the Rising Sun patented vein, which lay between two of their north-south veins. Three shifts of four men each were engaged in pumping out the Big Oak Tree mine during the months of September and October, - 1915. An assay made for the writer of the mineralized quartz taken across the vein when the mine was pumped out ran \$0.80 in gold per ton. Installation of new machinery with electric power was contemplated. Owned by J. C. Valentine of San Francisco. Leased by a Colfax syndicate, of which D. A. Russell, D. Falconer, D. A. Gillen and J. Toman, of Colfax, are the board of directors.

**Black Canon Mine.** Canada Hill district. Sees. 2, 3 and 10, T. 15 N., R. 12 E., M. D. M. Three miles east of Westville. Elevation 5,500 feet. Quartz ledge in slate and metamorphic-sandstone, carries free gold and pyrite. Development work consists of a 300-foot shaft and two tunnels: No. 2, 400 feet long, and No. 3, 200 feet long. Equipment of the mine consists of an Ingersoll Rand Imperial Compressor, capacity 650 feet of air per minute, which runs air drills, a piston machine and a jack hammer at 90 pounds pressure. The 37 h. p. electric hoist is good to a depth of 500 feet. The 20-stamp mill, run by two 25 h. p. motors, has 1050 pound stamps or a capacity of 50 tons of ore per day. A 10" x 12" jaw crusher is run by a 10 h. p. motor. Power is secured by a 13-mile line from the Pacific Gas and Electric Company, at Alta. A 100 h. p. transformer is installed near the mine. Water is pumped by a 5 h. p. motor from Black Canon Creek for the compressors, the overflow running to the batteries. There is plenty of pine timber on the property, and a sawmill is operated by the mine. The ore in the chutes averages \$7.00 per ton, while the balance averages about \$1.00 per ton. Probably an average of all the ore milled would be \$3.00 per ton. Mining and milling costs about \$2.20 per ton. The property has a shop, 26-room bunkhouse, large dining-room, and office. Owned by E. C. Cavanaugh and Judge Aiken Estate, of San Francisco, and the Dickson Estate, of Titusville, Pennsylvania. J. Cullen, San Francisco, secretary ; E. B. Quigley, superintendent and manager, Westville.

**Black Oak Mine.** New England Mills (Weimar) district. Sec. T. 14 N., R. 9 E., M. D. M. Three miles south of Weimar. Elevation 1875 feet. Three-foot quartz vein carrying 3% sulphurets in slate. Strike N. 10° E., dip 65° E. Tunnel 150 feet, run to cut ledge. Drift N. 400 feet and S. 600 feet. Old shaft sunk in north drift. Equipped with tracks and push car. The Northern Light property adjoins the Black Oak to the northeast. Four men have been cleaning out the old workings preparatory to opening them up. Owned by Drexler Estate of San Francisco f, Mr. Wyman, of Applegate, J, and J. A. Graves, of Weimar, J. Leased to John and Ed. Major and Frank Cannon, of Weimar, who have temporary quarters just south of the mine. Black Spanish No. 2. Ophir district, Sec. 7, T. 12 N., E. 8 E., M. D. M. Quartz vein in granodiorite. Idle. Owned by J. E. Walsh, East Auburn.

**Blue Bell Mine.** Dutch Flat district. Sec. 3, T. 15 N., R. 11 E. Elevation 3000 feet. Two and one-half miles southeast of Shady Run. Four-foot free milling quartz vein in slate. Developed by tunnels. Patented. Idle. Owned by A. Percival Crittenden, of Towle.

**Blue Wing or Ostrom Mine** (formerly the Pritchard Gravel Mine). Iowa Hill district. Sec. 28, T. 15 N., R. 10 E., M. D. M. One and one-half miles NE. of Iowa Hill. Elevation 2800 feet. Twenty-foot quartz vein, with some free gold and sulphurets, between slate and serpentine. Strike N. 35° E. Dip 38°. Tunnel 150 feet. Shaft 30 feet. Claims, Blue Wing and Wolverine. The vein outcrops for about 500 feet, and is exposed both in the bedrock of the old hydraulic works and on the side hill which slopes steeply down to the American River. So-called assessment work is done yearly. An asbestos ledge claimed by the Placer County Properties Company is exposed about 100 feet west of the quartz vein. Water is available from the Gleason ditch, about ¼ mile east. Owned by W. A. Hilliard, of Grass Valley.

**Bobtail Mine.** Dairy Farm district. Sec. 18, T. 13 N., R. 7 E. M. D. M. Seven miles northeast of Lincoln. Elevation 500 feet Three-foot quartz vein with diorite foot wall and slate hanging wall. Strike NW.-SE., dip NE. Shaft 60 feet. Drift 90 feet. Hand work with windlass. Ore said to run about \$.10.00 per ton. Owned by Wm. Recknagel, of Auburn, who thinks the ledge is very much like that at the Dairy Farm.

**Bonanza Mine.** Damascus district. Sec. 11, T. 15 N., R. 11 E. M. D. M. One mile northeast of Damascus. Elevation 3200 feet Four-foot quartz vein carrying free gold. Slate wall rock. Shaft feet and one tunnel. Idle. Owned by Jerry J. Sullivan, San Francisco.

Bibl.: Placer County Register of Mines, 1902. State Min. Bur.

**Bonnie Bee Mine.** Blue Canon district. Sec. 3, T. 16 N., R. 11 E., I. D. M. Three miles northwest of Blue Canon. Elevation 3,450 feet, three quartz veins, 4 feet, 6 feet and 12 feet wide; carrying free gold and sulphurets, in slate. Strike NW.-SE., dip 90°. Shaft 30 feet, Tunnel 140 feet. Some drifting. Water power was used. Electricity available. Mill. Idle. Owned by J. L. Waggoner Estate, Dutch Flat, and Bonnie Bee Gold Mining and Development Company.

**Boulder Mine.** Ophir district. Sec. 18, T. 12 N., R. 8 E., M. D. M. Patented. One-half mile east of Ophir. Elevation 950 feet. Two-foot quartz vein in granodiorite. Strike N. 40° W., dip SW. 45°. Shaft 50 feet. Tunnel 300 feet. Water power was used. Electricity now available. Mill. Idle for several years. Owned by Jack Smith, leased by E. Lavelle, of Ophir.

**Buena Vista Mine.** New England Mills (Weimar) district. Sec. 24, 14 N., R. 9 E., M. D. M. Adjoins the Red Bird mine to the south. Vee gold and pyrite in a 6-foot to 25-foot ledge of decomposed quartz a slate. Strike N.-S. Tunnel 125 feet. Mill tests are said to have run \$6.00 in gold and \$4.00 in sulphides. Owned by Ed. Bigley, of Colfax.

**Bunker and Nihill Mine.** Michigan Bluff district. Sec. 32, T. 14 N., 11 E., M. D. M. Three miles southwest of Michigan Bluff. Quartz vein. carrying free gold in slate. Owned by H. H. Bunker and J. A. Nihill, of Michigan Bluff.

**Burner Prospect.** Forest Hill district. Sec. 14, T. 13 N., R. 9 E., I. D. M. Strike N. 12° W., dip 45° E. Shaft 29 feet. Tunnel 40 feet. ore said to assay \$6.00 per ton. Owned by J. W. Burner, Forest Hill.

**Butt's Mine.** Ophir district. Sec. 21, T. 12 N., R. 8 E., M. D. M. four-foot quartz vein, in granodiorite, carries free gold with some alena and sulphurets. Strike E.-W. Dip 45° S. Shaft 40 feet. Tunnel 800 feet. Five-stamp mill. Ore reported to have averaged 3.00 per ton. Idle for over 15 years.

**Calf Pasture Mine.** Rock Creek district. Sec. 34, T. 13 N., R. 8 E., [I. D. M. Three and one-half miles north of Auburn. Elevation 1000 set. Eight-foot vein of quartz in amphibolite. Strike NW.-SE. dip 90°. Incline shaft 250 feet. Drifting 40 feet. Claims, Calf Pasture, Calf Pasture Extension. Patented. Adjoins the Rock Creek mine. Idle. Owned by W. E. Dean, Kohl Building, San Francisco.

**California Quartz Mine.** Ophir district. Sec. 16, T. 12 N., R. 8 E., I. D. M. Two and one-half miles southwest of Auburn. Eighteen-inch quartz vein, carrying free gold in amphibolite. Strike

approximately E.-W., dip 50° S. One hundred feet of open cut along vein. Patented. Idle. Owned by a Mr. Hubbell, of Auburn, in 1902.

Bibl.: Register of Mines and Minerals, 1902. Cal. State Min. Bur.

**Cash in Dump.** Tahoe district. Sixteen miles southeast of Soda Springs Station by wagon road. Elevation 5480'. Thirty-foot incline shaft on 18" vein of quartz striking N. 30° W. and dipping 32° SW. The vein is decomposed and porous near the surface and carries some iron sulphide. Three claims adjoin the Chicago Mine. Eight assays of the surface quartz are said to have averaged \$51.00 per ton. Owned ' by H. M. Black and H. J. Ellert of Virginia City.

**Centennial Mine.** Ophir district. Sec. 17, T. 12 N., R. 8 E., M. D. M. Elevation 1180 feet. One 18-inch quartz vein in amphibolite, carrying pockets of free gold and sulphurets. Strike N. 80° W. Dip; 70° S. Tunnel 1100 feet. Owned by Walsh Bros., Freeman Hotel, Auburn.

**Central Mine.** Damascus district. Sec. 3, T. 15 N., R. 11 E., M. D. M. Three miles north of Damascus on the North Fork of the American River, north of Humbug Canon. Elevation 2200 feet. Five-foot quartz vein, carrying sulphurets, in slate. Tunnel 300 feet. Water power. Mill. Idle. Owned by Lee Dorer, of Towle. and H. T. Power, of San Francisco.

**Champion Mine,** Michigan Bluff district. Sec. 15, T. 14 X., R. 11 E., M. D. M. One and one-half miles northeast of Michigan Bluff. Three foot vein of quartz, carrying free gold, in slate. Shaft 120 feet. Assessment work only. Owned by Daniel Webster Mining Company, made up of F. A. Leach, A. Dibble and Mr. Hampton, of Michigan Bluff.

**Cherokee Mine.** Last Chance district. Three seams of ribbon quartz, in slate, carrying sulphurets. Strike NW.-SE., dip 70 Shaft 55 feet. Drifts 200 feet. Water from Deep Canon. Idle. Bibl. : Rep. XII, 1893-4, p. 206.

**Chicago or Falls Creek.** Tahoe district. Sixteen miles southeast of Soda Springs Station by wagon road, in Sec. 32, T. 16 N., R. 14 E.. M. D. M. Elevation 5200'. Upper tunnel 52'. Lower tunnel 15' Eighteen-inch quartz vein strikes N. 30° W. and dips 35° E. in limestone. The vein carries considerable pyrite, chalcopyrite and free gold Oxidized ore is said to assay \$61.00 per ton while the sulphides assay \$17.00 per ton in gold, 4 oz. silver and 8% copper. There is an excellent mill site 30' from the tunnel, on Wubbena Creek which carries from 10" to 12" of water during the dry season. Owned by Tom Young of Cisco. Leased by H. J. Ellert of Virginia City and F. L. Bradley M. A. and S. B. Wright of Berkeley, who shipped some ore in October

**Christmas Hill Mine.** Butcher Ranch district. Sec. 26, T. 13 N., ? . 9 E.. M. D. M. One mile southeast of Butcher Ranch. Elevation feet. A 300-foot porphyry dike in slate carries quartz stringers. Strike N.-S. Open cut 350 feet. Owner works in mine every year. Owned by J. A. Ware, of Butcher Ranch.

**Conrad Mine.** Ophir district. Sec. 17, T. 12 N., R. 8 E., M. D. M., ?½ miles west of Auburn. Elevation 1150 feet. Thirty-inch quartz rein, carrying free gold, galena and sulphurets, in amphibolite. Strike approximately E.-W., dip 70° S. Shaft 130 feet. Tunnel 700 feet. Patented. Adjoins the Centennial, to which it is parallel. Owned by Wm. Walsh. Freeman Hotel, Auburn.

**Crandall Mine.** Ophir district. Sec. 8, T. 12 N., R. 8 E., M. D. M., | miles west of Auburn. Elevation 950 feet. A two-foot vein of quartz in amphibolite, carries sulphurets. Strike NE.-SW., dip 70° SE. Shaft 70 feet. Tunnel 400 feet. White-Rogers 5-stamp mill. Worked by hand drills. Water power. Owned by Wm. Jull, of Auburn.

**Crater Hill Mine.** Ophir district, Sec. 12, T. 12 N., R. 7 E., .1. D. M., 3½ miles west of Auburn. Elevation 1200 feet. Patented. 2½ foot quartz vein, in amphibolite, carries galena and sulphurets. Strike

X. 80 c W., dip 48° S. Shaft 800 feet. Dump has been sorted and values taken out. Idle. The Kittler property is southeast of the Crater Hill, in the SW. corner of Sec. 7, T. 12 X., R. 8 E., M. D. M., miles west of Auburn. A quartz ledge on the property, in granouorite, carries galena and sulphurets. Strike E.-W., dip 45° S. Shaft 150 feet. Tunnel 400 feet. Idle. Owned by George A. Qdrich, of Auburn.  
Bibl. : Rep. X, 1890, p. 433.

**Dahlongega.** Blue Canon district. Sec. 12, T. 16 X., R. 11 E., 1. D. M., 2 miles south of Emigrant Gap. Elevation 5350 feet. A ½ ft-foot quartz vein in slate carries sulphurets. Strike NE.-SW., dip E. Tunnel 480 feet stoped to surface. In another tunnel run 100' lower the ore did not pay. Steam power. Mill burned. Worked, off and on. for 40 years. Owned by the Dahlongega Gold Mining Company. Ir. Tripp of Redlands, president ; A. E. Rudell of San Bernardino, Secretary.  
Bibl. : Register of Mines and Minerals, 1902. Cal. State Min. Bur.

**Daniel Webster.** Michigan Bluff district. Sees. 15 and 16, T. 14 X.,: 11 E.. M. D. M., H miles northwest of Michigan Bluff. Elevation 300 feet. Claims, Daniel Webster and Champion. Placer patent. Two veins of free milling quartz, two feet and five feet thick, occur in slate, Strike XE.-SW., dip 80° E. Shaft 125 feet. Drifts 200 feet. Assessment work only. Owned by Daniel Webster Mining Company, made up F. A. Leach, A. Dibble and Mr. Hampton, of Michigan Bluff.

**Debb Mine.** Dutch Flat (Shady Run) district. Sec. 4, T. 15 N., R. 11 E., M. D. M., 2 miles northwest of Shady Run. Elevation 3850 feet. Patented. A four-foot quartz vein, in slate, carrying galena and sulphurets, was discovered in the bed of the old hydraulic mine. Shaft 60 feet. Drift 60 feet. Idle. Owned by A. Percival Crittenden, of Towle.

**De Maria or Garbe Mine.** Michigan Bluff district. Located 5 miles southeast of Michigan Bluff. Includes 30 acres or more of unpatented land. Free crystallized gold occurs in quartz seams in a porphyry dike and is washed by the placer process. Owners, C. J. De Maria and Mr. Garbe, of Spring Garden.

**Dewey Prospect.** Butcher Ranch district. Sec. 22, T. 13 N., R. 9 E., M. D. M. Prospecting has been done on a quartz vein in slate west of \ the U. S. or Carlson ranch, by E. B. Gilbert, of Butcher Ranch.

**Dewey and Stocker or Burt Mine.** Forest Hill district. Sec. 30, T. 14 N., R. 11 E., M. D. M., two miles northeast of Forest Hill. Quartz vein in slate. Tunnel 1200 feet. Development work only. No ore milled. Idle. Owned by Mrs. S. Burt, of Forest Hill.

**Don Prospect.** Tahoe district, One-fourth mile east of the Lost Emigrant mine. Elevation 6700'. An 18" vein along a fracture in schist. Strike N. 80° E. and dip 70° S. Fifty-foot tunnel. Assessment work only. Owned by John Lass and Walter J. Wren of Virginia City.

**Dorer Mine.** Dutch Flat (Towle) district. Sec. 3, T. 15 N., R. 11 B. M. D. M., 2\ miles SE. of Shady Run. Elevation 4016 feet. Free milling quartz vein in slate. Strike N.-S., dip E. Tunnel 450 feet. Idle, L. R. Dorer, of Towle, owner.  
Bibl.: Rep. VII, p. 468; Rep. VIII, p. 207.

**Drummond Mine.** Iowa Hill district. Sec. 1, T. 14 N., R. 10 M. D. M., 3 miles southeast of Iowa Hill. Elevation 3,600 feet Patented. Two veins of quartz in slate. Strike N. 60° W., dip 80° NE Shaft 50 feet. Tunnel 810 feet. Idle. Owned by Hon. C. F. Reed and Mr. J. E. Walsh, Freeman Hotel, Auburn.

**Dry Hill Mine.** Forest Hill district. Sees. 31 and 32, T. 14 I R. 11 E., M. D. M., 2 miles southeast of Forest Hill. Three claims Quartz stringers, carrying crystallized free gold, in slate. Drifts 1501 feet. Worked off and on for fifteen years. Owned by L. C. Lorenz and C. J. De Maria, of Spring Garden.

**Eclipse Mine.** Ophir district. Sec. 17, T. 12 N., R. 8 E., M. D. M 2£ miles west of Auburn. Elevation 1000 feet. Patented. A quartz vein in granocliorite carries galena and sulphurets. Strike N. 70°

E dip 45° S. Shaft 297 feet. Old mill used water power. Idle. Owner by Eclipse Milling Company of Auburn.

**Eureka Consolidated.** Forest Hill district. Sec. 1, T. 13 N., R. 9 E., and Sec. 31, T. U N., R. 10 E., M. D. M., one mile northwest of Spring Garden and 6 miles southwest of Forest Hill. Elevation 2000 feet approximately. Six claims. Quartz stringers scattered through 200 get of amphibolite. Strike N. 11° W., dip 45° E. The ore is said to assay \$5.00 per ton. Owned by O. F., Wm. and G. Seavey, W. A. Shepherd, H. Adams, and G. Coffin, of Forest Hill.

**Eureka Mine.** Ophir district. Sec. 13, T. 12 N., R. 7 E., M. D. M., four miles west of Auburn. Elevation 900 feet. Claims, Eureka No. 1, Eureka Extension No. 1, Eureka No. 2, Eureka Extension No. 2. includes about 69 acres. A two-foot quartz vein, in granodiorite, carries free gold, pyrite and galena. Strike N. 75° W., dip 68° S. developed by a 280-foot shaft on Eureka No. 1, with 1000 feet of drifting on the 130-foot and 280-foot levels. Equipment of the mine consists of a 15 h. p. motor, which runs a compressor that furnishes air for six Waugh drills. Electricity is also used for the hoist, to a depth of about 1500 feet. Milling with two California Roller Quartz Mills, run by electricity, costs about \$2.00 per ton. Amalgamation tables are used, and the sulphides are sent to the Selby smelter. Two shifts of twenty men each are employed, and about thirty tons of ore per day are milled. The ore is said to average about \$10.00 per ton. Pine lumber from the divide costs about \$13.00 per thousand. Lagging Lad stulls cost about \$2.50 and \$6.50 per thousand, respectively, delivered at the mine. Electricity is secured from the Pacific Gas and Electric Company. Owned and operated by the Borealis Consolidated Mines Company; president, Dr. G. W. Hillegass, Oakland; manager, . P. Stephenson, Freeman Hotel, East Auburn.

**Fall Ravine.** Last Chance district. Sec. 14, T. 15 N., R. 13 E., I. D. M., 10 miles northeast of Last Chance, on the south side of Bald Mountain, near Flat Ravine. Elevation 6000 feet. A three-foot quartz vein, in slate, carries galena and sulphurets. Strike N.-W., dip 7° E. Shaft 350 feet. Tunnel 598 feet. Drifting 60 feet. Idle. Owned by M. Savage, of Forest Hill.  
Bibl. : Rep. XII, 1898-9, p. 208.

**Gem Mine.** Dutch Flat district. Sec. 2, T. 15 N., R. 11 E., M. D. M., ? miles north of Red Point. Elevation 3200 feet. Patented. Quartz veins scattered through a 100-foot belt in slate. Strike NW.-SE., dip 70° XE. Shaft 70 feet. Tunnel 1200 feet. Idle for several years. Owned by John Rablin, of Dutch Flat.

**Gold Blossom.** Ophir district. Sec. 12, T. 12 N., R. 7 E., M. D. M., four miles west of Auburn. Elevation 700 feet. Patents, the Ohio, Gold Blossom, Back Action and Harrison or Gold Blossom No. 2. Three-foot vein of quartz in granodiorite, carrying free gold, galena and pyrite. Strike E.-W., dip 85° S. Three compartment shaft 840 feet deep in center of property Crosscuts every 100 feet to the ledge. Drifts 450 feet. Ten-stamp mill at shaft No. 1 and a 20-stamp mill at shaft No. 2. Electric power available. The ore is reported to. average upward of \$7.50 per ton in free gold and \$0.75 in sulphurets. Considerable ore is blocked out. Idle. Owned by the Reed Estate, Auburn; J. H. Toler, manager; A. C. Lowell, executor.  
Bibl. : Annual Rep. XIV, U. S. G. S., Pt. II, p. 270. Rep. X, Cal. State Min. Bur. 1890, p. 431.

**Gold King Mine.** Canada Hill district. Sec. 8, T. 15 N., R. 13 E., M. D. M., 10 miles east of Westville and 40 miles from Colfax, the nearest railroad station. Elevation 5860 feet. Twenty acres. A banded quartz ledge in schist carries free gold, pyrite, arsenopyrite and galena. The vein is from 12" to 20" thick on the hangwall, strikes N. 10° E. and dips 60° W. A 200' tunnel cuts the ledge at 120' and follows the vein for 80'. Ore milled ran about \$3.50 per ton. Assays said to run from \$8.00 to \$10.00 per ton. Owned by Jas. G. Dodds, Elizabeth T. Bell, and Nels Forthun, of Westville. Leased by Henry J.

Snyder and John Henessy, of Grass Valley, who have taken up the Gold Queen and Gold Prince claims, north and south respectively of the Gold King.

**Golden Reward.** Canada Hill district. Sec. 5, T. 15 N., R. 13 E. M. D. M., 10 miles east of Westville. Elevation 6000 feet, approximately. Five claims, called the Golden Reward group. Twenty acres. A three-foot quartz vein, in slate, carries free gold and sulphides. The main N.-S. vein dips 45° and is cut by an E.-W. vein. Crosscut tunnel 300 feet. Ten-stamp mill. Assessment work only. Owned by Mrs. Wm. Bell and son, of Westville.

**Golden Rule Mine.** Rocklin district. Center of Sec. 17, T. 11 N. R. 8 E., M. D. M., two miles southwest of Rattlesnake Bar and eight miles east of Rocklin. Elevation 750 feet. A three-foot quartz vein in granodiorite, carries free gold. Tunnel 1358 feet. Idle. Owned by Wm. Kendall, of Sacramento.

**Golden Scepter or Ellen Dip.** New England Mills district. Sec. 1 T. 13 N., R. 9 E., M. D. M., two miles east of Applegate in Codfish Canon. Elevation 1625 feet. A thirty-foot mineralized belt between serpentine and slate carries values which were concentrated on the surface and hydraulicked in the early days. Strike N.-S., dip 90, Shaft 16 feet. Tunnel 270 feet. Later prospecting has not uncovered a main vein. Assessment work only is now being carried on by the owners, Ed. Vore, of Applegate and E. Ephraim.

**Golden Sheaf Mine.** Michigan Bluff district. Sec. 27, T. 14 R. 11 E., M. D. M., one-half mile south of Michigan Bluff. Claims chunk (quartz), and Beehive (placer). Idle. Owned by the Golden Sheaf Mining Company; E. P. Thompson, of Michigan Bluff, manager.

**Golden West Mine.** Blue Canon district. Sec. 25, T. 16 N., R. 11 E., 1. D. M., three miles southeast of Blue Canon. Elevation 3000 feet. Patented. A 200-foot ledge in slate, carrying quartz stringers. Shaft 200 feet. Tunnel 1500 feet. Drifting 500 feet. Idle. Owned by Reuben H. Lloyd, San Francisco.

Bibl. : Register of Mines and Minerals, 1902. Cal. State Min. Bur.

**Great Western.** Canada Hill district. Eighteen miles SE. of Cisco Sec. 31, T. 15 N., R. 13 E., M. D. M. Elevation 5000'. Fourteen claims including 270 acres. A quartz ledge in diorite carries free gold and sulphides. A 430' tunnel run to crosscut the ledge did not strike it, since apparently the vein dips rather flat. Assays near the surface of the vein are said to have run from \$16.00 to \$20.00 per ton. Owned by the Great Western Mining Company. Mr. Kelley, resident; Martin Winters, secretary, Pier 36, North River, New York.

**Green Mine.** Ophir district. Sec. 8, T. 12 N., R. 8 E., M. D. M., Two miles northwest of Auburn. Patented. Eighteen-foot vein of quartz in slate. Values in pockets. Shaft 300 feet. Mill. Idle. Owned by Wm. Kendall, of Dutch Flat.

Bibl. : Rep. XII, 1893-4, p. 209.

**Hathaway or Butts Mine.** Ophir district. Sec. 18, T. 12 N., R. 8 E., M. D. M., three and one-half miles southwest of Auburn. Patented. Adjoins the Eureka mine on the east. Elevation 675 feet. A three-foot quartz vein in granodiorite carries argentiferous galena, auriferous pyrite and zinc blende. About 2% of the ore is sulphurets. The concentrated sulphurets are reported to have run as high as \$230 per ton. Strike of veins N. 75° W., dip 75° S. Shaft 756 feet. Tunnel 37 feet. Drifting 3,500 feet. Equipped with old 20-stamp (850 bs. each) mill and 4 Woodberry concentrators. Electricity is now available for power. Bonded by Dr. G. W. Hillegass and associates of Oakland and E. P. Stephenson, of East Auburn. The same parties have bonded the Eureka, Kirkland and Kirkland Extension patents. The Hathaway was taken over in 1916 by the Borealis Consolidated, the controlling interest of which is held by J. C. Winters of

New York. The mine was being dewatered in October, 1916, and the shaft retimbered. The property will be worked in conjunction with the Eureka.

Bibl. : Rep. X, 1890, p. 429.

**Herman Mine.** Deadwood district. Sec. 29, T. 15 N., R. 12 E., .1. D. M., 5 miles south of Westville. Elevation 4500 feet. Patented 448 acres. Three veins of ribbon quartz varying from three feet to ten feet wide, in slate, carry free gold and silver, with pyrite and galena. Strike N. 10° E., dip 67° E. The veins can be followed. For 1500 feet on the surface. Incline shaft 100 feet. Crosscut to ledge 1500 feet. Shaft 450 feet. Drifting on 100-foot level, N. 250 feet and S. 250 feet; on 200-foot level, N. 400 feet and S. 200 feet; on 300-foot level, N. 100 feet and S. 150 feet. No drifting on 450-foot level. The mine was pumped out in July, 1915, and has produced on an average of 50 tons of ore per day since August 10, 1915. It is equipped with five air drills and two Water-Leyner drills. The ore is drawn from the mine in one-ton cars by mules. Two 200 h. p. steam boilers furnish power for an electric generator for lighting purposes, an air compressor and 1 Worthington and 1 Blake pump. Wood for fuel costs \$3.00 per cord.

The mill has thirty 1200-pound stamps, which have a six-inch drop, 100 times per minute. The ore is crushed to 24 mesh and the pulp passes over amalgamation plates. The tailings are not impounded.

From thirty to fifty men were employed in October 1915. When; visited in September, 1916, poles to obtain electric power from the Black Canon line were on the ground but the mine had been shut down and was rapidly filling with water. Good ore is reported in the lower workings. Owned by the Herman Property Syndicate. Operated by the Pennsylvania Gold Mining Co., 2001 First National Bank Bldg., Pittsburgh, Pa.; C. H. Stolzenbach, Pittsburgh, Pa., president; Samuel H. Brockunier, superintendent, Westville, Placer County, Cal.

**Hermit Prospect.** Last Chance district. Section 30, T. 15 N., R. 13 E., M. D. M., five miles northeast of Last Chance, in Deep Canon. Elevation 5500 feet. Quartz ledge in slate, carrying sulphides. Shaft 10 feet. Drift 20 feet. Owned by John Lass, of Summit.

**Hope Mine.** Ophir district. Sec. 17, T. 12 N., R. 8 E., M. D. M., 1½ miles southwest of Auburn. Elevation 1142 feet. Patented. Eighteen-foot quartz ledge, in slate, carrying sulphurets. Shaft 70 feet. Handwork, with windlass and pump. Owned by Andrew Johnson, of Ophir.

**International Quartz Mine.** Forest Hill district. Sec. 12, T. 13 N. R. 9 E., M. D. M., 7 miles southwest of Forest Hill. Free gold along the footwall of a 50-foot porphyry dike. Assays are said to run from \$3.75 to \$15.00 per ton. Owned by Patrick McInnis, of Butcher Ranch

**Joe Dandy.** Tahoe district. One mile south of the Lost Emigrant mine. Elevation 6935'. Decomposed vein material, in decomposed limestone, strikes N. 70° E. and dips 70° SE. Opened up by a 34' shaft and 25' drift east along the vein material. The vein material pans. Claims, Joe Dandy and Billy Boy. Owned by John Lass, of Virginia City, and L. D. Heath, of Los Angeles.

**Julia Mine.** Damascus district. Sec. 3, T. 15 N., R. 11 E., M. D. M 11 miles NE, of Damascus. Four-foot quartz vein in slate. Strike NE.. dip E. Tunnel 80 feet. Idle. Owned by J. D. Sullivan and A. P. Crittenden, of Towle.

**Julian Mine,** formerly the Boulder Claim. Ophir district. Southeast corner of Sec. 7, T. 12 N., R. 8 E., M. D. M., three miles west of Auburn. Three-foot vein of ribbon quartz, carrying sulphurets, in granodiorite. Strike N. 10° E., dip 45° E. Tunnel 300 feet on vein. Shaft connects with tunnel at depth of 115 feet. Claim now covered by an orchard. Idle. Owned by Mrs. Dr. M. Schnabel, of Newcastle.

Bibl. : Rep. XII. 1893-4, p. 205.

**LaFollette or Nob Hill Mine.** Canada Hill district. Sees. 7 and 8, T. 15 X.. R. 13 E.. M. D. M., 8 miles east of Westville. Elevation 5,930 feet. Twelve-inch quartz ledge, in metamorphic sandstone,

carries free gold, arsenopyrite, galena and sphalerite. Open cut 200 feet along vein. Ninety-foot tunnel. Twenty acres. Adjoins Gold King claim. Ore said to assay about \$10.00 per ton. Owned by Henry Snyder, of Grass Valley.

**La Trinidad or Sterritt Mine.** Canada Hill district. Sec. 34. T. 16 X., R. 13 E., M. D. M., eight miles south of Cisco. Elevation 6000 feet. On the North Fork of the American River, in Sailor Canon. Patented. Four-foot quartz vein in slate, carrying free gold, strikes NW.-SE. and dips 45: NE. Tunnel 200 feet, caved; 500' drift with 700' raise used as ore chute. Ten-stamp mill. Last leased to the Viking Company who installed considerable machinery. Most of the oxidized ore is said to have been stoped. The ore is said to have assayed \$3.45 per ton. Owned by the New York Mining Company; Geo. F. Dannel, Cisco, superintendent ; George Montgomery, of Mills College, manager.

**Little Banner Mine.** Ophir district. Sec. 22. T. 12 X., R. 8 E., M. D. M.. 2 miles southeast of Auburn on the slope of the American River. Two claims. Three-foot to ten-foot quartz vein, in granodiorite. carries free gold and pyrite. Strike NB.-SW., dip SE. Tunnel 1,000 feet. Shaft 100 feet. Five hundred feet of drifts on the 100-foot level. The value of the ore ranges between \$6.00 and \$16.00 per ton. Equipment in 1915 consisted of a California Roller Quartz Mill. Owned by Charles Glover. Leased by Dr. G. W. Hillegass and associates, of Oakland; superintendent, E. Stephenson, East Auburn.

**Live Oak Mine.** New England Mills (Weimar) district. Sec. 23, T. 14 N., R. 9 E., M. D. M., two miles northeast of Weimar, in Live Oak Ravine. Free gold in a quartz vein in slate. Owned by Geisendorfer Estate. Bonded by Mr. Dan J. Williams, of Weimar, who is reported to have installed a Williams New Stamp and to have 4 men working. The ore is reported to assay \$15.00 per ton in the 175

**Lost Emigrant Mine.** Tahoe district. Sec. 32, T. 16 N., R. 14 E., M. D. M., 12 miles by road southwest of Soda Springs station.

Elevation 6700 feet. Twelve-inch to 4-foot quartz vein in diabase porphyrite, carries free gold and pyrite. Strike NW.-SE., dip 30° SW. Shaft 115 feet. Incline 500 feet. Drifting, 400 feet on 65-foot level 50 feet on 300-foot level, 50 feet on 500-foot level. Old steam



Photo 9. Lost Emigrant Mine, eight miles southwest of Soda Springs, Placer County. Snow Mountain in the distance.

hoist and 4 1000-lb. stamps. Idle. Six hundred tons of tailings on the dump are said to assay \$10.00 per ton. Owned by F. L. Heath et al., Donner post office, Placer County, Cal.

**Lundquist Mine.** Ophir district. Sec. 16, T. 12 N., R. 8 E., M. D. M., two miles southwest of Auburn. Reported to have had a 12-foot quartz vein, in slate, carrying free gold and sulphurets. Strike NE.-SW., dip 40° E. Shaft 120 feet. Tunnel 200 feet. Idle. Owned by Mrs. Lundquist, of Auburn.



**Malmberg.** Ophir district. Sec. 16, T. 12 N., R. 8 E., M. D. M., 1 mile southwest of Auburn. Patented. Quartz vein in amphibolite. Shaft 110 feet. Idle. Owned by Mr. J. Malmberg, of Auburn.

**Marguerite.** Rock Creek district. Sec. 3, T. 12 N., R. 8 E., M. D. M., 1½ miles north of Auburn. Elevation 1360 feet. Patented. Reported to be a 5-foot quartz vein in serpentine. Strike NW.-SE., dip 80° SW. Shaft 310 feet. Idle. Owned by San Francisco parties.

**Mars Quartz Mine.** Damascus district, 5 miles west of Westville, near the Pioneer mine. Patented. Eighty acres. Three quartz veins, in slate, carrying gold and silver. One vein is reported to be 20 feet wide. Tunnel 500 feet. Three-stamp mill. Ore is said to average \$3.50 per ton. Idle. Owned by Sam Wolford, Grass Valley, Cal.

**Minna Ricca.** Ophir district. Sec. 17, T. 12 N., R. 8 E., M. D. M., two miles west of Auburn. Elevation 1,000 feet. Reported to have been a 16-foot quartz vein, in slate, carrying free gold and sulphurets. Strike NE.-SW., dip 85° E. Shaft 150 feet. Tunnel 300 feet. Considerable good ore was taken from a chute. Idle. Owned by J. E. Walsh, East Auburn.  
BibL: Rep. X, 1890, p. 433.

**Mitchell Mine.** Last Chance district. Located in El Dorado Canon. Worked off and on since 1855. Owned by H. F. Adams, of Forest Hill, and Ben Taber (1/5), of Auburn.

**Mollie Stark.** Ophir district. Sec. 21, T. 12 N., R. 8 E., M. D. M., 1½ miles southwest of Auburn. Elevation 850 feet. Patented. Three veins of white quartz, in granodiorite, carry free gold and silver associated with galena and sulphurets. Strike NW.-SE., dip 74° SW. Shafts 40 feet and 18 feet. Incline 130 feet. Tunnel 200 feet. Drifting 270 feet. Idle. Owned by Mrs. Asa B. Eastwood, of Newcastle.

**Moore Mine.** Ophir district. Sec. 17, T. 12 N., R. 8 E., M. D. M., two miles southwest of Auburn. Elevation 1050 feet. Patented. Eight-foot quartz vein, in slate, carries free gold and sulphurets. Strike E.-W., dip 45° S. Shaft 300 feet. Idle. Owned by J. M. White, of Auburn.

**North Star Mine.** Damascus district. Reported to be in the neighborhood of the Pioneer mine. Seven-foot quartz ledge carrying free gold. Tunnels 80 feet and 90 feet. Owned by E. J. Power, E. J. Young and Henry F. Power, Berkeley.

**Number Two Mine.** Dutch Flat district. Sec. 10, T. 15 N., R. 10 E., M. D. 3\I., one-half mile northeast of Gold Run. Elevation 2875 feet. Reported as a 12-foot quartz vein in slate. Strike N.-S., dip E. Open cut 80 feet. Shaft 40 feet. Idle. Owned by E. A. Moody and Mr. Garety, of Gold Run.

**Old Pacific Mine.** Ophir district. Sec. 25, T. 12 N, R. 7 E., M. D. M., one mile southwest of Newcastle. Reported as an 18-foot quartz vein, in granodiorite, carrying free gold, native silver and sulphurets. Strike E.-W., dip S. Shaft 200 feet, Idle. Owned by Mrs. Dr. M. Schnabel, of Newcastle.

**Oro Fino Mine.** Ophir district. Sees. 7 and 8, T. 12 N., R. 8 E., M. D. M., 4 miles west of Auburn. Elevation 1,002 feet. Claims: Bullion, Bullion No. 1, Bullion No. 2, Golden Eagle, Bellevue, Last Chance, Buckeye, California and Smith's Extension. Two-foot quartz vein in amphibolite. Strike E.-W., dip 65° S. Inclined two-compartment shaft 300 feet. Old Bellevue shaft 312 feet, with the following drifts: 75-foot level, 370 feet drift; 117-foot level, 340 feet drift; 170 foot level, 200 feet drift ; 224-foot level, 460 feet drift ; 312-foot level, 730 feet drift. The 312-foot level connects with the Bullion No. 1 shaft, from which the ore is being worked and the water pumped. About one-half the ore between the Bellevue and Bullion No. 1 shafts has been stoped out. It is practically new ground between Bullion No. 1 and the old Bullion shaft, which is 100 feet deep with 100 feet of drift.

Electric power is secured from the Pacific Gas and Electric Company. The equipment of the mine consists of a 350-foot air compressor, air drills, 1-ton skips and telephone to the 300-foot level. A 75 h.p.

electric motor runs the 10-stamp (1000-pound stamps) Joshua Hendy mill, two No. 5 Deister concentrators and 4-foot Joshua Hendy amalgamation barrel. About 28 men are employed.

About 30 tons of ore per day of 24 hours is milled. Mill tests are reported to have run from \$17.00 to \$18.00 per ton. About 70% of the gold is recovered on the amalgamation plates, while from 25% to 30% is recovered from the sulphurets. The ore taken



Photo No. 10.—Headframe and mill of the Oro Fino Mining Co., on Bullion No. 1, Ophir District.

as a whole averages about \$7.00 per ton. Work in September, 1916, was being carried on in the 400' level.

Owned by the Oro Fino Mining Company ; II. Gridley, superintendent, East Auburn.

**Pacific Slab Mine.** Last Chance district. Sec. 33, T. 15 N., R. 12 E., M. D. M., I mile southwest of Last Chance. Quartz vein in slate, exposed in bedrock of drift mine. The ledge has not been worked. Owned by the Pacific Slab Consolidated Mining Company, 1007 Monadnock Building, San Francisco; W. T. Davis, superintendent at drift mine.

**Paragon.** Forest Hill district. A quartz vein averaging 4 feet in width was encountered in the main tunnel of the Paragon drift mine about 300 feet from the portal at the contact of serpentine and amphibolite. The vein is exposed for over forty feet and strikes N. 65° E., dip 66° SW. The gravel is reported much richer near this vein. No developments. Owned by J. F. Thompson, of Bath.

**Patrick Consolidated.** Canada Hill district. Sec. 10, T. 15 N., R. 12 E., M. D. M., two miles southeast of Westville. Elevation 4800 feet. Three-foot quartz vein, carrying free gold, in slate. Strike NE.-SW., dip SE. Tunnel 550 feet. Idle. Owned by G. W. Snyder, of Damascus.

**Pioneer Mine.** Damascus district. Sees. 10 and 3, T. 15 N., E. 11 E., If. D. M., two miles northwest of Damascus. Elevation 3800 feet. Patented. Two quartz veins, one 14 feet wide carrying free gold and sulphurets. The wall rock is slate. Strike NE.-SW. Dip 80° E. Shaft 1200 feet. Tunnel 2300 feet. Drifts 2500 feet. Twenty-stamp mill. Employ thirty to forty men all year. Production between 50 and 60 tons per day. Owned by the Pioneer Gold Mines Company, 600 Thos. Clunie Building, San Francisco; C. M. Bandy, general manager; Fred Jost, superintendent at the mine.

**Prairie Flower.** Canada Hill district. Forty acres in Sec. 9, T. 15 N., R. 13 E., M. D. M., 8 miles east of Westville. Elevation 5,800 feet. Three-foot vein of ribbon quartz in slate carries free gold and pyrite. Strike N. 45° E., dip 70° W. Lower tunnel 1000 feet. Drift 500 feet, New 100-foot shaft. Stopped from lower tunnel to the surface for 400 feet along the vein. The last work consisted of a 50-foot winze and 60-foot shaft below the lower level. Water from Van Cliff Canon furnishes power for five-1000 lb. stamps. Ore said to run between \$6.00 and \$10.00 per ton. and average \$8.00 per ton between the two levels. Owned by Mrs. Wm. Bell and son, of Westville.

**Quien Sabe Mine.** Canada Hill district. Sec. 9, T. 15 N., R. 13 E., M. D. M., 8 miles east of Westville. Elevation 5,300 feet. Forty acres. A 2-foot quartz vein, in metamorphic sandstone, carries free gold and pyrite, strikes N. 5° W., dips 75° W., and follows the bedding plane of the metamorphic rocks. A tunnel crosscuts the ledge at 60 feet and follows the vein for 40 feet, A lower tunnel 150 feet long has not

reached the vein. A 160-foot pipe line from Van Cliff Canon, a branch of Antoine Canon, furnishes power for a Hendy triple discharge 2-stamp mill, for six months of the year. Other equipment consists of 36-inch Pelton waterwheel and a jaw crusher. The ore is said to mill from \$3.00 to \$8.00 per ton. Concentrated sulphides are said to have run about \$380 per ton. Owned by Peter Hinst and J. G. Dodds of Westville.

**Rawhide Mine.** Dutch Flat district. Sec. 4, T. 15 N., R. 11 E., M. D. M., three miles southeast of Towle. Two porphyry dikes 4 feet and 6 feet thick, in slate, carry free gold. Strike NW.-SE.; dip 45° NE. Open cut 20 feet. Shaft 70 feet. Tunnel 600 feet. Drifting 110 feet. Ten stamp mill. Water power. Fifteen men reported to be working in October, 1916. Idle in September, 1916. Owned by the Helester Gold Mining Co. Leased by Frank B. Keever. Frank Chase, Towle, foreman.

**Razzle Dazzle.** Ophir district. Sec. 20, T. 12 N., R. 8 E., M. D. M., 1½ miles east of Newcastle. Elevation 950 feet. Patented. Fourteen feet of decomposed quartz, carrying pyrite, in slate. Strike NW.-SE., dip 70° NE. Shaft 180 feet. Drift 60 feet. Idle. Owned by G. L. Threlkel, of Newcastle.

**Reciprocity Mine.** Gold Hill district. Sec. 11, T. 12 N., R. 7 E., M. D. M., three miles northwest of Ophir. Elevation 595 feet. A four-foot quartz vein, in granodiorite, carries gold and silver. Open cut 30 feet. Shaft 20 feet. Idle. Owned by I. Meyer, of Lincoln.

**Red Bird Consolidated.** New England Mills (Weimar) district. Sec. 24, T. 14 N., R. 9 E., M. D. M. Elevation 2000 feet. Auriferous quartz stringers in Mariposa slate. The mineralized ledge is about 25 feet wide and carries free gold and pyrite. Tunnel 200 feet. Double crosscut with 16-foot chamber. The Buena Vista mine adjoins the Red Bird No. 1 claim to the south, while the Red Bird No. 2 adjoins it to the north. The ore is said to average about \$10.00 per ton. Owned by G. A. Tubbs, Colfax.

**Red Rock Mine.** Blue Canon district. Sec. 24, T. 16 N., R. 11 E., M. D. M., three miles southeast of Blue Canon. Elevation 4200 feet. Patented. Ten-foot quartz vein in slate. Strike NW.-SE., dip W. Mill moved. Water power. Idle for several years. Owned by N. B. Willey, Blue Canon.

**Rip Van Winkle Mine.** Formerly called the Lady Bedford or Page and Buckman Mine. Deadwood district. Sec. 29, T. 15 N., R. 12 E., M. D. M., six miles south of Westville. Four-foot to ten-foot vein of ribbon quartz in slate, carrying galena and pyrite. Strike NW.-SE., dip 50° E. Shaft 60 feet. Tunnel 1200 feet. One mile southeast of the Herman mine. Ore is said to average \$3.00 per ton. Old two-stamp mill dismantled in September, 1916. Assessment work only. Ore shoot said to have been lost by a fault. Owned by B. S. Buckman, of Michigan Bluff, and J. G. Dodds, of Westville.

**Rising Sun Mine.** Colfax district. Sec. 33, T. 15 N., R. 9 E., M. D. M., one mile northwest of Colfax. Elevation 2290 feet. Forty acres patented. One laminated quartz vein from 6 inches to 3 feet wide with several stringers, in diabase. The vein carries free gold, pyrite and chalcopyrite and strikes E.-W., with a dip 85° S.

Development consists of a shaft in the center sunk to the fourth level, with levels at 60', 111', 187', 268' and 350'; a second shaft (6 ft. x 12 ft.), with three compartments, to the east of the first has nine levels and is about 751 feet deep. The levels are 111', 187', 268', 350', 431', 511', 590', 668' and 751' below the surface. A third shaft to the west of the main shaft has two levels at 111' and 187'. The wall rock is hard and usually no timbering is required. A tunnel has been driven over 300 feet from a point .3 of a mile northwest of the property on the south slope of Bear River Canon. It was the intention to work the mine more cheaply from the tunnel, but it has never been completed. The shafts are now caved at the surface.

It is reported that 80% of the auriferous value is free gold, while the balance is obtained from the concentrated sulphides which run from \$150 to \$200 per ton. Little work has been done below the fifth

level and considerable low grade ore still remains above the fifth level. All improvements, including mill, hoist, etc., have been destroyed by fire. Assays made for the writer ran as follows:

No. 1. Quartz vein material from dump at Rising Sun Mine, \$1.10 per ton.

No. 2. Mineralized schist from same dump at Rising Sun Mine, \$0.40 per ton.

The power line of the Pacific Gas and Electric Company, from Alta, passes within one mile of the property.

Owned by Marie A. Valentine Estate, New York, and Werry Bros., Colfax.

**Roosevelt.** Tahoe district. Seventeen miles southeast of Soda Springs Station in Sec. 4, T. 15 N., R. 14 E., M. D. M. One claim adjoining the old Lost Emigrant mine. An oxidized vein is 3' wide on the surface and 7' wide at the bottom of a 28' shaft. Quartz vein in diabase porphyrite. Owned by F. L. Heath et al., Donner, Cal.

**Rublin Mine.** Last Chance district. Sec. 34, T. 15 N., R. 12 E., M. D. M. On south side of the ridge towards Last Chance from the Pacific Slab mine. Shaft 150'. Tunnel 860' was run to tap the vein at 500' below the surface, but it is said that it was run too far south and never hit the vein. The tunnel was driven by machine drills supplied with air from a compressor run by water power. Idle. Owned by Messrs. Foley, McCarty and Casen of Chicago who bought it of D. M. Ray of Last Chance.

**Ruby Mine.** New England Mills (Weimar) district. Sec. 25, T. 14 N., R. 9 E., M. D. M., three miles east of Weimar near the American River. Elevation 2200 feet. Four-foot porphyry dike in slate, carrying free gold and sulphides. Strike N.-S., dip 45° E. Incline shaft 126 feet. Drift north 15 feet, south 14 feet. Ore said to assay \$1.00 to \$40.00 per ton. Assessment work only. Owned by E. H. Hinchey, Weimar, Cal.

**Saint Lawrence Mine.** Ophir district. Sec. 7, T. 12 N., R. 8 E., M. D. M., 3½ miles west of Auburn. Elevation 1000 feet. Patented. An 18-inch quartz vein in granodiorite carries free gold associated with pyrite and galena with some stibnite. Strike N. 70° W., dip 35° S. Shaft 300 feet. Tunnel 1000 feet. A 50 h. p. hoist and ten-stamp mill lie idle. Owned by the Reed Estate, of Auburn. Bibl. : Rep. XIV, U. S. G. S., Pt. II, 1892, p. 271.

**Salig Mine.** Rock Creek district. Sec. 3, T. 12 N., R. 8 E., M. D. M., 1½ miles north of Auburn. Elevation 1300 feet. Patented. Quartz vein in slate, carrying free gold and silver in sulphurets and galena. Strike NW.-SE., dip 75° E. Shaft 200 feet. Idle. Owned by A. L. Smith, of Auburn.

**Salsic Mine.** Rock Creek district. Sec. 3, T. 12 N., R. 8 E., M. D. M., ¾ of a mile northwest of Auburn. One-foot quartz vein carrying free gold, pyrite and galena, in slate. Strike N. 45° W., dip 75° E. Idle. Owned by Smith and Fulweiler, of Auburn. Bibl. : Rep. XII, p. 212, 1893-4.

**Secret Town Mine.** Gold Run district. Sec. 10, T. 15 N., R. 10 E., M. D. M., 1½ miles southeast of Gold Run. Elevation 2875 feet. Two-foot quartz vein in slate. Strike NW.-SE., dip 60° E. Shaft 75 feet. Tunnel 20 feet. Idle. Owned by E. A. Moody and J. E. Everhart.

**Shady Run or Midas Mine.** Dutch Flat district. Sees. 27 and 28, T. 16 N., R. 11 E., M. D. M., 1½ miles northeast of Shady Run. Elevation 2700 feet. Patented, 640 acres. Stringers of quartz, carrying arsenopyrite and 3% sulphurets in a 38-foot porphyry dike. Strike NW.-SE., dip 90°. Shaft 140 feet, tunnel 570 feet. Six drifts. Water-power mill. Idle. Owned by R. Watson, Midas.

**Southern Cross Mine.** Damascus district. Sec. 4, T. 15 N., R. 11 E., M. D. M., four miles northwest of Damascus. Patented. Three quartz veins, 2½', 4' and 5' wide in slate carry free gold, sulphurets and galena. Strike NW.-SE., dip 60° E. Tunnel No. 1, 700 feet; No. 2, 500 feet. Mill burned.

Idle. Owned by E. L. Ford, of Towle, and A. W. Nicholls, of Berkeley. J. E. Hines, superintendent, Rock Springs, Wyoming.

**Spanish Mine.** Ophir district. Sec. 7, T. 12 N., R. 8 E., M. D. M., 2½ miles northwest of Auburn. Elevation 1050 feet. Patented. Sixteen-foot vein of quartz, carrying free gold, in granodiorite. Strike NW.-SE., dip 45° NE. Shaft 200 feet. Bonded to Brown, DeCon and Company, of San Diego. Reported to be installing a hoist and compressor, and to have leased the mill on the Peachy Consolidated property. Owned by the Reed Estate, Auburn.

**Texas Mine.** Blue Canon district, Sec. 20, T. 16 N., R. 12 E., M. D. M., four miles south of Emigrant Gap. Elevation 5600 feet. A three and one-half foot quartz vein, in slate, carries sulphurets. Strike N.-S., dip 60° E. Shaft 110 feet. Tunnel 400 feet, was never completed to bottom of shaft. Idle for 4 years. Owned by the Halsey Estate, of Towle. J. L. Gould, Alameda, president. Reported bonded to the Oakland Consolidated Gold Mining Company, Oakland, Cal.

**Three Stars or Columbia Mine.** Ophir district. Sec. 2, T. 12 N., R. 7 E., M. D. M., 7 miles west of Auburn. Elevation 850 feet. Patented. Claims : North Star, Middle Star and Morning Star. Two quartz veins, carrying free gold, silver and sulphurets, in granodiorite. Shafts 524 feet and 724 feet, Incline 541 feet, Drifts 3,176 feet. "Water-power mill.

The Morning Star has a 90-foot shaft and 95-foot incline on a 12-inch vein of free milling quartz in granodiorite. Strike NE.-SW., dip 45°. Idle.

Owned by the Columbia Gold and Silver Mining Co., E. H. Vance, 1911 Webster St., Oakland.

**Tiger Mine.** New England Mills (Weimar) district. Sec. 25, T. 14 N., R. 9 E., M. D. M., three miles east of Weimar. Elevation 2200 feet, A three-foot quartz vein in slate carries free gold. Strike N.-S., dip 45° E. Open cut 50 feet. Shaft 30 feet. Incline 90 feet. Tunnel 50 feet. Adjoins the Red Bird No. 1 Mine. Idle. Owned by Ed. Bigley, J. W. Hinchey and Mr. Odel, of Weimar.

**Tyler Mine.** Near Clipper Gap. Thirteen-foot ledge of quartz, carrying sulphurets. Tunnel 190 feet. Owned by Levi Tyler, of Clipper Gap.

**Van Avery Mine.** Blue Canon district. Sec. 14, T. 16 N., R. 11 E., M. D. M., 8 miles southeast of Blue Canon. Elevation 4625 feet. Patented. Three quartz veins, one 6 feet wide, carrying free gold and sulphurets, in slate. Strike NW.-SE., dip 77° W. Tunnel 600 feet. Water power. Idle for 20 years. Buildings burned. Said to have never paid. Owned by L. Balliet, of San Francisco.

**Washington Mine.** Forest Hill district, Sec. 30, T. 14 N., R. 11 E., M. D. M., 8 miles east of Forest Hill. Elevation 3400 feet. Patented. Two veins of ribbon quartz, 3 feet and 20 feet wide in diabase and serpentine. Strike N. 74° W., dip 80°. Tunnel 1400 feet. Water power. Mill removed. Idle for some time. Owned by A. M. Nihill, of Nevada and Jack Nihill, of Michigan Bluff.

**Wubben Mine.** Tahoe district. Sec. 32, T. 16 N., R. 14 E., M. D. M., 10 miles southeast of Soda Springs station on the Southern Pacific railroad. Elevation 6500 feet. Twenty-foot quartz vein, carrying free gold, in diabase. Strike north of west, dip south. Shaft 50 feet. Incline shaft 100 feet. Tunnel 50 feet. Idle. Prospect only. Owned by Herbrant, Eustice and Co., of Woodland.

#### GOLD—DRIFT MINES.

**Allbright Mine.** Rocklin district. Sec. 36, T. 12 N., R. 7 E., M. D. M., 2 miles east of Penryn. Surface hydraulicked. Bedrock tunnel reported to have been run 500 feet in slate and upraise made to the loose gravel, but little pay found. Idle.

Bibl. : Rep. XII, p. 204.

**Alta Mine.** Dutch Flat district. At Alta. Alta Gold Mining and Development Co., held  $\frac{3}{4}$  mile along the cement "White" and "Blue" channels. A 2000-foot tunnel was started to top the gravels. Idle since Mr. J. E. Doolittle, of Dutch Flat, the superintendent, died.

**American Hill.** Canada Hill district. In Sec. 24 T. 15 N., R. 12 E., M. D. M. In Lost Canon, 4 miles by trail southeast of Secret House. Gravels similar to those at Canada Hill occur. A large channel 250' wide and  $\frac{1}{4}$  mile long and a small channel from 6' to 40' wide are said to occur. Work is said to have been mostly done along the south rim of the large channel. Owned by Ben Denton of Westville.

**Avalon Mine.** Forest Hill district. Avalon Mining Company of San Francisco, ran a tunnel. Abandoned.

**Azalea, or Blue Canon Mine.** Blue Canon district. Sec. 22, T. 16 N., R. 11 E., M. D. M., 2 miles southwest of Blue Canon. Elevation 4000 feet. Patented 360 acres. One and one-half miles on channel. Tunnel 3300 feet; did not strike a pay channel. Free wash gravel carried low values. Water-power. Prospect work only. Owned by the Azalea Gold Mining Company, J. B. Knapp, president, Blue Canon.

**Baker Divide Mine.** Forest Hill district. Portions of Sees. 12, 13 and 18, T. 14 N., R. 10 E., M. D. M. On the Baker Divide, three miles northeast of Forest Hill. Elevation 2838 feet. Tunnel 3300 feet in cement gravel. Upraise 125 feet. Drifting 375+ feet. Idle. Owned by Mrs. Soule and Mr. Bacon, Bacon Block, Oakland.  
Bibl.: Rep. VIII, p. 466.

**Baker Ranch Prospect.** Michigan Bluff district. Sec. 17, T. 14 N., R. 11 E., M. D. M., near the road from Forest Hill to Michigan Bluff. Elevation 3700 feet. Two short tunnels in a gravel channel. Gravel panned for values. Some work during rainy season. Owned by Mr. F. B. Ellsworth, of Baker Ranch.

**Bald Mountain Mine.** Last Chance district. Portions of Sees. 21, 22 and 28, T. 15 N., R. 13 E., M. D. M., in Flat Ravine, 10 miles southeast of Westville. Elevation 5800 feet. 160 acres. 10,000 feet is claimed along a north-south channel extending from Bald Mountain to Millers Defeat, 800' tunnel and 1000' drift along rim of channel. New 200' tunnel 300' lower in elevation than the 800' tunnel. 100' shaft with 150' drift and 600' along channel caved. Two 60' shafts caved. Channel said to be 200' wide where crosscut. Gravels said to have paid \$6.00 to \$7.00 per man in upper part of channel where drifted. Claim overlapped on the northwest by the Fall Ravine quartz mine. Idle. Owned by A. Harpending, 2607 Fruitvale Ave., Oakland, Cal. Fred "W. Venzke, original locator, Westville, Cal.

**Banner Mine.** Dutch Flat district. Sec. 34, T. 16 N., R. 10 E., M. D. M. At Dutch Flat. Elevation 3100 feet. Patented. Cement gravel. Shaft 50 feet. Owned by E. C. Uren, Nevada City.

**Bartley Consolidated Mine.** Dutch Flat district. Sec. 26, T. 16 N., R. 10 E., M. D. M. Elevation 3600 feet. Patented 110 acres. Large deposit of low grade, free wash, blue gravel. Depth 200 feet. Channel 4000 feet. Tunnel 1400 feet. Idle. Owned by Wm. Rablin, of Dutch Flat.

**Belle Verne Prospect.** Last Chance district. Sees. 26 and 35, T. 15 N., R. 12 E., M. D. M. Across Grouse Canon from the Home ticket mine. Elevation 4800 feet. Eighty acre claim. Channel said to run east-west on the south side of Grouse Canon and may be 2000 feet long. Gravel is 2 feet deep and 30 feet wide and is capped with andesite. Tunnel 50 feet driven towards channel. Owned by George H. Smith, of Last Chance.

**Ben Franklin Mine.** Forest Hill district. One hundred and sixty acres on Swindle Hill near Yankee Jim's. Elevation 2350 feet. Near forks of Brushy Creek and Devil's Canon. Bedrock tunnel 1200 feet. Upraise 50 feet. Idle. Owned by Joe Gilbert and R. C. Burry, of Forest Hill.  
Bibl. : Rep. XII, 1893-4, p. 205.

**Big Bar Prospect.** Last Chance district. Sec. 20, T. 14 N., R. 13 E., M. D. M. Large bar in Duncan Canon below the Blue Eyes property. Ground was tested for value and it was found to have been drifted by Chinese in the early days. Abandoned by Messrs. Threlkeld and Blohm, of San Francisco, and W. T. Davis, of Last Chance.

**Big Gun.** Forest Hill district. Idle. J. F. Thompson, Bath.

**Bigelow.** Forest Hill district. Idle. J. F. Thompson, Bath.

**Black Hawk Mine.** Forest Hill district. Sees. 13 and 14, T. 14 N., R. 10 E., M. D. M., 3 miles north of Forest Hill. Idle. Owned by W. A. Freeman Estate, Thomas Nichols, manager, Auburn.

**Blue Eyes Prospect.** Last Chance district. Sec. 32, T. 15 N., R. 13 E., and Sees. 5, 7, 8 and 17, of T. 14 N., R. 13 E., M. D. M., 2500 acres. Assessment work done on a bedrock tunnel. Channel not yet reached. Tunnel reported to be too high. Old hydraulic work was done in the Pine Nut pit. Owned by S. S. Caples, of Michigan Bluff.

**Bogus Thunder.** Michigan Bluff district. No information.

**Bowen Mine.** Michigan Bluff district. Sec. 10, T. 14 N., R. 11 E., M. D. M., 2 miles northeast of Michigan Bluff. Elevation 3400 feet. Bowen claim patented. Hold 2000 feet on a gravel channel. Assessment work only on other claims. Owned by Mrs. F. A. Bowen and sons of Michigan Bluff.

**Brooklyn and Olympia Prospect.** Last Chance district. Sees. 26, 35 and 36, T. 15 N., R. 12 E., M. D. M., one mile northeast of Last Chance. Elevation 4580 feet. Two hundred and thirty-five acres. Reported as one mile along a cement gravel channel. Tunnel 800 feet follows channel. Owned by Messrs. Threlkeld and Blohm, of San Francisco; W. T. Davis, superintendent, at Last Chance.

**Burns Mine.** Michigan Bluff district. Sec. 22, T. 14 N., R. 11 E., M. D. M., one-half mile north of Michigan Bluff. Elevation 3500 feet. Two hundred acres. Early work on cement gravel channel. Tunnel 800 feet. Shaft 130 feet. Channel lost. Assessment work only. Owned by the Michigan Bluff Mining Company ; secretary, Wm. Burns, Placer County Bank, East Auburn.

**Canada Hill Mine.** Canada Hill district. Sees. 4, 5 and 9, T. 15 N., R. 13 E., M. D. M., 8 miles east of Westville. Elevation 6300 feet. Patented. Three hundred and ten acres. Reported to have one mile along a channel of free wash gravel. Old tunnel 1500 feet caved. New tunnel has entered gravel. Twelve men employed in November, 1915. Owned by Mr. E. H. Armstrong, of Grass Valley.

**Carey Mine.** Iowa Hill district. Sec. 27, T. 15 N., R. 10 E., M. D. M. At Monona Flat. Elevation 3200 feet. One hundred and twenty acre claim. Cement gravel channel with slate bedrock and andesite capping. Course of channel N. 20° "W. Tunnel 250 feet. Some drifting. Channel is reported to be from 6 inches to 4 feet deep and 100 feet wide. One thousand eight hundred pound hand-cars are used to carry the gravel to a bin, where it is washed by water from Indian Canon. Work is carried on all year. Two men work and mine about 18 cars per day. The gravel averages \$1.00 per car. Owned and operated by Mr. Bonham, of Iowa Hill.

**Cedar Creek Mine.** Dutch Flat district. Sec. 3, T. 15 N., R. 10 E., M. D. M., 1½ miles south of Dutch Flat. Elevation 3500 feet. Four hundred and sixty acres. Reported to embrace 1½ miles along a channel of free wash gravel. A bedrock tunnel 7 feet x 9 feet is 2200 feet long. The gravel channel is reported to have been about 40 feet wide. Of the four upraises, only one is open. Idle. Property in charge of Mr. F. K. W. Develey, of Blue Canon. Owned by J. L. Gould, of Alameda.  
Bibl. : Rep. VII, p. 206.

**Copper Bottom Mine.** Iowa Hill district. Patented. Idle. Owned by John Peters, of Sheridan.

**Dam Mine.** Damascus district. Sees. 23 and 26, T. 15 N., R. 11 E., M. D. M., 2½ miles southeast of Damascus. Elevation 3715 feet. Patented 174 acres. Reported to have had four miles along a channel

with free wash gravel 500 feet deep. Main 7500-foot tunnel is caved. Power plant removed. Idle. Owned by the Damascus Mining Company, Margaret Ogden, president, Monadnock Building, San Francisco.

**Damascus or Sunny South Mine.** Damascus district. Sees. 14, 15 and 23, of T. 15 N., R. 11 E., M. D. M., one mile southeast of Damascus. Elevation 3748 feet. One thousand five hundred and forty-eight acres of claims. White and blue cement gravel channels 900 feet deep. Tunnel 9000 feet. Worked out. Idle. The Red Point Mine is said to be on a continuation of the same channel. Owned by the Hidden Treasure Mining Company, of Michigan Bluff ; H. T. Power, 625 Call Building, San Francisco.

**Dardanelles Mine.** Forest Hill district, Sees. 34 and 35, T. 14 N., R. 10 E. ; M. D. M., 1½ miles southwest of Forest Hill. Elevation 2600 feet. Patents, Dardanelles and Oro. Area 312 acres. Reported to be a 2500-foot channel of cement gravel on slate. Tunnel 3000 feet. Handwork. Two men working. Car capacity one ton. Work about four tons per day, tunneling, and eight tons per day breasting. Gravels average about \$1.50 per ton. Prospect work only by the leasers. Owned by T. L. Chamberlain, of Auburn. Leased by Chester F. Bowman and Samuel G. Bowman, of Forest Hill.

**Devil's Basin Consolidated.** Includes the Lofruth Mine. Deadwood district. Sec. 1, T. 14 N., R. 11 E., and Sec. 25, T. 14 N., R. 10 E., |M. D. M., \ mile north of Deadwood. Elevation 3700 feet. Claims: Harkness, Washington, Elk Horn, Devil's Basin Consolidated, Devil's Basin and Rattlesnake. Tunnel 5000 feet. Worked by the owners. R. Lofruth, of Deadwood, and J. E. Ferguson, of Michigan Bluff, who employ two men. Some good gravel is said to have been struck in October, 1915, which ran \$3.50 per car.

**Devil's Gate.** H. G. Munger, 525 Adler St., Portland, Ore.

**Dewey Consolidated Mine.** Iowa Hill district. Sees. 33 and 34, T. 15 N., R. 10 E., M. D. M., \ mile southeast of Iowa Hill. One hundred and thirty-seven acres. Running tunnel to strike what is supposed to be a part of the "Blue Lead" channel. Property recently surveyed. Owned by A. and B. Rossi, of Sacramento, and P. T. Langenour, J. W. Monroe, J. L. Stephens, Harvey Willoughby, Daniel Woods and J. P. Keene, of Woodland; and Manuel Chapman and Ralph Sparks, of Winters. J. P. Keene is superintendent.

**Dixie Queen Mine.** Last Chance district. Sees. 9, 16 and 17, T. 14 N., R. 13 E., M. D. M., 9 miles southeast of Last Chance on the west side of Duncan Canon and south of the Blue Eyes property. Elevation 4000 feet. Two hundred and forty acre claim. Cement gravel channel on slate with capping of andesite. Course of channel SW. Tunnel 700 feet. Breasted for 240'; 600' of crosscuts. Gravel washed in



Photo No. 11. Devil's Horn, in Devil's Basin, on the eastern slope of Deadwood Ridge, at head of the trail to Last Chance. The "horn" shows how the andesite has intruded the slates and gravels in places.



sluice boxes by water from Duncan Creek. Cars hold 1800 lbs. Equipment consists of: hand outfit for 8 men, shop and cabin. Two men work steadily and employ two others. Gravels average \$1.00 per car. Said to have been \$5000.00 taken out since 1906. Owned by Joseph Scherer and John Franks, of Last Chance.

**Dutch Flat Blue Lead.** Dutch Flat district. Sec. 3, T. 15 N., R. 10 E., M. D. M. Small patented claim adjoining the Federal Drift Mine. Cement gravel, blue lead. Gravel from 50 feet to 110 feet deep. Tunnel 1000 feet. Shaft 400 feet, Owned by C. S. Jordan, of Dutch Flat, and J. L. Gould, of 16 Ensloe Ave., Alameda.

**Dyer or Wisconsin Mine.** Dutch Flat district. Sec. 35, T. 16 N., R. 10 E.3 M. D. M., I mile west of Dutch Flat. Elevation 2800 feet. Twenty acres. Cement blue gravel channel in slate. Channel 300 feet. Tunnel 800 feet. Seven men drifting and breasting. Gas engine runs air compressor equipped with one Sullivan air drill. Distillate costs \$0.12 per gallon at the property. Gravel is washed in hopper with 100 feet of sluice boxes. Owned by J. L. Gould, 16 Ensloe Ave., Alameda. Leased by Messrs. Fred Husler and Chas. Wachter, locally known as the 'Swiss Boys'

**Eagle Bar Mine.** Forest Hill district. Wm. Duffy, Forest Hill.

**Elite.** Dutch Flat district. Sees. 31 and 32, T. 16 N., R. 11 E., M. D. M., one mile southeast of Shady Run. Elevation 3950 feet. Four hundred and twenty-five acres. Gravel reported to be 500 feet deep. Shaft 153 feet. Tunnel 1100 feet. Idle. Owned by R. Monroe et al., of Dutch Flat.

**Eureka.** Damascus district. Includes 3,000 acres in Sees. 17, 18, 19 and 20, in T. 15 N., R. 12 E., and in Sees. 24 and 25 of T. 15 N., R. 11 E., M. D. M., miles southeast of Forks House. Elevation 4400 feet. Free wash gravel. Tunnel 4000 feet. Prospecting only at present. Owned by the Eureka Consolidated Drift Mining Co.; J. A. Ferguson, superintendent, Forest Hill, and Chas. Leach, U. S. Mint.

**Excelsior.** Forest Hill district. Sec. 26, T. 14 N., R. 10 E., M. D. M. Worked through the New Hope, 3500 foot bed-rock, tunnel with portal in Sec. 35, T. 14 N., R. 10 E., M. D. M. One-half mile southeast of Forest Hill. The channel is on the Blue Lead and was located in the early 70 's but was not worked until 1913. The company now owns all claims between the Dardanelles and the Gore, including also the Banner and the Garland Mill Slope, including about 2000 acres. The channel northeast of here has all been worked out through the Mayflower and Paragon tunnels. The channel varies from 20 feet to 100 feet wide and has a course about N. 20° E. The bed rock is slate and the cement blue gravel requires blasting. Work consists of drifting along the channel and stoping out the chambers. Mine equipment consists of a 350-cubic-foot air compressor and eight Ingersoll and Sullivan air drills. Electric power, 700 h. p., is brought from Horseshoe Bar. The gravel is screened through a revolving grizzly lined with T-rails and the fine material run through a 6-stamp triple discharge mill. Six months gravel was blocked out



Photo No. 12. View eastward towards the town of Dutch Flat. The X in center marks the location of the Federal Drift shaft.

when visited in September, 1915. Water is obtained from the tunnel, through which drain the old Harley shaft and Independence slope. Owned by Excelsior Gold Mines Co., Inc., M. Jenks, president, San Francisco; R. B. Elder, manager, Berkeley.

**Federal Drift Mine.** Dutch Flat. Sec. 34, T. 16 N., R. 10 E., M. D. M. Elevation 3000 feet. Patented land in town of Dutch Flat. One hundred and twenty-five acres. Slate bed rock.

Channel thought to be a branch of the Dutch Flat Blue Lead and strikes approximately N. 80° E. A two-compartment vertical shaft over 80 feet deep struck gravel in November, 1915, but water was encountered. A mule whim was used for hoisting and five men were employed. Owned by the Federal Drift Mining Company, Dr. W. B. Coffey, president; W. T. Watson, superintendent, Dutch Flat.

**Fitzpatrick.** Iowa Hill district. Sec. 32, T. 15 N., R. 10 E., M. D. M., one mile west of Iowa Hill. Tunnel 2000 feet. Two men prospecting on an old property. Owned by M. E. Poor, Monona Flat, Iowa Hill.

**Florida.** Forest Hill district. Sec. 25, T. 14 N., R. 10 E., M. D. M., one mile northeast of Forest Hill. Elevation 3550 feet. Patented. Cement channel. Tunnel 650 feet. Some development work being done. Owned by Mr. Rice.

**Flying Fish.** Dutch Flat district. Sec. 34, T. 16 N., R. 10 E., M. D. M., i mile southwest of Dutch Flat. Elevation 3100 feet. Ten acres. Cement gravel. Idle. Owrned by Ed. C. Uren, Nevada City.

**Franklin.** Michigan Bluff district. Sec. 10, T. 14 N., R. 11 E., M. D. M., 2 miles northeast of Michigan Bluff. Elevation 3400 feet. Tunnel 800 feet. Expect to strike Bowen channel in another 100 feet. Two men employed. Owned by A. Dixon, of Michigan Bluff.

**Gleason Mine.** Iowa Hill district. Said to be three miles southeast of Iowa Hill. Patented. Cement gravel channel with slate bedrock. Idle. Owned by Gleason Consolidated Mining Co., 3793 Twentieth St., San Francisco; Miss M. T. Gleason, Iowa Hill.

**Glenn Mine.** Last Chance district. Sees. 22, 27, 28 and 34, T. 15 N., R. 13 E., M. D. M., 6 miles east of Last Chance. Elevation 5000 feet. Cement channel on the northwest side of Duncan Canon. Drifting up the channel has been carried on recently by Mr. F. A. Moss, who with Mr. M. C. Threlkeld, leases the property from the owners, G. R. Cowen, of San Francisco, Geo. McCauley and K. A. Robinson, of Auburn. The course of the lower channel is N. 60° W. and it has been covered with andesite. A later channel



Photo 13. Glenn Mine, eight miles east of Last Chance, Placer County.

deposited gravels on top of the andesite and was capped by a more recent lava flow. The bedrock consists of schist and is steep and cut full of potholes. The pay gravel is from 10' to 100' wide. Equipment consists of shop, tools, snowsheds, bunk house and superintendent's house. Former work seemed to have been northeast of the channel, and considerable work was done by the present operators before the channel was opened up.

**Gold Ring or J. D. Peters Mine.** Dutch Flat district. Sec. 1, T. 15, N., R. 10 E., M. D. M., 2J miles southwest of Towle. Elevation 1500 feet. Sixty-three acres. Cement gravel channel 30 feet wide. Idle. Owned by Mr. West, of Green Valley, or Towle.

**Golden Channel.** Blue Canon district. Sec. 1, T. 16 N., R. 11 E., M. D. M. Elevation 4800 feet. One and one-half miles southwest of Emigrant Gap. Patented. Four hundred and eighty acres. Reported as

free wash gravel 130 feet wide. Could not find a pay channel. Shaft 105 feet. Idle for 14 years. Owned by J. "W. Hyatt, Emigrant Gap.

**Golden Nugget.** Blue Canon district. Sec. 12, T. 16 N., R. 11 E., M. D. M., two miles northeast of Blue Canon. Elevation 4000 feet. Patented 640 acres. Reported to include one mile of channel, carrying free wash gravel 450 feet deep and 75 feet wide. Tunnel 325 feet. Idle. Owned by C. M. Everhart, of Gold Run.

**Golden River or Red Point Mine.** Damascus district. Sees. 12, 13, 14, 23 and 24, T. 15 N., R. 11 E., and Sees. 3, 4, 5, 6, 7, 8 and 18, of T. 15 N., R. 12 E., M. D. M., one mile north of Forks House. Elevation 3827 feet. Patented. One thousand feet of free wash gravel. Tunnels over 18,000 feet. The gravel is said to have been about worked out. Idle. Owned by the Societe des Mines de Golden River, of Paris, France. Leased to Messrs. Bird and J. A. Ferguson, of Forest Hill.

**Golden Sheaf.** Michigan Bluff district. E. S. Thompson, Michigan Bluff.

**Golden Star.** Iowa Hill district at Succor Flat. Tunnel, 675 feet. Prospecting for blue gravel. Owned by N. E. Booth and R. L. Wills, of Auburn. Leased to Robert McClanahan, of Iowa Hill.

**Golden Streak.** Iowa Hill district. Said to be a channel 80' wide, 5000' long and varying from 0' to 8' deep capped by 400' of lava. A 1200' bedrock tunnel is contemplated to reach the gravels. Owned by the Golden Streak Mining Co., Henry Lobner, F. H. and Walter Schulze, F. D. Kuenzley, and P. W. Crider, of Colfax.

**Golden West.** Canada Hill district. Sees. 4 and 5, T. 15 N., R. 13 E., M. D. M., eight miles east of Westville. Elevation 6500 feet. Claims: Big Hill (150 acres) and Bunker Hill (140 acres). Patented 400 acres. Claim 1 mile along a channel, of red and blue gravel, 130' wide. Development work consists of an incline shaft and a 2200' bedrock tunnel which, it is said, lacks only 200' of work to reach the channel. Some gravel from an upper tunnel is said to have run \$5.00 per car. The operators are reported about to resume work after four years idleness. E. H. Armstrong, of Grass Valley, manager.

**Gorman Mine.** Michigan Bluff district. Sec. 27, T. 14 N., R. 11 E., M. D. M., one mile south of Michigan Bluff Drifting in cement gravel channel. Owned by A. Gorman, of Michigan Bluff.

**Grey Eagle.** Forest Hill district. Sees. 5 and 6, T. 13 N., R. 10 E., M. D. M., five miles southwest of Forest Hill, on Owl Creek. Elevation 2400 feet. Hold all claims eastward to the Franklin and are negotiating for others, which will extend the holdings to the San Francisco claim. Present holdings include about 6000 feet of cement gravel channel with a volcanic capping. The gravel averages 5 feet thick and 50 feet wide. Little timbering is necessary. Present working consists of a 3000-foot bedrock tunnel in slate, which crosscuts the E.-W. channel. Drifting has been carried eastward along the channel for 4000 feet. The gold is fine like bran, the largest pieces being valued at about \$1.00. Tunneling costs about \$11.00 per foot. When visited in October, 1915, the mine equipment consisted of an air compressor and six air drills. The gravel is drawn in one-ton cars by a horse to an old 10-stamp mill, repaired for temporary use. The camp included an office and bungalow, warehouse, shop, change room and 12 bunk houses. Water is pumped from the mine by one 2-inch centrifugal pump, one 4-inch single acting pump and one 7-inch duplex pump, which lift 10 inches of water 50 feet. Electricity is obtained from the Excelsior line, owned by the Pacific Gas and Electric Co., and costs 1½ cents per K. W. H. Twelve men were employed. Freight from Auburn costs ½ cent per pound.

New equipment contemplated consists of a revolving screen and conveyor belt; a three-stamp triple discharge Hendy mill with 24-mesh screen. The fine gravel will be run through sluices, while all gravel 1 inch or over will be crushed. Owned by the California Chief Development Co.; Walter Fitch, president, Eureka, Utah; Chas. L. Austin, manager, Forest Hill.

**Hard Climb.** Last Chance district. Sees. 3 and 9, T. 14 N., R. 13 E., M. D. M., 6 miles southeast of Last Chance, on Duncan Ridge on the southeast side of Duncan Canon. Elevation 4000 feet. Four hundred acres in claims. A lava capped channel is worked by those interested when water is available. In 1908 a tunnel was run 75 feet into gravel and some gold taken out. About 60 feet lower and 1000 feet north of the first tunnel, another tunnel was run 40 feet on the channel, but the gravel encountered did not carry much value. A new 200' tunnel, in conglomerate and 50' of gravel, is said to look promising. Owned by F. M. Tillotson, Hiram W. McCullough and Chas. H. Hilton, of Last Chance, and Mrs. Mary Haviland, of Michigan Bluff.

**Hassler.** Ophir district. In Long Ravine, 2 miles southeast of Auburn on the road to Folsom, Sec. 28, T. 12 N., R. 8 E., M. D. M. Prospecting is being carried along a NW.-SE. channel, said to be 2'- 12' deep, 75' wide and 1000' long. The channel is capped with lava, gravel, mud, etc. Development consists of a 340' incline shaft on an angle of 30°. The values are said to run out to the rims of the channel on the bedrock. Equipment consists of a 25 h. p. steam hoist used to raise the gravels, and a 1600 lb. car. The gravels are said to run, from \$4.00 to \$14.00 per ton, and 150 cars are on the dump ready for washing.

Owned by Harold Powers, San Francisco, and E. C. Gaylord et al., of Auburn. Leased by J. W. Wright, Frank Wooldridge and G. P. Johnson of East Auburn.

**Haub.** Dutch Flat district. Sec. 28, T. 16 N., R. 11 E., M. D. M. ½ mile northeast of Shady Run. Elevation 3720 feet. Thirty-three acres. Reported as free wash white gravel. Channel 40 feet wide. Tunnel 960 feet. Shaft 30 feet. Some work being carried on. Owned by Robert Watson, of Blue Canon. Bibl. : Register of Placer County Mines, 1902, Cal. State Min. Bur.:

**Hermit or Great Channel.** Michigan Bluff district. Sec. 3, T. 11 N., R. 11 E., M. D. M., four miles north of Michigan Bluff. Elevation 3400 feet. Free wash gravel. Shaft 75 feet. Tunnel 2200 feet. Idle. Owned by Mrs. Bowen and sons, of Michigan Bluff.

**Hidden Treasure.** Damascus district, Sees. 26, 27, 34 and 35, of T. 15 N., R. 11 E., M. D. M., 5 miles north of Michigan Bluff. Elevation 3644 feet. Patented 1545 acres. Reported as free wash gravel. Channel 300 feet wide. Tunnel 8300 feet. Electric power was used for traction, hoisting, pumping and blower. Idle since fall of 1914. Owned by the Hidden Treasure Mining Co., of Michigan Bluff; Harold T. Power, secretary, 625 Call Building, San Francisco. Bibl.: Rep. VIII, p. 469; Rep. IX, pp. 29-120; Rep. X, p. 451; Rep. XII, p. 209.

**Hogsback Mine.** Canada Hill district. Sees. 2 and 3, T. 15 N., I. 12 E., M. D. M., three miles east of Westville. Elevation 4524 feet. Patented 1545 acres. Reported as free wash gravel. Tunnel 2500 feet. Thought to be the same channel that was worked at Red Point. Owned by Compagnie des Mines et Minerals, 26 Rue de Chateau- Ion, Paris, France; J. A. Ferguson, superintendent, Forest Hill. Bibl. : Rep. VIII, p. 472.

**Homestake.** Forest Hill district. Sec. 31, T. 14 N., R. 11 E., M. D. M., two miles south of Bath, in Volcano Canon. Elevation 1260 feet. Idle. Owned by M. Savage, of Forest Hill.

**Home Ticket.** Last Chance district. Sees. 26 and 35, T. 15 N., I. 12 E., M. D. M., one mile east of Last Chance. Elevation 4700 feet. Twenty-one claims. Cement gravel channel in slate averages 7 feet thick. A channel with a northerly direction is cut by one with an east-west course. Tunnel 4300 feet. The gravel is mined by hand work and then washed in hoppers by water from a reservoir in Grouse canon, owned by the Pacific Slab Mine. During the dry season scarcity of water compels them to chute the water for sluicing. Between 5 and 20 men are employed. Owned by J. F. Thompson, of Bath, and others. Frank B. Keefer, president, San Francisco. Leased by D. M. Jay, of Last Chance.

**Indiana Hill.** Dutch Flat district. Sees. 9 and 10, T. 15 N., R. 10 p., M. D. M., 1½ miles southeast of Gold Run. Assessment work only. Owned by J. L. Sparhawk, Iowa Hill.

**Jack Robison.** Last Chance district. Sec. 16, T. 14 N., R. 13 E., J. D. M. Elevation 4070'. An 80' tunnel in loose gravel has penetrated a blue gravel. Equipment consists of bunk house and shop, the gravels are sluiced by water dammed up from the mine. The channel is thought to run diagonally across the ridge in a NE.-SW. direction. Owned by S. S. Caples, Michigan Bluff.

**Jarvis or Bob Lewis Mine.** Damascus district. Sees. 14 and 15, K 15 N., R. 11 E., M. D. M., ½ mile northeast of Damascus. Elevation 5850. One hundred and sixty acres. Cement gravel channel said to be 400 feet wide. Fourteen hundred foot tunnel. Owned by H. M. Farvis, of Mobile, Alabama. Leased to Geo. Brown, Orin Jones, Jack Jrighton and Bob Craig, of Last Chance, who have been drifting along the channel and producing since June, 1915.

**Jupiter Consolidated.** Iowa Hill district. Sec. 11, T. 14 N., R. 10 3., M. D. M., 3½ miles southeast of Iowa Hill. Patented 250 acres. Reported to have a channel one and one-half miles long in free wash gravel on the north side of Shirttail Canon. Shaft 250 feet. Idle, owned by the McGeachin Company.

**Live Oak.** New England Mills (Weimar) district. Sec. 22, T. 1 N., R. 10 E., M. D. M., 2 miles northeast of Weimar in Live Oak ravine Elevation 2000 feet. Owned by the Geisendorfer Estate. Bonded to Dan J. Williams, of Weimar.

**Lost Camp.** Blue Canon district. SE. Corner of Sec. 23, T. 16 N. R. 11 E., M. D. M., 1½ miles southeast of Blue Canon on the north fork of the North Fork of the American River. Elevation 4500 feet. Six hundred acres. Tunnel 300 feet. Now operated as a hydraulic mine Owned by George F. Miller, of Blue Canon.

**Macedon Mine.** Canada Hill district. Sec. 1, T. 15 N., R. 12 E. M. D. M., four miles east of Westville. Elevation 5000 feet. Patentee 110 acres. Reported to have 3000 feet along a free wash grave channel which is about 70 feet wide. Tunnel 200 feet. Owned by Dr. C. W. Richards and Mrs. A. Snyder, of Sacramento, and Mr. Rey of the Britton & Rey Co., San Francisco.

**Maguire, or Foss Mine.** Dutch Flat district near Lowell Hill Worked by drifting in the early days. Wm. Maguire and wife the present owners reported to be going to hydraulic the gravels.

**Marian Mine.** Michigan Bluff district. Sec. 35, T. 14 N., R. 11 E. M. D. M., two miles south of Michigan Bluff. Elevation 3800 feet One hundred and eighty-five acres in claims. Cement gravel channel in slate with andesite capping. Tunnel 600 feet. Development work only. The owner expects to strike the channel in about 50 feet. Owner by E. A. Hills, of Michigan Bluff.

**Maus Tunnel.** Forest Hill district. Sec. 36, T. 14 N., R. 10 E. M. D. M., one mile east of Forest Hill. Elevation 3000 feet. This claim lies between the Excelsior and the. Paragon properties, but does not extend northwestward as far as the probable course of the Blue Lead channel. Tunnel 1000 feet. It is reported that 500 feet more of tunnel with raises will be run.

Bibl. : Grass Valley Union, October, 1916.

**Mayflower Mine.** Forest Hill district. Parts of Sees. 22, 23, 24 25 and 26, T. 14 N., R. 10 E., M. D. M., two miles northwest of Forest Hill. Elevation 2700 feet. Claims: Eastern, Portuguese and Brushy Slide. Patents: You Bet, Center Hill, Orono, Hancock and Watson; Banner, Coates, Slater, Live Oak, Rockby Point, High Run, Justice, Nil Desperandum, Gore and Freeze Out. Twenty-six hundred acres; Three cement gravel channels in slate. The Orono channel averages 40 feet wide, and a 3500-foot bedrock tunnel has been driven in mining it. The Blue Lead channel averages 300 feet wide, and a 14,800 foot bedrock tunnel has been driven in course of mining it. The Upper Lead channel averages 250 feet wide and a 3500-foot tunnel in bedrock and gravel has been driven. In a shaft which was sunk to bedrock

bout 325 feet of blue gravel was passed through. Drifting is being carried on in all three of these channels. Two air compressors serve seven machine drills and a forge. The gravel is trammed in 1½-ton cars.

Water and steam power are used, depending on the abundance of water and time of year, to run a 20-stamp mill which crushes the gravel. The pulp passes over amalgamation plates and then over riffles. Sixteen men are employed and the miners move about 3<sup>^</sup> cars of gravel per man per day. It is claimed that the net production of this mine during the last forty years has been about \$3,600,000. Owned by the Mayflower Gravel Mining Company; Geo. L. Duffy, resident, 2352 Mission Street, San Francisco.

**Missouri Mine.** Forest Hill district. Sees. 33 and 34, T. 14 N., i. 10 E., M. D. M., one mile southeast of Yankee Jim's. Elevation 2650 feet. Tunnel run but apparently struck little gravel. If carried southward into the San Francisco claim, this tunnel might encounter gravel, idle.

**Mohawk.** Iowa Hill district. Sec. 26, T. 15 N., R. 10 E., M. D. M., three miles north of east of Iowa Hill on Succor Flat. Elevation 3200 feet. Claims: Gravel channel, with a north-south course, in amphiblite. Incline shaft. Two men said to have been working for two years. Hand labor. Owned by N. E. Booth, of Colfax.

**Monumental.** Canada Hill district. Sec. 4, T. 15 N., R. 13 E., M. 0. M., 8 miles east of Westville. Elevation 5300 feet. Five claims. Two hundred acres. Adjoins the Golden "West property. A gravel channel running N. 60° W. is about 80 feet wide, with andesite capping. Tunnel 400 feet with some drifting. A 5 h. p. gasoline engine is used to run a barrel mill 8' long x 30" in diameter for loosening up the values. Eighty feet of sluice boxes. Three men work all year. Eighteen hundred feet of Reed channel worked out.



Photo 14. Tunnel entrance to Monumental Mine, Canada Hill District, Placer County.

Some gravel is poor while other carries values up to \$8.00 per car. Owned by Peter F. Hinst, E. W. Smith and A. A. Bissell, of Westville.

**Moody Ridge.** Dutch Flat district. Sees. 3 and 10, T. 15 N., R. 10 E., M. D. M., two miles east of Gold Run. Elevation 3650 feet Patented 120 acres. Some tunneling. Remains undeveloped. Owned by Mr. Moody, of the Pacific Hardware Company, of San Francisco.

**Morning Star.** Iowa Hill district. Sees. 33 and 34, T. 15 N., R. 10 E., M. D. M., one mile northwest of Iowa Hill. Elevation 2700 feet Patented 160 acres. Reported to have 5500 feet along a gravel channel: Tunnel 4800 feet. Shaft 488 feet.



Photo No. 15. View northeastward up the railroad right of way near Gold Run, showing hydraulic gravel banks and pit to the right.

Idle. Owned by the McGeachin Co., H. T. Power, Call Building, San Francisco.

Bibl. : Rep. VIII, p. 472 ; Rep. IX, p. 29 ; Rep. X, p. 420 ; Rep. XII p. 211.

**Mountain Chief.** Michigan Bluff district. Sec 34, T. 14 N., R. 1 E., M. D. M., 1½ miles south of Michigan Bluff, northwest of the North Fork of the American River. Idle. Owned by Fred Outhouse, of Forest Hill.

**New Baccarat.** Lincoln district. Sec. 23, T. 12 N., R. 6 E., M D. M., three miles southeast of Lincoln. Shallow drifting in residual gravels. One hundred and sixty acres. Tunnels 325 feet. Idle Owned by Lincoln parties.

**New Basil Consolidated.** Canada Hill district. Sees. 2, 3, 10 and 11, T. 15 N., R. 12 E., M. D. M., 2J miles east of Westville. Elevation 4900 feet. Three hundred and eighty acres. Cement gravel channel Tunnel 3000 feet ran out of channel. Shaft 160'. The Black Canon Quartz Mine occupies a portion of this property, and it is intended to obtain electric power from the Black Canon Power Line for driving a new shaft. Idle. Owned by R. F. McLeod, 350 California St., San Francisco.

**North America Prospect.** Dutch Flat district. Sees. 28 and 29 T. 16 N., R. 11 E., M. D. M., one mile northeast of Shady Run or Midas. Tunnel 150 feet. Idle. Owned by L. K. Develey and brother of Blue Canon.



**Occidental.** Iowa Hill district. Sec. 3, T. 14 N., R. 10 E., and Sec. 34, T. 15 N., R. 10 E., M. D. M. Elevation 3300 feet. Patented 17 acres. Cement gravel channel. Tunnel 3100 feet. Probably worked out. Idle. Owned by W. E. Wretman, Garden City Bank Bldg., San Jose.

**Oro.** Michigan Bluff district. Sec. 10, T. 14 N., R. 11 E, M. D M., 2J miles northeast of Michigan Bluff. Elevation 3500 feet. Idle; for several years. Owned by A. Dixon, of Michigan Bluff, as are also the Willey and Yule and Willey claims which lie north of the Turkey Hill consolidated.

**Outhouse Consolidated or Sellier Mine.** Damascus district. Sec 34, T. 15 N., R. 11 E., M. D. M., 6 miles north of Michigan Bluff. Nine hundred and twenty acres. Claims: Never Fail (160 acres) Maintop (160 acres), Electric (160 acres), Golden Promise (160 acres) Up-to-Date (160 acres), and Brimstone (120 acres). A 310-foot shaft on the Mountain Sheaf claim is said to have struck the rim of a channel Assessment work is being carried on in this shaft and in a shaft on the Georgia claim. Using a 12 h. p. gasoline engine to pump water. Three men employed. Owned by the Outhouse Consolidated Mining Co Mr. Fred Outhouse, president, Forest Hill.

**Pacific Blue Lead or George Fulton.** Canada Hill district. Sec. 4 and 5, T. 15 N., R. 13 E., M. D. M. Elevation 6320'. Four hundred and thirty acres. Claim 1 mile along a blue channel 11' deep and 150 wide in which the gravel benches above the bedrock ran from \$0.50 to \$37.00 per car;



Photo 17. Camp, at the Pacific Blue Lead Drift Mine, Canada Hill District, Placer County.

also 1 mile along a white channel 6'-14' deep and 12½ wide from which 1000 cars are said to have averaged \$2.50 per car, The channels run East-West and the main bedrock tunnel 450' long struck white gravel and crossed the channel into the rim of the blue channel. The gravels are washed in sluice boxes and the tailings slumped into Flat Ravine.

Owned by Leo P. Harris, Westville or 2279 West Twentieth St., Los Angeles.

**Pacific Slab Mine.** Last Chance district. Sees. 27, 28, 33 and 34, 15 N., R. 12 E., M. D. M., 1½ miles southwest of Last Chance. Twelve miles by steep trail from Michigan Bluff. Five hundred and twelve acres. Claims : Pacific Slab, Bob Lewis, New York and Ohio. Discovered about 1852 and worked



Photo No. 18. View eastward of the Pacific Slab Mine, Last Chance District, showing office, cook house, gravel bin and hydraulic monitor.

off and on ever since. The channel is slate capped by andesite and the gravel is fairly well cemented. The gray gravel consists of the lower 5 feet of gravel above bedrock, but the gravel is in places 20' to 50' deep. The channel has been followed for over 4000 feet. A 215-foot raise provides ventilation and entrance for supplies. Six-foot split pine costs \$9.50 per thousand, while 1½ " x 6" x 5' lagging costs \$20.00 per thousand, and 3-foot lagging costs \$15.00

per thousand. The mine is equipped with a 6" x 6" Gardner air compressor, run by a 30" Pelton-Doble water-wheel under a head of 130', which serves air drills.

About 3500 feet from the portal of the tunnel a 40-foot channel 2' deep from the northeast has cut the main channel in two. In September 1916, work was being carried on in the small channel by 4 men who took out about 8 cars of gravel per day. Owned by the Pacific Slab Consolidated Mining Co., M. C. Threlkeld, president, 1007 Monadnoeli Building, San Francisco; Chas. H. Blohm, secretary; W. T. Davis superintendent at the mine.

**Paragon or Breece and Wheeler Mine.** Forest Hill district. Sees: 19, 24 and 30, T. 14 N., R. 11 E., M. D. M., 2 miles northeast of Forest Hill. Elevation 2900 feet. Five hundred acres patented. Cemented gravel channel in amphibolite and serpentine capped by andesite. A tunnel



Photo No. 19. Hydraulic bank above the old Paragon tunnel at Bath, Forest Hill District, showing lens-shaped gravel strata.



1¾ miles long follows the channel and connects with the May flower tunnel. There are estimated to be about 15 miles of drifts Three channels were worked. The main or "Blue Lead" channel averaged 300 feet wide and the gravel is said to have averaged \$4.50 per car of 16½ cubic feet. The Paragon channel, 150 feet higher than the "Blue Lead," averaged 45 feet wide and is said to have averaged \$10.00 per car. The Orono or volcanic channel averaged about 25' feet wide and the gravel is said to have averaged \$5.00 per car. The Paragon lead, to a distance of 3000 feet from the portal of the main tunnel, is said to have produced \$900,000. The Orono channel is said to have been worked for 1800 feet and produced \$75,000. The gravel was crushed in a Blake crusher and a 10-stamp mill. The pulp was passed over amalgamation plates and through sluice boxes and the tailings run into Volcano Canon. Two men in the mine are doing development work to determine the direction of the Paragon channel at a point about one mile in the Blue Lead tunnel. Owned by J. F. Thompson, Box 178, Long Beach, Cal.

**Penn Valley.** Iowa Hill district. Sec. 27, T. 15 N., R. 10 E., M. D. M., at Monona Flat, 1J miles northeast of Iowa Hill. Elevation 3200 feet. Patented 120 acres. Gravel channel in amphibolite with gravel capping. Tunnel 3000 feet. Present work consists of prospecting. Owned by B. T. Jamieson and Robert Smith, of Iowa Hill.

**Placer Gravel Gold or the El Dorado Mine.** Last Chance district. Sec. 26, T. 15 N., R. 12 E., M. D. M., | mile northeast of Last Chance. Elevation 4700 feet. Claims: El Dorado of 160 acres and others. Said to include 4000 feet along a cement gravel channel in slate. The channel course is approximately N. 35° W., and capped with andesite. The pay gravel is said to be 40 feet wide and 6 feet deep. Bedrock tunnel 4000 feet. Channel is worked through a 30-foot raise. Loaded cars run by gravity and each hold one ton of gravel. Each miner handles two cars of gravel per day. The mine lies north of the Home Ticket and is thought to be on the same "Big" channel which occurs in the Pacific Slab mine. It has been leased for the past two years by H. E. Gorman, Berry Griffin and Roy Anderson, of Last Chance. Owned by the Pacific Slab Gold Mining Company ; Mr. D. M. Ray, of Last Chance, part owner. Marshal Sherbert, secretary.

**Placer Queen.** Canada Hill district. Eighteen miles east of Westville. Elevation 623t)'. A 3000' tunnel is said to have been run but to have been above the channel. A lower tunnel is contemplated to strike the channel which is thought to run E.-W. towards Canada Hill. Owned by the Placer Queen Gold Mining Company. Leased by W. Duffy, of Michigan Bluff.

**Ralston Divide Gravel Mine.** Ralston Divide district. Sees. 1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 12, of T. 13 N., R. 12 E., Sees. 4, 5, 6, 7, of T. 13 N., R. 13 E., Sees. 22, 23, 27, 28, 31, 32, 33, 34, of T. 14 N., R. 13 E., and Sees. 34 and 35, of T. 14 N., R. 12 E., M. D. M. Elevation 3500 to 5000 feet. Ten thousand acres. Reported to have 10 miles along the Ralston Divide capped with andesite, which is underlain by gravel channels. Considerable prospecting has been carried on for several years. Scarcity of water permits work to be carried on only part of the year. In September, 1916, 8 men were doing hydraulic and drift work on Pat Goggins property on the Ralston Divide. Owned by the California and Hawaiian Development Co., Alaska Commercial Building, San Francisco; W. Duffy, manager, Michigan Bluff.

**Red Star.** Last Chance district. Three miles east of Last Chance. Claims: Red Bird No. 1 and Red Bird No. 2. The Buena Vista claim adjoins Red Bird No. 1 to the south. The channel appears to be rather scattered and no good values have been found. Old 250' tunnel with two branches in search of pay gravel. New 325' tunnel with two 50' branches. Water is obtainable by a long ditch from Duncan Canon. At present water is taken from the tunnel. Gravel from the old tunnel is said to have run about \$0.10 per car. Equipment consists of shop, car, and tools. Assessment work only, by D. M. Ray and M. Savage of Forest

Hill. Was bonded by Graham and Cates, Pacific Building, San Francisco, who did considerable development work.

**Reed Mine.** Canada Hill district. Sec. 8, T. 15 N., R. 13 E., M. D. M., 8 miles east of Westville. Elevation 6000 feet. Reed claim, 80 acres; White claim, 70 acres. Cement gravel channel, with NE.-SW. course, in schist. Tunnel 1800 feet. The pay gravel is reported to be 100 feet wide and 5 feet thick. Drifting under the old hydraulic works is said to have about worked out the channel. Owned by Mr. J. D. Meredith, of Grass Valley. Bonded to Mr. Henry Snyder, of Canada Hill.

**Rough and Ready.** Forest Hill district. Sees. 35 and 36, T. 14 N., R. 10 E., M. D. M., one mile east of Forest Hill. Idle. Channel probably worked out.

**Sailor Canon.** Canada Hill district. Sec. 34, T. 16 N., R. 13 E., M. D. M. Patented. Cement gravel channel. Reported as having an 1800-foot tunnel. Some gravel is said to have run \$2.00 per car. Idle. Owned by the Sailor Canon Gravel Mining Company; W. H. Duffy, superintendent, San Francisco. Bibl. : Rep. X, p. 426.

**Santa Fe.** Iowa Hill district. Ten acres in claims. Tunnels: No. 1, 1000 feet; No. 2, 400 feet, are said to lie above and below the Canada Hill channel. Thought to be the same channel as that found at the Monumental mine. Owned by Morgan Green & Co., of Auburn.

**Shaw Brothers Mine.** Dutch Flat. One-half mile south of Alta. Idle. Shaw Brothers, deceased.

**Shell or Shackleton.** Blue Canon district. Said to have  $\frac{3}{4}$  mile along a lava capped channel. An old tunnel, now caved, was in 4' of wash gravel. A slide is said to have covered up the ravine, and work thus far has consisted of building a reservoir and washing off the loose slide material. Where bedrock has been exposed good values have been found. The owners intend to begin drifting soon. Owned by Perry and A. V. Shell, of Blue Canon.

**Small Hope.** Forest Hill district. Sec. 27, T. 14 N., R. 10 E., M. D. M.,  $3\frac{1}{2}$  miles north of Forest Hill. Forty acres. Cement gravel channel. Reported to have 2000 feet of tunnel. Idle. Owned by Mr. Federer and James Nicholson, of Sacramento. Bibl.: Rep. XII, p. 212.

**Southern Cross.** Dutch Flat District, Sec. 34, T. 16 N., R. 10 E., M. D. M.,  $\frac{1}{2}$  mile northeast of Dutch Flat. One hundred and forty acres. Gravel channel reported to be 40 feet wide. Tunnel 300 feet. Idle. Owned by George Nicholls, of Dutch Flat. Bibl. : Register of Mines, 1902, Cal. State Min. Bur.

**Spring Garden Consolidated.** Forest Hill district. Sees. 5, 6, 7 and 8, T. 13 N., R. 10 E., M. D. M. Patented 530 acres. Reported to include 5000 feet along a gravel channel. Owned by N. W. Nash, of Sterling, Cal. Reported sold at sheriff's sale on Aug. 10, 1915, for \$1,650.00. Bibl. : Auburn Herald, Aug. 14, 1915.

**St. George.** Forest Hill district. Sec. 33, T. 14 N., R. 10 E., M. D. M., H miles southeast of Yankee Jim's. Elevation 2700 feet. Idle. A. M. Colwell, manager, at Yankee Jim's.

**Starr Mine.** Last Chance district, Sec. 26., T. 15 N., R. 12 E., M. D. M. Elevation 4800 feet. Idle. L. C. Haines, manager, Westville.

**Stewart Mine.** Dutch Flat district. Sec. 9, T. 15 N., R. 10 E., M. D. M., one mile south of Gold Run. Said to include 3000 acres lying south of the Southern Pacific railroad and 15,000 feet of channel, of which only 2000 feet have been worked. The channel is said to be 400 feet wide and the blue cement gravel 80 feet wide. Water is obtained by the company's own ditch from Canon Creek. Fifteen Chinamen employed. Owned by the Stewart Gravel Mining Co., Mrs. G. A. Stewart, president ; J. D. Stewart, secretary, East Auburn.

### **Swift Shore.**

Michigan Bluff district. Sees. 34 and 35, T. 15 N., R. 11 E., and Sees. 2 and 3, T. 14 N., R. 11 E., M. D. M., three miles north of Michigan Bluff near the head of Volcano Canon. Tunnel 810 feet along a gravel channel. Worked continuously for forty years. Two men working make wages. Owned by J. S. Vickford, of Michigan Bluff.



Photo No. 20. Stewart Gravel Mine, near Gold Run. The tailings pile, from the drift workings, may be seen just back of the superintendent's house.

### **Tagpole**

#### **Consolidated.** Canada Hill

district. Sec. 6, T. 15 N., R. 13 E., M. D. M., 6 miles east of Westville. Elevation 5500 feet. Owned by J. L. Sparhawk, of Iowa Hill.

**Truro.** Iowa Hill district. Sees. 21 and 22, T. 15 N., R. 10 E., M. D. M., 3 miles east of north of Iowa Hill. Elevation 1000 feet. Patented. Tunnel 350 feet. Idle. Owned by J. L. Pearson, of Iowa Hill.

**Turkey Hill Consolidated.** Michigan Bluff district. Includes the Boston and South Dakota and the Weske. Portion of Sees. 9, 10, 15 and 16, T. 14 N., R. 11 E., M. D. M., 2 miles north of Michigan Bluff. Patents: Weske No. 1, No. 2 and No. 3. Main tunnel over one mile. Gravel channel varies between 100' and 300' wide. Two men prospecting. Owned by the Turkey Hill Consolidated Gravel Co., Wm. Muir & Sons, principal stockholders, Michigan Bluff.

**Union Mine.** Iowa Hill district. Sec. 28, T. 15 N., R. 10 E., M. D. M., one mile north of Iowa Hill. Elevation 2900 feet. Cement gravel. Tunnel 1200 feet. Assessment work only. Owned by Wm. Hales and son, of Iowa Hill.

**Volcano.** Michigan Bluff district. Sec. 15, T. 14 N., R. 11 E., M. D. M., 1-J miles north of Michigan Bluff in Volcano Canon. Idle. Owned by Mr. Wm. Muir, of Michigan Bluff.

**Waterhouse, Big Dipper or Harmon.** Iowa Hill district. Sec. 3, T. 14 N., R. 10 E., M. D. M., 2 miles southeast of Iowa Hill, in New York Canon between Prospect and Wisconsin Hills. Patents: Big Dipper, Morning Star, Jupiter, Occidental and Weber. Water ditch from Shirttail Canon. Tunnel 700 feet. Two men prospecting and running a tunnel. Owned by the McGeachin Mining Co., J. E. Rose, manager, Iowa Hill.

**Watts Prospect.** Iowa Hill district. Sec. 26, T. 15 N., R. 10 E. M. I). M., at Monona Flat, two miles northeast of Iowa Hill. Patentee An east-west gravel channel in amphibolite capped with andesite Tunnel 3000 feet. Idle. Owned by John Watts, of Colfax.

**Welcome Consolidated.** Iowa Hill district. Five miles south of Colfax. Two hundred and forty acre claim. Tunnel 420 feet. Two men doing assessment work. Owned by Mr. Schwab, of Iowa Hill.

**Wild Yankee.** Blue Canon district. Three and one-half miles east of Shady Run. Gravel deposit forty feet deep. Tunnel 100 feet. Assessment work only. Owned by F. K. W. Devey, of Blue Canon.

**X-Ray.** Canada Hill district. Ten miles east of Westville. Two miles north of Sailor Flat on the south slope of the North Fork of the American River. Three hundred and twenty acres. Two channels

supported and two tunnels 300' and 600' said to have been run but not one have struck the channels. The main lower channel is said to be the same as that at the Placer Queen mine. Owned by F. Stevens, of San Francisco.

#### GOLD—HYDRAULIC MINES.

Since the Federal antidebris laws of 1893 went into effect, hydraulic mining in Placer County has practically ceased. The tailings from the Dutch Flat region were washed into the Bear River, where, with those from You Bet, Red Dog and other districts in Nevada County, they filled the river bed in places 10 feet to 20 feet deep. Dams have been projected by the California Debris Commission at points both north and west of Colfax, on the Bear River, to restrain tailings from these districts, but the sites have been held at such exorbitant prices by the owners that it has



Photo No. 21. Old hydraulic workings, just northwest of Gold Run. The bedrock is rapidly being covered by a growth of pine trees, the largest of which probably date back to 1893.



Photo No. 22. Lost Camp Placer Mine, Blue Canyon, Placer County.

not been economically possible to carry out the plans. When such methods can be applied the dams can be paid for by a tax on those operating. These dams could act as storage reservoirs for water supply, from which hydroelectric power could be generated, well as for the gravel tailings, and would be beneficial to the country in many ways.

The gravel tailings from Gold Run, Iowa Hill, Yankee Jim's, Forest Hill, Bath, Michigan Bluff and the Ralston Divide, all found their way into the American River. Restraining dams could be built in the forks of this river, should it be permitted and receive proper financial backing.

**Lost Camp.** Blue Canon district. Sec. 23, T. 16 N., R. 11 E., M. D. M., 2 miles southeast of Blue Canon on the Southern Pacific Railroad An old road leads from Blue Canon to the property. Elevation 4500'. Six hundred acres. Water is obtained from the Pacific Gas and Electric Co. for 10 cents per miner's inch. Hydraulic monitors are used under a 100 foot head. The course of the channel is East-West and it is about  $\frac{3}{4}$  mile long and is  $\frac{1}{4}$  mile wide at the lower end. The gravels in the main channel are about 65' deep. About 1200' of sluice boxes are used, 550'

of which are in a tunnel. The grade of the boxes is 7" to every 16'. Most of the gold is caught in the upper eight boxes and some nuggets run as high as \$80.00 in value. Coarse gold is obtained from the lower gravels and fine gold from the upper. The tailings are caught by a dam, in Blue Canon Creek, constructed of gravel held by wire fencing. Owned by Geo. F. and J. J. Miller, of Blue Canon.

**Park and Brown.** Last Chance district. Sec. 21, T. 15 N., R. 13 E., M. D. M., 12 miles northeast of Last Chance near the wagon road from Westville to Last Chance over Bald Mountain. Elevation 6480'.



Photo No. 23. Park and Brown Hydraulic Mine, four miles southeast of Canada Hill, Placer County. Duncan Peak lies in the distance to the right.

One Hundred and sixty acre placer claim. The deposit consists of metamorphic sandstone and shale, of red and yellow ochre colors, with a stockwork of quartz stringers up to 18" in thickness. The surface

has been decomposed and the values concentrated in the upper 3' to 6'. The deposit covers an area on a side hill about 400' wide and 1500' long. Hydraulicking has been carried on for six years and about of the surface has been worked. Water is obtainable for about six weeks in the spring by a ditch from the head of Deep Creek. A head of from 50' to 150' is used for the monitor. It is said that about \$1500 per season is cleaned up. It is possible that the bedrock could be worked on a large scale and run through a stamp mill to recover the values from the quartz stringers. Water could be piped from the head of Deep Canon. Owned by C. McKinley, of Auburn, and A. Harveson, of Last Chance.

**Pine Nut or Lincoln Consolidated.** Last Chance district. Sec. 20, T. 14 N., R. 13 E., M. D. M. Nine miles northwest of Last Chance on a branch wagon road from the Bald Mountain road. Elevation 4000'. Claims: Lincoln and "White Prairie. Two hundred and eighty acres. The channel, where exposed, is from 12' to 15' deep and was opened up by an 85' tunnel. Water is obtained by a 1½ mile ditch from Spruce Canon. Equipment consists of 1200' of 11 inch pipe, 1 monitor and sluice boxes. The owners are preparing to put in a dam in a branch of Duncan Canon. Owned by Fred C. Davidson and George Fisher, of Last Chance.

Following is a list of some of the hydraulic mines in Placer County, all idle, which could probably be operated profitably should restraining dams be constructed at a low enough cost:

- Big Gun, Michigan Bluff
- Gold Run, Dutch Flat
- Little Bear River, Dutch Flat
- Polar Star, Dutch Flat
- Pond, Forest Hill



Photo No. 24. Installing sluice boxes for hydraulicking at the Pine Nut Mine, Canada Hill District, Placer County.

Southern Cross, Dutch Flat

GOLD—PLACER MINES.

(Surficial or Sluicing.)

Considerable placer mining is carried on along the rivers in Placer County by parties of from one to three men. Some of these miners work on claims owned by old settlers and pay a royalty, while others work independently and prospect wherever the gravels pan favorably,

Workmen with rockers and longtoms recover on an average of \$2.00 per day in gold per man. Occasionally a rich streak of gravel or pocket is found.

**Acacia Claim.** Damascus district. Sec. 14, T. 15 N., R. 11 E., M. Idle since 1906. Reported to be leased to Oakland parties, Owned by George McAuley, of Auburn.

Bibl. : Colfax Record, Oct. 8, 1915.

**Bear River Claim.** Dutch Flat district. Sec. 4, T. 15 N., R. 10 E., D. M., 1½ miles southwest of Dutch Flat. Elevation 2500 feet. Reported to have 5000 feet along the bed of the Bear River. Idle. Owned by E. C. Uren, of Nevada City.

**Bear River Extension.** Colfax district. Sec. 14, T. 15 N., R. 9 E., I. D. M., 3½ miles north of Colfax. Elevation 2000 feet. Patented mile along the Bear River. Worked in 1902 with an hydraulic elevator. Idle. Owned by E. R. Waring, formerly of Colfax.



Photo No. 25. Gravels in the American River just below (west of) Rattlesnake bridge. Old hydraulic tailings may be seen on the terrace to the right. Considerable of the gravel in the river has come from the hydraulic mines above. Property of M. A. Kelley, of Auburn.



Photo No. 26. Gravel bars along the American River, just above (east of) Rattlesnake bridge. Old hydraulic tailings are said to cover virgin auriferous gravels in these bars which could be worked to advantage by hydraulic elevators. The hard, rugged, granitic bedrock would probably make dredging unfeasible.

**Bear River Tunnel Co.**

Colfax district. Sec. 6, T. 15 N., R. 9 E., Secs. 5, 6 and 7, of T. 15 N., R. 10 E., M. D. M. Elevation 2200 feet. Patented. Five miles along the bed of Bear River. In 1900 the tailings were concentrated. Idle. Owned by E. C. Uren, of Nevada City.

**Bogus Thunder.**

Michigan Bluff district. Sec. 19, T. 14 N., R. 1 E., M. D. M., six miles east of Michigan Bluff by trail. Two hundred and fifty acres in claims. Loose gravel bars along

the North Fork of the Middle Fork of the American River. Owned by S. S. Caples, of Michigan Bluff. Leased by B. E. Caples and W. S. Tripp, of Michigan Bluff.

**Booth River Claim.** Iowa Hill district. Sec. 29, T. 15 N., R. 10 E M. D. M., 1½ miles northwest of Iowa Hill. Elevation 1300 feet. Three claims in bed of North Fork of American River. Gravels are sluiced. The two Booth brothers work together on the claim. The gravels are said to be mostly old hydraulic tailings, and that about \$120.00 in gold per month is recovered, except occasionally when rich finds are made It was reported that in about two and one-half months of the fall of 1915 over \$2900 was taken out. Owned by John Booth, of Iowa Hill.

**Cambridge.** Iowa Hill district. Sees. 9, 16, 17, 19 and 20, T. 14 N R. 10 E., M. D. M., 4 miles south of Iowa Hill. Patented. Four miles of tailings in the bed of Shirttail Canon. The gravels were sluiced 1902. Idle. Owned by Mrs. Stemple, of Colfax.

**Canon Creek Tailings.** Dutch Flat district. Sec. 10, T. 15 N., R. 10 E., M. D. M., 1½ miles northeast of Gold Run. Elevation 1310 feet Ten acres. One and one-half miles along Canon Creek. Idle. Owned by the Stewart Gravel Mines, Inc., of East Auburn.

**Collins.** Colfax district. Sec. 31, T. 15 N., R. 10 E., M. D. Reported to have 7000 feet of gravel tailings along North Fork of American River below the Booth claims, extending up the river for ½ mile above the Forest Hill bridge. Three claims called the Boston, Armis and Keystone. Leased to Petit Bros, and Mr. Brown, of Colfax Gold is recovered by sluicing old tailings along the river. About \$3.0 per day in gold per man is reported to be recovered. Owned by W. I Fowler, of Colfax.

**Gillett.** Colfax district. Sec. 31, T. 15 N., R. 10 E., M. D. JV Twelve acres along the bed of the North Fork of the American River. Sluicing during dry season. Owned by F. N. Gillett, of Colfax.

**Haney Consolidated.** Last Chance district. Sec. 4, T. 14 N., R. 1 E., and Sec. 33, T. 15 N., R. 13 E., M. D. M. East of the Blue Eye drift mine, on the northwest side of Duncan Canon. Reported to hoi one mile along Bloody Ravine, the bottom of which was cleaned up in 1854. It is thought by the owner that some gold can still be obtained from the flats and sides of the ravine. Owned by Thos. F. Haney, of Last Chance.

**Horseshoe Bar.** Michigan Bluff district. Two miles southwest of Michigan Bluff. No mining now carried on. Used only for a power plant, which supplies the Excelsior drift mine.

**Kelly.** Auburn district. Sec. 9, T. 11 N., R. 8 E., M. D. M. Gravel bars for one mile along the American River north of Rattlesnake Bar Owned by M. A. Kelly, of Auburn. These gravels have recently been prospected and pan well in gold.

**Kinder River.** Iowa Hill district. Sec. 28, T. 15 N., R. 10 E., D. M. One mile north of Iowa Hill. Claim along the north fork of the American River, adjoining the Booth claim. Two men sluicing on small scale. Owned by Mr. Schworb, of Iowa Hill.

**Lehigh.** Michigan Bluff district. Sec. 30, T. 14 N., R. 11 E., M D. M. Sluicing was carried on but the gravels are practically worked out. Owned by J. F. Thompson, of Bath.

**Martin.** Iowa Hill district. Sec. 31, T. 15 N., R. 10 E., M. D. M 2 miles west of Iowa Hill, along the bed of the North Pork of the American River. Twenty acres. Some



Photo No. 27. Sluicing bench gravels on the south side of the North Fork of the America River, one-half mile below the Iowa Hill bridge, east of Colfax. A small gas engine is used to pump water from the river into the sluice boxes.

sluicing was carried on in the gravel tailings. Idle. Owned by F. P. Gallaher, of Colfax.

**Potato Flatiron.** Damascus district, near Red Point. Four men said to be working. Owned by Oakland and Alameda parties. Leased by Jack Creighton, manager, of Damascus.

**Rocky Bar or Estey.** Colfax district. Sec. 1, T. 14 N., R. 9 K, D. M.. 3 miles east of Colfax and ½ mile below the Iowa Hill bridge on the North Fork of the American River. The property is reached by a trail along the south side of the American River from the Iowa Hill road. Elevation 1050'. Claims "Swastika," "First Chance," "Rocky Bar," "Rocky Bar Extension." The claims include bench gravels along the river which are shoveled into sluice boxes and washed with water pumped from the river by a



Photo No. 28. Diving outfit used for the recovery of gold from the deep pools in the bed of the North Fork of the American River, east of Colfax.

small gasoline engine. A diving suit is worn by the owner who recovers gold from the deep pools in the bed of the river. Owned by O. L. Estey of Colfax.

Various attempts have been made to recover gold from the American River bed and from the Feather River bed in Butte County. Coarse gold has been recovered from the bedrock in rough places where a dredge could not be operated and where the river channel could not be diverted without unwarranted expense. The use of divers' suits

is an ambitious attempt to recover gold, but the difficulty and slowness of working under water must necessarily make the work expensive and in many cases prohibitive to financial success. The method will probably never become of great economic importance.

**San Francisco.** Iowa Hill district. Sec. 4, T. 14 N., R. 10 E.. M. D. M., claim one mile southeast of Iowa Hill, adjoins the Harman, or Big Dipper, claim. Worked by the owner, S. Delmu, of Iowa Hill.

**Swamp Angel Mine.** Dutch Flat district. Sees. 7 and 18 of T. 16 N., R. 11 E. Four miles north of Towles at Lowell Hill. Worked when water is available. Owned by A. W. Hawkins of San Luis Obispo.

**Theniss and Adams.** Colfax district. Sec. 1, T. 14 N., R. 9 E., M. D. M. Gravel bars on the west side of the North Fork of the American River, just above the bridge on the stage road from Colfax to Iowa Hill. Elevation 1200 feet. The gravel is loose and about 6 feet deep. The gravel is not worked to bedrock and is washed in a hand rocker. The fine gold is caught on an old carpet, while the finest probably escapes. Two men save about \$16.00 in gold per week. Worked by Martin Theniss and F. C. Adams, of Colfax.

**Zelma Bell.** Colfax district. Sec. 19, T. 14 N., R. 10 E., M. D. M. Along the bed of the North Fork of the American River, north of the mouth of Shirttail Canon. Forty acres. Owned by the Zelma Bell Mining Co. Assessment work only.

#### GOLD—DREDGES.

Dredging is being carried on along the Middle Fork of the American River and along Auburn Ravine. In 1915 three dredgers produced \$93,812 in gold. Large deposits of gravel in the Bear River await a feasible means for working them. The nature of the bedrock is such that they might be dredged.

**El Dorado and Placer Gold Mining and Power Co.** Butcher Ranch district. Sec. 35, T. 13 N., R. 9 E., M. D. M., 1½ miles south of Butcher Ranch, near Poverty Bar. About 3½ miles up the Middle Fork of the American River from the Pacific or Yukon dredge. The gravel bars are partially covered by



hydraulic tailings and average about 25 feet in depth. The dredger hull is 45' x 85', and carries a line of 79 buckets of 3½ cu. ft. capacity each. It is capable of dredging 35 feet below the water line. Five electric motors have an aggregate of 220 h. p. and receive their current from an extension from the line of the Pacific dredger. Three shifts of four men each operate the dredger. Owned by the El Dorado Gold Mining and Power Company, W. B. Pennycool J. J. Madigan, W. D. Sullivan and Chas. Malin, all of Vallejo. are financially interested.

**Gardella Gold Dredge Co.** Gold Hill district. Sec. 8, T. 12 N., R. 7 E., M. D. M., ½ mile northwest of Virginia and north of the road from Lincoln to Newcastle. Elevation 350 feet.

The gravels being worked were partially drifted in the early days by the Chinese and are comparatively fine and angular, there being no coarse boulders, such as are found in the main stream channels. The deposits average about sixteen feet in depth, the upper portion being clay. The pay gravel varies from 1' to 8' in thickness and lies on a

granitic bedrock. The channel is about 900 feet wide, and about 6 years work for one dredge has been outlined. A 160-foot front is forked and about 75,000 cubic yards of gravel are handled each month. The gravel is said to average about 12½ cents per cubic yard, the cost of working being about 7 cents per cubic yard. The land is low and is sometimes partially covered by overflow from Auburn Ravine during the rainy season. Three shifts of men, of three men each, including dredgemasters, are employed on the dredger, while three men are employed most of the time cutting trees and brush. The sale of oak wood from the trees probably pays for the cost of clearing. The dredge was built by the Risdon Iron Works and has 62 5-cubic-foot. close-connected buckets. The boat is 40' x 90'. Electricity is obtained by tapping the main Pacific Gas and Electric Company's line

from Drumm, at Ophir. The motors on the dredge develop about 500 h. p. The company owns portions of the Peterson, Conley and Chevalier Ranches, including 105 acres, besides having options on other property. Owned by the New Castle Gold Mining Company, Lawrence Gardella, of Oroville, manager.



Photo No. 29. Gardella Dredge, near Virginia, four miles northeast of Lincoln, working gravel and alluvial deposits north of Auburn ravine.



Photo No. 30. Bucyrus Dredger of the Pacific Gold Dredging Co., working near Mammoth Bar on the Middle Fork of the American River.

The **Gaylord** gold dredge which was working on the American River, below Rattlesnake Bar near Loomis, was reported closed down in November, 1915. The ground was worked out. The dredge was a small one with 3-cubic-foot buckets, and six men were employed. south of the Bear River. Elevation 954 feet. Two Risdon dredgers were operated several years ago, but have been removed. Owned by W. P. Hammon, of Oroville.

**Pacific Gold Dredging Company**, subsidiary of the Yukon Gold Dredging Company. Butcher Ranch district. Sec. 5, T. 12 N., R. 9 E., M. D. M. On the Middle Fork of the American River near Mammoth Bar. The dredger is of the Bucyrus type and is equipped with a line of 77 7½ -cubic-foot buckets, and a shaker screen made of one-inch cast manganese steel. About 4500 cubic yards of gravel are handled daily. The gravel averages 28 feet deep and consists of loose gravel with boulders. The bedrock is slate, which is decomposed in places one foot deep. The gravel probably averages considerably over 10 cents per yard while the bedrock probably averages over \$1.00 per yard. Owned by the Pacific Gold Dredging Company, S. R. Guggenheim, president, 417' Hobart Bldg., San Francisco; Chas. K. Lipman, secretary; H. C. Perring, superintendent, Auburn and Oroville. C. A. Anderson, dredgemaster.

*Fifteenth Annual Report of the State Mineralogist, 1915-1916, Pages 309 to 399*

Note: This file does not include Asbestos mines, Brick and Clay, Chromite, Granite quarries, Iron and Magnesite mining, Mineral Waters