

Aug. 15 1932 p.4

THE MINING JOURNAL

prospectors? Show me one that does! Yet, many a valuable mine has been turned down by high-priced engineers, and any competent prospector knows that if he could get into the hills and stay there he would make commercial finds in plenty.

I have no quarrel with geologists. They have their place in the scheme of things. With my head bared in reverence I stand before them dumb with awe while they unfold the mysteries of nature in polysyllabic outpourings. Nor am I hostile to engineers. In the present state of mining I have a feeling that we are brothers in adversity, because I know more than one engineer of repute who at this very moment has projects of merit on his lists and is hopelessly up against it for financial backing for their development. My quarrel is with the financial interests of the country, so shortsighted that they can not see the solution to a problem so simple; or so intent upon their stock manipulations that production no longer interests them.

Back the prospector and he will find your mines! Not a business house of any consequence in the west; not a chamber of commerce in any western city; not a capitalist, not a mining company in America, but should have prospectors in the field. Grubstake them, see that their families are cared for; put them in the hills and let them stay there until they expose the yellow metal to the light of day. And when they have made a find, investigate, explore it, develop it and cash in on it. Don't spend a fortune doing this; it is not necessary. Don't lose your head. Have nothing to do with hectic, high-powered stock selling schemes, but quietly, economically, in a business-like way, exploit your find. Mining, in the last analysis, is applied mathematics; no guesswork need be involved. It responds to business management just as does any other business, but with the odds in your favor.

Business, wake up! Remember that no man can prospect for gold and make a living for his family at the same time. Make the prospector your partner. Charge his expenses while on the search to overhead; it will be the first overhead charge you ever had to return a profit. Get together, all of you, and get your men in the field. You will find them ready to meet you half way. Select competent men, honest men, men who are prospectors because they cannot interest themselves in any thing else. Strikes will be made—don't worry about that—and even if your individual prospector fails to strike it rich you will share in the general prosperity brought about by other strikes, and so get returns on your money just the same. By concerted action you can make your own prosperity.

One word of warning! Don't expect your prospector to make you a fortune in a day. It doesn't happen like that. It takes much longer now to locate prospects than in the days of old. You do not stub your toe on millions now-a-days; you work for everything you find. Days must be spent in the study of formations, contacts, slips and faults. The modern prospector must probe far deeper into the ground for his deposits than his predecessor; but the patience is his, and the will to win is his, just as much today as ever in the past.

And the deposits are there, never fear! It is true that most of those which beckoned the prospector across miles of desert and mountain with their bold and challenging surface outcrops have long since been found; but for every one of these remain dozens just as valuable lying hidden beneath the surface, and they can be found. Slow, careful, painstaking study and hard work—plenty of it—will bring them to light. If you doubt it fill the hills with your prospectors and see the result.

South, the Champion road on the north, are now joined on the Bohemia and Fairview ridge, thus looping the district, making it possible for a general review of the camp in one day. The Forest service salient interest in the mineral zone is, quite naturally, vested in the great forests that cover the mountains and canyon ridges throughout the camp, unequaled, perhaps, in any like mineral area in the United States.

'Tis a cry of some three-quarters of a century—to be exact, 79 years, for it was in 1853—since the first discovery of gold in Bohemia, when "Bohemia" Johnson—a Bohemian and from whom the district took its name—and George Ramsey, who were making their get-away from the strong arm of the law, having killed an Indian in a quarrel in Eugene—made the first gold find. It is said that when they came out they were loaded with gold. It was free gold and a great rush of gold hunters swarmed into and over the region. The old timer will tell you that many big stakes were made and that \$2,230,000 was shipped from the district.

Since then the history of the development of Bohemia has been spasmodic, with many rich finds made every few years that has served to keep the district fire of interest alive with many prospectors in the field; but these free gold strikes have not been of sufficient size to draw the interest of mining capital, for it was soon learned that the great volume of ores were of the baser class—largely lead and copper—carrying gold values of from \$3 up. In that day, to treat such ores, meant transportation over rough wagon roads a distance of 40 miles, then to ship by train to smelters many hundreds of miles away; and so development has lagged from time to time, notwithstanding that the history of the camp gives record of the uncovering of many free milling ore shoots carrying gold values ranging from \$30 to \$30,000 per ton.

Today activity is slowly but surely coming back and this old district is coming into its own. The Lead Crystal Mining Company maintained a working crew throughout last winter and is still driving away, blocking out and dumping huge bodies of ore, carrying good values, preparatory to shipping when the company shall have completed its new road leading from the works to the Champion creek highway. P. J. Jennings, president of the company, and his son George, manager and mining engineer, are both on the works, giving personal attention to details, and are looking forward to early shipments throughout the closing months of the present year.

W. B. Patton who two years ago acquired title to The President group of mining claims on Steamboat from A. P. Churchill, one of the pioneer miners of the district, is driving into pay ore and will operate a two stamp mill this season.

The Evening Star Mining Company, under management of Fred Bartels, is working a small crew and preparing to increase production. This company has the distinction of being the only company in the west that was compelled to rely upon airplane delivery of supplies last winter. For the past fifteen years the winters have been normal, transportation of supplies being possible throughout the winter with only now and then a shut-in of a few days at the most. Last winter it was something else; not cold but heavy snow at intervals throughout the winter. On two occasions the airplane was called into commission by the management.

JACK HOWARD* relates

Activities Near Dorena, Oregon

The old Vesuvius mine, on Fairview mountain, which was under the control and personal management of F. J. Hard until the time of his death some years ago, is now reported owned by Glenville A. Collins and son, mining men, 200 Pine Street, San Francisco, California. The junior Collins is now at the camp, with engineer and several assistants, cleaning up the works and sampling the tunnels, with expectation of putting the mill in order and resuming operations in the near future. Mr. Hard, a well-known Colorado mining man, spent some 20 years of his life in the Bohemia district, during which time he continuously pushed development work on the Vesuvius, having great faith in the future of the mine. It is said that during the years he operated the property several attractive cleanups were made, and the mine became identified as a good producer. It is announced that the senior Collins will arrive from California within a few weeks and will become active in the mine management.

For a number of years the U. S. Forest Service has been giving close attention to the Bohemia mining district, its geographical location being within the confines of the Umpqua forest district, with

headquarters at Rujada, Paul Pieper, forest ranger, in charge. This week marks the return assignment of Louis Dodge to the old Musick mine for the fire season of '32.

One of the most sightly lookout stations in the western forest area is located on Fairview Mountain, a sister peak of old Bohemia, the two connected by a sharp saddle ridge, at an elevation of some 5,000 feet. From this station an expansive view of the district is presented, and for miles the outline of the early-day Sharpe Creek wagon road, over which hundreds of thousands of dollars in gold bullion by pack horse and freight wagon has been transported. This outline of the old road as it winds along sharp ridges, ever downward into the Row River valley, on to Cottage Grove, some 38 miles distant, is a scenic picture that lives long in memory.

There are two wagon roads into the district, each of which through cooperation of the Forest service with the Lane county court are being worked over into fine auto and truck roads that will care not only for the tourist's comfort but for the bodies of ore now being blocked out by the several mines now operating for shipment to smelting plants. The Sharps Creek road entering the mineral zone on the

*Dorena, Oregon

According to John F. Hechtman, vice-president, a discovery of molybdenum ore has been made on property of the **Del Rey Silver Mines Company**, Globe, Arizona. The company's property is located in the Pinal mountains, about eight miles from Globe. The vein is said to be four feet wide, but its length has not been determined.

The sale of two groups of claims, near the scene of the recent strike in the Cherry Creek district of Yavapai County, Arizona, has already been reported. These are the **Gold Bullion**, owned by R. H. Tucker, Box 54, Cherry, Arizona, and the **Sunnybrook** property, owned by Mrs. James Boyer, Oliver Loper and R. W. Wingfield. The Gold Bullion is equipped with a 25-ton ball mill which will handle ores from both properties for the present. The Sunnybrook has been developed by two shafts, one bottomed at 200 feet, and the other at 100 feet.

For the first six months of this year **Magma Copper Company**, Superior, Arizona, reports a loss of \$28,257, against a profit of \$187,783 in the same 1931 period. The loss for the second quarter amounted to \$7,490, against a loss in the preceding quarter of \$20,767.

Consolidated Galiuro Gold Mines, Inc. forwarded its initial shipment of gold bullion to the U. S. mint at Denver, on July 11. The ore for this shipment was taken principally from the dumps, but for a second shipment, made the eighteenth, the ore was mine run. The first showed values of \$12 per ton, while the second showed \$15 per ton. A Sullivan compressor and air hoist, together with complete equipment for air drilling, is being installed, and when completed the pilot mill is scheduled to be run three eight-hour shifts. Mining and milling are directed by L. Page, general manager, Box 578, Safford, Arizona.

CALIFORNIA

Under the supervision of Whitman Symmes, 51 Shipley Street, San Francisco, California, the **Shamrock Gold Mining Company** is cleaning out the incline shaft connecting with the drain tunnel in the Diadem mine, near Forest. The work has progressed beyond the 60-foot point and there are 20 feet to go. Mining of a three-foot ledge will then be started. Mr. Symmes has lately obtained an option on the **Young America** mine, near Sierra City, owned by F. M. Doak. While the Young America has produced considerably, it has been idle several years, other than the search for the ledge that once produced. Mr. Symmes will continue the search.

W. D. Broaddus has uncovered a four-foot vein in the **Klondike** mine in the Highgrade district, north of Ft. Bidwell, California, where, for 20 years, he has diligently continued to look for ore. The discovery is at the end of the No. 1 claim, and assays across the face are reported to have run \$34 in gold.

C. R. Graves is leasing the **Comanche** mine at Benton, California. Two years ago, under the management of the Comanche Mining and Reduction Company, this property was producing gold, silver and copper ore. Its production was handled largely in the smelter at Midvale, Utah.

The **Texas Flat** mine at Coarsegold, California, has been taken over by W. E. Little, 1071 South Hoover Street, Los Angeles Street, Los Angeles, and associates. They are sinking a two-compartment shaft, laid out to cut the vein when it reaches a depth of 220 feet, at 1,400 feet on the

incline below the outcrop. This is possible through the surface contour and the vein dipping in the same direction. The vein is said to be 500 feet long and to average \$10 to \$12 milling ore. The mine has been idle since 1925, when the mill burned. All old development faces are said to be in ore, and it is said that a 50-ton mill has been arranged for.

Considerable development is mapped out for the **Telegraph** property, near Halloran Springs, San Bernardino county, California, controlled by A. G. Keating, Room 1011, 210 West Seventh Street, Los Angeles. The group embraces 60 acres, developed by a 60-foot shaft in which four feet of \$30 ore is disclosed. Gold was first discovered on the property November 10, 1930, by A. A. and Ralph Brown of Salina, Utah.

About two feet of ore ranging from \$16 to \$25 per ton has been opened in the **Wanderer** property, near Halloran Springs, California, by the **American Hellenic Gold Mining Company**. New machinery is being added to that already at the mine and, it is understood, the ore will be milled. The bulk of the ore available is at the 200-foot level. American Hellenic is an outgrowth of the Wellington Oil Company, with headquarters 510 South Spring Street, Los Angeles. Its officers are E. B. Fish, president; George D. Broader, vice-president; and E. R. Gross, secretary.

O. C. Mattheis, 414 Wilcox Building, Los Angeles, California, is reported to have about completed the financing of the **Gold Point** mine, near Victorville. The property is a low-grade proposition on the north slope of the San Bernardino Mountains.

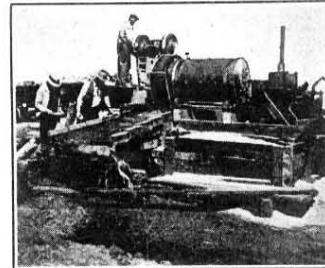
The crosscut from the 350-foot shaft level of **Colosseum Mines, Inc.**, at Colosseum, via Nipton, California, is said to be nearing the No. 2 ore body, which on the upper levels averaged \$43 a ton across considerable width. This ore body is parallel and about 200 feet west of the No. 1 ore body, which has been developed to a width of 60 feet, and is said to average \$7 gold ore. Twenty men are working under the supervision of D. M. Reck, and about two carloads of concentrates are being shipped to the Salt Lake smelters each month. C. H. Gowman, 401 Equitable Building, Los Angeles, is president and general manager.

It is understood that the **California Treasure Box, Ltd.**, will soon begin both hydraulicking and straight placer operations on the old Mammoth River channel, in Butte County, California. The concern owns 3,500 feet along the channel and has a lease on 5,500 feet. Los Angeles and San Francisco men are sponsoring the work, with Rex B. Goodcell, 720 Garfield Building, Los Angeles, as president. E. P. Turner, c/o DeSable Stage, Chico, California, is superintendent. The concern is capitalized at 500,000 shares of \$1 par.

The **Shanghai** mine, a patented claim located in the early '50s, credited with a production of between \$150,000 and \$200,000, but which has lain idle for almost 40 years, is being reopened by Thomas A. and Mrs. Gertrude M. Piper of Sonora, California. It is located two miles northeast of Columbia, and is owned by G. P. and F. A. Morgan of Sonora, and other heirs of their father, the late George Morgan, once prominent pioneer of the historic Columbia. Four veins traverse the property in which the ore is said to range from \$22 to \$40 per ton. A hoist and compressor have been installed and the mine's horizontal passages will be made accessible through a new shaft now 35

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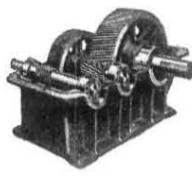
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feet deep. Five stamps of a 10-stamp battery are to be installed soon and it is planned to have them operating by the middle of September.

A newly discovered vein eight to 30 inches wide in the Gem mine at Confidence, California, gave mill returns of \$20 a ton in a test run of ore taken out while sinking a 32-foot shaft. The mine is owned and worked by F. M. and J. R. Wulzen, whose postoffice is Confidence, via Sonora, California. Sinking has been resumed, with plans for drifting when greater depth has been attained. The mine is equipped with a 10-stamp mill.

It is reported that the Idaho-Maryland Mines Company, Errol MacBoyle, president, Grass Valley, California, plans the erection of larger milling facilities. Together the Idaho Maryland and Brunswick mills are turning out a daily tonnage of 150 tons, and development work underground warrants additional milling facilities. The monthly production runs between \$50,000 and \$60,000.

Dr. Felix A. Smith, Medical Building, Oakland, California, and other East Bay dentists, are reported to have acquired the historic Washington mine in Mariposa county, California, 35 miles northeast of Merced, and intend to reopen it at an early date. This mine was abandoned in 1882, because of lack of fuel, and has been allowed to fill with water. Its record production is \$2,250,000 in gold, from the 900 level and above, because with the crude equipment the former operators were unable to hoist the ore from greater depth. Electricity will be used in the proposed work and about 25 men employed. It will require between 60 and 90 days to unwater the workings.

The Calaveras Central Gold Mining Company, Ltd., has about completed the construction of a new milling plant that can treat about 400 tons of ore a day, according to Harry Sears of Angels Camp, California, president of the organization. It is to be in operation early this month, with a corresponding enlargement of the underground equipment, which will enable the company to begin steady production from blocked out reserves of gravel and to mine and produce its gold at a very low cost.

The Harrison Bros., of which G. H. Harrison is a member, have started hydraulicking the Big Bend placers along the Trinity River, a mile from Lewiston, California. Water is being pumped from the river through a 15-inch pipe and is delivered with a 320-foot head. A 300-horsepower motor, connected with the P. G. & E. power line operates the pump. The work is of an experimental nature, since this is the first time in Trinity county that hydraulicking has been started with water being pumped from a nearby stream.

E. I. West has completed construction of his aerial dredge on the Feather River at Oroville, California, and has two 10-hour shifts working. The dredge is handling approximately 100 tons of rock an hour and it is estimated that there is enough gravel along the river for five years' operation. The plant was constructed at a cost of about \$22,500. In a few weeks, Mr. West plans to increase his crew and to work three eight-hour shifts.

The American Smelting and Refining Company has completed the sinking of a 150-foot winze from the 260, or tunnel level, in the Big Blue mine at Kernville, California, thus reaching a depth of 410

feet below the surface. A drift has been extended from the hanging wall 75 feet towards the footwall. From this point drifts have been started in both directions on the vein and are said to be progressing rapidly. As practically all rock encountered is of milling grade with some high-grade bunches from time to time, it is believed that the work so far is more than meeting expectations both in quantity and quality. R. H. Abbott is general superintendent.

John L. Witney of Jamestown, California, has leased the Arbona mine at Tuttletown, California, from Cassius Swerl. It is one of the oldest claims in the district. Originally, its ore was crushed in an arrastra, but under subsequent operators the property was equipped with modern mining and milling machinery.

Louis Harris, 1401 Haight Street, San Francisco, has acquired the Clio mine and millsite, 15 miles south of the town of Jackson, California, from the state. Not long ago, Mr. Harris acquired the Blackfoot, Side Hill, Gladstone and Gladstone Fraction lode claims and the Side Hill millsite, in the same vicinity, and it is probable that the group will be in operation soon.

J. C. Dennerlin, 1101 South Hope Street, Los Angeles, has put nine men to work on the Skehan placers at Remington Hill in Nevada county, California. A camp has been established and a truck and some machinery is on the ground. The property has been idle 40 years pending the settlement of the estate of the owner who was killed in the mine in 1893. It is on an unworked section of the Dutch Flat channel, covering three-quarters of a mile of it, where property to both the north and south has yielded heavily. Dennerlin is vice-president of the Alemite Company and of the Stewart-Warner Company. His engineer, Frank A. Crampton, 827 Second Street, Santa Monica, California, is secretary to the mining committee of the Los Angeles Chamber of Commerce.

A number of business men in Grass Valley, California, have formed the Grass Valley Prospecting and Development Company to prospect and develop a number of gold properties in the vicinity of that town. A number have already been optioned and work will be started soon. The concern is capitalized at 150,000 shares of \$1 par. Its officers are: C. E. Clinch, president; C. J. Bosworth, vice-president; Fred Morgan, secretary; H. B. Skewes, assistant secretary; A. H. Mooser, treasurer; and Nilon, Hennessy and Kelly counsel.

Fifteen stamps are dropping on a good grade of ore in the Four Hills mine in Sierra county, California, being operated by Andrew Bachelis of Johnsville, and a crew of six men.

The Kirkpatrick mine, near Goodyear Bar, California, on which development was continued all last winter has been organized as the Kirkpatrick Gold Mines Company, with a capitalization of 1,000,000 shares of \$1 par value. The directors are Charles G. Johnson of Sacramento, state treasurer; James D. Stewart of Auburn; O. N. Duffy of Napa; and F. F. and John Clark of Sacramento, California.

Stephen Reiss, operating the Amalie mine at Caliente, California, has taken in pumps and machinery to unwater the old workings. The shaft is 500 feet deep and has several hundred feet of laterals.

Mining operations in Mariposa county, California, are expected to be stimulated by the reopening of the **Fremont Grant**, sometimes known as the Mariposa Grant. It comprises some 44,000 acres, and was owned by General John C. Fremont. Already two crews are making extensive examinations of the Pine Tree and Josephine mines, situated on the Grant, for F. W. Bradley, 1022 Crocker Building, San Francisco, who is understood to have an option to purchase these old producers. It is also reported that the old Princeton mine will be reopened.

A two-shift working schedule is in effect in the 700-foot tunnel in the **Densmore** mine, west of Columbia, California, while an outside crew is engaged in preparations for the installation of machinery and the erection of a compressor building and a blacksmith shop. The tunnel will be driven some 1,000 feet under the present program, leaving a like distance before reaching the south end of the property. R. H. Travers, formerly of Chicago, is in charge as general manager; and R. L. Bateman, until recently superintendent for the Cusi Mexicana Mining Company at Cusihuiriachic, Chihuahua, Mexico, is mine superintendent.

The rich ore pocket at the 320 level of the **Sugarman** mine, just north of Sonora, California, has yielded approximately \$10,000 in a fortnight period. Apparently the last of the rich ore has been extracted, though under existing appearances of the shoot in the face of the raise from the bottom, or 320 level, the operators believe chances are favorable for breaking into a new mass of rich ore any time. The Sugarman gives up rich pockets with considerable regularity, and much virgin ground is yet to be worked between the 320 and the 250 levels. Ralph H. Butler, Robert Nelson and Harry Bowerman, local men, are the operators.

COLORADO

A recently organized concern, known as the **Richmond Gold Mining and Producing Corporation**, has become interested in the Richmond-Fairfax gold mine on Soda Creek, nine miles west of Boulder, Colorado. A small shipment sent to the Boulder Sampler netted \$22.90 a ton in gold and \$1.50 in silver. Another shipment to the Black Swan plant, in the district, returned \$15 a ton. Denver men are sponsoring the new concern; Floyd Redding, president; Wesley Steenbock, 1612 Ulster Street, secretary; and William G. Haldane, engineer in charge.

Superintendent R. L. Jones of the **Empire Zinc Company** has ordered the mine on Battle Mountain, Colorado, flooded, to check a fire that broke out on the sixteenth level late in July. The flames will be restricted by bulkheading. It is said that the damage will be nominal.

Directors of the **Golden Cycle Corporation** have declared their regular quarterly dividend of 40 cents a share, and amounting to \$76,500. Disbursement will be made September 10, to stock of record August 31, 1932.

During the first five months of this year, the **Saratoga Gold Mines, Inc.**, shipped \$47,268 in gold ore from its properties in Russell Gulch, Colorado. The ore had an average value of \$17.61 per ton. Under the management of P. J. Ragooland, 728 Majestic Building, Denver, the property has been improved and equipped with new machinery. The main shaft has been deepened to open up two new levels, and

about 50 men are now working on four veins, at different levels. The Incidental mill has been remodeled and is treating about 25 tons of the low-grade ore daily, and the higher grade is being shipped to the reduction plant at Colorado Springs. In addition, some 15,000 tons of low grade have been piled on the dump, anticipating the construction of an ore reduction plant in the vicinity of Denver by Colorado Gold Refineries, Inc.

Representatives of The Denver Equipment Company, 1419 Seventeenth Street, Denver, Colorado, have visited The **United Mines Company** property in Boulder country, and are said to be preparing a plan for the construction of a 50-ton mill for that company. The plan is to install it in the orehouse, which has heavy foundations and construction. According to M. S. Brandt of Boulder, Colorado, general manager of the mining company, everything at the mine is being placed in first class condition for the rapid transportation of ore through the tunnel.

The **Mexican Gold and Silver Mining Company** has completed a winze to a depth of 200 feet below the 1,000-foot point in the shaft, thus attaining the

greatest depth on the north contact of the Cripple Creek district, Colorado. An ore body that carries some picture rock and from which screened shipments will run close to \$100 a ton is reported at that depth, but the dimensions of the ore have not been determined. This will considerably increase production, which has been averaging between 10 and 12 carloads a month. Between 12 and 15 men are employed. Zeb. Kendall, 1108 Alexander Building, San Francisco, California, is president and in charge of operations.

Under the supervision of R. E. Myers of Breckenridge, Colorado, the **Headlight Mining Company** is retimbering the tunnel in its property between Galena and Summit gulches, and completing the installation of a steam plant. The tunnel is said to cut several rich veins, of which development will start in a few days. Bryce Morris, 229 Custom Building, Denver, Colorado, is president and general manager of the Headlight.

The **Colorado Fuel and Iron Company**, and subsidiaries, for the quarter ended June 30, 1932, reports a net loss of \$795,190, after taxes, interest, depreciation, etc., against a net loss of \$389,061

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FRANK A. CRAMPTON reports on

Auriferous Gravel Channels Of Nevada County

During a reconnaissance of auriferous gravel channels, converging at Dutch Flat and in the area from Remington Hill to Omega and Relief to Hunts Hill, important facts were developed. The area under discussion lies in Nevada County, California, about the center of the Colfax Quadrangle of the United States geological survey. It is described in detail by Pettee in "Contributions to American Geology," Volume I, 1880; by Lindgren in Professional Paper 73 of the United States geological survey, "Tertiary Gravels of Sierra Nevada," 1911; by Mac Boyle—"Mines and Mineral Resources of Nevada County," 1918; by Haley, Bulletin 92, "Gold Placers of California," 1923. The last two are California State Mining Bureau publications.

Heavy storms in November brought the work to a sudden termination and a completed survey of the area, particularly that east and south on the intersecting channels from Dutch Flat, became impossible. However, the findings reverse the theory as to the original course of some of the major Cretaceous-Eocene channels in the area described.

It has been generally assumed that the channels flowed as shown on the maps prepared by Lindgren and Haley, that is—of the Remington Hill channel flowing southwest, that from Colfax northeast, that from Iowa Hill north and another from the direction of Lost Camp, all converging at Dutch Flat. This was undoubtedly the general course in Neocene time and had been accepted as the entire channel history. However, the reconnaissance revealed that, in Cretaceous time, during which period the stream originated, the main channel was from Iowa Hill through Dutch Flat to Remington Hill, then into the old Yuba drainage basin at Omega. Into this came tributaries from Colfax, Iowa Hill, Lost Camp, and from north of Little York. All joined the main stream near Dutch Flat. Northward, a channel flowed from Hunts Hill to the Yuba Basin, discharging above Relief.

A part of the Cretaceous-Eocene drainage basin was separated in early Eocene by an uplift having its origin at some point east of Harmony Ridge. The axis of this uplift was probably between Scotts Flat and Burrington Hill; the terminus, and greatest uplift, south of Emigrant Gap.

This uplift created a slight westward-tilting ridge and separated the old Yuba River from the present Bear River drainage basin. With the exception of the channel from Hunts Hill to the old Yuba River, the drainage at the west was not greatly altered.

To the east, somewhat north of Remington Hill, and south to Liberty Hill and Elmore Hill, an entirely new drainage was required. This developed a channel through Dutch Flat to You Bet, Red Dog and Hunts Hill, where a junction was made with the channel at Scotts Flat. The original channels from Colfax, Iowa Hill and Lost Camp were generally un-

A reconnaissance of the auriferous gravel channels in the vicinity of Dutch Flat, Nevada County, California, brought forth some important disclosures. An extended area for further study and prospecting, an area of important and un-worked gravels, was indicated.

disturbed. This drainage was well developed by late Eocene time.

The uplift came at a period between the formation of the white quartz bearing channels of the early Eocene and those later channels which contain blue and red quartz and other rocks carried into the streams by erosion. The notes made on the complex features of the gravels, resulting from the uplifts of this transitional period, indicate the necessity for a complete and comprehensive study of the channels and especially for an extended and closely coordinated survey of the gravels.

In a close analysis of the maps prepared by Lindgren and Haley, a striking fact is evident—the confluence of channels at and near Dutch Flat and Hunts Hill do not appear natural, as in a river of normal habits, even allowing for radical changes which took place during long periods after the channels first were formed.

The channels into Dutch Flat, from the east and northeast were studied, particularly the one from Remington Hill and Democrat through Liberty Hill. The result explains the seemingly unnatural behavior at Dutch Flat and Hunts Hill.

Pettee (1880) traced the course of Remington Hill-Democrat channel from Dutch Flat through Liberty Hill and Lowell Hill, then across Steep Hollow to Remington Hill and on under the lava cap east of the Remington hydraulic diggings to Democrat Ravine. From Democrat Ravine, he traced the course easterly across the North Fork of Steep Hollow to Excelsior Point, from which point no further trace of channel was observed. Lindgren, in a later report (1911), traced the channel over the same course.

A doubt seems to have existed in the minds of both Pettee and Lindgren in regard to the Dutch Flat-Remington Hill channel being identical to that of Democrat. Yet, on account of lack of complete evidence to the contrary, each assumed the Remington channel to be a part of that at Democrat.

To quote Pettee: "The direction of the channel at Remington seems to be a matter in regard to which the miners themselves have no theory. The finding of

gravel under the lava in the tunnels has suggested to some the idea that the main channel passed directly across the ridge (*TOWARDS PHELPS HILL OR OMEGA*). But this seems hardly possible; and it is more likely that this deposit will be found to have connected with that at Klepstein's (*NOW DEMOCRAT*), striking along on the southeastern side of the present ridge, as will be seen when describing that locality". . . "Between Klepstein's (*DEMOCRAT*) and Remington Hill there does not appear to have been any connection of channel actually proved. On the opposite side of Democrat Ravine, as has already been mentioned, there is a small quantity of gravel; but, beyond that, the trace is lost"

However, in his closing paragraph on Remington Hill, Pettee refers to a channel at Bald Eagle, north of the channel at Democrat and located where the North Fork of Steep Hollow cut the lava, exposing gravel under the volcanic.

Quoting—" . . . It is possible that the Remington Hill gravel may be connected with that under this ridge (*AT BALD EAGLE*); but the opportunities for observation in this vicinity were not sufficiently extensive to furnish the data required for a settlement of the question."

Lindgren, in speaking of the channel, says—" . . . The channel has been struck by two drift tunnels a little eastward (*FROM REMINGTON HILL*), making it possible that the channel comes out again at Democrat, another little gravel point, separated from Remington by a bedrock spur, where hydraulic work has also been done."

Since the surveys of Pettee, Lindgren and others, sufficient development has been done to offer opportunity for further study in the entire area and new data made available, thus clearing up some perplexing questions.

Mac Boyle identified bedrock at Remington as Blue Canon formation, that at Democrat as serpentine. The difference in bedrock formation may or may not be important but deserves attention in view of the other features connected with the channels at Remington Hill and Democrat. In this reference it should be noted that a serpentine belt extends from the south, its west side passing through Democrat Ravine to Phelps Hill, where Lindgren observed a fault of 40 feet. The writer noted a fault of 30 feet at Democrat Ravine and suggests the probability of one along the line of serpentine and slate, extending at least from Steep Hollow Creek to the Yuba River. Such faulting would have caused a change in the flow of the original channel and solve some of the remaining perplexing questions.

One fact of importance, aside from the difference in the character of the gravel in the Remington Hill section of channel, and that immediately east of Democrat Ravine, is the fact that the Remington Hill section is over 600 feet wide while that at Democrat considerably narrower, rarely exceeding 300 feet. Had the Democrat channel been identical to that of Remington Hill there would have been a similarity of gravels as well as of widths. Further, the gold of Remington Hill was

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all coarse and about \$19 an ounce, while that of Democrat largely fine and about \$17. It was this contrast, sharply defined at Democrat Ravine, observed when the reconnaissance of the channels reached that point, which was responsible for an extended observation not previously contemplated.

The course of the Dutch Flat-Remington Hill channel is shown on existing maps as from Excelsior Point to Democrat and on to Remington Hill, then across Steep Hollow to Lowell Hill, Liberty Hill and southwest to Elmore Hill and Dutch Flat where it is shown as a tributary of the northwest flowing channel which connects with the old Yuba River at North Columbia.

Essentially, this course is correct and is the probable course, with allowances for short changes of direction due to erosion and earth movements, which it followed during Neocene time.

Between Lowell Hill and Remington Hill-Democrat and from south of Lowell Hill to the lower section of Liberty Hill, sections were severed from the original channel and new drainage created south and around it. Prior to the uplift the channel had crossed from Lowell Hill to Remington Hill, but the course subsequent to the uplift was from Democrat to Lowell.

Following the channel down its previously unmapped course of Cretaceous-Eocene time, from Lowell Hill, it crossed Steep Hollow Creek into Remington Hill. It is entirely eroded between Lowell Hill and Remington Hill. From Remington Hill, it passed through the small lava capped ridge to the east where it was found in tunnels west of Democrat. In a tunnel driven northwest from Democrat Ravine the channel is encountered several hundred feet beyond the extreme north rim of the Democrat channel.

There is a marked contrast between the gravel west of Democrat Ravine and that of the Democrat channel to the east, as well as at other points along the channel. At Liberty Hill the Neocene gravel is of white, red and blue quartz with boulders of gabbro and serpentine. West of this is a well preserved Cretaceous-Eocene white gravel. At this point, after the uplift, there was some tilt eastward and the new drainage basin only a few hundred feet away. There is evidence of a channel coming into the main stream, near Liberty Hill, from the direction of Nigger Jack Hill and Blue Canyon, and of another further west from the direction of Towle and Alta.

At Lowell Hill, the gravel is composed of boulders of gabbro and serpentine together with white, red and blue quartz. As at Liberty Hill, there is evidence of a western flowing tributary from the direction of Nigger Jack Hill and of a shifting of the stream over a wide area. There is also convincing evidence of a fork north of Lowell Hill, the west arm toward Remington Hill is the original Cretaceous-Eocene, the other more easterly arm toward Democrat, of Neocene time.

At Remington Hill, west of Democrat Ravine, the gravel is composed only of well-rounded boulders of white quartz and the Cretaceous-Eocene character remains undisturbed. At Democrat, east of Democrat Ravine, the gravel is of well-rounded boulders of white, red and blue quartz through which is distributed gabbro, serpentine and volcanic rocks. At Excelsior Point the gravel is identical with that at Democrat, east of Democrat Ravine.

From the evidence disclosed in the tunnels between Remington Hill and Democrat Ravine and by the character of the different gravels along the various channel

sections, it is certain that the Dutch Flat-Remington Hill channel flowed north and emptied into the old Yuba River channel between Emigrant Gap and North Bloomfield with the junction undoubtedly at Omega. This was in Cretaceous-Eocene time. The flow continued over this course until an uplift south of the old Yuba River altered it and turned the flow south and west until a junction with the newly formed northwest sloping drainage from Dutch Flat was made. The uplift can be roughly determined as during middle Eocene time. Later, other disturbances took place affecting local areas and relatively short lengths of the original channel.

No evidence exists that the uplift affected the channels into Dutch Flat from Colfax, Iowa Hill or Lost Camp, excepting their points of discharge were altered by reason of the reversed drainage. The channel from Colfax only, shows any major shift.

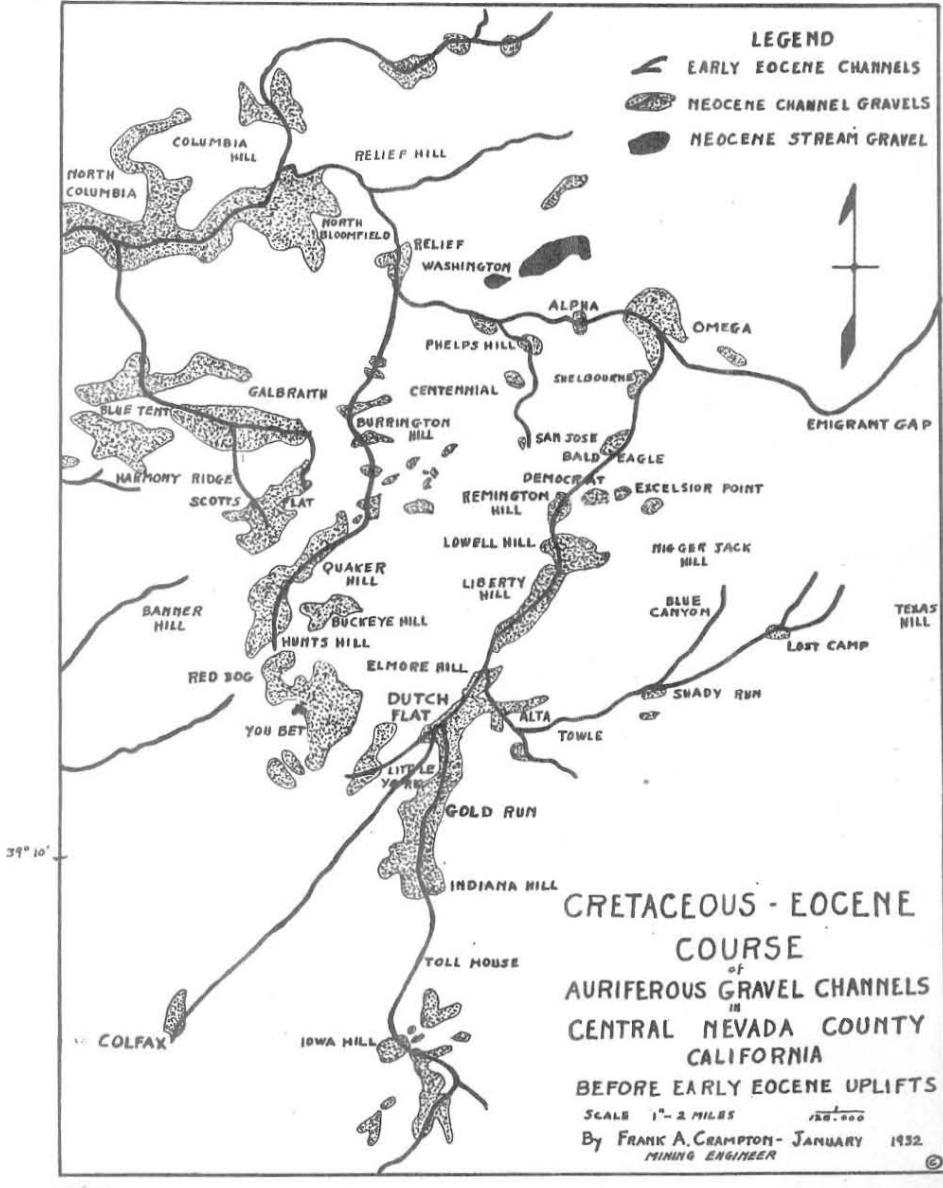
There is evidence to indicate the Cretaceous-Eocene channel between Dutch Flat and Omega was of relatively short duration. The uplift which took place immediately cut off the stream flow from the

south and created a new drainage flowing south to Dutch Flat and from that point northwest to North Columbia.

Of the original channel, there remain the sections between Democrat and Remington Hill and at Liberty Hill. These show evidence of stream flow subsequent to the uplift, as the shingling of the boulders has been reversed. However, their life was of short duration, probably not far into Eocene time, for to the original white gravels no country rock has been added and but little blue or red gravel.

At Remington Hill the Cretaceous-Eocene channel has not been robbed by later streams or erosion, but this does not hold true at Liberty Hill where the channel is not as wide as at Remington Hill and a small section of the southeast side and rim was robbed. However, the Cretaceous-Eocene character persists in the gravel remaining.

It is probable that, subsequent to the first uplift, the original channels afforded a reversed drainage over a short period but continued stream uplifting caused further shifting and the two segments of the Cretaceous-Eocene white gravel channel



were separated from the final drainage which followed the new course, east from Excelsior Point to Democrat Ravine then south across Steep Hollow to Lowell Hill, Liberty Hill and on to Dutch Flat.

Much data obtained during the reconnaissance, relating to sections of channels in the area dealt with, has been omitted for lack of completeness. There are two channels in Burlington Hill which are of major importance and further study would, no doubt, reveal important facts concerning them. It is not improbable that in this area will be revealed undisturbed segments of Eocene channel tributaries along the old branch to Relief from Hunts Hill. Not only might this be true but important areas are also possible at Blue Tent and Relief.

The important channel between Phelps Hill and San Jose is of probable Cretaceous-Eocene origin and subsequent to the uplift, with the possible exception of a short section near San Jose, continued as a drainage on the north slope of the ridge until well into Neocene time. There is some evidence of a Neocene channel flowing south from below San Jose to west of Remington Hill to Lowell Hill.

The channels east and north of Excelsior Point and east of Lowell Hill and Liberty Hill are unquestionably of late Eocene to through Neocene time. Their importance is from the fact that, in all probability, they intersected and robbed tributaries of the Cretaceous-Eocene channel into Omega and the source of their gold was largely from them. On the North Fork of Steep Hollow there is a Neocene channel, its occurrence would presume it having been an original tributary of the older channel to Omega and, as the uplift came, of having shifted its course to conform to the south flowing drainage. At the point this channel was observed there appears to be a large basin shaped depression with a stream outlet nearby. The nature of the gravels in this depression seem to indicate Eocene or earlier origin and further disclosures in this locality should be of the utmost importance.

Further enlightenment on several important points may be looked for a Remington Hill and north of Democrat. West of Democrat Ravine the Cretaceous-Eocene channel took a sharp turn northward and its exact course on to Omega is not yet determined though it no doubt passed on

and under Bald Eagle. As development progresses at Liberty Hill, Lowell Hill and south from Alpha and Omega disclosures may be anticipated which will determine the course of the older Eocene channels and the tributaries into the later Neocene streams.

The study along the channels south from Dutch Flat was most incomplete, yet there is ample evidence to warrant the observation that from Alta and Towle and to Lost Camp and Blue Canyon along the eastern tributary, and at Iowa Hill and south of Gold Run important disclosures of channel and gravel deposits are yet to be made.

In an area heretofore noted for the richness of its bedrock gravels and coarseness of gold, where gravel mining has been dormant over an extended period, the disclosures of the reconnaissance reveal an extended area for further study and prospecting. Within the limits mapped undoubtedly lie important and unworked gravel and channel deposits, some of which are not now exposed. It is not improbable that new and rich gravels will be encountered. The area might easily extend as far east as Blue Tent, certainly it embraces that from North Bloomfield to Omega on the north and as far south as Dutch Flat to Lost Camp, and it would be significant if the facts disclosed should be the means of again reopening what was once the greatest placer gold producing district in the world.

CUSTOMS BUREAU MAKES NEW RULING ON COMPLEX ORES

The customs bureau of the treasury department has instructed the classification hereafter of ore in accordance with the particular tariff provision applying to the metal for which it was mined, although it may not be of chief value.

Heretofore a shipment containing silver, copper and zinc, with the first named in chief value, has been classified as a silver ore. In the tariff silver is on the free list but because there is no provision for zinc lost in the treatment of silver ore it has been assessed at 1½c per pound Paragraph 393 waives duty on zinc, however, when found in ore imported for its lead or copper unless the zinc is actually recovered. The result has been duty payment on metal never secured.

Smelters objected to the bureau's ruling and claimed that there is a definite commercial and metallurgical understanding that lead or copper ore, if mined and smelted primarily for the recovery of these metals, is known and bought and sold as such, notwithstanding they may contain silver or gold of greater value. In mining circles, gold and silver ores are considered to be those in which the two metals are present to such an extent that the ores are sought for that reason.

The bureau's opinion, signed by Commissioner of Customs F. X. A. Eble, refers to several rulings of the U. S. customs court on the subject in which it was held that the metal of chief value controlled classification under the tariff of 1913. Those rulings, it is concluded, undoubtedly were based on customs practice, but the expert testimony now submitted to the bureau shows that actual designation of an ore depends on its character. In line with this conclusion the collector is advised that when an ore contains several kinds of metal and would be treated to best advantage for lead or copper, no duty is to be assessed on the zinc except in the event of recovery.

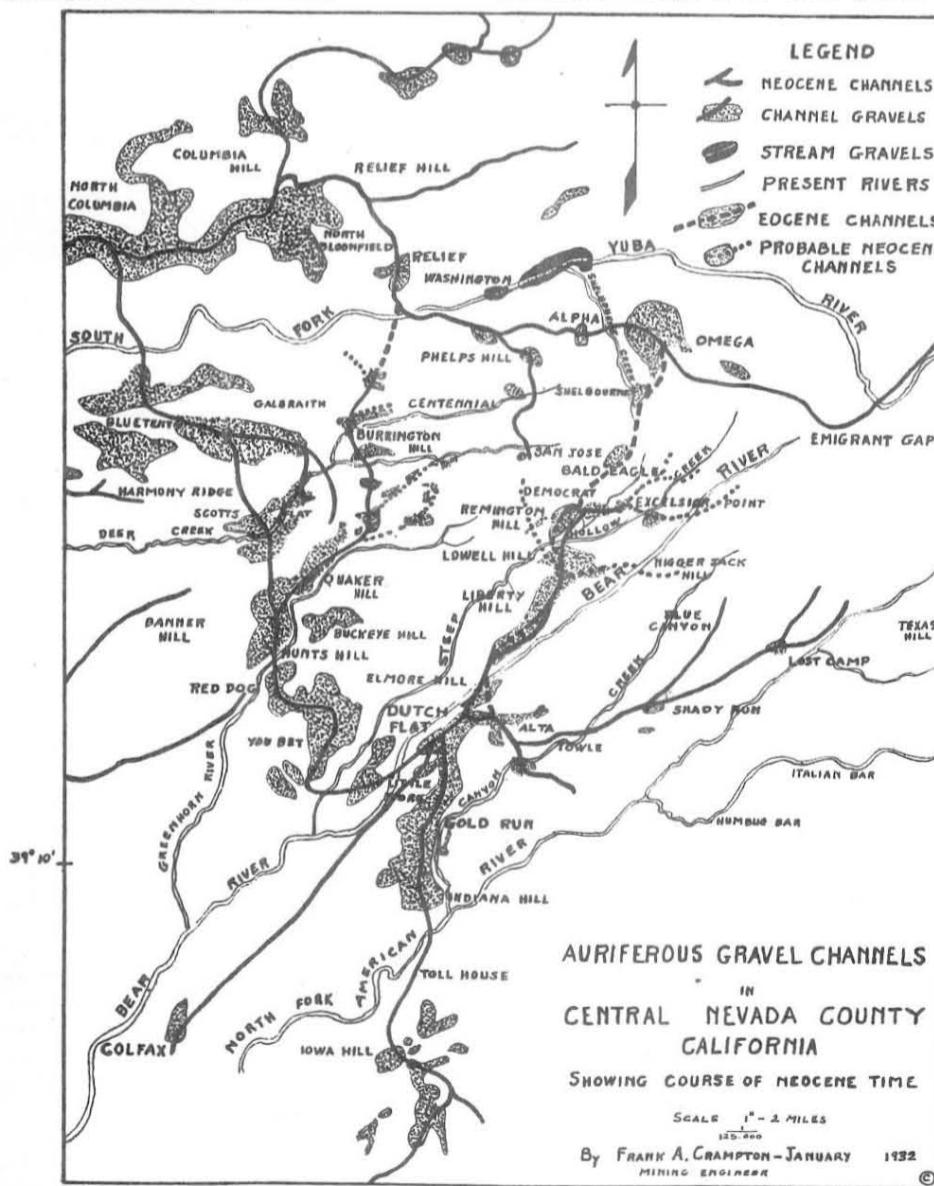


Fig. No. 2.—Sketch of the course of the Neocene gravel channels showing their relation to the older Cretaceous-Eocene and the probable channels of later Neocene time. The relationship of the later gravels to the channel series is clearly shown.