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the precious metals is an electrolytic process and refineries are usually located near a cheap and abundant power supply. Thus, electric power comes into the picture as an indispensable adjunct of the zinc industry.

Eight mining districts in Arizona contain zinciferous ores, mostly complex. From available data, these districts are estimated to be capable of producing 50 per cent zinc concentrates, equivalent to 344 tons of metallic zinc per day. In addition to this the 1929 zinc production of New Mexico was equivalent to 115 tons of metallic zinc per day.

Zinc resources are available for a 400-ton-per-day refining capacity. The electrolytic refining of zinc requires 1.5 k.w.h. per pound of zinc produced. Total power requirements for a 200-ton zinc plant are 42,000 horsepower. Full development of the zinc resources of the region is dependent on the development of 84,000 constant horsepower at a reasonably low generation cost. Adequate power at a cost of two mills per k.w.h. would make inevitable the installation of a zinc refinery of at least 200 tons capacity and create a short haul market for zinc concentrates, which would tremendously stimulate the mining and beneficiation of complex ores.

The average lead production of Arizona for the five-year period, ending in 1929, was 19,487,067 pounds, 65 per cent of which was derived from lead or lead-copper ores and therefore not dependent on the production of zinc. If a 200-ton zinc plant were established, zinc concentrates from complex ores would be accompanied by lead concentrates in about the ratio of 100 tons of lead to 200 tons of zinc. This amount of lead plus the quantity to be expected from non-zinc bearing ores would bring the annual lead production of Arizona to about 85,000,000 pounds.

Cheap power would probably result in the local electrolytic refining of this amount of lead.

Conversion of metallic lead to basic carbonate, widely used as a pigment, is an electrolytic process contingent upon cheap power. A combination of cheap power and raw material might serve to establish this industry in Arizona.

The foregoing developments in zinc and lead would depend primarily on the availability of cheap power equivalent to 86,000 constant horsepower.

The Ferroalloys

The ferroalloys of silicon, manganese, tungsten, vanadium and molybdenum are essential ingredients of special steels and the raw material for their production occurs adequately in Arizona.

The general methods of production are electrothermic and cheap and abundant electric power is essential for their fabrication.

All of these alloys require iron as an essential ingredient. There are five sources of iron available to Central Arizona. The Canyon Creek deposit, the Seligman deposit, ferrous portions of the Yavapai schist, Fierro (New Mexico) deposit, and electrolytic iron from pyrite as a by-product of the Arizona copper industry.

Vein quartz is considered the best raw material for ferrosilicon. This is abundant through Arizona.

Manganese ores or concentrates, of 35 per cent manganese or over, are generally used for ferromanganese. Arizona has many manganese deposits, the bulk of which would produce concentrating ore. Concentration of manganese ores has made many advances in the last few years, particularly leaching methods.

Consideration of the manganese output

of Arizona during the war, advances in concentration and leaching of manganese material, and the manganese deposits of Arizona, particularly of the extensive low-grade, sedimentary manganese beds of the Alamo-Signal region, indicates that a production of 20,000 tons of manganese per annum could be reached if a short haul market existed.

The tungsten resources of Arizona are also adequate. The Borianna mine in Mohave county is a producer of tungsten ore. The Las Guijas mine in Cochise county was equipped to produce 30 tons of hubnerite concentrate per day whenever the market justified. Scheelite has been shipped from several localities and considerable wolframite is reported in the Tip Top and Eureka districts.

Vanadium and molybdenum as the minerals vanadinite, wulfenite and descloizite are common in the oxidized zone of lead-zinc deposits in southern Arizona and New Mexico. Some production has been attained from these sources in the past and a local market would assure production of adequate amounts. Molybdenite has been produced at the Leviathan mine in Mohave county and deposits with some production exist at Santa Nino, Johnson, Helvetia and Copper Creek.

The fabrication of the ferroalloys require the following amounts of electrical power: ferrotungsten, 7,600 k.w.h. per ton; ferrovanadium, 6,800 k.w.h. per ton; ferromanganese, 5,000 k.w.h. per ton; ferrosilicon, 5,000 k.w.h. per ton; ferromolybdenum, 8,400 k.w.h. per ton. These quantities vary somewhat as the analysis of the product.

Cheap power to the extent of 50,000 constant horsepower would be sufficient for a ferroalloy industry of 32,000 tons of ferrosilicon, 18,000 tons of ferromanganese, 450 tons of ferrovanadium and 380 tons of ferrotungsten per annum.

Adequate power at a rate of two mills per k.w.h. and a short haul on raw materials, should enable Arizona to compete in the ferroalloy market.

Iron and Steel

By expenditure of electrical energy, both iron and sulphur may be obtained from pyrite by leaching and electrolysis. Electrolytic iron is practically C. P. iron and is used in specialized industries where its improved malleability, ductility and electrical properties are an advantage. Seamless tubing with very thin walls may be produced by using a cylindrical cathode. Pyrite is a mineral that almost universally accompanies the copper minerals, as well as those of lead, zinc and the precious metals. In concentrating these it is necessary to drop out a large portion of the pyrite as a worthless gangue. In Arizona, pyrite may be considered as a by-product that must be mined and to a certain extent concentrated in order to recover the other minerals.

With cheap and abundant power, iron and sulphur could be recovered as by-products of the base metals, notably copper. Conversion of waste material into saleable products would be reflected in the costs of primary products and the copper industry would be further fortified against foreign competition.

Two k.w.h. per pound of iron are required for electrolysis from sulphide leaching solutions. A production of 1,500 tons of iron per day would require 330,700 horsepower. Power at two mills per k.w.h. and by-product raw material would operate to entrench the industry against more favorably situated sources of iron and sulphur.

Iron is usually the last metal developed in a region of diversified mineralization.

Development of the iron resources of an area is usually contingent upon a cheap fuel supply. Arizona is unfavorably situated in regard to fuel supply, but cheap electrical power would be a satisfactory substitute. Electrothermic iron smelting and steel making are entirely feasible and their use is a matter of costs.

The Lake Superior iron ore reserves will be consumed in about 20 years at the present rate of consumption. While their life may be greatly lengthened by mechanical concentration of low-grade reserves, this would only seem possible under heavy tariff protection. If this protection is forthcoming, outlying iron deposits should be able to compete.

The iron resources of Arizona were outlined under ferroalloys. A constant supply of 150,000 horsepower would be necessary to a production of 1,000 tons of iron and steel per day.

BETTY O'NEAL SILVER MINE TO REOPEN NEXT MONTH

Noble H. Getchell, vice-president and general manager of the Gold Circle Consolidated Mines Company at Midas, Nevada, announced that work will be resumed on company account at the Betty O'Neal silver mine during March. The Getchells, who have resided at Midas for the last three years, will again occupy their home at Betty O'Neal, 12 miles southeast of Battle Mountain, Nevada.

The Betty O'Neal mine, a noted producer of high-grade silver ore, was consolidated three years ago with the Gold Circle Consolidated. The mine is fully equipped and electric power for mine and mill machinery is generated by Diesel engines of 660 horsepower. The mill is equipped for concentration by flotation and has a capacity of 250 tons a day.

From October 21, 1922, to the end of 1928 the mill turned out concentrates valued at \$2,194,456. Concentrates in 1926 contained .57 ounce gold, 369.44 ounces silver, 3.29 per cent copper and 13.5 per cent lead.

The 75-ton cyanide mill at the Gold Circle mine is operating at full capacity and regular shipments of gold and silver bullion are being consigned to the mint at San Francisco. A 7,200-foot tunnel is being driven in the Elko Prince property that will cut four veins along its course and drain both the Elko Prince and the Miners Gold mines.

NATOMAS COMPANY ADDS ANOTHER DREDGE TO FLEET

The Natomas Company plans to soon contract for the construction of a giant gold dredge, similar to the three largest of the six dredges which the company is operating 24 hours a day in the California placer gold fields, according to the announcement of President Thomas McCormack, Forum Building, Sacramento.

The new dredge will be electrically operated and capable of digging to a depth of 30 feet. The hull will be built in the San Francisco Bay district, knocked down and shipped to the Natomas dredging field near Folsom, where other units are in operation. Six hundred acres of dredging ground have been acquired recently and it is there that the new boat will begin work.

With its present fleet of dredges, Natomas worked about 18,000,000 cubic yards of gravel last year. The new plant is expected to be ready about the end of this year and will add about 4,000,000 cubic yards a year to the output, or an increase of about 22 per cent over present production.

A. L. RUSSELL* asks

What of The Boarding House?

Innumerable articles have been written on the subject of economical operations in the many phases of mine management. Costs of stoping, drifting and sinking have been figured to the very fraction of a cent. But there is one problem that has been left from the indexes of practically every publication. That problem is the boarding house.

Careless buying, poor equipment and poor facilities can do more towards making a boarding house a liability than a wasteful cook, who, as anyone knows, can throw more food out of the back door than an operator can bring in the front. And all too often the cook is made the goat of the situation.

In the operation of a boarding house there are two things to be considered: equipment and actual operation.

The most important piece of equipment to consider is a stove. The operator has the choice of five different types of stoves. These are the coal and wood, kerosene, compressed gas, electric and fuel oil. In making his purchase of a stove the miner must weigh the various factors affecting the operation of the stove. Briefly, the coal and wood are the cheapest in first cost and in operation when fuel is convenient and can be gathered by the mine crew. A recent innovation on the market is an oil burner using tops or distillate, that can be ignited cold and can be installed in a regular wood or coal stove without any expense for remodeling the stove. Oil is stored in a tank adjacent to the stove and piped through a regulating valve to the burner.

A coal oil stove can be used at certain times, but not very often with the price of kerosene at 27 cents per gallon. The compressed gas stoves are in the same category; fuel is too expensive. Electric stoves are high in first cost, but make up for it in their convenience and cleanliness. It is assumed, of course, that the operator is obtaining a cheap electric rate due to his large consumption of electricity in other phases of mine operation.

Next in importance to the stove is a water heater. A coil can be built into any of the stoves except the electric stove and kerosene stove. This coil in connection with a 50-gallon storage tank will provide sufficient water for all boarding house needs. Electric hot water heaters, as a separate unit to the stove, can be purchased to conform with the wiring requirements of the building. Separate kerosene coils and a tank can also be bought to be used with a kerosene stove.

After ascertaining the type of stove and heater, the operator naturally turns to the refrigerator next. In such weather as is prevalent at this time there is very little need for one, but in the summer, a boarding house without one is lost. So much has been written and broadcast about the electric refrigerator that anything written in this article would only be needless repetition. An electric refrigerator is the best there is on the market today.

For the operator who is not electrically equipped there is a gas refrigerator which operates on either compressed gas or regular city main gas. In addition a mail order house places a kerosene-operated

While many mine operators regard the camp boarding house as the chief nuisance, it can be turned into a real asset by proper planning and competent management.

refrigerator on the market at a reasonable price.

After selecting the three principal items of equipment the operator must then purchase or build a large amount of small furniture for the dining room and kitchen. These items include: serving table, mixing table, meat block, cupboards, dining room tables and benches or chairs. These can be made very cheaply by the mine carpenter. The only point to bear in mind is size. In all the mining camps I have visited I have never seen too much table or cupboard room.

Besides these items a small stove must be added to the dining room for heating in the winter months. Unquestionably the best is a wood stove. It is cheap, easy to operate and, if properly installed, fool proof.

About the only thing that can be said of dishes is to buy what the operator considers enough for the proper serving of the meals and then add 33 $\frac{1}{3}$ per cent to the list. And by all means buy the heaviest china there is on the market. Boarding house cooks are hard on dishes. A lightweight wish will not last over night. Heavy dishes cost more, but they pay in the long run.

In regard to the buying of utensils, let the cook make out his own list. No two cooks will cook alike and no two cooks will use the same utensils. The only thing to beware of in this line is enameled and granite ware. Buy cast iron pots, skillets and griddles. In some cases cast aluminum will do, although this will soon run into money.

After equipping his boarding house the miner must decide on his policy of operation. One certain person should be responsible for the buying of food and other supplies for the boarding house. If the proper cook is hired, he is the one who should be in complete charge.

In selecting a cook a great deal of study and time should be spent. There are good fry cooks, good pastry cooks and good bakers, but good boarding house cooks are scarce. A real boarding house cook is a combination of every type of cook rolled into one.

If the cook is permitted to do the buying it is usually in conjunction with the general manager. A two weeks' supply of staples is kept on hand at all times and such articles as fresh vegetables and other perishables are bought from "hand-to-mouth." During the winter months the stock of staples must be bought according to the weather conditions in that section.

Some mine managers have reported that they buy in larger quantities at all times of the year due to the saving they are able to make. By keeping in close contact with the larger wholesale grocery

houses and subscribing to at least one grocery trade journal they are able to take advantage of bankrupt and fire sales at considerable saving to their companies.

Whoever does the buying must, by all means, acquaint himself with the various sizes of cans, various brands and other units of measure. For instance in the tri-state lead fields the unit of measure for ripe, fresh tomatoes is the peck and bushel, and in the copper and gold camps of Arizona the unit is the lug.

While it may seem foolish and out of place to some, it would pay every mine manager who operates a boarding house to read his wife's magazines. One can hardly pick up a single issue of the better woman's magazines without finding at least one article about canned goods and how to buy them.

The operation of a boarding house involves the expenditure of a considerable amount of money. It is only natural that mine operators regard it as a prime nuisance. However, a boarding house can be made a real asset by following a definite program similar to the one set forth herein. The advice of one well-known mine foreman should be framed and hung above the stove. "You can't expect men to hop on a muck pile on poor grub."

GEOLOGICAL SURVEY REPORTS ON CLIMAX MOLYBDENUM DEPOSIT

For several years the bulk of the world's production of molybdenum, most of which has been used in the manufacture of molybdenum steel, has come from the large deposit at Climax, Colorado. In 1931 the known ore reserves of that deposit were 85,000,000 tons, and the geology suggests that an additional large amount of unproved ore exists. It is probable that Climax will continue to supply most of the world's demand for molybdenum for many years.

The results of a study of the geology and ore of this deposit by B. S. Butler and John W. Vanderwilt, of the United States Geological Survey, have just been published by the Department of the Interior as Bulletin 846-C of the Geological Survey, which can be obtained from the Superintendent of Documents, Washington, D. C., for 50 cents. The history and production of the deposit are summarized by Charles W. Henderson, of the United States Bureau of Mines, especially for this bulletin.

Little was heretofore known of the geology, and many questions concerning the nature, extent, and probable origin of the deposit are here answered for the first time. The authors believe that hot molybdenum-bearing solutions were given off from a cooling mass of molten rock below a highly fractured cover of granite at the beginning of the Tertiary period. The molybdenum-bearing solutions deposited an enormous amount of quartz in the fractured rock, changing a great mass (shaped like an inverted cone) into nearly pure quartz. The outer part of the cone-shaped mass contains a small percentage of molybdenum and constitutes the ore now mined. Although most of the ore contains less than 1 percent of molybdenum sulphide as mined, the final product, after crushing and concentrating, contains more than 85 per cent of the sulphide.

*Prescott, Arizona.

Dr. Henry Mace Payne, assistant to the president of the New Mexico Gold Producers Corporation, remains in charge of operations at the company's property at Taos, New Mexico. In The Mining Journal of February 15, it was reported in error that Dr. Payne had been succeeded by Philip A. Frear. Mr. Frear was elected general manager of the company to serve until certain financial negotiations are completed in connection with the installation of additional recovery units.

SOUTHWEST MINING ASSN. RE-ELECTS BOYD PRESIDENT



Julian Boyd

At the February meeting of the Mining Association of the Southwest Julian Boyd was re-elected president. Mr. Boyd, a consulting engineer of Los Angeles, has been most active in the affairs of the organization and was selected as its first president when the group was formed in May of last year. Other officers elected were:

C. B. Tibbetts, vice-president; Walter Abel, secretary; Victor J. Hayes, assistant secretary; G. A. Bisbee, Thos. E. Campbell, E. H. Hill, M. J. Holmes, E. Huguenin and W. B. Tucker, directors.

A resolution was unanimously approved and adopted by the association providing for the establishment of a Federal Fund of \$100,000,000, or other proper sum to be used by a federal agency to assist in bringing gold and other non-competitive metal bearing deposits to profitable production, and/or prospecting and developing gold and other non-competitive metal-bearing deposits and areas directly, or indirectly, or in connection with any other governmental agency.

The association next considered and adopted a resolution calling for the transfer of the U. S. Bureau of Mines to the Department of Interior, to bring the U. S. Geological Survey and the U. S. Bureau of Mines in the same department. Facts were brought out showing that the bureau of mines is in imminent danger of extinction; that the present housing condition and personnel were respectively inadequate and undermanned; that for the five years ending 1928 the appropriations for the bureau of mines were 10 millions and for agriculture 509 millions; that during this same period agriculture paid taxes in the sum of 162 millions and mining 700 millions. Thus it was the opinion that mining, the second largest industry in our nation, has been made to suffer.

House Bill No. 6098 was next considered. This bill seeks to give to the Secretary of Interior absolute authority over all mineral deposits in the lands ceded to the United States under the Treaty of Guadalupe Hidalgo. If such a provision were adopted it was deemed by the Mining Association of the Southwest to sound the death knell of mineral prospecting and development in the lands under discussion, inasmuch as such an enactment would withdraw all such lands from easy access to prospectors and would furthermore upset the titles of countless persons who have entered upon and settled these lands. It was believed that such a step would undoubtedly prove to be a serious hindrance to the mining industry in the mineral producing states of the Southwest.

The association went on record as favoring the retention of partial or complete depletion and depreciation clauses of existing statutes as they relate to natural resource industries. The elimination of these clauses would, it is feared, have disastrous effects in the mining industry by placing an undue burden on the industry.

General discussion was entered into by the members relating to the value and desirability and possibilities of the establishment of Federal Assay Offices at numerous locations and made easily accessible to prospectors, wherein no charge would be made for assays. Though no definite agreement was reached along these lines the resultant views and thoughts brought forth many interesting points on both sides of the question.

Deceased

George W. Morse of Park City, Utah, passed away. Mr. Morse was for thirty years an employe of the Silver King Coalition Mines Company.

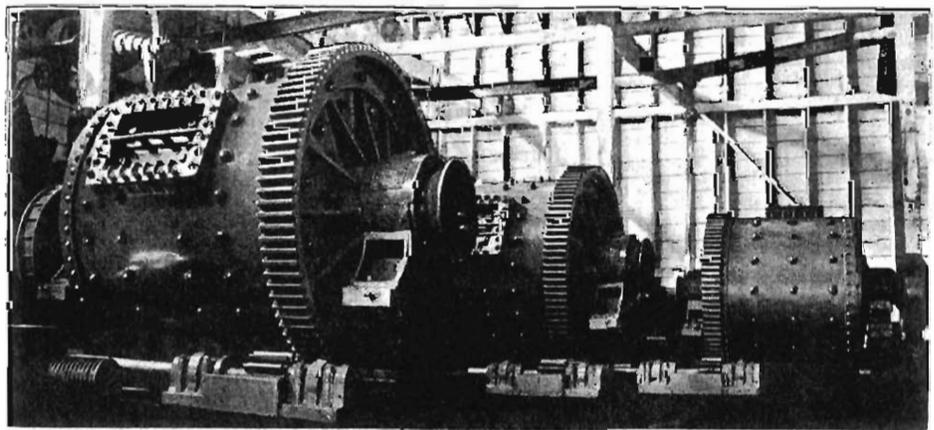
Richard Dally, for 20 years an employe of the U. S. Smelting, Refining and Mining Company, died at his home at Bingham Canyon, Utah. He was 60 years of age.

William J. McKibbin of Denver, Colorado, passed away in Kansas City, while on a visit. He was native of Central City, Colorado, and had given much of his life in metal mining.

John B. Neville, Colorado mining man, succumbed to a heart attack in Los Angeles. Mr. Neville had been in California

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only a short time. During early days he was a prominent figure in Cripple Creek mining but for several years made Denver his home.

William F. Carr, president of the Yellowstone Placer Mining Company, near Livingston, Montana, passed away. He had been a resident of Spokane since 1902 and only ten days before his death had gone to the mine, planning to spend the remainder of the winter there.

Col. Chester T. Kennan, widely known mine operator and geologist of the northwest, passed away in San Francisco. Col. Kennan had recently made his home at Helena, Montana, where he was interested in the development of the Running Wolf iron deposits. More than 10 years ago he was interested in the development of iron deposits around Tekoa, Washington.

Frank W. Graham, for 39 years a Colorado resident and widely known in business and mining circles through the state, succumbed to a heart ailment at the St. Luke's Hospital in Denver. Mr. Graham was a member of a distinguished English family and studied at Oxford College. He was interested in athletics and was one of the first members of the Denver Athletic Club.

Ernest Taylor, shift foreman of the Asarco Mining Company, Ground Hog Unit, died on February 14, following a short illness. Taylor was born in Oklahoma in 1885 and at the age of 19 joined the mining industry in New Mexico. He later followed mining in Leadville, Silverton and Animas Forks, Colorado, returning to Grant county, New Mexico in 1917. Since 1924 he has been employed at the Ground Hog mine at Vanadium, New Mexico.

Matt Baumgartner, prominent northwest mining man and who has given nearly all his life to the development of mines in the Coeur d'Alenes, passed away a few days ago in the Sacred Heart Hospital in Spokane. He had been ill only a short time. Mr. Baumgartner was born in Germany and educated as a chemist and metallurgist in that country. After coming to the United States he spent some time in California before locating in the northwest. He was managing director of the Metropolitan Mines Corporation, head of the Delaware and Commodore operations, and interested in the First National, Jim Blaine, American Lead and many other mines.

H. B. LOWDEN

Hugh B. Lowden, widely known Colorado engineer and inventor, passed away at his home, 1312 York Street, Denver, following a brief illness. He was for several years advertising manager for the Colorado Iron Works Company.

Mr. Lowden was born in New York City December 31, 1872, and educated in private schools. Before coming to Denver in 1906 he was associated for several years with the Gates Manufacturing Company, in Chicago. Much of his time was devoted to scientific research and he was known for his microscopic studies. Prominent among his inventions was the Lowden ore dryer.

He was a member of the A. I. M. E., the American Institute of Chemical Engineers, the State Historical Society, the International Rifle Association, the Denver Athletic Club and the Colorado Motor Club. He was active in Oriental Masonic Lodge No. 87, the Colorado Consistory No. 1 and El Jebel Shrine.

NEVADA'S BID FOR ADDITIONAL MINERAL DISCOVERIES

By William Friend.*

A most interesting and entirely successful departure from the usual vocational education training classes has been undertaken by the Vocational Department of the State Department of Education in Nevada. This is the establishment of a prospector's school which is taken around the state, virtually to the door of the prospector who might find it difficult, if not impossible, to attend the school if it were held in a central location.

With a truck equipped with a complete laboratory outfit, Donald Cameron and Fred D. Gibson, of the mining division of the vocational department, travel from town to town throughout the state and hold the prospectors' classes which cover both a course of lectures, with a thorough drilling in the theoretical information needed by the prospector, as well as class and individual instruction in laboratory work in the identification of minerals.

The classes are of a duration of three weeks at the present time, with sessions held for three-hour periods each evening during six days of each week. The instruction material has been formulated after a careful study of the job of prospecting. Classes are sponsored by the State Department of Vocational Training in cooperation with local school units throughout the state and are a part of the department's regular industrial training for adults.

One of the most pleasing features is the way the classes have been received by the students who manifest an earnest interest in both phases of instruction and who maintain a large average attendance. At the class held at Hawthorne the total enrollment was 54 and the average daily attendance was 50 during the entire course.

The classes, which are held as nearly as possible during the inter-seasonal periods of prospector activity, are planned as a permanent feature of the department's program of education. It is proposed that the classes during the next year will be of longer duration and cover a wider scope of instruction.

It is interesting to note what might be called the "itinerant" class of the students who have assembled at the different places where the classes are held. Some are there for the sole purpose of attending the course of instruction, while others are "holed up" for more favorable weather to get back into the hills, or possibly working for a grub stake to carry them through the coming prospecting season when they will be back in the hills, following some lead they have found. The instruction, which is presented in a most lucid and non-technical manner, making use of class discussion which draws on personal views based on experiences and observations in the field, will send many of the men back into the field much better prepared to do a more thorough job of prospecting. Many knotty problems that have been worrying the different students concerning their particular prospects will undoubtedly be solved through the instruction that has been given them during these classes.

In several of the towns where classes have been held the students have banded themselves together into "Prospector's Clubs" for the purpose of assembling from time to time to listen to lectures by men sent by the department of education and other mining authorities and engineers. Other objects of these clubs will be to

*Prospector and Placer Miner.



Fred D. Gibson, instructor, standing beside the truck used by the Department of Education, State of Nevada, in conducting the school for prospectors.

assemble mineral collections from their respective localities and disseminate information on the mining possibilities of their sections.

This year classes have been held in Elko, Ely, Fallon and Hawthorne with definite arrangements made for classes to be held in Yerington, Las Vegas and Boulder City, and tentative arrangements for further classes in Lincoln County, possibly at Panaca and also at Battle Mountain and Lovelock. Provisions will probably be made for classes in two or three other places to fill out the year.

The number of genuine, persistent students attending each class already held is: Elko 83; Ely 35; Fallon 65, and Hawthorne 54.

Consideration has been given to the idea of having students list their prospects with the department, describing what they have together with an outline of what they need in the way of help for development in order to prove their property or place it on production. The descriptions would be assembled and printed in the form of a bulletin for distribution to persons wishing to contact meritorious prospects. The cost of gathering such information would be practically nothing and the cost of printing and distribution would be nominal compared with the possible results of the man in the hills making direct contact with capital to carry him through to a successful conclusion of his task of development.

SUNSHINE MINING CO. MAKES NICE PROFIT ON SILVER ORE

Profits from the Sunshine Mining Company's operations have been recently revealed by A. E. Larson, president, at Yakima, Washington, whose annual report showed a total income of \$1,078,206 for 1933. Net profits amounted to \$480,732, of which \$372,205 was paid out in dividends.

The Sunshine is located near Kellogg, Idaho, and is the leading silver mine in the United States at the present time. Along with production, extensive development is in progress. The vertical shaft is being sunk another 400 feet below the 1,900-foot level, and additional depth provided for a sump. It has three compartments, five by five feet in the clear. The work is now well below 2,100 feet and on that level a crosscut is approaching the vein.

According to Mine Manager C. O. Samuels, the 1,900 level has been developed for more than 600 feet and is the best level in the mine. For 325 feet the vein is 10 to 12 feet wide and averages more than 40 ounces silver to the ton. Ore is being mined from all levels between this and the 400, and 325 to 350 tons milled daily. The concentrates go to the Tacoma smelter and carry 900 to 1,000 ounces silver to the ton.

Concentrates from the Western State

Some high spots of the mining industry in the Western United States and Mexico.

ARIZONA

Consolidated Gold Mines Co., Ltd., at Dos Cabezas, Arizona, is employing two shifts of workmen in the development of its ore deposit. The principal work is consisting of drifts and raises. A 50-ton pilot flotation mill is being installed. A. B. Wadleigh is general superintendent.

The **Lucy Bell Mining Company**, J. Frank Jones, president and general manager, Box 3177, Lowell, Arizona, is completing mill installation, following considerable exploration conducted during the last year. The company expects to be on a production basis at an early date.

The 10-stamp mill at the Climax mine is being repaired and the mine put in shape for production by the **Climax Gold Company** of Prescott, Arizona. Actual production was scheduled for the last of February. A large tonnage of gold ore, said to average about \$7 per ton, is available. The interested parties are J. E. Russell, attorney, Neal Hayden and William A. Freericks, all of Prescott.

The **Western States Gold Mining Company**, operating the Guttry property on Cherry Creek, resumed operations the middle of January. The property is equipped with a three-stamp Nissen mill, which is being put in shape for operation. The mine is developed by a 310-foot shaft which is being pumped out and retimbered. A considerable tonnage of \$15 ore is said to have been exposed in workings from the main shaft. The company plans to continue the shaft to the 500-foot level and at the same time extend the lateral workings. Operations are under the direction of T. L. Guttry, Cherry, Arizona. Los Angeles and Pasadena investors are behind the project.

The **Golden Belt Mines, Inc.**, Cordes, Arizona, A. L. Lampton, president and general manager, shipped concentrates valued at \$22,000 during the month of January. The ore is running between \$12 and \$18 per ton and is concentrated in the company's mill.

The **Comstock Dexter Mines, Inc.**, Hillside, Arizona, T. F. M. FitzGerald, president and general manager, is making plans for the sinking of its main shaft to a depth of 400 feet, and developing the vein systems on the 156, 256, and 356 levels. The shaft at present is 136 feet deep. There are also about 900 feet of tunnel workings. Recent work has included the finishing of the 250-horsepower Diesel power plant. Edward L. Haff, 723 Pacific National Building, Los Angeles, California, is consulting engineer for the company.

Operators of the **Oatman Rainbow** mine, near Oatman, Arizona, are reported to have closed down that property and to be transferring their attention to the **Golden Door** mine in the river range. J. Galbraith has assumed the task of building a mill and operating the property which belongs to Kean St. Charles of Kingman. Lumber and other materials have already been shipped to the Golden Door for the mill.

Regular shipments of 70 per cent tungsten concentrates are being made every 25 days by the **Boriana Mining Company**, Yucca, Arizona. A number of improvements are being installed, including additional power equipment, an electric hoist, an 800-cubic foot compressor, and a thickener for the mill. The company is em-

ploying about 60 men and expects to increase this number when the new equipment is in place. A winze is being sunk to permit development of lower levels of the mine. A. J. Klamt is general superintendent.

Robert O. Gruwell of Kingman, Arizona, is cleaning out the old stopes and building ore bins at the **Alameda** mine. The ore is said to be free milling and to carry about one-half ounce of gold per ton. Some production was made by this property in 1927-29.

About 50 tons of gold ore averaging \$60 per ton, are being shipped weekly from the **Sunrise Gold Mine**, 19 miles west of Wickenburg, Arizona. The ore is being hauled to Aguila 12 miles north of the mine. The mine is opened to the 230-foot depth, but the present work is on the 200 level on a vein running 12 to 15 feet wide. The four feet along the hanging wall is producing the high grade being shipped, while the balance is being retained for milling later. It is the intention of C. W. Mitchell, manager, to shortly begin the erection of a mill with a monthly capacity of 1,000 tons. He states that measurements of the ore bodies and a thorough sampling of them show approximately 40,000 tons of ore in sight with an average value of \$25 per ton at the present price of gold. The Sunrise is equipped with air compressor, hoist and mine equipment sufficient to take out 30 tons of ore daily. This equipment is to be enlarged to handle 50 tons daily.

A mining property, to be known as the **Alamo**, near Prescott, Arizona, has been taken over by C. G. Walker who is erecting a 50-ton milling plant.

At the annual meeting of the **St. John Gold and Copper Company**, Cleator, Arizona, all officers of the company were re-elected. They include: John Slak, president and general manager, 1222 North Third Street, Phoenix, Arizona; George T. Wilson, secretary; William Peper, treasurer. The officers, with George Nelson and Jack Davey complete the board of directors. The company has recently been making test shipments of gold ore from its Los Felice property to serve as a guide in the formation of large-scale exploration and production plans. It is also planned to similarly explore and determine the possibilities of a silver vein immediately east and parallel to the main gold deposit on Los Felice No. 2 claim.

On February 15 the **Tom Reed Gold Mines Company**, Oatman, Arizona, will resume milling operations, according to an announcement by Bemis Phelps, consulting engineer. The recently opened low-grade ore on the 200 and 600 levels will be handled, in addition to the ore of higher grade being produced by lessees in important amounts. Jack Zwinge is assistant general manager of Tom Reed, in charge at the property.

Plans of the new operators of the **Vivian Mining Company** at Oatman, Arizona, call for the erection of a 50 to 75-ton cyanide plant. This property was taken over from the Judge Ross Estate of Los Angeles by P. E. Gardner, owner of the Gardner Hotel of El Paso, Texas, and E. G. Langley, oil man of Odessa, Texas. The holdings consist of five unpatented and ten patented claims, four and one-half miles west

of Oatman. First operations will center in the Leland Mountain as considerable ore is already blocked out through tunnel and raises. Assays are said to show values from \$5 to \$40 per ton with veins three to six feet wide. There are three shafts on the property with 700 feet the greatest depth attained. Electric power is supplied from Kingman. Earl L. Goodwin, the superintendent, reports that the mine machinery is in first-class shape and that very little primary work will be required.

Leasing activity in the Tombstone district of Arizona has been considerably increased, due to the higher prices for gold and silver. At the **Head Center** claim actual mining is in progress, ore being hoisted regularly to supply the mill which is running steadily. The Head Center is a part of the holdings of the Tombstone Development Company. At the San Diego mine, the ventilation pipe has been installed and ore bins completed. Mining was started this month at the **Free Coinage** after a long period of development by Tom Brandt, John Bertoglio and John Vecillino. This claim is equipped with cyanide outfit which is scheduled for production this week. The output will be reduced to bullion before shipment. At **Dry Hill** a force of 12 men, eight on day shift and four on second shift, are mining approximately 25 tons of ore daily, shipping three cars per week. The shaft extends to a depth of 140 feet on an incline, all in ore. A compressor is to be installed immediately. On the **Empire Claim**, work is progressing steadily and shipments are about equal to those at Dry Hill.

CALIFORNIA

For the first time in four years, the **Argonaut Mining Company** has paid a dividend. Payment was made February 21 at the rate of 25 cents a share and totaled \$50,000. The last previous dividend was one of 20 cents a share and was paid in February, 1930.

The **Lancha Plana Gold Dredging Company**, operating at Camanche, California, has declared an annual dividend of between \$30,000 and \$35,000. During the five years that the company has been operating, a dividend has been declared every year but one. On that exception the annual profit was used to enlarge the plant and to purchase new equipment. Two years' "ground" are yet available for dredging and test borings indicate that the dredge is entering a piece of land richer than any handled during the past year. Negotiations are pending for the acquisition of another tract, estimated to contain 90,000,000 cubic yards of gravel. The officers were re-elected as follows: C. G. Patmon, president and general manager; R. L. Quisenberry, vice-president; H. L. McPherson, secretary; Dr. Lindstrom, treasurer, and George Swain, additional director.

W. J. Flynn and associates of the **Farrar Gulch Mining Company** have started washing gravel on the Beggs property near Blythe, California. Dragline equipment is being used. Almost six miles of pipe have been laid to a well on the Bert Johnson ranch, water is being pumped in by a 75-horsepower Holt engine and stored in a reservoir at the property. The first day of operation 110 yards of gravel were handled and they expect to run around 150 tons a day after the work is well started.

It is reported that the **Arlington Mining Corporation** will add to its mill at Victorville, California. Under the management of Algernon Del Mar, Room 812, 112 West Ninth Street, Los Angeles, the

(G. J. A.)

company has been a long time and steady producer. The plant can treat 100 tons of ore a day and is operating at capacity.

Gravel averaging better than \$5 a cubic yard in gold is reported to have been located at 40 feet in a shaft in the **Dondero** placers at Columbia, California. Ten feet of sinking below that depth continued in gold-bearing material and bedrock is not yet in sight. Frank L. Mitchell of Columbia is in charge of operations for H. J. Lynch, 2309 Mitchell Street, Oakland, who leased the ground last summer. Ray and Clarence Dondero are owners of the ground.

Culminating weeks of preparatory work, the **Russell Gold Mining Company** is installing a new electrically operated hoist and compressor at the Vista mine at Angels Camp, California. Plans are to sink the shaft another 150 feet. At the 100 level a five-foot vein of ore was opened which Superintendent J. W. Bandhauer says is concentrating to about \$125 a ton. The company is reported to have also taken over the Pareda and Centevich properties nearby.

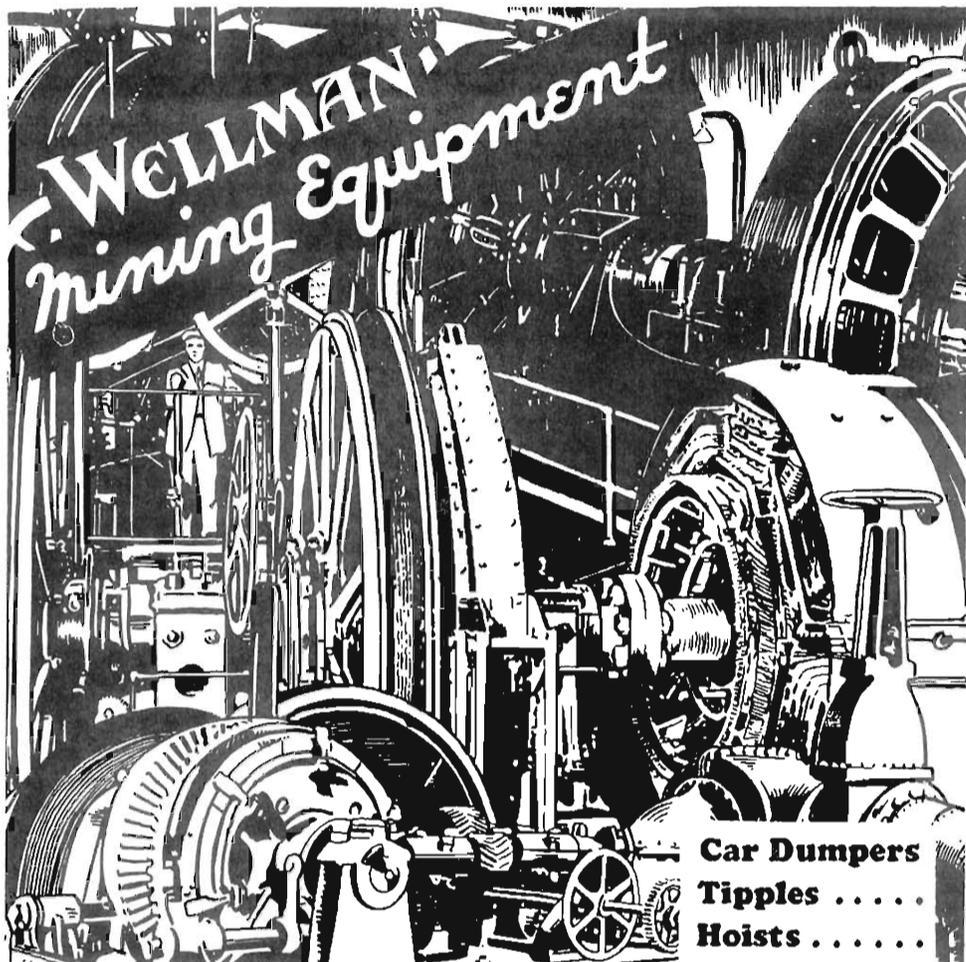
The **Empire Star Mines, Ltd.**, has day and night crews working in the North Star mine at Grass Valley, California, following a 10-day shut down while repairs were being made. In that time the damaged headframe has been repaired and 10 feet added to the height of the structure and two new sheave wheels have been brought in on truck from Salt Lake City and installed. F. W. Nobs is manager of operations and Fred Searles, Jr., 14 Wall Street, New York City, is engineer in charge.

A nine-day run of the **Gabriel** pilot mill of the **Belmont Metals Corporation** at Midpines, California, resulted in a cleanup of 18 ounces of gold. According to H. R. Lawson, manager, the concentrate will carry an additional value of around \$500 a ton. The ore was mined from a vein 200 feet long and at a depth of 195 feet on the dip of the vein. S. M. Pike, 381 Bush Street, San Francisco, is president of the company.

Jafet Lindeburg, owner of the **Red Hill** mine at Junction City, California, has a crew of 20 men installing a new water system. The ditch will bring in the water from Canyon Creek.

F. A. Beauchamp of Hamilton, Beauchamp & Woodworth, consulting metallurgists, 564 Market Street, San Francisco, and eastern associates have taken over the **Malvina** mine and other property at Coulterville, California, until a few years ago operated by the **Merced Gold Mining Company**. Rehabilitation work has already commenced with Ed. McMahon in charge. The 1,000-foot shaft sunk from a 2,600-foot tunnel in the Malvina is being unwatered. The original holdings of the Merced company embrace 1,000 acres.

Some damage and inconvenience was caused when a bulkhead gave way under the pressure of water in the **Canyon Creek Placers** reservoir six miles above Dedrick, California, and some million gallons of water poured down the mountain side. Only a few weeks ago, the company completed an elaborate water system, built dwelling houses, garage and shops, on which 72 men were engaged on construction work. The set up was planned for handling 10,000 cubic yards of gravel a day by hydraulic mining, but actual mining will be delayed until such time as repairs can be made. George H. Bergin of Weaverville, California, is general manager.



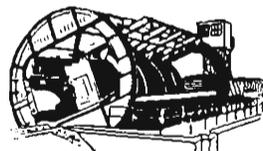
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PP9-A

E. W. Cooper is showing a gold brick valued at \$500 from the **K. C.** mine in the Klamath River mining district, near Yreka, California. He has been working there several years, using a small stamp mill to crush the ore, and hopes to increase the capacity of his plant in the near future.

Another 100 feet of depth has been added to the workings of the **Soulsby Belle** mine at Soulsbyville, California, making a total depth of 340 feet. Drifts have been started from the bottom to open up and block out the ore that is ready for stopping from the 240 level up. When reserves warrant, it is planned to replace the present ball mill with a plant of greater capacity. The property is being operated by Bahl, Bacon & Henry, 1921 East Tenth Street, Kansas City, Missouri; and John Kelly and John Brunton are manager and superintendent, respectively.

With only one wall in sight, four and a half feet of sulphide ore, a sample of which is said to have assayed \$100.78, is reported in the bottom of a 40-foot shaft at the **Miller** mine at Jamestown, California. The property has recently been taken under lease and option by Tref Willson and R. J. Stewart. It is planned to drive a crosscut, after going a little deeper, to determine the full width of the vein. A power hoist has been installed and a compressor and machine drill are said to be on order.

A 10-stamp mill is being installed at the **Alabama** mine near Jamestown, California, by J. A. Keyes, L. L. Coffey and J. H. Bowie, who have taken over a part of the property under a royalty lease. The lease embraces the 300-foot shaft on the property and a long tunnel located just above the shaft. It is reported that thousands of tons of ore are in sight.

Active mining is reported underway at the **Bright Hope** mine northeast of Georgetown, California. D. Barnes, one of the operators, has recently returned from Seattle, where he had been for six weeks.

Andrew Goering and his son, Elwell, are tunnelling to a gold-bearing channel in the **Royal** mine in the Cement Hill district, near Nevada City, California. The objective requires about 170 feet of work, which is about half completed. The shaft on the property is equipped with a hoist and 15-ton Ellis ball mill. The Royal property includes 160 acres and some production has been made, but the mine was closed almost three years ago by litigation.

Since February 2 the **Beebe Gold Mining Company, Inc.**, at Georgetown, California, has been operating one unit of its milling plant and treating 250 tons of ore a day. By the middle of March they expect to be working at capacity and treating 400 tons a day. The concentrate treatment plant has also been working since the first of February. The Eureka winze has reached the 500-foot level, where laterals are being started north and south on the vein and connection made with the Beebe shaft. At present about 30 men are working at the Beebe, under Byron E. Rowe, general superintendent. The Alpine mine has been reopened and is hauling 40 tons of ore a day to the Beebe mill.

The 70-ton milling plant of the **Consolidated Metal Mines, Ltd.**, at Yucca Grove, California, has been placed on a 24-hour operating schedule, according to O. Perry Riker, superintendent. Thirty-five tons of ore were run through the mill at the start, and it is planned to step up production as the work proceeds. Ore is being drawn from two shafts in the Telegraph mine, which the company holds

under bond and lease. A third shaft is being sunk. It is down almost 50 feet and has for several feet been in ore averaging \$15 a ton in gold. Arthur Thomas, 1106 Newhouse Building, Salt Lake City, is president of the company.

A five-stamp battery of 1,000-pound stamps is in operation at the **American** mine at French Gulch, California, which is being operated by William and H. J. Franck. The old workings are to be found at different elevations from the lowest, or No. 5 adit, to the outcrop, about 800 feet. Production is coming from the upper levels and the ore is reported to be worth from \$42 to \$50 a ton. New work consists of a 40-foot winze below the No. 5 level.

Plans are being made to operate the old **Peerless** mine in the Muletown district, out from Redding, California. J. J. Johns, one of the old operators, has returned from Chicago to supervise the work. The old 100-foot shaft is being unwatered, new machinery installed and plans are being made to sink deeper into the ore body.

The **Silver Lead Syndicate, Inc.**, started work at the Cerro Gordo mine, in Inyo county, California, February 1. One of the old drifts is being extended into new ground towards the point where J. J. Beeson, the consulting engineer, expects to open an ore body. President Beeson and Charles Trezona, vice-president, may be reached at 525 Security Building, Los Angeles.

The **Black Bear Consolidated Mining Company** reports a production of slightly more than 48 ounces of gold from the Home Ticket mine at Michigan Bluff, California, during the month of January. The gold was sold in part for \$34.45 and the remainder for \$35 an ounce. Gross yield was approximately \$1,500. The January output was 50 per cent greater than the best previous monthly production. The gravel yielded an average of \$3.15 a yard. Black Bear is operating under a stepping-up program and expects February to show a production exceeding that of January. A larger crew has been employed and with three faces of gravel open they expect to be washing at least 30 tons of gravel a day soon. C. S. McCarthy is superintendent at Michigan Bluff.

George Holmes, leaser of Mojave, California, received returns averaging \$40 a ton from a 45-ton shipment from the **Silver Queen** mine on Soledad Mountain. The ore was sent to the Selby smelter just as it came from the mine, that is, without sorting. With returns, Holmes plans the installation of new drilling equipment and other machinery. The No. 1 shaft, which he is sinking, is near 50 feet, and at 100 feet lateral development will be started.

H. F. Alexander of the **Alexander Exploration Company**, 617 South Olive Street, Los Angeles, has started drilling to prove the value of its vast Amerok placers, 30 miles northwest of Baker, San Bernardino county, California. The area extends over 14 miles. Granville Moore, consulting engineer of Los Angeles, is in charge of the work.

Harry Engal of Oroville, California, reports the successful operation of a dragline and gold recovery equipment at Palermo, in Butte county, California. The project is known as the **Dragline Dredger Company**. Two thousand and four hundred yards of gravel are being handled every 24 hours, power is provided by a 35-horsepower Diesel engine and a lighting system has been installed on the barge. The gravel is moved by a yard

and a half shovel to a large revolving screen on the barge. There the boulders are separated from the fine gravels conveyed by a stacker to behind the barge. The fine gravel passes over riffles.

The **United Gold Mines, Inc.**, is reopening the Moses and Lamphear mines at Mokelumne Hill, California, under the direction of John B. Cesson, mining engineer and graduate of the Libon University, Austria. These properties are contiguous and four veins have been partially developed by tunnels, shafts, and other workings. Cesson estimates 40,000 tons of ore in sight and blocked off. Much of it assays better than \$16 at the present price of gold and it is estimated that this class of ore will net more than \$10 a ton after deducting all costs of mining and loss in tailings. The cost of improvements at the mines, exclusive of underground development, is placed at \$37,000, including a 20-stamp mill which is expected to go into operation at an early date. T. L. Giammugnani, Suite 306, 60 Sansome Street, San Francisco, is president.

Preparations are being made to clear out the main tunnel level and to pump out the shaft in the **Gladstone** mine at French Gulch, California. The mine is being reopened by G. T. Salsbury, who is backed by Los Angeles and eastern capital. For several weeks he has had a crew of men repairing buildings and surface equipment and making ready for a larger crew. A 30-stamp mill on the property is in fair condition.

A milling plant with a daily capacity of 150 tons of ore is to be installed on the **Swift Gold Lode Mining Company's** property near Georgetown, California, according to George R. Swift, superintendent of the property and long interested in the development of the mine. Walter Play has come from Oakland to be in charge of construction. Eight men are engaged in preliminary work and preparing the ground for the installations.

A 12-inch vein of gold ore is reported to have been opened in the **Brown Monte and Reward** mines in the Russ mining district, 12 miles north of Lone Pine, California. The report continues that the ore was missed by the early day operators by only about three inches and that it can be flaked off with a fingernail. Indications are that it will develop into a large ore body. These mines were recently leased by J. F. and R. B. Brackett, W. E. Jones, W. A. Gould, Jack Diamond and Jim Wightman. The latter is credited with the discovery of the ore.

COLORADO

According to B. F. Webster, Jr., 722 North Tejon Street, Colorado Springs, Colorado, mild weather has made possible rapid progress on repair and construction of the mill, tramway and mine equipment of the **Royal Charter Mining Company** at Howardsville. The compressors are working and it will be only a short time before the mine will be in full operation. Development of new territory and new exploration are planned. Webster is a metallurgical engineer and is superintendent for the company.

K. F. Fulton, construction engineer, has purchased a stamp mill that can crush 10 tons of ore an hour and an American ball mill, which he is using in rebuilding the **Black Cloud** mill at Salina, Colorado. Last fall, control of this property passed to Judge A. L. Beckett of Oklahoma City and associates.

River in Idaho an improved suction dredge adapted to work rocky river bottom placer deposits by the employment of the Hydro-Vacuum self-cleaning suction nozzles and Duplex stone rakes, is ready to supply these dredges in capacities of from 500 to 6,000 yards to those who have similar river bottom ground. The company has lately secured exclusive rights to use an improved exploration equipment, adapted especially to prospecting and testing of river bottom placer deposits. In order to encourage the mining of river bottoms, they are now leasing their exploration equipment on a mileage basis. The equipment puts down an average of four holes an hour, usually at the cost of 15 to 25 cents a hole, and delivers a sizeable sample of one cubic foot or more into a receptacle for analysis. The company has been operating this prospecting equipment over a short space of the Salmon River bottom and has found paying ground the full length, much of it running \$6 a yard, according to A. R. Brewer, manager.

It is reported that the Gold Hill Mining Company will reopen its property in the Slate Creek country, Whatcom county, Washington, about May 15. Eight or ten men will be required. Considerable development has been carried on at the Gold Hill property during the summer seasons and a number of stringers carrying \$15 to \$17 gold (at the old price) have been drifted on for a length of about 600 feet and a width of 25 feet. The board of directors is H. I. Ballard of Mazama, Washington, who is manager of operations; W. S. Paselk, George H. Fender, R. E. Johnson and R. M. Badger.

On behalf of his Los Angeles associates, C. D. Richardson has started unwatering the Mountain Lion mine at Republic, Washington. A new steam plant has been installed for power. Since these investors became interested in the property late last summer they have installed a good deal of machinery including an 80-horsepower hoist. Last year the Mountain Lion mine was the largest shipper from the district to the Trail smelter and all of the ore came from leases. All leases have now expired and the company has full charge of the mine.

CHIEF CONSOLIDATED MAKES REPORT FOR 1933

Operation of the Chief Consolidated Mining Company, the Plutus Mining Company and the Eureka Machinery & Supply Company for the year 1933 resulted in a net loss, exclusive of provisions for depreciation and depletion, of \$71,803.95. Operations for 1932 resulted in a net loss of \$78,396.08.

According to Cecil Fitch, general manager, mine operation was resumed in June, following a shut down from February, 1932. Work began on a leasing plan, employing a few men in the Chief and Plutus properties. As these operations extended and proved successful from the standpoint of no loss to the company, the Eureka Lilly was opened under a similar plan just before the close of the year.

Considerable work was necessary in reopening the various workings due to the air slacking and sloughing of the drifts attending the sixteen months' idleness. The greater part of that work is now finished and the company is in position to materially increase tonnage and take full advantage of further advances of the metal prices which, in turn, will make it profitable to mine lower grade ores. Large tonnages of the latter are available, particularly in the Chief mine.

Research and experimental work on the concentration of the ores was continued during the year and further progress was made which will give greater profit on milling, when started again. One hundred and twenty-five men are employed; the new prices for gold and silver have stimulated the expansion of all operations and the company is now receiving a small return which gives promise of increasing.

YUBA GOLD FIELDS TO LAUNCH 15,000-YARD GOLD DREDGE

A gold dredger approaching the dimensions of an ocean liner is being constructed just west of Hammonton in Yuba county, California, by Yuba Consolidated Gold Fields, veteran dredge builders and operators. The boat will be 550 feet long with a beam of 68 feet and will require 30 feet of water in order to float. Close to 125 men are engaged on construction and, unless something delays progress, the dredger will be launched the end of the month.

Construction throughout is of steel and all machinery is to be operated by electricity. It has 130 steel buckets, each weighing two and a half tons and each capable of lifting 18 cubic feet of material. Its operation will require about five men working each eight-hour shift. When working at capacity, it can handle approximately 15,000 cubic yards of material daily.

The machine will reach its buckets down into the stream to a depth of 110 feet, bringing up what they hope will indicate new potential fields of rich ore-bearing soil. The material will be dumped into a hopper and conveyed to a revolving screen for classification. The finer material, measuring five-eighths of an inch or less in diameter, will pass through the perforations and be distributed on the gold-saving tables, where it will come in contact with mercury and amalgamate. The coarser material will go out the end of the screen to be distributed on a stacking ladder 275 feet in length.

PART UTAH CONSOLIDATED REPORTS LOSS FOR 1933

The Park City Consolidated Mines Company, in normal times one of Utah's largest silver producers, confined its work last year entirely to a small amount of development work and to maintaining the property in good repair both below and above the tunnel level. Everything is in shape to resume production without delay whenever it plans to put its ores on the market.

The work has involved the expenditure during the year of \$77,459 for mine maintenance; \$44,355.71 for general and administrative expenses; \$7,417.33 for tunnel maintenance and drainage; and \$5,718.39 for development expenses, a total of \$134,950.34. Income for the year aggregated \$57,470.18.

According to George W. Lambourne, president and general manager, ore bodies containing lead, silver and zinc sufficient to supply the concentrator for some time to come have been developed and are ready for extraction. Other silver-bearing ore bodies are in reserve and will be of commercial value when silver further appreciates in price.

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Gold Activity For New World District

The Cooke City, or New World district of Montana, expects to make its bid for a gold boom with the coming of spring. A new interpretation to the geology of the district is given by Dr. J. C. F. Siegfriedt, geologist and paleontologist.

With the coming of spring, 1934, owners of properties in the Cooke City or New World mining district of south central Montana look forward to a gold boom unprecedented in the old camp's history.

In a recent interview, Dr. J. C. F. Siegfriedt, geologist and paleontologist of Red Lodge, Montana, stated that the Clark's Fork river, from its headwaters in the Cooke City region to its merging with the Yellowstone river at Laurel, Montana, is laden with gold carried down by the waters over hundreds of years from the rich deposits which have recently come to light in the New World mining district. Characterizing the Clark's Fork as a literal "river of gold," Dr. Siegfriedt said that his statements were based on geological study of the origin of the gold deposits in the New World district, and are being borne out by actual experiments now under way there.

The geologic studies, Dr. Siegfriedt said, reveal that the colored-talc deposits which are yielding values from \$70 to \$300 per ton in the Scotch Bonnett and Red mountain region, near Cooke City, are but remnants of a vast deposit which formerly lay there. Prospecting operations show that the present Cooke City deposits are by no means small. Briefly, the geologic theory is that the fine or "talcum" gold, found in the Gros Ventre clays of the region, was impregnated in the strata by gases from a huge lava or rhyolite dyke which shoved itself up through the center of New World district. This occurred far below the surface; subsequently the whole area under went a gigantic uplift.

The evidence indicates that the mining area from Scotch Bonnett mountain to Red mountain was once filled to the brim with gold bearing material. This fill was one mile wide and some 3,000 feet deep. Stream action of the Clark's Fork over a long period of time, together with other erosive forces, carried away the bulk of this huge deposit and gave the area its present aspect. That vast amounts of gold were carried down stream by the swift-flowing waters is an actuality which cannot be overlooked, Dr. Siegfriedt stated.

The theory held at Cooke City, since gold was first discovered there more than 40 years ago, was that gold had never been encountered above the Box Canyon or O'Hara creek on the Clark's Fork. The newer geologic theory holds that fine golds are scattered all along the river from its mouth at Laurel up to the Saddle between the head of the Clark's Fork and Stillwater

Red Lodge, Montana.

river's near Cooke City, and the site where Walter McLaren, eastern ice cream cone magnate, who came west seeking health, discovered the rich gold contents of the colored clays in the New World district last summer.

The old theory clung to the belief that gold would never be discovered above O'Hara creek mainly for the reason that the river flowed too swiftly to allow deposition of the metal. The newer theory agrees partially with this and points out that at the time the river was eating away the great deposit it must have been a much larger stream than at present and had a flow at least ten times greater than it has today.

Debris plains which extend for miles along the course of the Clark's Fork give evidence of the size the river once attained. As the river rushed forth from the mouths of the canyons, no longer confined by rock walls, it spread out, dropping the coarser fragments of silt, and the finer particles as the flow slackened and widened on the valley floor. Thus were great plains of river debris built up. A large proportion of the gold deposit from the river's source was deposited in these heaps, and here, says Dr. Siegfriedt, lie the real treasures of the Clark's Fork.

Test holes which have been sunk into the debris benches along the river's course near Belfry, Montana, are proving this point. Sands taken from the bed of the present course of the Clark's Fork assay from 45 to 50 cents per yard while assays, taken from a 14-foot shaft in the debris benches at the same point, are running from \$1.00 to \$1.50 in gold per yard. Values, assayed at various levels in the test hole, have shown a tendency to increase as the hole was sunk deeper in the river silt.

These debris benches extend for miles along the Clark's Fork. One bench, from Box Canyon to Belfry, is 35 miles long. Great activity in gold mining will not only occur at Cooke City, which is about to awaken from a half century slumber, but will be noted along the entire course of the Clark's Fork, declares Dr. Siegfriedt.

"This activity will take place simply for the reason that this is a poor man's field. The gold is there, lots of it, in these silt basins," he said, "and can be recovered fairly easily once the large boulders, laid down by the great glacier which at one time covered the river bed, are cleared from the surface and the river gravels are struck."

Unconfirmed reports tell of four men who cleaned up a small fortune during the summer of 1933 at a point along the Clark's Fork course. Clearing the big boulders from the river bed, they used a team of horses and a drag line to bring up gravel for their sluice boxes.

Dr. Siegfriedt believes that never before in the history of Cooke City has the stage for gold production been so perfectly set. The area now has the new federal highway available for cheap transportation of gold concentrates to the smelter, smelter charges are lower and the prices of gold and silver have been materially increased.

CRESSON CONSOLIDATED NET JUMPS WITH NEW GOLD PRICE

The report of L. G. Carlton of Colorado Springs, Colorado, president of the Cresson Consolidated Gold Mining and Milling Company, for last year is that the company shipped 63,136 dry tons of ore on company account with an average value of \$8.15 per ton and a gross value of \$516,192.17. Returns, less transportation and treatment charges of \$223,472.26, were \$292,719.19, or a net value of \$4.63 per ton.

The company received as additional income the sum of \$5,324.52 interest on bank deposits, and \$161,395.25 net royalty on 29,816 tons of lessee ore, making a total of \$459,439.68. Total expenses were \$296,757.62, resulting in a net gain from operations of \$162,682.06. Dividends for 1933 totalled \$48,800, bringing the grand total of dividends paid by the company to \$12,491,072.50.

During 1933, 11,285 feet of development work was completed, which is 2,300 feet more than in 1932. The total cost per ton on ore shipped in 1933 was 47 cents less than in 1932, notwithstanding an increase in taxes from 6 to 19 cents per ton.

On February 10 dividend checks were mailed out at the rate of 3 cents a share. This is treble the rate that prevailed during 1932. Cresson is shipping to the Golden Cycle mill at the rate of about 5,000 tons of mine ore and 3,000 tons of dump ore a month and is giving steady employment to nearly 200 persons. The bulk of production is coming from the lower levels and two good bodies have been opened up recently on the 1,100 and 1,300-foot levels. A. H. Bebee of Cripple Creek is mine superintendent.

UDELL & ASSOCIATES TO PLACE BIG BLUE MINE ON PRODUCTION

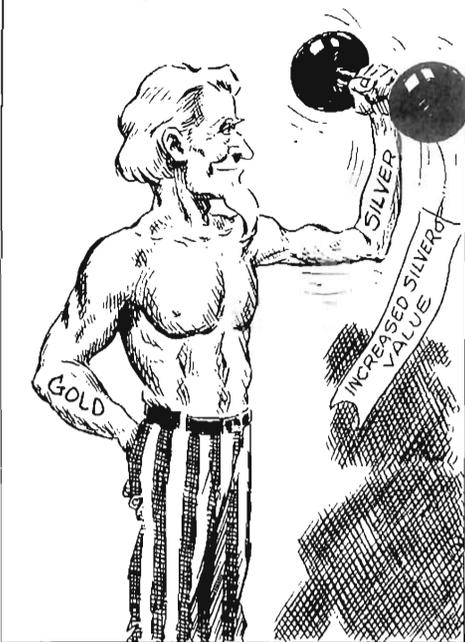
The Bullion Gold and Silver Mining Company has acquired a 30-per cent interest in the Big Blue mine at Kernville, California, following favorable reports of Oscar Hershey, geologist, and A. V. Udell, mining engineer. Plans are being formulated for the immediate mining of one of the Big Blue ore bodies and for the installation of a reduction plant with a daily capacity of 100 tons a day. Mr. Udell will be in charge of operations.

Mr. Hershey made an exhaustive survey of the Big Blue mine. He estimates from detailed sampling that monthly production will amount to around \$19,000 on the basis of 3,000 tons of ore milled per month, and that operations on this scale should yield a net profit of around \$10,000 monthly. Plans are to build the plant as a unit permitting additions later.

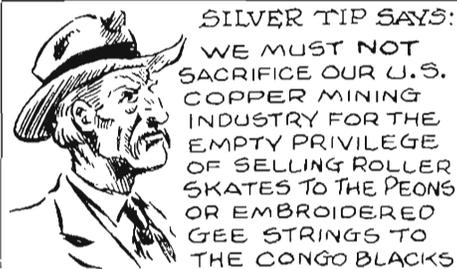
The history of the Big Blue mine dates back to 1861, with the first ore being worked in an arrastre on the bank of the Kern River. Later, when production reached its highest proportions, an 80-stamp mill was installed to treat the ore. Operations covering three and a half years yielded an output amounting to a million and a quarter dollars, with some of the ore running more than \$300 a ton, according to the 1913-1914 report of the California state mineralogist. Total production is estimated at two million dollars and \$600,000 from the Sumner claim, practically all of the production coming from within 260 feet of the surface. Last October, control of the property passed to Mr. Udell and Robert L. Long on lease and option to purchase agreement.

THE LEVITY LODE

By JOHN ROWLES



RESTORING THE WITHERED LIMB



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Mining Men and Their Activities

About men who are well known and prominent in the mining circles of the western states.

T. A. Phillips, 321 Jefferson St., Miami, Arizona, is operating the El Torro Gold mine in that district.

R. P. Fitch is general manager of the Indian Springs Mining Company, Box NN, Lordsburg, New Mexico.

F. A. Lindlof, 200 Spreckels Building, Los Angeles, California, is at Reno, Nevada, on mining business.

G. L. Sheldon, Box 811, El Paso, Texas, has returned from two months spent in Sinaloa, Mexico, on professional work.

George K. Kimball, Jr., of Denver, has joined his father in a move to reopen the Old Town mine at Idaho Springs, Colorado.

L. R. Sunderland, mining engineer, is reported to be doing considerable sampling and mapping at the old camp of Gilbert in Nevada.

R. H. Toll, mining engineer, 2816 Sunset Place, Los Angeles, California, was examining mine prospects in Mariposa county, California, recently.

J. S. Coupal, formerly of the Tip Top and the Octave mines, is operating the Steel property at Cave Creek, north of Phoenix, Arizona.

F. C. Cocks, mine superintendent for the Charcas Unit, Compania Minera Asarco, has returned to his post after several weeks in San Antonio, Texas.

Earl M. Smith, once mill superintendent at the Verde Central mines at Jerome, Arizona, is with the Natural Soda Products Company at Keeler, California.

Fred W. Hewitt, a director of the Consolidated Chollar Gould and Savage Mining Company, Russ Building, San Francisco, is on a business trip to New York.

Frank P. Herbert, Box 1502, Phoenix, Arizona, is directing the development of some gold-silver properties along the Arizona border and in the Altar district of Sonora, Mexico.

D. A. Callahan, president of the Callahan Zinc-Lead Company, has returned to Wallace, Idaho, from Washington, New York and Chicago. He had been in the east several months.

Kiyoshi Oda, chief engineer for Mitsui Mining Company, Ltd., Muromachi, Nihon-bashiku, Tokyo, Japan, is visiting the various copper districts of Arizona upon commission from his government.

Mose Kelley, Box 247, Superior, Arizona, is leasing a property near the Magma Copper Company mine. He is a recent graduate of the College of Mines and Engineering, University of Arizona.

D. D. Moffat, vice-president and general manager of the Utah Copper Company, has returned to his office in the Kearns Building, Salt Lake City, Utah, after several weeks in New York.

Maj. Geo. H. Burress has just returned from Arizona and California where he has been examining mining properties for Oklahoma City parties. His address is 910 Petroleum Building, Oklahoma City.

William Sharp, prominent Reno mining engineer, is temporarily in charge of work

CARSON HILL COMPANY MOVES 300 TONS A DAY FROM OPEN PIT



Chas. H. Segerstrom

Further inducement to try open pit mining on the Mother Lode of California is seen in the statement of Charles H. Segerstrom of Sonora, managing director for the Carson Hill Gold Mining Corporation at Melones, that in most cases the ore could be mined and milled for not to exceed \$1 a ton. This very low figure probably is exceeded only by such operators as the Alaska Juneau, who handle tremendous tonnages.

The Carson Hill company's experiments with steam shovels proved successful and by this method it is working the Santa Cruz claim, where an ore body approximately 2,000 feet long and averaging 30 feet wide is available. The waste from the sides is being stripped and put over the dump, while the ore is being handled by the steam shovel and trucks and put into the mill at very low cost. With its existing equipment, Segerstrom says, the company can handle about 300 tons a day.

The Carson Hill mine resumed work on Labor Day last year and the mill was placed in operation shortly after, following one of the largest construction and rehabilitation programs of the year. Production has been gradually stepped up and operating costs have shown a gradual decrease. Monthly figures state that in October there were mined and milled 10,000 tons, in November, 12,000 tons, and in December, 14,000. October operating costs were \$2.06 a ton, November, \$1.86 a ton and December, \$1.62 per ton of ore milled. Operating costs of less than \$1.50 a ton are expected to be attained on full production of the plant considered to have a capacity of around 700 tons of ore a day.

C. W. McCann, formerly with the U. S. Machinery Company, San Francisco, California, has opened an office at 75 Fremont Street, in that city. He is specializing in reconditioned and guaranteed mining and milling equipment.

Ira Eyster of Oatman, Arizona, has taken a lease on the 700 level of the Ben Harrison mine of the Tom Reed estate. He expects to soon be sending ore to the Tom Reed mill. Eyster has, in other years, worked leases in the Ben Harrison property.

J. O. Elton, manager of the International Smelting Company, the Utah unit of the Anaconda Copper Mining Company, has returned to Salt Lake City, after a trip through Arizona and the mining districts of northern Mexico. He was gone several weeks.

mine has just been completed by a group composed of E. Ross Housholder, consulting engineer, Kingman, Arizona; Judge Rex B. Goodcell, 415 Garfield Building, Los Angeles, president of the Peerless Mines Co., Inc.; P. J. Brady, secretary, and R. E. Longyear, Foshay Tower, Minneapolis, Minnesota. This examination is to be followed during the next 60 days by a thorough sampling of the property to determine the exact procedure that the new operators will take to put the mine on production and for the construction of a mill to treat the ores.

The milling plant at the McCabe and Gladstone property, Humboldt, Arizona, went on a production basis on March 8 and is handling 200 tons of ore daily. The mill was constructed by E. L. Sweeney, under contract from Howard H. Fields, Title and Trust Building, Phoenix. Fields took over the old McCabe and Gladstone mine in December of last year and since that time has had a regular crew engaged preparing the mine for production.

National Gold Corporation, Box 432, Prescott, Arizona, W. W. Linesba, general manager, is opening a portion of its property to leasers. The company holds approximately 40 claims surrounding its major workings and from which it is believed ore running \$10 a ton to quite high grade can be mined immediately. The company agrees to purchase all gold produced by the leaser and offers the leases with no payments except a 10 per cent royalty basis on all ore produced. National Gold is operating its 250-ton mill regularly and reports an extremely low cost index.

CALIFORNIA

Idaho Maryland Consolidated Mines, Inc., has declared a dividend of 3 cents a share, payable March 20. The dividend is similar to that paid December 20, 1933. Commenting on the pending payment, E. L. Oliver, president, 351 California Street, San Francisco, said: "On the basis of earnings a higher rate could have been paid, but it was considered to be advisable to build up cash reserves. During the past two months approximately \$100,000 has been expended on improvements, and in addition we have been holding concentrates for treatment in the new cyanide plant, which will be in operation by April 1. As a consequence, cash holdings are below normal."

R. J. Miller of Tuolumne, California, reports an important new discovery at the Ocean Star mine near that place. Open excavations are said to expose a flat vein, varying from a few inches to two feet in thickness, that is rich in gold and high-grade sulphides. He plans installing a small milling plant in the near future.

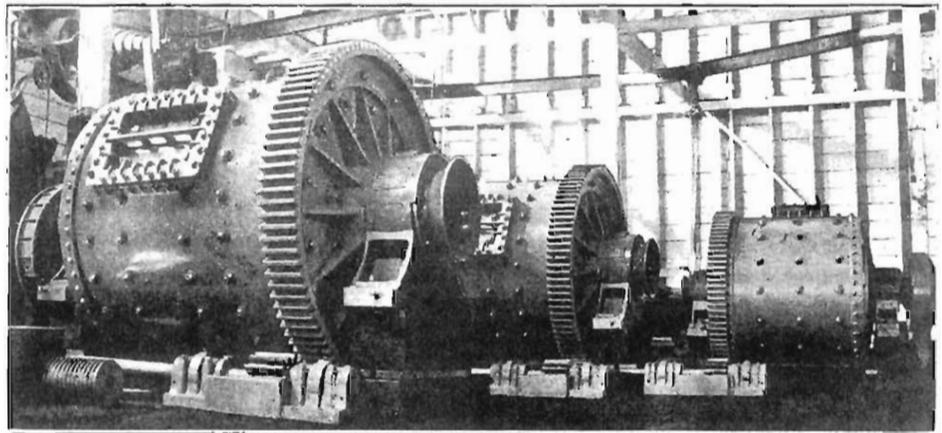
Louis C. Purdey of Sonora, California, has cleaned out and retimbered the main 300-foot tunnel in the old Nervi mine, six miles north of Columbia, and is now re-opening a winze near the face of the tunnel. Development is to be concentrated on the ore body below the tunnel level. C. V. Hessin of Los Angeles is associated in the project. When the mine was worked many years ago, the ore was moved by pack animal a distance of five miles to a three-stamp mill.

J. W. Bishop, D. A. Smith and E. N. Honn of Tuolumne, California, are opening up widening stringers of fine ore in a vein fissure six to 10 feet wide at the Buckeye mine near that place. They have a shaft down 80 feet and plan horizontal exploration at the depth of 100 feet, prob-

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ably at the same time continuing sinking. Their equipment consists of a gasoline hoist, pump and blacksmith shop.

The Sinaloa Premier Mines Company, a Nevada corporation of which Raymond Guyer, 627 Mills Building, San Francisco, is vice-president and general manager, has taken over the Opulento group of mines near Groveland, California, under a lease and option to purchase. It is understood that some work has already been started at the property. The group is six claims, said to have produced about a half million dollars and is owned by N. W. Moody of Sanger, California, and Samuel V. Cornell of Turlock, California.

The Lensmore Mining Company, with headquarters at 1111 Easton Building, Oakland, California, has ten men working in two shifts at the old Harvard property at Jamestown. Crosscuts are being pushed from the 250-foot tunnel and arrangements are being made for a plant to reduce the ore. The directors of the firm are Stanley J. Smith, D. B. Cooley and J. C. Smith, all of Oakland.

George F. Snyder and associates of the Sheep Ranch Gold Mining Company, with offices at 1224 Hearst Building, San Francisco, have retimbered the Sheepranch shaft at Angels Camp, California, to 300 feet. A flow of water has interrupted the work, but pumping is to start, and the plan is to repair the shaft to the full depth of 1,700 feet.

Fred Rout of Needles, California, (P. O. Box 65) is considering putting in a small cyanide plant at the Gold Coin mine near Goffs, in San Bernardino county. Drifts have been run at both the 50 and 100-foot levels and each are said to have opened four feet of ore that averages about .7 ounce gold to the ton. Assays have run as high as \$265. The ore also is said to carry about six pounds of cinnabar to the ton and effort may be made to recover this value also. At present all ore is being treated at Oatman, Arizona.

The Bagdad Metals Extraction Corporation, of Los Angeles, is building a plant at Barstow, California, for the recovery of the gold, silver and copper values in the tailings at the Bagdad Chase mine at Ludlow. The Eisenhauer process is being installed. The Bagdad Metals bought the Bagdad Chase tailings several weeks ago.

The Concordia Virginia Mining Company, William J. Pearce, president, 156 Montgomery Street, San Francisco, has taken options on 800 acres of placer ground in Sierra county, California. The hydraulic method will be used in mining the gravel contained in this area and the provisions of the California anti-debris law will be complied with through purchase of storage space for tailings behind Bullard's Bar dam, at the rate of 2 cents per cubic yard. The group includes the Halana, Halana Extension, Blue Lead, Yuba Gold Run, Crater Pass, Eagles Nest and Spanish Camp claims, which are estimated to contain more than three million yards of gold-bearing gravel. Present equipment is for small-scale operation. The company expects to wash about 25,000 yards during its first season and to equip the property eventually to handle between 300,000 and 500,000 yards per season, depending on the seasonal snow fall and water supply.

The Gruss Mining Company, with offices at 333 Kearny Street, San Francisco, has taken a five-year lease and option on the Thorne mine near Angels Camp, California, according to J. I. Plunkett, newly elected president. The property in-

AVERAGE PRICES OF METALS
(Figures by American Metal Market)

	Copper Per Lb. Conn Valley	Lead Per Lb. New York	Zinc Per Lb. St. Louis	Silver Per Oz. New York
1924	13.024	8.097	6.344	66.781
1925	14.042	9.020	7.622	69.065
1926	13.795	8.417	7.887	62.107
1927	12.920	6.755	6.242	56.870
1928	14.570	6.805	6.027	68.178
1929	18.107	6.833	6.512	62.998
1930	12.932	5.517	4.556	38.154
1931	8.369	4.244	3.638	28.701
1932	5.792	3.181	2.881	27.892
1933	7.276	3.870	4.031	34.728
1932				
Jan.	7.000	3.750	2.900	29.750
Feb.	6.250	3.717	2.828	30.185
Mar.	5.994	3.150	2.791	29.810
Apr.	5.789	3.000	2.735	28.298
May	5.506	3.000	2.629	27.755
June	5.389	2.995	2.798	27.466
July	5.284	2.760	2.546	26.700
Aug.	5.435	3.285	2.761	27.986
Sept.	6.208	3.462	3.304	27.870
Oct.	5.975	3.046	3.046	27.195
Nov.	5.309	3.050	3.096	26.698
Dec.	5.036	3.000	3.125	25.010
Ave. 1932..	5.792	3.181	2.881	27.892
1933				
Jan.	5.000	3.000	3.015	25.400
Feb.	5.000	3.000	2.671	26.085
Mar.	5.256	3.148	2.997	27.828
Apr.	5.684	3.280	3.361	30.730
May	6.932	3.664	3.805	34.072
June	8.000	4.173	4.347	35.668
July	8.909	4.462	4.886	37.630
Aug.	9.000	4.500	4.909	36.074
Sept.	9.000	4.500	4.702	38.440
Oct.	8.253	4.316	4.744	38.190
Nov.	8.156	4.204	4.521	42.974
Dec.	8.125	4.142	4.470	43.550
Ave. 1933..	7.276	3.870	4.031	34.728
1934				
Jan.	3.185	4.000	4.276	44.187
Feb.	3.000	4.000	4.452	45.233

cludes 450 acres of patented ground and is to be developed from the receipts of a 2-cent assessment recently levied. Development has been intermittent since 1894, and from 1927 to 1930 the mine was operated by the Kirby Development Company, which suspended work on account of financial difficulties. A shaft has been sunk to 700 feet and laterals driven at 300 and 500 feet. Equipment consists of a 100-horsepower double drum electric hoist, a 75-horsepower compressor, a Sterling electric sinker type pump and other accessories. Terms of the option call for no cash payments for five years, other than a 10-per cent royalty from production, which will apply on the total purchase price of \$112,500.

The Arlington Mining Corporation will add to its mill at Victorville, California. Under the management of Algernon Del Mar and R. K. Voorhies, Room 812, 112 West Ninth Street, Los Angeles, the company has done a great deal of development work and has run a large tonnage through its pilot plant. A huge tonnage of commercial free milling gold ore is ready for the proposed 500-ton mill.

Al. Kelliher, contractor of Nevada City, has built a 50-foot headframe, ore bins and hoist for the Auburn-Chicago Company at Penryn, California, Arthur N. Sweet, manager. A compressor will be installed. The company is putting in a small Amador mill for experimental purposes. The old 300-foot shaft in the Chicago mine has been cleaned out and it was found that ore had been stoped out to the surface for several hundred feet on the ledge.

Kenneth Holmes and E. A. Nicholson have shipped seven carloads of gold-silver ore in the three months they have been working their lease on the Silver Queen mine on Soledad Mountains, near Mojave, California. They are sinking a new shaft and have reached a depth of 80 feet. As

sinking has continued the vein has widened to four feet.

D. E. Irwin is reported to have purchased the Tower mine, seven miles south from Benton Station, Mono county, California, from the estates of W. W. and M. Q. Watterson. He has retimbered the old shaft to water, which stands within 80 feet of the surface, and is crosscutting from a lower point to drain the old workings. At an estimated length of 400 feet, the new tunnel will give a depth of 170 feet below the collar of the old shaft. The old shaft was sunk on the footwall of the vein to 250 feet and levels driven at 80, 190 and 250 feet. Ore was found on all levels, varying in widths but averaging 16 or 18 inches. Assays ran \$75 to \$250.

The California Treasure Box, Ltd., has been reorganized and several new directors added. Rex B. Goodcell, attorney, 415 Garfield Building, Los Angeles, has been re-elected president and W. L. Leland, Box 505, Chico, California, general manager. R. W. Lawton is superintendent of operations. The property is located on the Mammoth channel in Butte county and has been idle several weeks on account of litigation.

Directors of the Gray Wing Extension Mining Company have instructed E. R. Gray, superintendent, to proceed with drill prospecting on the Broder ranch, located on the Blue Ravine channel near Folsom, California. The property comprises 480 acres and controls 6,500 lineal feet of the channel. Drill prospecting was carried on several months ago, followed by drift mining. From a relatively small area and with gold at \$20.67 an ounce, they are reported to have recovered \$44,548 worth of gold. Z. S. Israelsky of Napa, California, is president of the company. E. S. Sheffield is consulting engineer.

The old Cranberry and Rutherford gold mines at Incline, California, are being reopened by John C. McGarry and associates. These properties have yielded fortunes.

It is reported that the Lucky Tiger Combination Gold Mining Company will open new levels in the Boston mine at Mokelumne Hill, California, to a depth of 950 feet. Seventy men are employed at the property and milling has been stepped up to 100 tons a day. A. E. Mosier, 761 Board of Trade Building, Kansas City, is president.

Charles W. Nielson and Gordon F. Schleckler are working 50 tons of gravel a day at the Lloyd mine on Central Hill, about four miles northwest of San Andreas, California. Ten men are employed. The incline shaft has been reconitioned to a depth of 200 feet and a hoist, gasoline engine and ball mill installed.

The California Mother Lode Gold Mines, Inc., will soon resume work on the Albert Guttinger ranch near San Andreas, California. All surface work has been completed and the old 120-foot shaft will now be reopened. William W. Thayer, 155 Montgomery Street, San Francisco, is president. R. N. Smith, Box 181, San Andreas, California, is engineer in charge of the mine.

Charles R. Marshberger and Bob Skanjicle have leased the Bimetal group of tungsten claims at Ivanpah, California, for one year. The ground is owned by Frank Warning and Charles M. Broyles of Oatman, Arizona.

I. E. Selix, 54 Mason Street, San Francisco, California, has purchased the Gold Shute quartz mine on Buckeye Creek, near Minersville, formerly owned by Charles Bays, a resident of the Minersville section.

Operation of the mine will be directed by P. X. Johnson of Lewiston, California. Selix has purchased a five-stamp mill, crusher and other equipment, which will be installed as soon as weather conditions permit. With some repair, the old buildings on the property can be used.

The Alabama mine at Penryn, California, control of which passed to a new group last summer, has been reorganized as the Alabama California Gold Mines Company. William Anderson, the owner of extensive phosphate deposits at Garrison, Montana, is president and general manager, and will maintain headquarters at Auburn, California. Mark U. Weber of Sacramento, California, is vice-president; and Edward Pohlman of the Pohlman Investment Company, 205 Standard Stock Exchange, Spokane, Washington, is secretary-treasurer. Early in January they added five stamps to the former battery of five and the complete unit can crush from 30 to 35 tons of ore a day. Tests show that at least 70 per cent of the value of the ore can be recovered by amalgamation. It is planned to make cleanups semi-monthly. Under former management, the mine has been opened principally by a two-compartment shaft 230 feet deep and sunk on an incline of 82 degrees along the vein. Drifts of 100 feet have been extended on the vein from the bottom of the shaft, and about 500 feet of work has been done on the 200 level. A larger air compressor and hoist have been installed, capable of sinking the shaft to 1,000 feet. Another important announcement is that a crew engaged in surface work uncovered the extension of the Alabama vein at a point about 300 feet south of the main shaft and at a depth of 18 feet. The vein was not only found in place but measured three feet in width and sampled high in gold.

The Big Jim Mines Company, for a number of years operating mines in Arizona, has taken over a property near Sonora, California, and has two shifts working there. Mine development is being concentrated principally on tunnelling to the ore bodies. The Sonora property is adjacent to the Eagle Shawmut mine and close to some of the largest producers on the Mother Lode. A. G. Keating, 909 Van Nuys Building, Los Angeles, is president of the company.

A complete geological re-survey is to be made of the Yellow Aster mine at Randsburg, California, to determine the advisability of installing a 1,500-ton crusher. A 50-stamp mill with a capacity of 250 tons a day and a flotation plant of the same capacity are in operation, and a pilot mill for cyanide tests has been constructed. Approximately ten to twelve million tons of low-grade ore is available for large-scale operations now in progress, according to Val DeCamp, manager. Should experiments show that further expansion and addition of equipment are justified, it is the intention of the management to install electric shovels of two and a half to three cubic yard capacity, and a standard-gauge transportation system throughout the workings.

The Belmont Metals Corporation has opened high-grade ore that assays as high as \$17,534 in gold in the roof of the main tunnel in the Gabriel mine at Midpines, California. The gold is reported to be telluride in the characteristic ribbon-quartz of the Mother Lode district. According to H. R. Lawson, manager, the vein has been opened for a distance of 200 feet by a series of stopes, revealing

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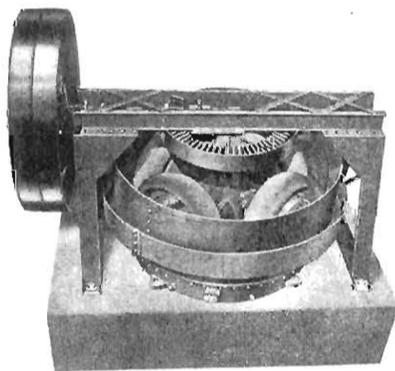


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 an average width of between three and four feet. Two of the stopes sampled \$69.89 and \$33 in gold across the face. The high grade is being carefully sorted and sacked as it is broken down and the remainder is being treated in the company's mill.

The **Mines Exploration Company, Ltd.**, with headquarters in the Hobart Building, San Francisco, has acquired three gold mining properties in the Grass Valley-Nevada City area of California. Dr. Edward L. Herrington, Flood Building, San Francisco, is president and announces that plans for large-scale operations have been perfected. The new holdings are the Gracie, Osceola and Bunker Hill mines, all of which have been well developed to relatively shallow depths. They will be operated concurrently, but primary attention will be given to the Gracie mine because of the extent of the underground workings permitting production with a minimum of expense and effort. This mine is equipped with a 10-stamp mill, electric hoist, compressors and pumps. It is traversed by the Orleans vein, which is reported to have produced close to \$12,000,000 in the Champion group, and by six flat veins that prospected satisfactorily from panning and mortaring. The shaft has been sunk to 354 feet. Edward C. Uren of Nevada City, engineer in charge, is of the opinion that they can recover a net value of \$15 a ton from the flat ledge and of about \$5 a ton from the Orleans.

It is reported that the **West Mines Corporation** will soon begin the deeper development of the Hussey mine at Nevada City, California, and the delivery of ore to its own mill in which flotation was recently installed. According to Orlando McCraney, president and general manager, the mine is now working on a three-shift basis, in compliance with the larger program anticipated. The raise has been completed, giving them a second shaft for development purposes.

Surveys are being made for a new shaft at the Murchie mine at Grass Valley, California. G. A. Kervin, mine manager. The new shaft will be located much nearer to the mill than the old shaft and will be made by upraising. Since the installation of the new ball mill at the Murchie, an average of 250 tons of ore have been milled daily. This is one of the mines being operated by the **Empire Star Mines, Ltd.**

The survey has been completed for two and one-half miles of power line to bring electricity to the **Keystone Divide Mining Company's** property at Grass Valley, California. Plans are underway to deliver 500 horsepower of electric energy and to purchase and install a large compressor, hoist, drill sharpening tools, pumps, etc. A new shaft of three compartments is to be sunk. The old Hocking shaft has been cleaned out and sunk on the vein to approximately 42 feet and the Premier shaft is down 157 feet. The Hocking shaft is reported in five feet of \$14 ore (gold valued at \$20) and the Premier shaft is in ore averaging \$26 a ton. Melville B. Rapp, 1415 Montana Street, Santa Monica, is president and general manager. J. J. Jordan is mine superintendent.

C. E. Clark, manager of the **Relief Hill Mining Company** at North Bloomfield, California, has taken a crew to the property. Several months of hydraulicicking last year brought in good returns in nuggets and coarse gold and they put the property in shape for an excellent run this year as soon as enough water can be secured.

R. M. Burnette and associates of San Francisco are reported to have taken over the **Stockton Hill** mine in the Cottage Hill district, southwest of Grass Valley, California. Four veins are exposed in the 160-foot shaft and a few weeks ago it was reported that one of the veins carried gold ore assaying as high as 354 ounces. Surface equipment includes a hoist, compressor and pump and it is said that a flotation plant will be installed.

The new 150-ton mill of the **Cardinal Mining Company** at Bishop, California, burned to the ground and the equipment it contained is reported a 100-per cent loss. The damage is about \$50,000 and is only partly covered by insurance. The fire occurred just as the plant was about ready for its first run, and was caused by welding sparks falling into a creosoted wooden tank which had been salvaged from the old mill. The blaze shot up to the roof and spread rapidly in spite of every effort to extinguish it. Walter Haggerty, one of the principal owners, is in conference with Los Angeles and San Francisco associates regarding future plans.

The **International Mining and Milling Company** has started crosscutting from the bottom of the 550-foot shaft sunk in the King Solomon mine at Randsburg, California, to reach the Nossor vein. At the same time virgin areas will be prospected. Plans calling for the sinking of the present shaft to a depth of 1,000 feet, with laterals every 100 feet, have been approved by the company officials, according to A. G. Ilse, president and general manager, 183 North Martel Street, Los Angeles. This work will be rushed to completion in order to mine the more valuable ores found in the lower or sulphide zone. The large building to house the power units is rapidly approaching completion. The surface equipment includes a 250-horsepower Diesel engine, 75,000-watt generator, twin compressor units, hoisting engines, tanks to store 21,000 gallons of fuel oil, 15 stamps, 50-ton Traylor ball mill and flotation machines.

A. E. Green and brother of Spring Garden, California, are leasing the **Dutre** mining claims on Squirrel Creek, from J. P. Dutre, owner. Last season they washed out \$911.32 worth of gold. Some of the gold they sold for \$16.80 and the last for \$33.76 per ounce.

Thomas Scadden, who has spent the past winter at Nevada City, California, has returned to his **Oak Flat** mine at North Columbia. He will start at once cleaning out ditches and will continue the 280-foot tunnel to the ancient river channel, probably another 20 feet ahead. Scadden is also interested in the **Placer Queen** property, adjacent, and the **Dudley Coe** property in the same district. The Oak Flat and the Placer Queen each include 320 acres and the Dudley Coe, 80 acres. Scadden expects to remain at the property until October.

Los Angeles interests, headed by Max Vogel, 809 Great Republic Building, and F. W. McRae, have acquired the **Duleek** group of quartz mines and the **Gold Ship** placer properties from the estate of William Miller Graham. Both properties are located in Tuolumne county, California, and near Groveland. The Duleek is developed by several shafts and the new operators have started retimbering and preparing for continuous operation. A substantial tonnage of commercial ore is reported already developed. Core drilling will be prosecuted on the Gold Ship acreage to determine the course of the channel.

COLORADO

The **Withrow-Commodore Lease, Inc.**, has moved three carloads of ore to the Leadville smelter. This is the first shipping that has been done from the Creede district since 1930. Under the management of D. G. Withrow, 12 to 15 men are employed at the Commodore mine and the workings are being prepared for production. The old tram that once operated almost incessantly when Creede was booming has been repaired and is being used to load the Commodore ore.

Ben Birdsey, superintendent of the Peerless clay mine south of Creede, Colorado, is organizing a "Creede Pool" to start working the old **Corsair** mine in the Sunnyside district, about two and a half miles southwest of town. He already has a small crew on the ground and hopes to have diamond drills prospecting soon. The Corsair was opened in the silver boom days of the early 90's. According to government report, it produced \$60,000 worth of ore before it was closed down in 1903.

Julian E. Hall and associates are reported working in good ore below the 100 level of the **Plutocrat** mine at Cripple Creek, Colorado. Power for the hoist and compressor is being provided by a line built to the adjacent Wagner property. Hall may be reached at 136 South Hazel Street, Denver. They are also moving ore to the Golden Cycle mill from the **School Section** dumps, on which they obtained a lease last year.

Fire destroyed the Pennsylvania tunnel of the **Telluride Mining and Milling Company** at Telluride, Colorado. The damage is estimated at \$60,000 and is only partly covered by insurance. During the latter part of last year the company was the heaviest producer in the district and was equipped with a flotation plant and zinc unit. S. M. Kobey is manager.

The **La Plata Gold Placers Company** has tunneled through pink shale and into the upper La Plata sandstone formation, in the Kaibab property near Durango, Colorado. Irwin Walker and associates began work at the property December 1 last. A good camp was established, supplies taken in and the tunnel driven to a length of 125 feet during the winter. The tunnel follows a north-south vein of mill grade and about four feet wide.

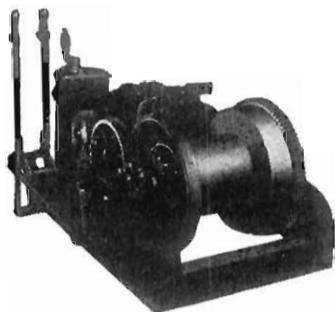
The **Corporation of American Mines** at Dumont, Colorado, is mining some high-grade ore from the Clear Creek-Gilpin tunnel. According to President A. R. Specht, the ore is being sorted and sacked for direct shipment to the smelter.

W. E. Wood of Kansas City, Missouri, and A. V. Hagen of Colorado Springs, have 12 men working at the old dumps at the **Portland** mill at Victor, Colorado, where they are organizing a project to recover the gold values. The dumps contain probably four million tons of material. Under the old gold reduction processes, ore that yielded less than \$40 a ton could not be milled at a profit. The new process being installed is an electric-chemical one and it is believed that the cost of treatment will not exceed 70 cents a ton. Wood and Hagen believe that it will take twenty years to completely work the material, but they were able to lease the dumps from the city for only fifteen years.

Under the supervision of K. F. Fulton, construction engineer of Boulder, Colorado, a 200-ton flotation and amalgamation custom will is being built at the **Black Cloud** mine at Salina. Modern equipment is being used throughout. Receiving ore bins with a capacity of 500

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WEST LONDON CO. WILL START TWO NEW DEVELOPMENTS MAY 1

The West London Mines Company, sponsored by George E. Cranmer and James N. Redman with offices in the California Building, Denver, is extending its original development program in the Alma district in Colorado. Ore is being blocked out and they expect to maintain a weekly production of from 50 to 75 tons of high grade ore after present exploration on the McDonald and London veins is completed late this month. Besides, additional acreage is being leased along the great London fault both north and south of the London mine, the pioneer producer of the sector designated as the "London area."

It is worth remarking that the original discovery on the London mine was made in the Bridal Chamber tunnel in 1875 by a company of London, England, capitalists. Approximately a million dollars was taken from the 400-foot stope that averaged 100 feet in height. This oreshoot, on the McDonald vein, was lost in 1882 by reason of a cross fault.

The West London group secured a lease on the Bridal Chamber workings and the entire upper section of the London mine, representing an undeveloped block 2,400 feet in length on the vein strike, with an average back between the Bridal Chamber tunnel and the surface of 400 feet.

Activities began June 19 of last year. After reopening the caved tunnel, constructing buildings and installing machinery, the McDonald vein was picked up where it had faulted, 35 feet east of the Bridal Chamber stope. The London vein, undiscovered in the Bridal Chamber workings, was opened 50 feet west of the McDonald vein. A stope 160 feet has been opened on the London lode, with a streak averaging 12 inches wide and yielding 2.5-ounces gold ore. Recent development on the McDonald vein has opened a stope immediately south of the Bridal Chamber that is 60 feet in length with an average width of two feet and average grade of 4-ounce gold ore. The distance to the surface outcrop is 185 feet, with reasonable assurance of high-grade ore the entire distance. The Bridal Chamber tunnel is being extended through London Mountain and will come out on the south side, a short distance from the American mine. Roy Huner, formerly leasing in the London mine, is mine foreman.

The West London company also has under operating lease the Moffat group, including the South London dump of 180,000 tons of \$6 values, and will undertake within the next three months construction of suitable reduction plant. A production shaft is being sunk on the Moffat group, three-quarters of a mile west of the London, to check the diamond drill bore made by the late David H. Moffat, noted Colorado banker and industrialist, in 1900. The Park Range, Black Cloud, Willmarth and Wilkin groups are also under lease, as is considerable additional acreage in the south Mosquito amphitheatre and on Pennsylvania Mountain. Manager Redman plans to begin development of the Willmarth group about May 1.

Thirty men are on the company's payroll. From the standpoint of extensive acreage, development and production projects well underway and those already approved, the company may justly be classed among the major operating mining corporations in Colorado. It is amply financed by Denver and New York capitalists.

CUSI-MEXICANA ENTERS COLORADO MINING FIELD

In an effort to locate another profitable mine, Cusi-Mexicana has made many examinations of gold and silver properties, chiefly in the United States and Mexico, but also in Canada, Colombia and Venezuela. At Aspen, Colorado, the organization has taken over options and leases on a considerable portion of the formerly more productive sections of the camp. In these options are included several of the famous silver mines of the eighties which have been closed for a long period of years. Exploration of these holdings will be carried on from old stopes and the result should be known within six months.

Ore milling operations at its Mexican properties are to be resumed late in the current month by Cusi-Mexicana Mining Company, according to H. C. Dudley, president of the company. The reopening of the mines, located at Cusihiuiriachic, Chihuahua, started in January and the unwatering of the Santa Marina and San Miguel shafts was begun February 1, and by the first of March the A level of the Santa Marina was cleared. The mill will start with a daily tonnage of 150 to 200 tons, and production will be gradually increased to capacity of 500 tons daily later in the year, when the mine has been unwatered.

For the year 1933 Cusi-Mexicana reports a net loss, before depreciation, of \$49,329.33, which compares with a similar loss of \$86,051.43 in 1932. Deferred notes payable and current notes and accounts payable declined from a total of \$132,521.61 to \$68,755.50. With the mines on production, it hopes to quickly retire the remaining indebtedness from earnings.

GOLD LOAN PLAN COMES UP FOR DISCUSSION APRIL 14

A meeting of the Mining Association of California is to be held at Angels Camp on Saturday, April 14, to further discuss and consider the Stockton plan for getting an appropriation of \$100,000,000 from the federal government to help finance gold mines and prospects of merit in the western states.

The plan as outlined by President Harry Sears of the Mining Association of California at a joint meeting with Alta California, Inc., at Stockton, is for the securing of funds from the RFC or other federal organization through a direct appeal to the President. In general the plan is to have a county application board to receive the individual applications for mining loans. These in turn would go through the state government and its specialized departments, including a state application board, State Division of Mines or other organization for actual examination and recommendations. If satisfactory, the application would then be passed on to the federal loan agency, the custodian of the fund, which would make the actual loan and arrange conditions for its repayment.

The mining association already has under way a preliminary survey in California to determine roughly the number of properties to be financed, total amount required, number of new men to be employed, etc., and questionnaires covering these and other points can be obtained from the association offices at 381 Bush Street, San Francisco.

J. C. KempvanEe, Jr., of the association, is touring the western states in connection with the movement. Many of the states have announced their willingness to co-operate.

ANOTHER FAHRENWALD FLOTATION MILL GOES INTO OPERATION

The new 100-ton flotation plant of the Four Square Gold Syndicate on Prichard Creek, three miles below Murray, Idaho, was placed in operation February 18. It was designed by A. W. Fahrenwald, head of the department of metallurgy of the Idaho School of Mines and is modern in every detail.

Only 18 months have passed since actual development work was started, a remarkable feature in view of the extreme difficulty of financing mining operations during the last few years. All underground work has been done with a view to productive operations and this has been characteristic of all building construction and equipment. There is evidence of completeness, permanence and stability throughout.

Harry P. Pearson and Julius P. Hall, both residents of Wallace, sponsored the project. Upon the shoulders of Mr. Pearson rested the financing and Mr. Hall took the responsibility of the engineering.

The operating staff is well qualified for the respective positions the men hold. Z. I. Chaney, for many years a resident of the Coeur d'Alenes, is mine foreman. He has been on the job throughout the program of development.

W. H. Reck, a young engineer, graduate of the Michigan School of Mines at Houghton with post-graduate training at the Idaho School of Mines at Moscow, is mill superintendent. Since leaving college he has been continuously connected with milling operations, first in the copper district of Michigan and later with gold milling in southern Idaho.

Lloyd Fisher, formerly with the Bunker Hill and Sullivan people, is electrician. Arthur Erickson, formerly at the Trail smelter in British Columbia and later employed with the Day interests at Wallace, is assayer.

B. & M. SYNDICATE MAKES FIRST CLEANUP

E. G. Barrett, co-partner in the B. & M. Syndicate, with offices at 539 Roosevelt Building, Los Angeles, announces a return of 9.65 ounces of gold from a two-day run at its property at Mariposa, California. Four hundred cubic yards of gravel were treated. The yield was much better than they had anticipated.

Owing to certain errors having crept into press accounts of the syndicate's work, Barrett makes the following statement: The Syndicate holds 640 acres of the Fremont Grant at Mariposa. Active mining is at present confined to placer, of which there is estimated to be a total of two million yards. Half of this is under a meadow and the remainder covering a mile by 450 yards at the junction of Agua Fria and Buckeye Creeks.

A gas shovel delivers the dirt to a land dredge, carrying two 48-inch sluice boxes provided with 12-foot by 3-inch riffles and Hungarian riffles. It was this first 12 feet that was cleaned for the return stated above. Capacity is 200 yards a day with one dredge and one shift. Arrangements are being made for a second dredge, which with double shifts, will bring capacity up to a thousand yards a day.

In preparation for hard rock mining, a U. S. surveyor is tracing and surveying throughout the entire 640 acres. His report will soon be available. Twenty-five ledges, varying from two to 15 feet and in value from \$12.50 to \$79 per ton have been traced. There is also a porphyry dyke in the meadow that goes \$12.50 over 15 feet.

It is planned to enlarge the 60-foot shaft on the No. 1 vein to two compartments and sink to 500 feet. Four feet of ore in the shaft samples \$39 a ton, and the same vein at the creek gives \$32.75 over five feet. A second single shaft has been sunk to 107 feet on another vein and gives values from \$12.50 to \$25. At 40 feet there is a 12-inch feeder vein assaying \$76 and at 70 feet still another comes in on the footwall eight inches thick and assaying \$298.36.

Financial arrangements are being made to electrify the property, necessitating a pole line of four miles. A 50-ton rod mill is on the ground ready for installation. F. A. Mansfield, the other member of the partnership, is superintendent at the mine.

ARGONAUT CASE VS. FEDERAL GOVERNMENT

The case of the Argonaut Mining Company against H. H. McPike, U. S. district attorney, et al, was heard in the district court at San Francisco, March 5, Judge A. F. St. Sure, presiding. The government made a motion to dismiss the action and the Argonaut attorneys made a motion for an injunction against the government's prosecution and a motion to transfer the action from the equity to the law side of the court.

Judge St. Sure ordered that 20 days be given each side for preparing briefs, the time to run consecutively and that 10 days additional be given for filing of the briefs, making a total of 50 days before final action is had in this court.

The case involves the nine bars of gold bullion weighing 7,171 ounces, which had been accumulated and stored during last summer, and on which the mining company asks the new gold price. The temporary restraining order against the government, preventing the enforcement of any penalties, seizures or forfeitures against the company was issued in January.

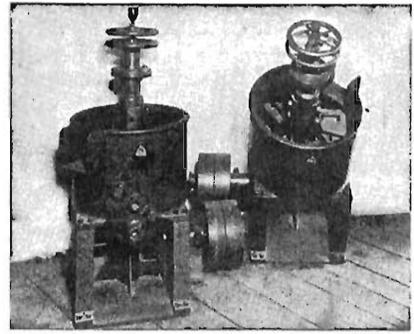
The judge indicated that he will rule on the legality of President Roosevelt's order pertaining to gold delivery to the government when the case is finally presented. He indicated that he will rule favorably to the government on the constitutionality of the Emergency National Bank Act of March, 1933, if this point is pressed in the present action.

At the close of the arguments on March 5, the judge commented that the main question brought forward appeared to be whether the president or the secretary of the treasury is empowered to carry out the provisions applying to gold in the emergency act. He indicated that if that power is vested solely in the secretary of the treasury, as he was informed one federal judge already has held, then the Argonaut Mining Company is within its rights in withholding its gold for the higher price after the president had ordered that all gold be surrendered to the government.

PRESIDENTIAL ORDER IS TO TRANSFER BUREAU OF MINES

Acting under the authority given him by the last session of Congress, President Roosevelt has ordered the transfer of the United States Bureau of Mines from the department of commerce to the department of the interior. The transfer will become effective in 60 days unless vetoed by Congress.

This returns the bureau of mines to the department under whose jurisdiction it operated, prior to the Hoover administration. It also brings together, under the same direction, the bureau of mines and the geological survey.



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NEW REGULATIONS COVERING GOLD BUYING

The following gives the new instructions for gold buyers and shippers, as announced by Walter W. Bradley, state mineralogist for California.

The minimum amount receivable at the U. S. mint is:—In the form of retort sponge, lumps, nuggets, grains and dust in their native state, free from earth and stone or nearly so, not less than 2 ounces of pure gold. In the form of unmelted scrap, not less than 1 ounce of pure gold. Melted scrap will not be received.

Actual producers shipping direct to the mint must submit form TG-19 in duplicate, sworn to before a notary when deposits are more than 5 gross ounces. In cases where shipments are less than five ounces, the notarial acknowledgment may be dispensed with, but the form must be submitted.

Gold buyers depositing mined gold must submit form TG-21 in duplicate, sworn to before a notary. A list showing from whom purchased, where mined, etc., as heretofore must be attached and sworn to. Section L of form TG-21 applies only to gold buyers who buy scrap gold and operate under a license from the U. S. treasury. Operators of custom mills, smelters or refineries depositing mined gold must submit form TG-20 in duplicate, sworn to before a notary.

Depositors of unmelted scrap gold must submit form TG-22 in duplicate, sworn to before a notary. Gold buyers can not buy melted gold in any form. One licensed buyer can not buy gold from another licensed buyer.

NEW MAP SHOWS COUNTRY OF HISTORIC INTEREST

Old Fort Colville, in Stevens county, Washington, established as a trading post in 1826, is shown on the topographic map of the Colville quadrangle just published by the United States Geological Survey. The city of Colville itself was founded about 50 years ago as a result of the mining development in this region. The Old Dominion mine, about five miles east of Colville, has produced thousands of dollars' worth of silver-lead ore, and numerous other mines and quarries are shown on this map.

The Colville quadrangle, which was surveyed in cooperation with the State of Washington, is an area of about 790 square miles in northeastern Washington just south of the Canadian boundary. Clark Fork joins the Columbia River just beyond its north edge, and the Columbia flows southwestward across its northwestern part, past the town of Northport. The Columbia Valley is a well-known international gateway between Washington and British Columbia.

This is at present one of the most picturesque portions of the valley, the blue-green water tearing through white walls of marble with layers of black argillite or quartzite here and there. The eventual construction of a dam to a height of 350 or 400 feet at Grand Coulee, however, will flood this part of the valley practically to the Canadian boundary.

This map, which is one of the standard 10-cent maps published by the geological survey, is on a scale of two miles to the inch and shows the surface configuration by contour lines drawn at vertical intervals of 100 feet. The quadrangle lies mostly in Stevens county but includes a small area in western Pend Oreille county. The principal settlements are Colville and Northport, but the map shows also scattered villages and individual houses,

schools, and mines, besides all the natural features—lakes, mountains, rivers, and valley flats. The woodland edition of the map shows that nearly the whole area is forest-covered, and a part of the Colville National Forest lies in the northwest corner.

In the ice age northeastern Washington was overrun at least twice by lobes of the great Cordilleran ice sheet. At one stage the ice extended southward beyond the Spokane River, about 50 miles south of Colville. At its maximum the ice must have been 4,000 to 5,000 feet thick over the valleys, so that few if any of the mountain tops as far south as Colville projected above its surface. The ice was so thick in the Columbia River gorge that the river was dammed and formed a long lake discharging through Grand Coulee. To the deposition of silt, sand, and gravel washed into this lake from the melting ice and to subsequent erosion when the river was reestablished are due the remarkable terraces in the Columbia Valley.

This map shows several United States and state highways, and the Great Northern Railway follows the Columbia River across the northwestern part of the quadrangle. Such a map as this would have greatly lessened the hardships of the pioneers, for as late as 1853 men were lost from exploration parties simply by getting off the trail in this region.

CLAY RESOURCES OF MONTANA BEING STUDIED BY COLLEGE

Montana people are taking an unusual interest in the possibility of developing the state's clay resources, according to an announcement from Montana School of Mines, one of the few western colleges which offers a course of study in ceramics, the art of working clay.

Following upon a state-wide investigation of the state's deposits last summer by Adolph Kuechler, instructor of ceramics at the mining college, under the supervision of the State Bureau of Mines and Geology, hundreds of clay samples have been sent to the testing laboratory at Montana School of Mines for analysis as to commercial possibilities.

"A clay high in iron, soluble salts, lime, or sand content is of little value," Mr. Kuechler says. "Of the properties of clay itself, plasticity, shrinkage, slaking, fusibility, and color when burned are the most important."

The following simple tests are suggested for the clay prospector or owner. These tests can be performed at home or in the field by anyone interested. Clays which show promise in these results should be sent to the laboratory for further testing, he says. The tests are:

1. Iron content: A small lump of clay may be roasted in the flame of a gas stove or even in a cook-stove. If the clay turns red or brown, the percentage of iron is high, probably more than 4 per cent.

2. Soluble Salts: By tasting the clay, bitter salts such as alum and epsom, may be detected. Such salts may also occur as white coatings on the clay as it occurs in the field. Such salts will form "white-wash" coats on the finished brick, injuring its appearance.

3. Sand content: Sand may be detected by grinding between the teeth, and a rough idea of the percentage of sand may thus be gained. This is the most common impurity of clays.

4. Lime: If carbonate of lime is present, a few drops of hydrochloric (muriatic) acid will cause effervescence or bubbling, as the carbonic acid gas passes off. A

high percentage of lime invariably ruins a clay.

5. Plasticity: A measure of plastic quality may be obtained by working the clay with water to a stiff plastic consistency like putty. A good test for pottery clay is to thus moisten it and determine whether it can be worked into a definite shape, and whether or not it will retain its form without cracking when dry.

6. Shrinkage: A rough brick can easily be made and dried, and by measuring it before and after drying the shrinkage may be easily determined. If the brick cracks or crumbles when dry, shrinks badly, or warps out of shape, the clay is of doubtful value. For this test the clay should be ground thoroughly, tempered with water and dried slowly.

7. Slaking: The slaking of clay, or the crumbling down in tempering is tested by dropping a lump of the raw clay into water. Some clays slake in a very few minutes, and so are easily tempered.

8. Color: The color of a finished clay-product is largely dependent upon the amount of iron present. It is not always possible to predict the color of the burned ware from the color of the raw clay. Red clays, it is true, will invariably burn to some shade of red, but blue clays or those of other shades also commonly burn to red or buff. The color of the raw clay is often caused by organic matter which is combustible and will be driven off in the burning.

9. Fusibility: A clay which fuses in an ordinary fire or a blacksmith's forge is not likely to be of commercial value.

Clay suitable for the manufacture of common red brick is so widespread in its occurrence that it has practically no value except for local use. If a clay burns to a light buff, a white color, and in the preliminary tests is free from the objectionable qualities described above, then further testing is probably justified.

GOVERNMENT ISSUES MAP OF COLORADO MINING SECTION

The topographic map of the Minturn quadrangle, an area of 230 square miles lying mostly in Eagle county, Colorado, just issued by the United States Geological Survey, shows the rugged Gore Range and the Fed Cliff mining district, which includes, at Gilman, one of the largest zinc producers in the United States. The long rows of company houses and the mine tramway at Gilman are plainly shown on the map, which represents in detail all the natural and man-made features of the area. The scale of the map is one mile to the inch, and the contour interval is 50 feet.

The Gore Range, near the east boundary of Eagle county, has peaks ranging in altitude from 10,000 to 13,274 feet. Its ruggedness is due largely to the presence of rocks that are very resistant to erosion. The flanks of the range are cut by numerous gorges, some as much as 2,000 feet deep, many of which are broadly U-shaped in their upper parts and head in great amphitheatres or glacial cirques containing small mountain lakes. The bottoms of these gorges vary in steepness in different parts and drop by more or less well-defined steps, like those of a "glacial stairway." This configuration is due in large part to the plucking and scouring action of the thick glacial ice.

The Eagle River, a tributary of the Colorado, flows northward across this area in a deep, narrow valley, in the bottom of which, near Red Cliff and Gilman, the stream has cut an inner gorge 1,000 feet in maximum depth.

The Denver & Rio Grande Western Railroad and United States highway 40 S. follow the Eagle River across the area, connecting Glenwood Springs, 55 miles to the west, with Leadville, 24 miles to the southeast. The trail to the Mount of the Holy Cross is shown near the south boundary of the area. Minturn, the largest town in the quadrangle, is on the Eagle River a few miles northwest of Red Cliff. A copy of the Minturn map can be obtained from the Geological Survey for 10 cents.

OLD QUARTETTE MINE IS SLATED FOR EXTENSIVE OPERATION

The Mollin Investment Company of Hollywood, California, has taken a five-year option on the old Quartette mine at Searchlight, Nevada, with the intention of immediately erecting a 150 to 200-ton flotation plant to treat some 30,000 tons of old tailings and to enter the mine from the old No. 3 shaft for the purpose of exploration. It is hoped that the exploration from this shaft will increase the water supply and find low-grade ore of commercial value for milling after the tailings have been treated.

J. F. McClish of Glendale, California, is superintendent and R. C. Jacobson of Kingman, Arizona is serving as metallurgist and consulting engineer. Ten men are employed in repairing the old buildings to accommodate a larger crew and in clearing and retimbering the shaft. What is believed to be the old 300 level has been reached and by March 15 a second shift will be employed. Mill plans should be completed by that date also.

The Cyrus Noble custom mill is working on lessee's ore, the Duplex mine has been examined by eastern interests who have taken an option on the property, and it is reported that machinery and supplies are being taken by Arizona mining men to a new prospect in the Searchlight district some four miles northwest. Mr. Brown has built a cable ferry almost on the site of the old Searchlight ferry at the mouth of Eldorado Canyon and is carrying as passengers both touring cars and trucks. The distance from Kingman to Searchlight is said to be shortened to 60 miles by this route.

HYDRAULIC MINING IN CALIFORNIA IS APPROVED

The roar of the hydraulic nozzle may be heard shortly on the Sacramento River tributaries—the first time in forty-one years, when hydraulic mining operations were prohibited by special act.

The first approval in all this period of time, to be voiced by United States army engineers, is in official hands at Washington, D. C. It approves hydraulic operations in the far reaches of the Sacramento River and the board of engineers will this month ask a \$95,000 survey allotment from the federal government. While PWA funds are depleted, it may be that President Roosevelt will allocate portions of the newly appropriated \$950,000,000 CWA money to departments for investigative purposes. Anyway, the step is considerably in advance of any progress that has been made.

Under authority of the Rivers and Harbors Committee of the House, two hearings were held in Sacramento last year as to the value of dams which would make possible hydraulic mining in the Sacramento River tributaries—the Bear, Yuba and American Rivers. It was set forth that such dams would serve to control flood waters, produce power and control the waters for navigation, and hold back the results of natural erosion.

SOME TECHNICAL BOOKS CARRIED IN STOCK

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Carbonization Technology and		—Marks	7.00
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Compressed Air Practice in Min-		lurgical Analysis—Keffer &	
ing—Penman	1.75	McNeil	4.00
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Flotation—Gaudin	6.00	Flotating & Operating Small	
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mons	4.00	—Osborn	3.00
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CANADA MINE PROMISES LARGE SUPPLY OF RADIUM ORES

Scarcely four years after the initial discovery of radium ore at Great Bear Lake, Northwest Territories, Canada has become an important producer of radium, with Eldorado Gold Mines, Limited, maintaining a steady production from its well-equipped refinery at Port Hope, Ontario, output from which already amounts to a few thousand milligrams. This company, which operates the Labine Point deposits at Great Bear Lake, is confident of its ability to continue to deliver a steady output of radium, according to a communication from the Federal Department of Mines, Ottawa.

The initial output has already been disposed of, the Province of Ontario purchasing several hundred milligrams for use in its various cancer clinics. As production increases, radium will become available to fill the needs of the Dominion and of the Empire. In addition to radium, the company produces important quantities of uranium compounds, which enjoy an active demand, with the bulk of the present output going to Great Britain.

Satisfactory arrangements have been made whereby ore will be shipped from Great Bear Lake to the railhead at Waterways, Alberta, by airplane during the winter months, thus avoiding any shut-down at the extraction plant. Tests are underway also as to a method of concentrating the ore at the mine in order to step up the grade, and thus reduce freight costs. Such concentration, if feasible, will be carried out in the recently erected mill on the company's Labine Point property, the mill being designed primarily for the treatment of silver ore found commercially associated with the radium ore.

Contrary to a somewhat prevalent belief, the Canadian government is in no way connected with the commercial production of radium, the work of the Federal Department of Mines in devising the method now used by Eldorado as a basis for the treatment of the ores, and in mapping the area, being in the nature of services rendered to the mineral industry. Neither is any control exercised by the government as to the price of the radium, this being entirely in the hands of Eldorado Gold Mines, Limited, the only producing company. For a time, at least, radium production will be on a moderate scale and it is not expected that operations will result in any immediate large addition to the existing world supply of the element.

Most of the prospecting and developing work in the Great Bear Lake region during the 1933 field season, was in connection with silver-bearing deposits.

NEW PROCESS FOR FORMATION OF PATINA ON COPPER ROOFS

The successful development of a method for the artificial formation of natural patina on copper has been announced by William M. Crane, Jr., of the Copper and Brass Research Association. By this method copper roofs and other sheet copper work may be made to turn a beautiful green within a few hours, in contrast with the years required by the ordinary processes of nature.

In describing the process Mr. Crane stated:

"The process is now out of the laboratory stage, and we have had very encouraging results with service tests on

actual roofs. We cannot yet guarantee results or make many promises. We can say the treatment will not injure the copper and we have one or two applications on roofs made six months ago which show no sign of deterioration on the coating.

"Our chemists discovered after some study that natural patina is a basic sulphate. Prior to that it had been assumed it was a carbonate. This set us off on a new track, and led to the development of a solution, consisting mainly of ammonium sulphate. The coating formed by dipping copper into this solution was found to be identical in composition with natural patina.

"This led to the adaptation of the ammonium sulphate process to application as a spray, and that is the method we are using on installations. The method is inexpensive and simple, though requiring a definite technique. The chemicals used are readily obtainable and cheap.

"Five or six spray applications are required, with drying allowed after each. The copper must be clean and must have weathered long enough for a brown tarnish to have developed on the surface. The patina does not appear immediately. If a heavy rain comes along too soon, it will probably spoil the work by washing off the salt before it has had an opportunity to act. After spraying there should first be an appreciable period of high humidity, or dew, or fog, so that the salt can absorb moisture and become active. After six hours or so of at least 80 per cent humidity, the next rain will wash off the excess salt and bring out the blue-green color of patina. The color that develops at first is somewhat bluer than the natural patina, but on weathering the color approaches the natural shade."

THE SAN FRANCISCO DIESEL ENGINE SHOW GREAT SUCCESS

Early in January the management of the Diesel Power Engineering Schools conceived the idea of putting on a Diesel Engine Show, in its school building at 3320 20th Street, San Francisco, and at the same time of the Annual Automobile Show—January 22 to 27.

Manufacturers and representatives of Diesel engines were invited to participate. They accepted and generously placed their latest models not only on display, but also in actual operation and demonstration, in order that the public and those particularly interested in Diesel power could see.

The attendance at this Diesel Show the first afternoon and evening proved the success of the idea, as public interest exceeded all expectations. During the week over 20,000 people saw Diesel engines of various types in actual operation and demonstration. So successful was this Diesel Show that by public demand, it was necessary to extend this over into the following week, so that many people from out of town, who had not been able to attend, could have this opportunity of viewing the latest achievements in Diesel engines.

The manufacturers admit that this, the first exclusive all Diesel Engine Show ever held in the United States, set an innovation for future Diesel Shows, as it presented a clear insight into the practical value of this type of power; its efficiency and economy as applied to operation and maintenance.

Roy Hemphill, president and general manager of the Diesel Power and Engineering Schools, who directed the event, likewise predicts great results will follow from the many advantages of this and future Diesel Shows.

ENGINEER RECEIVES PATENT ON NEW TYPE OF DAM DESIGN

Charles C. Tillotson, engineer of Phoenix, Arizona, has been granted a patent by the United States government for a new type of arched dam which he has designed. He claims this construction will eliminate cracking, caused by drying out of concrete, from low temperature, or from expansion due to heat or moisture, or from compression of the dam by the load of water above it.

Officially the invention is described as follows:

"In an arched dam, a series of spaced abutments, each having a cylindrical socket in its upstream end, arches spanning adjacent abutments having cylindrical sockets in their ends and cylindrical hinge elements engaging the adjacent sockets of the abutments and arches."

According to Mr. Tillotson, the safety of dams can be materially increased by prevention of cracking, and the cost of construction can be greatly reduced by more scientific use of materials.

Tillotson has many friends among the mining fraternity, due to his long connection with United Verde Copper Company as electrical engineer for the smelter at Clarkdale, Arizona, and with Phelps Dodge Corporation in charge of electrical design at the Warren concentrator. He also served for eight years in the engineering department of Montana Power Company at Butte, Montana. He is a graduate of the University of Kansas, a member of the American Association of Engineers and of the American Institute of Electrical Engineers.

CALIFORNIA GOLD PRODUCERS DRAW UP CODE UNDER NRA

A meeting of the gold producers of California was held in San Francisco, Friday, March 16, under the direction of the California Metal and Mineral Producers Association to consider a code for the gold mining industry. It was called as a result of a telegram from K. M. Simpson, division administrator of the National Recovery Administration, asking for a code for the gold-producing industry by a substantial majority of the producers.

In attendance at the meeting were representatives of the leading gold operations of the country, including Alaska-Juneau, Empire Star and others. The code drawn up is expected to form the basis for drafting a national code at the New York City meeting of the country's gold producers on or about April 16. Members of the California committee to meet with representatives of gold producers from other states and territories at the New York meeting are: F. C. Van Deines, vice-president of Yuba Consolidated Gold Fields; E. C. Hutchinson, president, Kennedy Mining and Milling Company; J. T. Smith, president of the Argonaut Mining Company; Errol MacBoyle, manager of the Idaho-Maryland Mines Company, and Charles Segerstrom of the Carson Hill Gold Mining Company.

Briefly, the proposed code asks the employment of additional labor in the search for new deposits and the extensions of existing deposits and the mining of so-called "marginal" ores; a 48-hour week for mine labor as essential to co-ordinated maintenance and production, in view of the number of men who must be continuously at work in keeping the mines unwatered, repairing timbers, operating dredges, mills, cyanide plants, etc.; minimum wages for surface and underground labor, for mills and other reduction plants, office and salaried employees.

COLORADO MINING MEN STRESS NEED OF FEDERAL HELP

Colorado metal mine operators and kindred state and district organizations have joined in a formal request that the federal government loan the petitioning interests approximately \$4,000,000 to finance the driving of a deep drainage tunnel in the Cripple Creek district and a similar tunnel in the Leadville district. The proposed Cripple Creek tunnel, according to survey, would be five miles long and cost approximately \$1,500,000. The length of the Leadville tunnel would be seven miles and cost an estimated \$2,500,000.



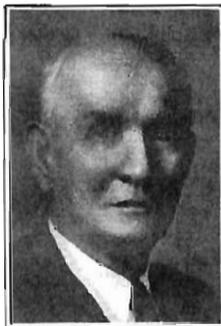
Robt. S. Palmer

Reporting on the present status of these major projects, Robert S. Palmer, secretary of the Colorado Mining Association and of the Colorado Metal Mining Fund, stated, "The Colorado Mining Association and subsidiary agencies have unanimously endorsed the Cripple Creek and Leadville drainage tunnel projects. These should not be construed as strictly mining projects, as they will be supported by a levy on the property of the district and the indebtedness will be paid in the form of a tax as well as a royalty on ore produced below the present water level.

"The first ruling from Washington was slightly misunderstood and was quickly corrected by Vincent Miles, regional director, who stated that mining projects, properly secured, would be given the same consideration as other projects of a public nature. The state legislature endorsed these projects and in vested mining with a 'public interest.'

"This attitude has been confirmed by the supreme courts of the western states as well as the U. S. supreme court itself. At the instance of the mining men of Colorado, the governor has asked a direct ruling relative to aid for mining from PWA. Before the appeal was sent, however, Secretary Ickes advised Senator Costigan that if the mine drainage district law was valid there would be no doubt as to the two projects coming within the scope of the act. Thus, as soon as the legality is determined, the exact status of the two projects will be decided."

John T. Joyce, commissioner of mines for Colorado and who is making a careful study of proposed aid for various mining projects, when interviewed said, "I note that the Gold Mining Association of America, now headed by Tasker L. Oddie, is urging the federal government to allocate \$100,000,000 to promote rehabilitation of the nation's metal mining industry; also, that the Mining Association of the Southwest at Los Angeles has made a similar plea. Both propositions are logically sound and the requested



John T. Joyce

appropriation should be made without unnecessary delay and I believe will be.

"Assuming that any agency of the government supplies \$100,000,000 to aid the metal mining industry of 12 western states, based largely upon the expansion of gold-silver operations, Colorado occupies a most favorable position. Briefly, Colorado can use to economic advantage \$10,000,000 of federal funds to further its output of the two money metals, divided thus: \$4,000,000 for drainage tunnels, \$4,000,000 for modern reduction plants, \$1,500,000 for retaining dams and \$500,000 for placer mining projects.

"Colorado placer mines have yielded more than \$30,000,000 and with proper equipment to work thousands of acres of practically virgin placer ground the total yield of former years would be far exceeded.

"All operators admit that the state lacks facilities to cheaply treat its millions of tons of medium and low-grade complex ores, hence the urgent need of, say two up-to-date smelters and a number of strictly modern concentrating mills."

SAN DIEGO COUNTY GOLD MINES JOIN GOLD MINING REVIVAL

A decided revival of interest in gold mining is manifesting itself in the Banner-Julian district of San Diego county, California. E. P. Barclay, mining engineer, associated with Keith Scott and Ray Campbell of Los Angeles, has consolidated the North and South Hubbard mines, Ready Relief, Redman and Hidden Treasure mines at Banner. At present 25 men are employed and regular shipments of gold are being sent to the mill and of concentrates to the smelter. A winze is being sunk through ore, and the ore hauled out through drifts and tunnels and railed along the mountainside to the mill. There it is put through a simple concentration and amalgamation process. Thus, development is self-sustaining. A new camp and mill are being planned.

Sidney Dodge of Julian has leased the Eagle mine from A. P. Frary and his flotation plant is under construction. Five stamps have been installed.

South of Julian, the old Harper property is being reopened. It is said that a two-stamp mill paid for all development work that has been done on this mine. It is at present owned by Sarah Harper.

High-grade ore is being milled on the Quayle property in the Laguna district and owned by the Quayle Bros., with offices in the Spreckles Theatre Building, in the city of San Diego. Two shifts are employed. Some of the ore is said to run as high as \$5,000 a ton.

The Noble mines, also in the Laguna district, are said to have been taken over by Colorado men. Several men are working on the old Ellis mine, in the Laguna district, getting milling machinery in condition. Ore running as high as \$75 a ton is reported being mined from the 300-foot level.

According to J. B. Current, 4802 Utah Street, San Diego, this summer will see a mill built on the Melba Mining Company's property in the Laguna district. Mr. Current is manager of operations. The property includes ten claims, of which a portion is patented.

Charles Keiser, 431 Twelfth Street, San Diego, is arranging for the development of his extensive holdings in the Laguna district. He is one of the largest single mine owners on the Pacific Coast, and has properties in both the U. S. and in Mexico.

WEALTH OF EXPERIENCE BROUGHT BY HAAS TO NEW MILL POSITION



M. C. Haas

With the re-opening of the Presidio mine of American Metal Company, after a shut-down of more than three years, a number of new men have joined the company's organization. Among them is M. C. Haas, who will serve as mill superintendent. He brings to his position a wealth of experience gained in four different countries.

Immediately upon his graduation in 1924 from the

South Dakota State School of Mines, with a B. S. degree in metallurgy, he joined the International Smelting Company at its Tooele, Utah, division. There he served as junior metallurgist working in the ore dressing laboratory where all research work problems were handled. This included gravity and flotation concentration and cyanidation testing. At the end of one year he was promoted to assist superintendent of concentration, having charge of the ore dressing laboratory. The following year he acted as concentrator metallurgist with full responsibility for metallurgical results from the company's 1,000-ton selective lead-zinc-iron custom flotation mill.

In 1927 he joined the Spokane Silver and Lead Company at Custer, South Dakota, as mill superintendent for a 100-ton lead-silver flotation mill, leaving there to accept a position as flotation superintendent with the Treadwell Yukon Company, Bradley, Ontario. During this period there was constructed a 250-ton mill to serve as a pilot mill to develop a treatment method and to determine the type of equipment that could be adapted to best advantage in a subsequent large tonnage plant. This ore was a low-grade copper-lead-zinc of a highly complex character, from which were produced selective concentrates of each of the minerals mentioned.

The next year and one-half were spent with the American Smelting and Refining Company in Mexico. His first work was at the company Anganguo unit in Michoacan where he supervised the construction work necessary for the revision of the existing gravity mill into a selective flota-

tion concentrator. After the completion of this he took up the duties of concentrator metallurgist and had charge of all testing work for the Southern Mexico division. This necessitated extensive research along the lines of roasting, followed by cyanidation of the calcines as a method of recovering the silver from its concentrates, in an attempt to eliminate freight and smelter charges.

For two years, May 1930 to May 1932, Haas acted as consultant for the Soviet government in the revision and operation of two gravity concentrators, treating tungsten ore, did consulting work on copper-zinc properties, and had personal charge of a 600-ton cyanide plant treating gold ore. His duties included the instruction of the workers and mechanics as to the proper operation and maintenance of all milling equipment (all of which was modern American equipment) and the instruction of the technical staff as to their duties in the operation of such a plant.

Because of the possible advantages offered by introducing flotation as a method of increasing the ratio of concentration of the material to be treated by cyanidation, and the results of preliminary test work on a number of local ores, he was given a special commission to go to the government laboratories at Moscow to continue work along that line. He later returned to the property and installed a 75-ton pilot mill to serve as a test unit for treatment of the different ores from that district to determine their amenability to the amalgamation-flotation process, followed by the cyanidation of flotation concentrates. As a result of the successful completion of this work, plans were made to introduce that method of treatment.

Haas returned to the United States in 1932 and since that time has been located at Whitewood, South Dakota, until taking over his new duties at the Presidio mine, Shafter, Texas.

WESTERN GOVERNORS PASS RESOLUTION ON COPPER

Although the primary object and thought of the Conference of Western Governors, held in Salt Lake City on March 12 and 13, was to consider and make recommendations to Congress on the silver question, Governor B. B. Moeur of Arizona presented a resolution on copper which was unanimously endorsed by the eleven governors in attendance.

The resolution follows:

WHEREAS: The non-ferrous mining industry has been, to a large extent, sus-

pending during the depression and most mines are idle or operating on curtailed basis of production, and

WHEREAS: The existence of large stocks of metal is depressing market prices and preventing re-employment, and

WHEREAS: The removal of the overhanging stocks of metal from the market would improve prices and bring about substantial improvement in re-employment, and

WHEREAS: The possession by the United States Government of a stock of the important non-ferrous metals would be an important step in preparedness for war,

THEREFORE, BE IT RESOLVED: That it is the sense of this Conference to recommend that the United States Government acquire at fair prices and by suitable financing, such portion of the surplus stock of the important indestructible non-ferrous metals, useful for ammunitions, as will be necessary to bring about an increase in mining activity and re-employment.

MINING ASSOCIATION HEARS NORRIS OF CORPORATION DEPT.

At the March meeting of the Mining Association of the Southwest, Byron Norris, engineer of the California Department of Corporations, assured members that the department does encourage the development of mines. He further stated that of recent mining permits issued over 80 per cent were for the purpose of procuring capital for prospecting or developing mines.

Norris described in detail the engineering requirements for qualifying mining enterprises before the department. The chief essential, he said, is a report from a mining engineer who has visited the property for which the capital is sought. Reports should be accompanied by location maps, details of geology, lists of samples and assays, assay maps, particulars of purchase contracts, and measurements of any development work done. All of these particulars are not required from mere prospects or surface showings for which a limited amount of development capital is sought. When permission is sought for raising capital to erect a mill, the amount of ore developed, its value and an estimate of working costs must be given.

The Association discussed the possibility of holding a mining exposition in August in connection with Los Angeles Market Week. Announcement was also made of a series of new classes in mine administration and elementary gold mining to be started at the University of Southern California, April 2, 1934.

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Mill Heads from Western States

Brief items covering the mining industry in the Western United States and Northern Mexico.

ARIZONA

Phelps Dodge Corporation and subsidiaries report net losses from operations in 1933 of \$83,568 after all expenses including depreciation, cost of maintenance and taxes on shut down properties, but before depletion. This compares with net loss of \$3,752,252 before depletion in 1932. After providing \$1,576,822 for depletion and \$1,335,730 as a special distribution to stockholders on February 1, 1934, the surplus account was reduced \$2,996,131 during the year. Production from the company's mines, together with metals produced from ores for the year, amounted to 77,592,032 pounds of copper, 2,031,971 ounces silver, and 43,882 ounces of gold.

The mill at the Tom Reed Gold Mines Company, Oatman, Arizona, is operating at capacity, and new units may be added to handle the excess production from lessees. On company account Tom Reed is driving ahead toward the Argo ground on the 1,100 level and making good progress. It is also reported that the company is contemplating some work near the Ben Harrison shaft. Jack Zwinge is assistant general manager in charge of operations.

A portion of the mill tailings from the United Eastern mill are being shipped by W. K. Ridenour, Oatman, to the Tom Reed mill for treatment. To date no report of values or tonnage has been made.

The Telluride Mining Company, Oatman, Arizona, is mining and shipping ore from the 600 level of its property. The ore is going to the Telluride mill, now operated by the lessees of the Big Jim mine. A considerable tonnage of \$25 ore is said to have been produced from this level of the mine. Bob Lyons is superintendent.

Test runs are being made of the recently completed mill by the Crown King Consolidated Mines, Ltd., Crown King, Arizona. The material being handled at this time is from the waste dumps of the former operators. A drag line is used to bring the rock to a receiving bin from which it is dumped onto a grizzly which removes the large boulders. The undersize is passed to a Blake-type crusher which prepares the ore for the Symons disc crusher where it is reduced to one-fourth inch cube, and passed to storage. From storage bins the ore is fed to a ball mill working in closed circuit with Dorr classifier. The ball mill capacity is three tons per hour, crushing so all will pass 80 mesh and 75 per cent reduced to 80 mesh. Classifier overflow goes to flotation cells—Denver Sub-A (Fahrenwald)—five of which are used as roughers and the sixth producing the finished concentrate. This concentrate goes to a Dorr thickener for partial dewatering and an Oliver filter completes the task. Tailings from the flotation machine pass over Wilfley tables for additional recovery and the final tails pass to a Dorr thickener outside the mill for recovery of all possible water for reuse. Joe T. Groves has been mill construction superintendent, and A. C. Traweck, mine superintendent. J. J. Macdonald, consulting mining and metallurgical engineer, has been in Crown King for several weeks assisting in mining and milling plans.

All buildings and equipment at the Sheldon Mining Company camp, Walker, Ari-

zona, have been purchased by the C. B. Walls, Jr., Lumber and Wrecking Company, 1600 South Central Avenue, Phoenix, Arizona. The material resulting from the dismantling are being shipped to Phoenix, 20 cars of material arriving shortly after the middle of the month.

J. T. Fitzgerald and associates are unwatering the Keystone mine at Mineral Park, via Kingman, Arizona, and expect to have the property ready for examination within the next 10 days. The property is owned by Fitzgerald and G. S. Holmes of Kingman.

The Pay Rock, Maggie and Eighty-Five mining claims in the Green Valley (Payson) mining district of Gila county, Arizona, have been taken over under contract by S. M. Stauffer, president of the Stauffer Petroleum Company of Oklahoma City, Oklahoma. He intends to start operations the first of April, beginning by cleaning up, sampling and making thorough metallurgical tests. Mr. Stauffer has been active in the mid-continent oil fields for the last 20 years, but believes that the new prices for precious metals offer an opportunity for a good margin of profit in the mining game. Associated with him in the venture are Charles E. Stewart, an independent oil operator who was at one time well known in the mining camps of western states, and Harry A. Shipman, mining engineer of many years' experience in oil and mining operations, 2213 Ramsey Tower, Oklahoma City, Oklahoma. Mr. Stewart is on the property, getting it in shape for final inspection and sampling.

The Hidden Treasure group of gold claims, near Cordes, Yavapai county, Arizona, has been sold to W. A. Bondurant and eastern associates who plan to put the mine in active operation at an early date. The Hidden Treasure is said to have a production record of more than \$150,000 in gold, with more than 10,000 tons of ore blocked out in the mine, running \$15 per ton, and some 15,000 tons of commercial ore on the dump. As soon as conditions warrant, Mr. Bondurant plans for the installation of a 50-ton mill. At present Mr. Bondurant is making his headquarters at Hotel Michigan, 127 E. Michigan Street, Indianapolis, Indiana.

The report of Iron Cap Copper Company and subsidiaries for the year ended December 31, 1933, shows a net loss of \$59,135 after interest, taxes, etc. The company made no provision for depletion or depreciation during 1933 as the properties were not operated. For the year of 1932 the company reported net loss of \$73,735.

The Walkover mine at Hackberry, Arizona, operated by H. L. Richardson, has made its second carload shipment of ore to the smelter. The ore was taken from the 200-foot level.

Consolidated Arizona Mines, Wenden, Arizona, is concentrating all development work on the section of its holdings which gives promise of producing important gold values. During the past month a heavier set of equipment was installed, including a 25-horsepower hoist, 50-horsepower gas engine and two-drill compressor. This equipment is deemed sufficient for the work at hand for the immediate objective is on the 300-foot level in a new working shaft. Harold W. Yost, consulting engineer, 1338 West Roosevelt Street, Phoenix,

Arizona, is in charge of the shaft work. W. B. Harris is general manager of the company.

Magma Copper Company, Superior, Arizona, has declared a dividend of 50 cents a share out of surplus, payable April 16 to stock of record March 29. A statement by the directors said the dividend was not to be regarded as an establishment of a permanent policy.

The Hart Cyanide Plant, W. L. Hart, operator, Salome, Arizona, has completed its 100-ton recovery unit. The plant was designed for the treatment of tailings at the old Harqua Hala Bonanza mine. Construction was handled by Mark Lintz, 1618 Montecito Avenue, Phoenix, Arizona. W. C. Kinnon is superintendent of the plant.

E. M. Moores and associates have begun work rehabilitating the Red Rover mine, located 54 miles north of Phoenix, Arizona, under a five-year lease from the Red Rover Copper Company, F. A. Gillespie & Sons, owners. In 1930 Mr. Moores, under a former lease, shipped 50 carloads of ore which averaged 40 ounces silver and 5.34 per cent copper. He was forced to close down on account of the drop in prices. He has engaged a full mine crew for the present work. Mr. Moore's address is Box 2002, Phoenix, Arizona.

February production from the Big Jim mine at Oatman, Arizona, is reported to have totaled considerably over \$18,000. The new oreshoot, recently opened below the 600-foot level, is said to be showing higher values than the ore previously mined. The mill is handling approximately 50 tons of ore daily. Rae L. Johnston is general manager, in direct charge of operations.

W. D. Roper and W. T. Toney of Safford, Arizona, who own the Silver Crown lode mine near Arivaca, are making plans to install modern machinery at the property. They are making a trial shipment of ore to the smelter. They report that there are about 100 men employed in the gold and silver mines around Arivaca, due to the better prices for gold and silver. Among the active mines are the Silver Peso, Lost Shepherd, Amado, Margarito, Tres Amigos and Las Guijas.

CALIFORNIA

The Big Jim Mines, Inc., A. G. Keating, president, 1116 E. N. Van Nuys Building, Los Angeles, has purchased a 15-ton mill for a property acquired recently near Sonora, California. Sufficient development work has been done to prove the continuity of the vein and average values of \$50 a ton at present price for gold. Costs are estimated at \$6 a ton. Two shafts have been sunk to 50 feet each and a 75-foot tunnel is being driven that will give 150 feet of backs. It is from the tunnel that production will start. Four adjacent claims have been added to the original two lode claims. Big Jim has a property at Redding, in Shasta county, California, under consideration but work has not been started there yet. More than 12,000 feet of development work has been done on the Redding mine and it is estimated that 300,000 tons of low-grade gold ore are available.

The preliminary consolidated report of the Idaho-Maryland Consolidated Mines, Inc., shows a net income of \$359,072, after reserve for taxes but before provisions for depreciation, depletion and amortization, for the year ended December 31, 1933. This is equal to approximately 21 cents a share. For the year ended December 31, 1932, the company

reported a net income of \$327,000. During 1933 the company produced 68,233 tons of ore of an average value of \$13.38 a ton (old price).

On March 15, Charles H. Segerstrom of Sonora, California, managing director for the Carson Hill Gold Mining Corporation announced the discovery of an important ore body on the 1,100-foot level of its property at Melones. The ore is estimated to be 150 feet wide, and is regarded as the biggest discovery since the famed Morgan ore body was uncovered several years ago.

The Mariposa Gold Mining Company, owned by J. A. Fazzi, Box 12, Altaville, California, has acquired bond and lease on the Norfolk gold mine, from Mrs. Katherine Raffetta of Murphys. Both shaft and tunnel work have been done, a compressor house erected and some machinery installed. A good road leads off to the mine from the main highway. Work is to begin within 30 days.

G. E. Campbell and partners are installing a 40-ton Denver mill on their Too Far North mine at Long Barn, California. Ore bins and tramway installations connecting the mine and mill have been completed and the plant is scheduled to begin taking ore early in May. The vein, six to seven feet wide where opened up, is described in a laboratory report as consisting largely of granite, with tellurium and tungsten present, and mention is made of the evident commercial quality of the ore. A recent six-ton test returned nearly \$100 a ton.

A 180-cubic foot Schramm compressor and other mining machinery is being installed on the Turnback Creek mine, eight miles south of Tuolumne, California, and lately taken over by Harry C. Warwick, 3769 Jackson Street, San Francisco. The property has three veins 40 to 60 feet apart, ranging in width from two to six feet, that have been opened up by approximately 700 feet of tunnel. Good values have been opened in each of the veins. After crosscutting from the 200-foot middle vein tunnel, the lowest of the three, to the other lodes, deeper development will be undertaken. A mill will be built providing there is sufficient ore. Mr. Warwick has been actively engaged in mining for the last 35 years. He has operated in Alaska, Montana, Nevada and California, and is credited with a number of successful enterprises.

D. C. Sharpstone, well-known Nevada mining engineer, has taken over the Big Buzzard mine, nine miles northeast of Polson, California. The property is the one in which J. W. Howard, formerly of Grass Valley, has been interested. It is estimated that the dump contains 2,000 tons of heavy sulphide ore that will average better than \$15 a ton. The shaft has been sunk to 300 feet on a vein varying from five to 30 feet in width, and it is estimated that 15,000 tons of ore that will run \$13.50 a ton are blocked out. The ore is principally sulphide in talcose slate and contains about 1.7 per cent copper, 5.1 per cent lead and from 4 to 17 per cent zinc. Silver is closely associated with the lead and runs as high as 30 per cent.

D. E. Irwin, Box 671, Bishop, California, reports that in a few days he will begin shipping from the Tower mine seven miles south of Benton Station. He expects to market two to three carloads a week. The vein is 13 feet in width, 10 feet of the hanging wall worth \$20 to \$30 a ton. A 12-inch width assays \$40 to \$50 and 16 to 18 inches of black metal runs \$75 to as high as \$280 a ton.

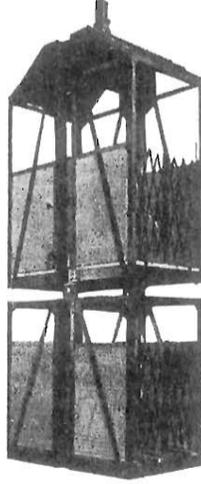
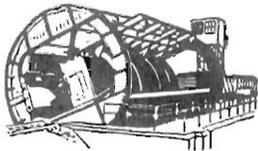
Rather extensive development work is being planned for the Uncle Jim mining claims in the Hite Cove district, 15 miles east of Briceburg, California. The property is owned by William H. Rykert and has been in litigation since November 28, 1932. The complaint originated with the Forest Service against patent proceedings on the contention that no minerals had been discovered and that the land involved was not of mineral character. The case first came before the Registrar, Land Office, Sacramento, and Rykert won the decision. The Forest Service carried its appeal to the Commissioner of the Central Land Office at Washington, D. C., who upheld the decision of the Sacramento office.

The discovery of a new and rich ledge of gold ore is reported from the New

World mining claims in the Havilah district of Kern county, California, by Simon Etchemedy, who has prospected the district 35 years. What he claimed to be run-of-vein ore was taken to John L. Hooper of Kernville, operating a custom mill in the Hobo Hot Springs district, and assayed \$106. At the surface the vein from which the sample was assayed is reported to be eight inches wide. Etchemedy is leasing from Mrs. Hannah Miller.

The Blue Star Mines, Ltd., intends to add a compressor to its equipment at Zurich, Inyo county, California, and to get ready for moving a substantial amount of tale already contracted for. Andrew C. Getty, 840 San Julian Street, Los Angeles, is president and general manager. Last summer the company employed fourteen men. James Collins and Henry Hill

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are mine and mill superintendents, respectively. The Big Pine, California, post-office serves the mine.

Frank Bedell of Big Pine, California, has put in electrical machinery at the **Bedell** silver-lead mine at Waucoba. Power is sufficient to run the drills and to light the tunnel. Considerable ore is being mined.

R. M. Burnette and associates have unwatered the old shaft in the **Stockton Hill** mine, southwest of Grass Valley, California, to 160 feet and plan carrying the shaft down to 500 feet. It is planned to enlarge all machinery units and to build a new mill using flotation. The nature of the ore does not permit amalgamation and cyanidation.

The **Omega Development Company**, headed by Arthur W. Hoge of Nevada City, California, has had one monitor in operation on its property in the Washington district since the middle of February. Twelve men are employed. Last summer and fall a good deal of work and money was expended in getting the mine ready for production. Everything is now ready for a long season.

Five men are working at the **Paymaster** mine on the Trinity-Shasta county line, in California. R. S. Moore of Lewiston, superintendent. Two stamps and a 36-inch Straub ball mill are in operation.

The **Anglo-American Mining Corporation**, 1005 Mills Building, San Francisco, is reported to have optioned the **Imperial** mine at Newberry, San Bernardino county, California. This is one of the largest silver-lead properties in the county and several thousand tons of ore are blocked out, estimated to carry 15 per cent lead and 30 ounces silver to the ton. Frank D. Orr of Bodfish has been in charge for years. It is understood that extensive prospecting will begin at once. A. W. Frolli is in charge for the holding corporation.

The **Socrates** quicksilver mine at Pine Flat, near Healdsburg, California, is being reopened under lease by Frank Pollard and M. Slevens. So far, work is confined to reopening the old tunnels which have been idle ten years and to cutting new workings to enable the mining of cinnabar ore.

O. L. Layne, 5059 Rosewood Avenue, Los Angeles, and R. K. Brudi, also of that city, are reported to have leased the **Ferguson** property three miles southeast of Westpoint, California. A hoist and compressor and other miscellaneous equipment have been purchased for installation at an early date. It is planned to reopen the present shaft to 165 feet and then cross-cut to the known oreshoot on the 110-foot level.

The **Maybert Gold Mines**, which a few weeks ago took over the Yuba property near Washington, California, has added the **Mayflower**, **Silatheal**, **Gray Eagle** and **Lindsay** mines to its holdings. The enterprise enjoys unusually fortunate conditions for profitable development such as a compact group of claims where most of the ore can be delivered at the mill by gravity or bucket conveyors, valuable water rights, central and accessible location and a substantial tonnage of proven ore that is believed to now be worth \$12 or \$13 a ton. When operated individually there were 25 stamps on the Yuba mine and 10 on each of the others. It is estimated that 200,000 tons of ore that can be milled at profit lie in the **Mayflower** oreshoot between the point where it was

last worked and the level of the Yuba drain tunnel. The old Yuba tunnel is being cleaned out and extended to this ore. The work of rebuilding the flume will be started soon together with the rebuilding of a five-stamp pilot mill for test purposes. Afterwards, the management will be able to announce its program. All officers are San Francisco men. H. E. McClellan, resident vice-president for the Maryland Casualty Co., 206 Sansome Street, is president; J. R. Wilson, attorney, is vice-president; and R. H. Humphrey, consulting mining engineer, 1246 Russ Building, is engineer.

The **Canyon Creek Placers, Ltd.**, has 45 men employed at its properties near Dedrick, California, and three seven-inch nozzles in operation. One of the giants is working on what is known as the Clarke property. Work continues full 24 hours a day. H. G. Kenworthy and George H. Bergin, both of Weaverville, are engineer and general manager, respectively.

The **Trinity Exploration Company** has seven men working in two shifts on the Hook and Ladder mine at Weaverville, California. One six-inch and two four-inch nozzles are being used. The work is to continue as long as the water holds out. A. C. McMillan, formerly of San Francisco, is president and general manager; A. E. Carlson is superintendent, and C. M. Bennett is foreman.

The **White River Mining Company** at White River, California, is crushing ore six days a week from the Bald Mountain mine. According to V. R. Crisp, construction engineer, three stamps have been added to the rock crusher and roller type of grinding equipment installed originally. The combined crushing capacity is said to be about equal to 10 stamps. Seventeen men are employed. Dr. George M. Walker of Los Angeles, graduate of an English university, is consulting engineer.

According to President Battista Sada, the **Utical Gold Mining Company** at Stanislaus, California, expects to be on regular production by April 15. Mr. Sada has been in charge of operations and Barney Barbolino is mine superintendent. He reports that substantial ore bodies have been blocked out and that milling values are satisfactory. Plans are being made to list the company on the San Francisco Mining Exchange. Permission has been granted by the state corporation commission to issue an additional \$50,000 of capital stock.

Fifty tons of ore a day are passing through the **Burton Bros.** mill with the mines of the Tropic Hill area at Mojave, California, maintaining a consistently high output, according to Clifford Burton, manager. Values as high as \$300 a ton have been reported. R. Luke, a new lessee on the **Hamilton** mine, milled three tons that returned \$970. **Kelsey & Myler**, largest leasers on the hill, report approximately 4,000 tons of ore available for immediate milling. **Rogers & Gentry** made a 30-ton shipment to the mill that netted them \$1,100. The **Burton Bros.** are continuing their work in the **Tropico** mine, and in the **Middle Butte** mines three miles north. Some of their ore has run \$100 a ton.

The first carload of ore to leave the **Brown Monster-Reward** mine near Lone Pine, California, is expected to run \$33 a ton. All of this came from one of the old dumps. It is estimated that there is more than 100,000 tons of gold ore in sight that assays \$8 to \$56 a ton, independent of the rich 12-inch vein of gold ore that brought the property into prom-

inence a few weeks ago. The owners are Guy Eddy and Henderson of Los Angeles, who have given a five-year lease to J. F. and R. B. Brackett and associates. Attracted by the rich values reported some weeks back, prominent engineers have been sampling ground.

The higher price of gold and the uncovering of ore bodies of better milling grade have placed the **Central Eureka Mining Company** in its best cash position in years, according to W. P. Henry, president, 2012 Hunter Dulin Building, San Francisco. Production from the Central Eureka mine at Sutter Creek for the month of February amounted to approximately \$32,000 as compared with \$31,000 during January. Earnings for the last few months have enabled the company to complete much necessary "dead work" which had been postponed for lack of reserve capital. The mill is dropping 40 stamps and treating approximately 1,000 tons of ore a week, with millheads during the first days of March showing increasing value. Albion S. Howe is general manager and James Spiers superintendent at Sutter Creek.

A \$42,000 verdict won by the **Original Mining and Milling Company**, operating at Clearinghouse, California, was upset by the state supreme court in a ruling in favor of the San Joaquin Light and Power Corporation. The verdict in favor of the mining company was returned by a jury in the superior court at Merced in 1929. The case was originated by the mining company to recover the value of 274 shares of power company stock assertedly lost in a deal between the late Joseph B. Hart, treasurer of the mining company, and Raleigh Casad, local manager of the power company.

Howard Woods has a crew of seven men rebuilding the mill and shops at the **Esperanza** mine at Kelso, San Bernardino county, California, in preparation for a larger output. Preparations are being made to open a new vein of ore of good value.

Four buildings that had stood more than 40 years on the **La Grange** mine at La Grange, California, were destroyed by fire. They were the boarding house, a bunkhouse, office building and a warehouse. While this property is the largest of northern California hydraulic mines, it has not operated on a large scale for some time. Last year Norman C. Stines, mining engineer, Russ Building, San Francisco, had nearly 20 men on the ground drill prospecting.

A. A. Bumgarten of Chicago and James A. Smith of Sacramento, who recently took over the **Barrett** mine at Confidence, Tuolumne county, California, from Dolph J. Jacobs of Sonora, have provided living quarters and mining machinery anticipating three-shift operations. Jacobs is a nephew of the original owner, George Barrett. Under Jacobs management, a body of milling ore 180 feet long and 30 inches wide was developed on the 50-foot level of the vertical shaft and a five-stamp mill installed. Under the direction of Smith, seven men are employed and the shaft is being sunk to 150 feet.

N. W. Wilson, experienced mine operator of Big Oak Flat, California, who several months ago acquired control of the Longfellow mine has also taken over the Mack and Wooten property, owned by the Two Brothers Consolidated Mines, Inc. Both properties are at Big Oak Flat. Both the Longfellow and the Mack are former producers, opened to 900 and 600

feet, respectively. At one time they were each equipped with 20 stamps. The combined operation is known as the California Gold Lode Mines, Inc. Chester A. Lee is associated with Wilson.

According to I. N. Dally, manager of the Mammoth Magalia Mining Company's operations at Magalia, California, the drills from the face of the long tunnel have entered gravels of the character they had been seeking. The tunnel has been driven to 3,620 feet and for some time drills have been sent ahead of the face in anticipation of the objective channel.

Materials for a new surface plant are being hauled to the old Pennsylvania mine at Browns Valley, Yuba county, California, taken over last summer by L. A. LaChance of Chicago. In the 90s this mine was rated as one of the big gold producers of the state but it is a wet mine and the cost of pumping finally became excessive. According to J. A. Wright, superintendent, all of the buildings, machinery and equipment will be new because the old has depreciated to the point where there is no salvage.

R. E. Anderson of Marysville, California, and associates have placed in operation the first dredger to be introduced into the Nevada City district. It is working on the Cademus and Home ground, which is the lower portion of the Champion mine, and covering a section of the bed of Deer Creek. The dredger unit is entirely electric, operated by five motors. Shaker screens, centrifugal pumps and conveyor belts are all compactly installed on a large pontoon. Gravel feeding is effected by a standard dragline, which feeds to a hopper at the upper end of the float. The pond in which the dredger floats has been made by changing the course of the creek by a system of dams and new channels. Anderson has several hundred acres under lease. His outfit is working several hundred yards of gravel per day and three men are employed on one shift.

The Junction City Development Company has started drilling on the Given ranch on the Trinity River, near Junction City, California, using a six-inch Keystone drill. Harry F. Wolfinger of Stockton, California, is in charge of the work.

The Genji Consolidated Mines Company, Ltd., C. N. Miller, president and general manager, 549 Holbrook Building, San Francisco, has five men working at Magalia, and is moving 20 cars of gravel a day. Drifting is in the direction of the reservoir, which is 250 feet away. The firm has a lease from the district whereby it gets 15 per cent of the gross gold found.

Oscar Fry of Los Angeles has purchased a millsite of five acres on the Sacramento River on the east side of Redding, California, and is building a custom mill there. It is the first plant of this nature to be built in the vicinity. The initial unit will be able to handle 100 tons of ore a day and a fleet of trucks will be operated to convey the ore from Trinity and Shasta counties. The site is advantageous because it allows a gravity feed of the ore. The plant will be equipped to treat gold, silver and lead ores. The plant will be ready to receive ore in April. It is known as the Redding Custom Ore Mill, and is purely a private venture. Fry may be reached at Box 227, Redding.

The Siskiyou Exploration Company, E. M. Elliott, president, Colorado and Euclid Avenue, Pasadena, California, is planning the early installation of a 2,000-yard

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PHOENIX - - - - - ARIZONA

placer plant to be used at its properties at Happy Camp, California. While the details of the plant are not yet decided, it is to be a mobile unit, and they are planning to purchase two Diesel power shovels of from one to one and a half yards capacity for the feeding of the plant. The operations call for the working of a bank from 30 to 50 feet high. The placer plant is to be fed by the power shovels into a hopper, conveyed to trommels, the fines to be treated by a modern type gold saver and the tailings to be disposed of by a conveyor tailings stacker.

A syndicate composed of T. L. Parks, Guy Cadez, George Estes and Harry B. Gentry has completed all necessary work to begin the recovery of gold from its Siad Creek hydraulic placer near Happy Camp on the Klamath River, in northern California. The first run from sluicing showed gold 890 fine to an average value of about \$1 a yard. They blasted a bedrock cut 550 feet long through a high rim up to 30 feet in depth as a tailrace outlet to the Klamath River. The sluice is 28 inches wide and has a grade of five inches to the 12-foot box. The gravel runs freely and contains no boulders that can not be lifted by hand. The ditch line is two and a half miles long and is designed to carry 2,000 miners inches. The sluice is provided with a special undercurrent to take care of the fine gold, of which formerly, in dredging operations, more than 25 per cent was lost. A. E. Place, consulting engineer, 530 Bartlett Building, Los Angeles, designed the plant now going into operation. Parks is at the property as manager.

The Gold Point mine eight miles south of the Box S ranch near Victorville, California, has been sold to the Abba Gold Mining Company, of New York, a Delaware corporation. Financing is to be done in New York and the shares are quoted on the New York Cub. This is a big proposition and will be developed entirely by open cuts, using steam shovels for mining. From numerous samplings it is believed to average \$5 in gold at present prices. The ore body is a mass of shattered limestone some 3,000 feet wide with granite on both sides. More than 3,000 feet of shaft and tunnel work has been done. Plans are to build a 500-ton per day all-slimes cyanide plant, with provisions for even greater capacity. Ample water exists for a 1,000-ton plant and has enough elevation above the camp and millsite to be utilized under pressure. The Southern Sierras power line is two miles from the workings. The Gold Point mine has, for the last six or seven years been controlled by O. C. Matheis, 302 Wilcox Building, Los Angeles.

The Natomas Company, Thomas McCormack, president, Forum Building, Sacramento, California, has declared an extra dividend of \$1.25 and regular quarterly dividend of \$1.25 a share, both payable April 2 to stock of record March 15, 1934. A similar extra was paid January 1, 1934. The directors have approved a plan for a ten for one split-up of the present 99,582 shares of stock outstanding. The stockholders will vote on the proposal at the annual meeting March 20. The net profit for January is reported at \$59,768 after deductions for expenses, depreciation, depletion and federal taxes. The net profit in January, 1932, was \$31,820.

J. L. Bennett, superintendent of the Spanish mine at Washington, California, for the Bradley people, is moving 50 tons of ore a day to the cyanide mill over the

new 8,000-foot tramway. The company has practically opened a new mine more than a mile from the old workings.

A second shift is soon to be added to the crew of five men working at the Honcut Gold Mines Company property at Bangor, California. The property has been in steady operation for the last eight months and is said to be on a paying basis. It covers 1,000 acres, including the Blue Lead channel, and was acquired four years ago from D. E. Young. The channel is as wide as 500 feet and the gravel is four to six feet thick. W. I. Kohnke of the Kohnke Printing Company, 686 Sacramento Street, San Francisco, is president.

Sam. S. Denman and associates, who have been working the Crandall mine in the Ophir district, near Auburn, California, for more than a year as the First National Crandall Corporation have reorganized as the Crandall Mining Company. The new concern is capitalized at \$200,000. Denman is president and Frank L. Hoyt, 495 South Thirteenth Street, San Jose, is vice-president. The program of mine work to be carried out includes rather extensive development and exploration below the existing 300-foot workings. The Lukens mill on the property, which was leased a few weeks ago by A. C. Crosby, is being enlarged and modernized and will soon be treating ore from the Crandall mine and from the Crosby property, some six miles distant.

The cyanide plant built by the Lacy Manufacturing Company, 601 Washington Building, Los Angeles, California, is making satisfactory recovery from the tailings at the Tumco mines, near Ogilby, California. A Caterpillar tractor brings the dirt to the plant, where it is screened and run through three cyanide tanks. A Diesel engine runs the dynamo. Water is being pumped in from a ranch two miles away.

W. L. Wolf and L. G. Kilkary of San Francisco have bonded placer ground on Indian Creek, near Weaverville, California, owned by Frank L. Upham, and have 15 men pushing construction work. Two new bunkhouses and a cookhouse have been completed and the sawmill is cutting lumber for a 3,744-foot flume to carry water from Indian Creek to the mine. Nearly 600 feet of the flume have already been completed. Upham is superintendent of operations.

Preliminary work is about finished at the True Grit property at Camptonville, California, and the washing of gravel will be started as soon as the water is available. Equipment is up-to-date in every respect and includes a new reservoir, flume and several hundred feet of ditch. Water rights have been acquired on Oregon, Miller and Brush Creeks. The True Grit is owned by John C. Donnelly and under lease to George N. MacRae. It is at present being operated by C. F. Humphrey and Norris English of San Francisco. H. C. Smith is engineer in charge.

William J. Quackenbush and associates of the Piute Mining Company at Cantil, California, are considering pilot mill installations. Mine development has been in progress two years and some of the high-grade gold ore from the Burning Moscow mine has been shipped. However, indications are that it will be a strictly milling proposition, especially if the big ledge across Kelso Creek comes up to expectations.

Jess Knight, lessee and operator of the Elephant and Grey Eagle mines at Mojave, California, has shipped four gold bricks estimated to be worth \$6,000 to the U. S.

mint at San Francisco. Production is expected to double shortly because the workings have been prepared and thrown open to leasers. A 50-ton ball and rod mill has been purchased from the Old Dominion mine at Globe, Arizona, and a Dorr thickener 44x10 feet has been trucked in from Randsburg. Eight miles of water line from the Tehachapi Range has been repaired and both water and air lines extended through the workings for use by both the Knight crew and the lessees. Many of the old surface buildings have been repaired and Knight is building a comfortable residence at the mine for himself.

H. H. Abbott and W. E. McDonald, both of Big Pine, California, and two associates have leased the Sulphur Queen mine near town and have organized as the Sulphur Queen Mining Company. Indications are that a product of unusual purity will be available and under the dry process of treatment is free from moisture. R. J. Spatz, patentee of a dry heat process, has joined the operating group and will build one of his plants to treat 25 tons of material a day.

The Mutual Gold Corporation is installing a No. 9 Cameron pump at the Simpson mine near Leevining, California, to handle a heavy flow of water in the vertical shaft. Russell F. Collins, president, purchased the pump at Reno a few days ago. The shaft has been sunk to 175 feet and is expected to cut rich gold vein at 250 feet.

The Carnation Gold Mining Company is reported to have a crew of 40 men at work at the Jamieson mine at Johnsville, California, preparing the mine and mill for production. The report follows that all of the old machinery in the mill has been discarded and is being replaced by new; the pipe line has been repaired and changes made at the intake. R. J. Jefferson, 80 Broad Street, New York City, is president. N. Srdanovich is superintendent at Johnsville.

A Los Angeles syndicate with offices in the Pershing Square Building and represented by James E. Sellers, is reported to have leased six mining claims in the Yucca Grove district, out from Barstow, California. The ground is owned by C. A. Kellogg, building inspector at Eagle Rock. The lease is for three years. Early operation is intimated.

Under a revised prospecting program, the Pleasants Gold Mining Company is carrying out the original plan of sinking a 150-foot shaft, crosscutting east at points indicating favorable mineralization and crosscutting east to the main ledge, which is not more than 20 feet from the shaft. The operators are Charley Combs, A. J. Ousley, Fred Reynolds and Burt Snyder, all members of the original organization of a year ago. At the 55-foot level, values are encouraging although nothing is known of the extent of the ore. The assays made at Redding ran \$50.80 and \$26.60, respectively; and two other assays made at Reno, Nevada, showed \$30.60 and \$99.46, respectively.

At a recent meeting, R. M. Hardy, H. Barry, Earl Keller, Art Johnson, and Carl H. Fox were elected an advisory committee to represent the Susanville, California, shareholders of the Honey Lake Gold Mining and Development Company. The shareholders are planning reorganization and continued development of the property, located near Milford. The mine has, for the last two years, been operated under the management of Hilding Sundberg.

The Banner mine at Oroville, California, which was optioned nearly a year ago by the Hammon interests at 351 California Street, San Francisco, has come under the control of the **Oroville Banner Mines, Inc.** Capitalization is \$500,000. The directors are W. P. Hammon, W. C. Hammon, Vernor Allen, D. S. Shadle and E. J. Gorman. No announcement has been received yet as to the development program.

The **Melba Mining Company** will build a mill at its property in the Laguna district of San Diego county, California, this summer, according to J. B. Current, manager, 4802 Utah Street, San Diego. The property is 65 miles northeast of San Diego and includes ten mining claims. A portion is patented. Eastern capital is interested in the property.

COLORADO

Excellent progress is being made by the **Gold Hill Development Company** in the reopening of the Fairfax property at Salina, in Boulder county, Colorado. The leaders in the project are Bill Saxon and A. B. Dupler, 1532 Stout Street, Denver. The Fairfax is being operated through the Clarissa crosscut tunnel in the adjoining Richmond property. It cuts the Fairfax workings at 300 feet. A stope 125 feet long and four feet wide has been opened on the Fairfax vein north of the Fortune dyke on the 200 level for about 35 feet and the ore averages \$12 a ton. At the same time, development will be carried on south of the Fortune dyke on both the 200 and 300 levels, and later on the 400 and 500 levels now under water.

F. C. Bowman, mining and metallurgical engineer, Apt. 4, 1412 Franklin Street, Denver, is temporarily in charge of operations at the **Little Johnny** tunnel and **Ploughboy** mill in the vicinity of Jamestown, Colorado. Ore from a five-foot vein is being milled in the plant, which has been remodelled to handle 60 tons a day. Future plans include raising from the tunnel level to the surface just above the mill and hoisting the ore, instead of trucking it as at present.

Hobart Auer is shipping some ore from the **Great Britain** and **Lucky Star** mines at Wallstreet, Colorado, to the Golden Cycle works and by mid-summer expects to be making regular shipments. The shafts in the Great Britain and Lucky Star are 150 and 400 feet deep, respectively. Auer has announced that if conditions justify he will install flotation machines in the mill on the property. He is a Kansas man.

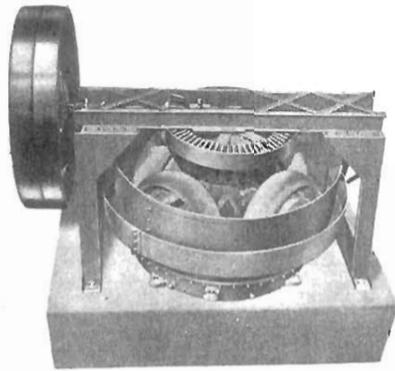
The **Jumbo Properties, Inc.**, R. E. Myers, superintendent, Breckenridge, Colorado, received a net of \$517.83 after deducting all expenses from a recent shipment of five and a half tons of ore. Regular shipments will be sent to the Leadville smelter as soon as the road is in condition.

The **Golden Treasure Mining and Milling Company** has completed construction of a ball mill and concentrator on Pole Creek, near Crestone, Colorado, according to Glenn Watson of Monte Vista, who has directed the work. It will be powered by three eight-cylinder automobile engines. The company expects to employ 25 men this summer.

Andrew D. Aitken, First National Bank Building, Denver, and Frank Kay are shipping from the **Colorado King** mine of the Stratton estate at Cripple Creek, Colorado. They equipped the mine late last year with an electric hoist and two machine drills. These men are also shipping from the **Alice** and the **Coriolanus**.

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SUCCESSFUL PLANTS AT LOWEST COST

PARK UTAH NEWS CONFUSED WITH PARK CITY CONSOLIDATED MINES

The financial report for 1933 of the Park Utah Consolidated Mines Company on Page 19, The Mining Journal, February 28, stated Park Utah in the heading and Park City Consolidated Mines Company in the body of the article. The financial report was of the Park Utah property and the reference to Park City was in error.

The Park City Consolidated Mines Company was not operating in 1933 but resumed production early in January, 1934, responding to the improved silver situation. They recently reported an increased production to between 80 and 100 tons daily. The work is under the direction of J. J. Beeson, 502 Scott Bldg., Salt Lake City, Utah, and is one of the affiliates of the Engineer's Exploration Syndicate, 120 Broadway, New York.

SHIPPING IS STARTED FROM NEW ORE BODY IN LOGAN MINE

Superintendent C. E. Joslin of the International Gold Producers, Inc., operating the John A. Logan mine on the Winfield Scott Stratton estate at Cripple Creek, Colorado, announces a gold strike which apparently is of major importance. The ore was opened while exploring from the 800 level of a three-compartment shaft sunk by the late Mr. Stratton to 1,300 feet and which remained unused from the time of his death in 1902 until the International people began work late in 1932.

On March 13 the crosscut was out 45 feet and the entire distance averaged a trifle better than .5 ounce gold to the ton. How wide the deposit will be cannot be predicted at this time. A shipment was made from the new ore just after the middle of March, but returns are not available

yet. The vein is in the typical Cripple Creek andesitic breccia, which has been the principal gold-bearing formation of the district.

The Logan property adjoins the Cresson on the north and is partially surrounded by the Cresson ground. The International Gold Producers have a 25-year lease. Shipping was started early in 1933 and has continued steadily as a result of operations between depths of 100 and 575 feet. The ore goes to the Golden Cycle mill at Colorado Springs, some 45 miles distant. Since the advance in the price of gold, the mill has been running 24 hours a day and can not handle all the ore offered to it.

IOWA HILL COMPANY OPENS ANCIENT RIVER CHANNEL

Placer county, California, once the mecca of the forty-niners, has again leaped into the limelight with the discovery of a gold-bearing Tertiary or Blue Lead Channel by the Iowa Hill Gold Mining Company. The channel was entered by an upraise at the end of the 1,280-foot tunnel, according to A. F. Muter, 303-307 Fidelity Building, Los Angeles, the company's consulting engineer.

More than two years have lapsed since the company started driving its tunnel into Iowa Ridge, hoping to discover this channel which most of the well informed miners of the district and the geologists who first mapped its approximate course prophesied would be found.

Enough work has been done to prove that the channel is 350 feet wide and six feet deep and sufficient gravel has been washed to prove its value. Most of the gold is very coarse and nuggets up to four ounces have been recovered. One of the surprising features of the discovery

is that the black sand concentrates assayed nearly \$2,000 a ton in gold. The first test of 10 cubic yards yielded \$20.77 per cubic yard and its second test of eight cubic yards yielded \$18.69 a cubic yard. Ben Kagan, contractor and builder, and his Los Angeles associates have financed the operation to date. They are preparing to install machinery to work the property on a large scale.

WESTERN STATES IS TO GO ON A PRODUCTION BASIS

The Western States Gold Mining Company is making every effort to place its property at Cherry, Arizona, on a production basis at an early date. The property has been inactive since the war, when high cost of mining made profitable production impossible. The mine was acquired by the present owners in 1929, through the efforts of Frank W. Brown, of Pasadena, who died on January 4, 1934.

Through the efforts of Mr. Brown and J. E. Russell of Prescott, the mine was cleaned up and put in shape for the resumption of operations. T. L. Guttry, the former owner and one of the largest stockholders, will be in direct charge of mine work. J. S. Sessions will direct milling operations. Both will be under the supervision of Mr. Russell, secretary of the corporation.

Western States is located on Cherry Creek, about 34 miles from Prescott, in a district which is strictly gold producing. The mine is developed by a 310-foot shaft, and miscellaneous tunnels and shallow workings. The mill is equipped with a three-stamp Nissen, capable of crushing 30 tons per 24 hours, amalgamation plates and Wilfley concentrators. The camp is equipped to accommodate a crew of 15 men.

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Feb. 20, 1934.

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MINES AND SMELTER AT
SUPERIOR, ARIZONA

Concentrates from the Western States

Some high spots of the mining industry in the Western United States and Mexico.

ARIZONA

The **Ace Mining and Development Company** has made another shipment of gold ore to the smelter, this being the twentieth carload shipped since operations were resumed last October. The Ace company, headed by Claude E. McLean, president, Box 1888, Phoenix, is working the old Max Delta mine, 10 miles south of Phoenix. The majority of the work done by the present company has been carried on in the No. 2 and No. 3 tunnels, and ore obtained by stoping. The main shaft is 600 feet deep. A second shaft, lower in the valley, sunk to a depth of 100 feet, has been unwatered and surveys are now being carried on to determine whether ore is available in that section of the property. A blacksmith shop had been erected and considerable machinery installed to aid in operations. Associated with Mr. McLean in the project are: Wm. M. Snow, mine superintendent; H. P. McIntosh, vice-president; Howard Gentry, Donald Scott, A. L. Flagg, James O'Haver and Sam Coldren.

New interests have acquired the **King of Arizona** mine in Yuma county, Arizona, and are reported to be employing a crew of about 12 men and operating a small mill. It is understood that the mine was purchased at sheriff's sale by Colorado men who are conducting the present work. The history of the old King of Arizona goes back to its discovery in 1896 and the mine is credited with a production of \$3,500,000.

Earl Goodwin, superintendent of the **Vivian Mining Company**, Oatman, Arizona, has just returned to the mine from Los Angeles where he held a conference with mine officials on future plans. It is expected that within a short time erection of the new 50-75-ton milling plant will be started. The Vivian-Leland property was taken over early this year by P. E. Gardner, owner of the Hotel Gardner of El Paso, Texas, and E. G. Langley, 1165 Vernon Ave., Los Angeles.

It is reported that engineers are working on plans for a mill for the Lexington mine of **Consolidated Gold Mining Co.**, Oatman, Arizona. Thomas A. Wood, 453 South Spring, Los Angeles, president of the company and one of the heavy stockholders, spent a few days at the mine early in April, looking over the possibilities for erection of a 100-ton plant.

Wm. Koerner, general manager of **Magna Copper Company** at Superior, Arizona, states that there is no truth in the numerous reports to the effect that his company has placed mining, milling and smelting operations on a basis of four six-hour shifts.

The **St. John Gold and Copper Company**, Cleator, Arizona, reports that exploration during March on its Los Felice gold property has proven highly satisfactory. This work has been carried on principally on a silver vein to which no previous attention had been paid. The vein outcrops on the Max Oppenheim claim, paralleling the main gold deposit, and traverses through a diorite intrusion, 500 feet long and 300 feet wide. Exploratory work consists of a number of trenches and excavations along the strike and outcrop of the vein. Ore samples taken from all openings and made into one average sample assayed: silver, 60.96 ounces; gold, 0.06 ounce, or a

total value of \$41.10 per ton. Further exploration of this vein will be conducted.

The **Southwestern Gold Mining Corporation**, operating the Gold Coin mine at Dewey, Arizona, is making shipments of high-grade ore to the smelter. Operations are directed by M. R. Mathews.

The **Silver Cord** mine at Cleator, Arizona, has been acquired by substantial Pennsylvania interests, and active mine development has started. The work is directed toward the production of direct shipping ore. Values are in gold, silver and lead, and several carloads, netting \$25 a ton, have been shipped in previous leasing operations. James Meyer of Cleator is in charge of the work.

Canadian and British capitalists who control **Ventures, Ltd.**, and other Canadian properties, have acquired four gold properties (29 claims) at Dos Cabezas, Arizona, following several months spent in preliminary examinations. The work has been directed by Major James G. L. Howard. Substantial cash payments are reported to have been made, with the contracts calling for regular monthly payments to follow. As soon as all matters of title are settled the new operators plan to start a campaign of development, both laterally and to depth, which it is estimated will require about 18 months. Among the properties acquired is the famous Gold Prince group. Estimates are being prepared as to the cost of a 500-ton milling plant which it is planned to install when justified by ore reserves.

The **Tyro** group of claims, reopened in December of 1933, is shipping 50 tons of ore a day to the Katherine mill operated by the **Gold Standard Mines**. The company regularly employs from 15 to 20 men. It is planned to increase production to 100 tons a day as soon as certain changes in the mill are completed. The Tyro is owned and operated by Wm. E. Whalley and C. F. Weeks, Box 257, Kingman, Arizona.

Newmont Mining Corporation has declared a dividend of 50 cents, payable April 30 to stock of record April 15. The last previous disbursement was \$1 on April 15, 1931. Board of directors has stated that this distribution should be regarded simply as a return out of earned surplus and not as the establishment of a dividend basis or policy for the future, the formulation of which should not in the opinion of the board be attempted at this time.

The mid-month cleanup at the **Tom Reed Gold Mines Company**, Oatman, Arizona, resulted in the obtaining of approximately 500 ounces of gold bullion. An equal amount remains as unrecovered values in the plant solutions, a normal condition for a plant of this capacity. The mill, under the superintendency of Paris V. Brough, is handling from 110 to 140 tons of ore daily. Approximately 40 to 45 tons daily is coming from the various leases.

The balance sheet in the annual report issued by **Shattuck Denn Mining Corporation**, Bisbee, Arizona, for the year ended December 31, 1933, showed among the assets in cash and on hand of \$22,905.48; U. S. government bonds at par, \$250,000; accounts receivable and accrued interest, \$3,067.95; and an inventory of copper, 4,758,938 pounds at eight cents a pound,

listed at \$380,715.04, less \$9,517.88 for selling expenses. According to a statement by L. C. Shattuck, president, the mines were on care-taking basis with all expenditures reduced to a minimum, and liquid assets appear ample to take care of shut-down expenses for an indefinite period. The report showed net profit of \$96,491 after including an inventory credit of \$142,768.

The **Derrick Mining Company, Inc.**, Oatman, Arizona, is reported to be ready to start development on its properties in the Silver Creek section. The Derrick group, managed by C. E. Durlin, secretary-treasurer, consists of a group of 13 unpatented claims, developed by a 504-foot tunnel, with approximately 200 feet to go to reach its objective.

United Verde Extension Mining Company of Jerome, Arizona, has declared a dividend of 25 cents, payable May 1 of stock of record April 3. This duplicates the dividend paid in the first quarter of the year.

CALIFORNIA

The old **Harley** silver mine on Bull Run Creek, five miles north of Kernville, California, is being reopened by E. F. and Scott Matlock, following a long period of idleness. Immediate interest in the property was caused by a small vein of impregnated silver ore in the ceiling and near the face of a 260-foot tunnel. Upon investigation it was found this vein widened rapidly and carries ruby quartz in which silver is plainly visible. Samples are being assayed from a rich silver ore body located in the floor of a drift a hundred feet above the tunnel level. Plans are to raise between the two levels and stope as the work progresses. While this section of Kern county is not particularly a silver district, it is of record that during the early Kern River mining days, the mines on Bull Run Creek produced heavily of silver ore.

The **Rogers-Gentry** property in the Antelope Valley, seven miles from Fairmont, California, is attracting considerable attention since returns from the milling of 87 tons of ore were announced as \$7,285. It includes 160 acres only a quarter of a mile from a modern surface highway and weather conditions permit year-round operations. Plenty of water can be obtained nearby at 40 feet. The ore is a decomposed quartz porphyry, free milling, and shipments are being made daily to the Burton Bros. mill 50 miles away. W. J. Rogers and W. T. Gentry, the owners, have built a comfortable residence near the discovery.

The **Swift Gold Lode Mining Company** is making rapid progress on the construction of its surface plant three miles north-east of Georgetown, California. A crew of eight men during the last five weeks has completed 125 feet of trestle across the canyon from the mine tunnel to the mill, built a 125-ton ore bin, installed a crusher, partially assembled a 150-ton ball mill and installed a 75-horsepower engine. Flotation machines will be installed and it is planned to ship concentrates to Selby. H. C. Lovett, 4400 Broadway, Oakland, owns a controlling interest. George R. Swift is mine superintendent and Walter Player, formerly of Oakland, is construction engineer.

Work is to start soon on the **Monte Carlo**, a drift placer proposition in Sierra county, California. Joe Harkins is in charge.

Half of the 20-stamp battery on the **Black Hawk** property on the North Fork of the American River, in California, is in

operation. Walter N. Sim, mine operator of Auburn, is doing the work.

The **Beecroft Mining Company** is preparing to start work on the North Fork of the American River in California. H. N. Clark of Los Angeles is president and M. L. Goff, 808 Grand Avenue, South Pasadena, is secretary.

Luke J. McNamee, Los Angeles attorney, has purchased the option and bond held by J. C. McDonald of Mokelumne Hill on the **Fine Gold** mine at Vallicita, California. His program is reported to include the construction of a 250-ton flotation mill. McNamee's office is 2301 Fourth Avenue.

Production from the **Black Bear Consolidated Mining Company's** Home Ticket mine at Michigan Bluff, California, for March was 75.5 ounces of gold, according to Superintendent C. S. McCarthy. This compared favorably with 52 ounces for February, 48 ounces for January, and about \$400 for last October when increased production began. April is expected to show a further increase. As soon as the road to the mine is open, which will be about May 1, more equipment will be installed and a second shift will be added to the working force with the view of doubling production. The gravel in the mine is reported to run consistently better than \$3 a ton and the mill is capable of handling eight to ten tons an hour.

A rather extensive working program has been announced by the **Oroville Banner Mines, Inc.**, controlling the Banner, Amosky and Clark and Coffee lode claims five and a half miles northeast of Oroville, California. The work is at present confined to the Amosky vein, where an incline shaft has been sunk to 600 feet. At this point a new oreshoot has been opened on three sides, part of it on four sides, and it is estimated that 4,000 tons of ore is blocked out that has a value of \$50,000. With few alterations, the 10-stamp mill on the ground can be made to handle 50 tons of ore a day. A four-cell Kraut flotation machine is at hand and a ball mill is to be installed. Other equipment will be added as the work progresses. F. L. Sizer, consulting engineer, Hobart Building, San Francisco, is engineer in charge. The Hammon interests at 351 California Street, San Francisco, are backing the proposition.

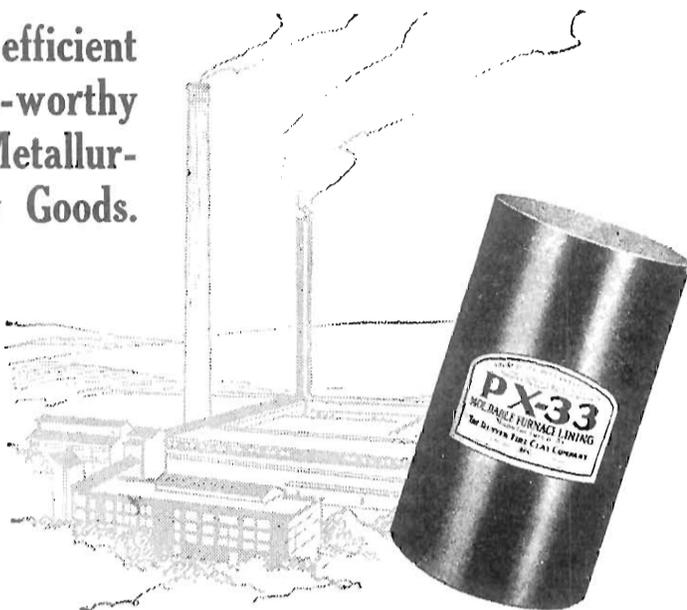
J. Burmeister, president and general manager of the **Bullfrog Mining and Milling Company**, until a couple of years ago an active operator of the Beatty district in Nevada, has taken over the **Paragon** group of seven claims near Tuolumne, California. A crew is already working at the property and mine machinery will be hauled in as soon as a road to the property is completed. George B. Connally of Tuolumne, one of the original owners, is mine superintendent.

The **Junction** and **Golden Dawn** mines at Soulsbyville, California, have again changed hands, this time under lease and option to purchase to A. Ralston Page of the firm of Page Bros., ship brokers with offices at 351 Montgomery Street, San Francisco, and in Portland and Seattle. Frank L. Mitchell, mining engineer, of Columbia, has charge of the property. The Junction has a 300-foot shaft and 200 feet or more of laterals. It is equipped with a 750-cubic foot Sullivan compressor and a new electric hoist is to be installed.

The **Muralite Mining Company**, Paul C. Murray, manager, Confidence, California, expects to be on production this month. Drifting is being started from the new 200 level of the shaft. The vein is five

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feet wide and is said to average \$17 a ton. Two stamps and a Frue concentrating table are ready for work.

L. F. Mooney and L. D. Beckes of Columbia, California, have taken a lease and option on the **North Fork View** mining claims near Tuolumne from J. N. and E. C. Damin. The lessees are extending an 80-foot tunnel that shows some good ore in a vein varying from 10 inches to two feet in width. They plan to put in power drill equipment and are also considering the installation of a small mill in the near future.

R. S. Moore of Lewiston and M. W. Collins are working the **Paymaster** mine on the Trinity-Shasta county line, in California, on lease. Two stamps on the property, and which have been idle since last fall, are expected to go into operation in a few days.

The **Silver Lead Syndicate, Inc.**, has done more than 170 feet of drifting and crosscutting on the 200 level of the Cerro Gordo mine at Keeler, California, since work was started February 1. The work is being done on the east or hanging wall side of the Buena Vista fault, with the object of finding the faulted segment of one of the major ore bodies of the property. As yet, the heading has not reached the objective, but the geology is checking up as anticipated, according to President J. J. Beeson, who is in Los Angeles following an inspection of the mine. Beeson's office is 502 Scott Building, Salt Lake City, Utah.

Early production is anticipated from the old **Demarest** gold mine at Angels Camp, California, which has just been unwatered and retimbered to the 600 level. F. J. Lundberg is in active charge for the Washington state people sponsoring the project.

The **Senator Mining Company**, Daniel E. Williams, manager, Chinese Camp, California, is sinking the shaft to open a second level at 200 feet. The mill is treating 50 tons of ore a day, milling three shifts, and so far has been supplied entirely from development work. Four flotation cells are to be added at an early date.

S. B. Gardner, former Inglewood man, is reported to have purchased the **Red Top** mine at Murphy, California, from Charles P. Clarke of Oakland and Joaquin Leonard of Murphy. Among improvements planned is the installation of a 35-ton mill. A 12-ton ball mill is at present crushing ore that averages \$30 a ton. Three men are drifting from the 65-foot level of the 85-foot shaft.

A custom mill is being built on the **Diamond Mountain** mine, six miles south of Susanville, California, operated by George N. McDow and son. The plant is being put up by W. F. Downie, experienced mill builder of Seattle and Portland, and who may be reached through P. O. Box 922, Sacramento, California. Capacity is 100 tons a day, which supply is said to be assured by a 30-foot ledge in the McDow tunnel.

The **Big Pine** mine, formerly the **Easy Bird**, a mile from Mokelumne Hill, California, is being operated under partnership by J. D. Donaldson and L. D. Esnoyers of Los Angeles and A. C. Barker of Santa Monica. Until a couple of years ago the property was operated under the management of Todd B. Elliott of Angels Camp, who sunk a three-compartment shaft to 285 feet, installed a 4,000-foot electric tramway from the shaft to the 100-ton ball mill and put in pumps. Work

is to start with the completion of minor repairs, and installations.

Alfred W. Stickney and F. W. Draper, both Bay City men and both members of the American Institute, have optioned the **Mexican** mine, an old producer of the Pioneer district, out from Jackson, California, from F. A. Kimball. Should the deal go through it will involve \$6,000. Early production has been through a double-compartment shaft sunk to 80 feet. Stickney, a geologist, has an office at 788 Mills Building, San Francisco; and Draper, a consulting engineer, may be reached at 2351 Ramona Street, Palo Alto.

Plans are being made for the development of the **Oak Hill** mine near LaGrange, California, lately leased with option to purchase by Todd B. Elliott, mining engineer, Box 1222, San Francisco, and an associate. The property covers an immense body of copper ore, with some values in gold, silver, lead and zinc. Six years ago it reached an advanced stage of development under the management of J. E. King of San Andreas. With the slump in the price of copper, it was shut down. The installation of milling facilities to treat some 80,000 tons of ore on the dump is being considered.

Discovery of a quartz ledge in the **Cory Mine Company's** drift gravel mine at Magalia, California, has been reported by M. D. Couch, secretary-treasurer, who has recently returned to the office at 381 Bush Street, San Francisco, from a trip to the mine. The vein, eight feet wide, contains stringers of "jewelry shop" ore and some specimens show clusters of leaf gold in its native state. The strike was made at a depth of 500 feet, while a raise was being driven to extend exploration of the auriferous deposit. O. M. Moore is mine superintendent.

At Railroad Flat, California, the **St. Paul Mining Company, Inc.**, has a small crew at work, using a ball mill, 30x40 screen 32-mesh, amalgamation plates and vanner. According to L. B. Fish, president, a small cyanide plant will be installed shortly. This is not an old mine. A shaft has been sunk 70 feet and a drift has been driven 420 feet through virgin ground.

Contracts have been signed for the purchase of the **Midway Mines Corporation** for \$300,000 by a New York syndicate, according to Dominic Rolleri of Angels Camp, California, who will be manager. Payments on the contract are spread over a period of five years. The property includes 14 claims, traversed by the Dead Horse, Utica and Mother Lode veins. Prospecting has been in progress the last few weeks and arrangements are being made to sink a shaft to 400 feet. Depending upon result of development work, a 250-ton mill may be built.

John Montague, wealthy Los Angeles man, has taken a controlling interest in the **Coyne** silver mine on Greenhorn Mountain, 35 miles northeast of Bakersfield, California. Development of this property was started early in the year by W. R. Coyne and T. F. Mankin, partners in the Aztec Gold Mines Company at Prescott, Arizona. Twelve men were transferred from the Prescott to the California location and are now shipping an average of six tons of ore a day. The ore is being trucked to Bakersfield and shipped to Selby. Samples from the workings have run as high as \$700 in silver and \$17 in gold to the ton. A tunnel has been driven 90 feet into the mountain and a raise is being driven to another tunnel 75 feet

higher. The vein averages three and a half feet in width.

F. B. Kollberg and D. F. Thompson, operators of the **Remington** mine near Columbia, California, have their five-stamp mill and Deister concentrating table in operation 16 hours a day. Ore is blocked out on the 200 level and drifting has been started from the bottom of the 300-foot shaft. Five men are employed.

The **Mattie Gold Mining Company** has connected the old and new workings of its property at Dead Man's Flat, according to M. J. McQuire of Grass Valley, California, mine superintendent. At a depth of 280 feet the new shaft broke into the 1,000-foot drift, which had been cut several years ago from the old shaft, which is located at a higher elevation. Further work from the old shaft will be limited to driving crosscuts into new territory. The new shaft has three compartments, modernly constructed and powered and will be sunk deeper with crosscuts into virgin territory.

The **Empire-Star Mines, Ltd.**, has paid \$5 a share on its rather limited outstanding stock. The company operates the North Star, Empire, Murchie and Pennsylvania mines at Grass Valley, California, which are probably the oldest quartz mines in the state. The company employs between 700 and 800 men with a payroll of approximately \$100,000 a month. Its gold production is said to be second in this country to the famous Homestake mine in the Black Hills.

Under the management of T. S. Davey, the **Phoenix** mine workings at Grass Valley, California, have been extended to 400 feet. The first 200 feet is vertical and the remainder is a winze off the southeast drift and following the contour of the ledge. Values are contained in a nine-inch quartz strip although the ledge filling between the hanging wall and the footwall is from four to seven feet and is believed to carry commercial values at the existing gold price. The mine is on production during three shifts a day.

The new cyanide plant of the **Idaho-Maryland Mines Company** at Grass Valley, California, has gone into operation on concentrates from the Idaho-Maryland and Brunswick mills. Until this time the concentrates had been sent to Selby without reduction. Robert Hathaway, construction engineer, has transferred his crew to the completion of the flotation unit of the new mill with the expectancy that this unit will be in operation by May 15.

Five stamps are dropping at the **Stillwater** quartz mine near Placerville, California, according to Jack Hibbard, manager. The mill is operated by water power and has a capacity of 20 tons a day. Additional equipment is to be added in the near future.

The **Standart** mining claims near Greenville, California, are reported to have been taken over by C. L. and H. C. Hibbard, Gilbert Skinner and G. L. Johnson, all of Seattle, Washington. Johnson, at present located at 1210 Western Avenue, Seattle, will move to Greenville in charge of operations. He is an experienced mine operator and was at one time foreman of the Willow Creek mines at Wasilla, Alaska. Plans are to start work on a tunnel to tap the ore on a lower level. The Seattle men are organized as the **Indian Valley Mining Company**.

The **Argo** mine, 12 miles east of Coulterville, California, is being operated under bond and lease to B. H. Body and associates of Sonora. It is owned by W. D. McLean of Coulterville. The shaft is

approaching the 300-foot level, with approximately 1,500 feet of drifts, and later development warrants a larger mill than the present three stamps in operation. The ore above the 200 level averaged \$17 a ton. No milling has been done below that point.

D. C. Sharpstone, well-known Nevada mining engineer, has taken over the Big Buzzard mine, nine miles northeast of Folsom, California. The property is one in which J. W. Howard, formerly of Grass Valley, has been interested. Sharpstone has started to dewater the mine, which is about 300 feet deep, for the purpose of making a complete examination of it. The lower 150 feet of the shaft is said to expose a sulphide ore body, containing appreciable quantities of gold, silver, zinc, copper and lead, but has never been worked because of its complex nature. Sharpstone's headquarters are in Hotel Freeman, Auburn, California.

The Good Hope mine at Perris, California, which last summer came under the management of James M. Hyde, 2079 Mound Street, Hollywood, and Clifford H. Marker, has been incorporated for \$250,000. The operating name will be the Good Hope Mining Company. A 50-ton mill has been built and bullion is being shipped to the mint. In early days this mine produced over two million dollars worth of ore.

About 50 men are employed on two shifts at the You Bet Mining Company's property northeast of Nevada City, California. Hydraulic mining on the You Bet or Brownsville side of the big hydraulic deposit is at present somewhat curtailed by reason of a shortage of water. Extensive work has been in progress on the Red Dog side of the deposit and actual hydraulic mining will be started soon. Ogden C. Chase is head of the company. D. R. Scott is superintendent.

Twenty men are engaged in rehabilitating the Pennsylvania mine at Browns Valley, California. The work includes cleaning out and retimbering the 195-foot shaft, building a 50-foot headframe, ore bins, blacksmith shop, hoist house and change rooms. The mine is being reopened by the Pennsylvania Mining & Investment Company, of which John C. Higgins is president; Albert Burch of Medford, Oregon, vice-president, and C. N. Miller, 549 Holbrook Building, San Francisco, manager. H. W. Whiting is mine superintendent.

Robert Stewart of Grass Valley, California, has gone to his mining property in the Mt. Oro section east of Nevada City, where he will work through the spring while water is obtainable. Six veins, six to eight feet wide, traverse the property.

The report of the Natomas Company for February shows a net profit of \$67,928 after depreciation, depletion and income taxes, or 68 cents a share, as compared with a net profit of \$59,768, or 60 cents a share, in January of this year. Stockholders approved a ten-for-one split-up of the stock at their annual meeting on March 20, and the new certificates will be ready for distribution early in May. Thomas McCormack, Forum Building, Sacramento, California, is president.

The Race Track Placers, Strawberry Valley, Yuba county, California, is planning the installation of a portable dredge, mill and placer plant of 1,000 yards daily capacity. They have about 1,500,000 yards of placer ground, with ample water. They had planned to hydraulic but on account of the three cent per yard impounding charge for tailings, have changed their plans to the portable dredge type. Andrew Thickett is field superintendent.

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PHELPS DODGE TO RESUME PRODUCTION AT NEW CORNELIA

Official announcement has been made by P. G. Beckett, vice-president and general manager, that Phelps Dodge Corporation will resume mining operations on a moderate scale at its New Cornelia Branch, Ajo, Arizona, in July of this year. The preliminary preparations for the re-opening are already underway.

In the formal statement Mr. Beckett said, "Phelps Dodge is glad to be able to announce that preparations are now being made to resume copper production on a moderate scale at Ajo in the month of July. In resuming operations at this property we feel that we are making a definite contribution toward the relief of the Arizona unemployment problem and also that we are assisting, directly and indirectly, the general business situation in Pima county and Arizona. Therefore, the decision to resume gives considerable cause for encouragement."

"Anticipation of increased export sales has made this resumption possible. It is hoped that once we resume we will be able to operate continuously, but this depends on the important factors of demand for copper in the future, the price that can be obtained for the metal, and the cost at which we can produce it."

"Shipments of concentrates from Ajo to Douglas will increase the tonnage to be smelted and will call for an increase in the number of men on the smelter pay roll."

The New Cornelia Branch was closed down in April of 1932, at which time approximately 7,000 tons of ore a day were being handled, although the mine and mill have a daily capacity of more than 20,000 tons. Michael Curley, manager of the Ajo division, has made no estimate as to the number of men who will be required, but preference will be given to former employees of the company. Unofficially it is believed that between 400 and 500 men

will be put to work, and that production will be stepped up to between 3,500,000 and 5,000,000 pounds of copper monthly.

PLACER GROUND IN THREE STATES TO BE EXPLORED

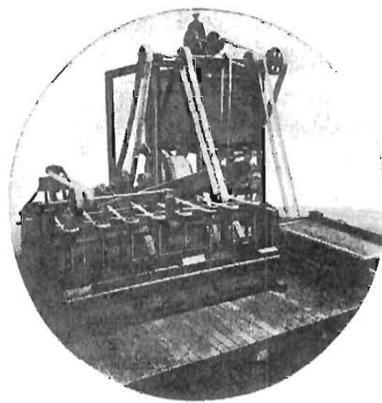
The Consolidated Mine Operators, with offices in the Pershing Square Building, Los Angeles, California, has taken over a stretch of more than 12 miles of virgin placer ground on the Rogue River, in Oregon. The group has engaged James E. Sellers and associates of the Mining Research Bureau, with offices in the same building, to make a thorough examination of the entire property.

An entirely new type of suction dredge is being designed through which they expect to run a big yardage from the river and both shore lines. According to J. C. LaMar, field manager, preliminary results show free gold in sufficient values to warrant sending a test crew to the property. An analysis of the sands is reported to show minimum values of \$1.23 on river run sand to depths of two feet and considerably higher values at greater depths. Extensive sampling will be made for spectroscopic analysis by the Mining Research Bureau.

This section of the Rogue River has never been thoroughly examined because it has always been used for fish hatchery purposes from Gold Beach to a point 12 miles inland.

The same operators have also taken over a group of six claims in the Yucca Grove district in eastern San Bernardino county, California, and are sampling the ground preparatory to early development. Assays run from \$5 to \$40.

In northern Mohave county of Arizona, near Pierce's Ferry crossing on the Colorado River, the placer ground included in the Colorado River properties of M. W. Musgrove, have been sampled and field reports are very satisfactory. This ground was reported upon in 1912 by A. A. Has-



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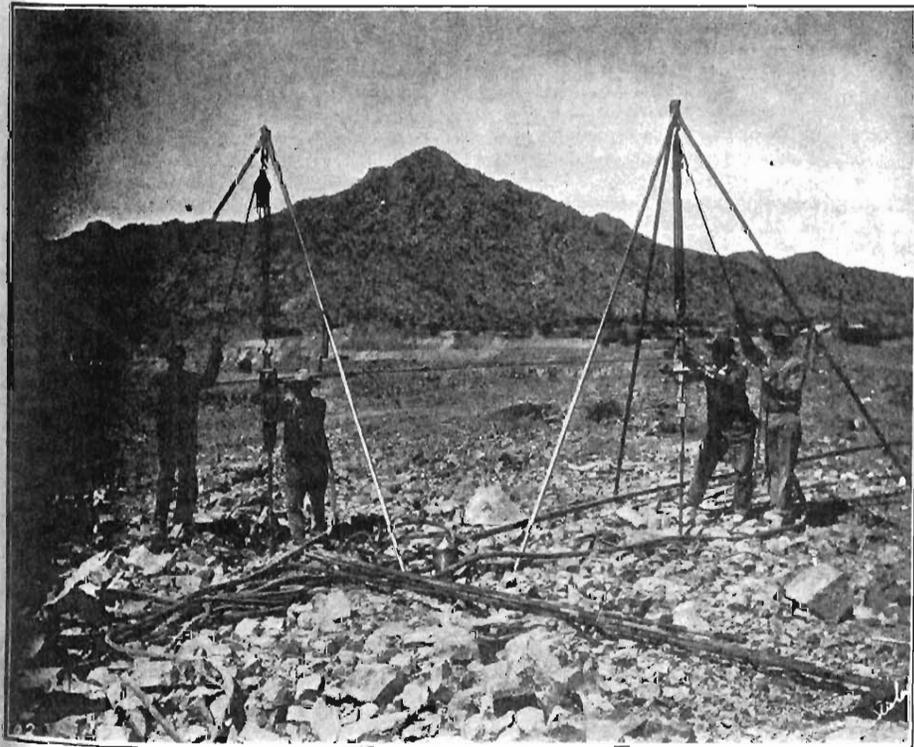
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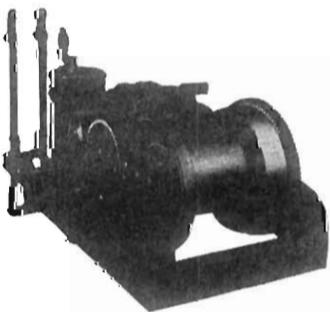
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san of New York City, and values of from 50 cents to \$1.50 were reported from more than 100 samples panned. Consolidated Mine Operators expect to have an experienced placer crew sample the entire 1,000 acres at an early date for the purpose of determining whether their new type suction dredge can be utilized for operation. Sampling will be by spectroscopic analysis method, according to the Mining Research Bureau.

**TINTIC STANDARD REPORTS
NICE PROFIT ABOVE DIVIDENDS**

The net profit of the Tintic Standard Mining Company and wholly owned subsidiaries for 1933 amounted to \$383,438.97, after depreciation and federal taxes, according to the report just released by the company. This included dividends of \$115,984.20 received from the Eureka Standard Consolidated Mining Company. This is an increase of 51.15 per cent over the profits reported for 1932.

A portion of the dividends received from Eureka Standard was, however, paid from surplus accumulated from prior years' earnings, and the actual net profit of the Tintic Standard and the Eureka Standard totaled \$351,766.39, of which amount \$321,800.66 was applicable to the Tintic Standard and \$29,965.73 was applicable to the minority stockholders of the Eureka Standard. On this basis the net income of Tintic Standard for the year 1932 amounted to \$286,844 indicating an actual increase in net profit for the year 1933 of 12.2 per cent.

According to J. W. Wade, vice-president and general manager, the total output from the Tintic Standard mine for the year 1933 was 26,855.682 tons and from the Iron Blossom mine 7,603 tons. The combined production of the two mines and the gross value thereof were as follows: lead, 12,375,347.58 pounds which sold for \$480,677.44; silver, 1,188,940.79 ounces which sold for \$423,559.71; gold, 1,290.914 ounces, which sold for \$30,352.45, and copper, 208,126.54 pounds which sold for \$8,447.22.

Four quarterly dividends declared in 1933 amounting to \$230,663 were distributed to stockholders during the year, making total dividends of \$14,747,883 paid to date, exclusive of dividends paid by companies in which the Tintic Standard has acquired a controlling interest. It is worthy of note that all dividends paid during the year were earned during the year.

At the Tintic Standard mine exploration work to the extent of 1,281 feet of drifting and 248.5 feet of raising was completed. Every effort was made to maintain the mechanical equipment and underground workings in an excellent working condition. During the year wages were increased approximately 35 per cent.

The principal revenue from the Eureka Standard mine is gold and, as the average grade was materially lower during 1933 than during 1932 the gross income was less. The lower grade of ore was, in part, due to the fact that the price of gold increased substantially during the year and made it advisable to mine ore which could not previously be mined at profit. This made it possible for the company to maintain its working crew at the maximum number for the year and the operating personnel was increased 13 per cent.

Production of the Eureka Standard for 1933 amounted to 27,042.965 ounces of gold which sold for \$658,574.46; 325,678.94 ounces of silver which sold for \$116,441.94; 770,222.89 pounds of lead

which sold for \$30,927.68, and 395,771.86 pounds of copper which sold for \$27,453.46.

Four quarterly dividends amounting to \$179,950.80 were distributed to stockholders during the year, making total dividends paid to date, \$629,827.80. All dividends paid during the year were paid from earned surplus of 1933 or previous years and were not tax exempt for federal taxes, although 50.97 per cent of 1933 dividends were exempt from state income tax.

Development work to the extent of 4,705.5 feet of drifting, 560 feet of raising and 110 feet of shaft sinking were completed during 1933.

**FT. COLLINS LAB. EXPLAINS
HOW TO RECOGNIZE METALS**

A chemical laboratory has been set up in the junior high school building at Ft. Collins, Colorado, where men are studying the chemistry of gold and other metals found in that particular section of the state. The class includes men seventeen to seventy, many of them coming back to study after a quarter of a century.

The classes were started under the auspices of CWA, but were considered sufficiently valuable to be taken over by the state department of vocational education and are now supported by Smith-Hughes funds. Two groups numbering about sixty in each meet for a two-hour session four evenings a week. K. P. Wallen, the instructor, gives a half-hour lecture followed by an hour and a half spent in the laboratory. A series of wet chemical qualitative analyses of the metals has been completed and the class is now working on blow pipe, bead and flame tests. The course will continue probably another six weeks.

According to Mr. Wallen, a number of important discoveries have been made by members of his class. Two of the prospectors brought in samples from their claim for testing which proved to be a good platinum ore. They plan to start exploration on their ground with the return of warmer weather.

**CARLSON OF SEATTLE CLOSES
\$50,000 DEAL IN WHATCOM CO.**

Gust R. Carlson, 5617 Rainier Avenue, Seattle, Washington, and his company have leased the Velvet group of mining claims located on Mill Creek, in Whatcom county, for six years on a royalty basis, with option to buy the property any time during the life of the lease for the sum of \$50,000.

The property includes ten claims and was originally owned and operated by the North American Mining Company forty years ago. Four new ore bodies have been opened by 240 feet of tunnel and two crosscut tunnels each 40 feet long. The main body is seven feet wide and while specimens have been reported to assay \$15,000, the general average is about \$15 a ton. It is estimated that 15,000 tons of ore is in sight.

The ore is strictly gold and silver and will run about 30 per cent free. Bids are being taken for machinery for a ton amalgamation and flotation mill, also for a compressor and machinery for the mining of the ore. Water power will be used.

The most important thing now for the district is transportation. A standard road is to be built from Diablo dam to Robinson Creek on the east side of the Cascades. Work will be started on the mill and living quarters as soon as the road is opened and material can be taken in.

4-15-34

IS THERE GOLD IN THE UINTAH MOUNTAINS?

(Continued from Page 4)

to carry on the search as directed, but the widow married a mining man from Colorado and gave her information to him. It is said that this man came to Utah on the advice of a "witch woman," who told him that he would marry a rich widow and that he would meet two Indians who would be able to take him to a gold mine if he handled them properly. Apparently he did not treat the Indians right, for he searched the rest of his life without finding the Rhodes mines.

The story of rich, undiscovered placer ground somewhere near the head of Rock Creek, where Rhodes is supposed to have mined, has some Indian confirmations.

A squaw stopped at the camp of one Sam Pierce, on Moon Lake. She had a nugget about the size of a pigeon's egg, with a hole punched in it, and had it strung on a buckskin thong about her neck. She also had a number of smaller nuggets, the size of peas and beans. She pointed up Lake Fork and over a ridge, making signs with her hands to show the way she had come, and explained that she had picked up the nuggets in a swamp after a heavy rain storm.

A similar story of a swamp in this locality which contains gold a few inches under the grass roots was told by a group of Indians to a man named Olsen. They said that one could scrape with a stick in certain places and pick up nuggets.

And so the stories go, and these which I have given are not half of them. Are they true? Is there gold in the Uintah Mountains? Are these stories made of whole cloth, or is there any foundation for them in fact?

Frankly, I don't know. I have yet to see any gold which I know came from the Uintah Mountains. My personal investigations of the range have been confined to an area 20 miles long and four or five miles wide between Rock Creek and the Yellowstone River, and I do not feel that this narrow experience justifies a profound conviction one way or the other.

The Mormons believe these stories implicitly, and the Indians, who are far from "dumb," have been making their stories pay dividends for a generation. Each white settler thinks that some day some Indian whom he has befriended will tell him something which will make him rich; so he slips a sack of flour or a side of bacon over to the Indian's cabin occasionally

when he can spare it, and waits for the Indian to talk.

In the meantime, the Indians are not reproducing themselves, and the race is rapidly dying off. There will be few left in this part of the world in another 20 years, and the stories will be myths, unless someone proves their truth.

Personally, I am inclined to pay some attention, and search for a fire when I see a big smoke; and I intend to devote some more time to the Uintahs when an opportunity presents itself; but for the present I prefer to present these stories as pure fairy tales.

PICTURE ROCK FOUND NEAR SPOT OF FAMOUS PERKINS NUGGET

A blast set off by miners toiling in the 300-foot level of the old Morgan mine at Melones, California, has reverberated through the western mining world. For, when the smoke and gases had cleared away, the toilers were confounded by the gleam of "picture rock" as their lamps cast rays throughout the tunnel darkness.

Preliminary estimates are that the ore will run between \$30,000 and \$40,000 a ton. How much of it there is can not be determined yet. According to Charles H. Segerstrom of Sonora, president of the Carson Hill Gold Mining Corporation, which is working the mine, the strike was made on a ledge three feet wide that has been yielding an average \$7 ore.

The strike is about 150 feet below the spot where, in 1854, the famous Perkins nugget, weighing 214 pounds and worth \$43,000 at prices then current, was found. Near the recent strike was found an old, hand-forged pick, leading to the belief that those who found the famous nugget had quit operations at a time when a few more "shots" would have uncovered another fortune.

It was not long after the discovery of the Perkins nugget that litigation resulted in the mine being closed down, not to be reopened until Segerstrom and his associates showed their faith in this section of the Mother Lode by rehabilitating the property and placing it on large-scale production basis.

Carson Hill Gold Mining Corporation announces that additions are to be made to the mill and cyanide plant of the Carson Mill mine at Melones, in Calaveras county, to increase production to 1,000 tons a day. The mill, which has 30 stamps and two Hardinge mills, has been operating at capacity and taking between 600 and 700 tons of ore every 24 hours. New units to be installed will include Symons cone crushers, rock breakers, another Hardinge mill and Deister concentrating tables. Four additional sand tanks, three slime tanks, three agitators and an Oliver filter will be installed in the cyanide plant. It is expected that the new equipment will be in place by September.

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The Manufacturers Tell Us

The Four-Duty Coupling—A new bulletin describing the Falk-Rawson four-duty coupling has been issued by The Falk Corporation, Milwaukee, Wisconsin, and carries the announcement of lower prices.

The company states that hundreds of successful installations in all classes of service testify to its unique merit for motor or engine drive when starting conditions are severe or unusual, or where such mechanical protection is needed against overload. The four special functions which it performs are: It starts the load with reduced power demand, acting as an automatic clutch; it couples prime mover to load; it cushions the shock load; it automatically limits the overload.

Fairbanks, Morse Company in New Location—After having been located for 45 years in and near the central business district of Los Angeles, Fairbanks, Morse and Company on February 1 moved its general offices, warehouse and shops to 2401 Santa Fe Avenue, the machinery district of Los Angeles.

This move gives to the company a set-up that is modern and up-to-date in every detail and will make possible prompt and efficient service. The warehouse provides ample space for the large stocks of scales, electric motors, gasoline and Diesel engines, and pumps. There is also a complete maintenance shop which will enable the company to give its customers a service of the highest type.

This change in location was made primarily for the purpose of placing the company in a better position to efficiently serve its customers.

Electric Heating Units—The answers to hundreds of small heating problems which arise in industrial plants are to be found in the 52-page booklet just published by General Electric Company, Schenectady, New York. Before General Electric originated and developed this line of small heating units and devices the installation of a "spot," or "handful," or "zone" of heat in machinery, processes and isolated buildings was a complicated and expensive job—usually necessitating considerable piping and equipment.

Now, one can turn to this convenient catalog, pick out the electric unit which will best do the job, order by mail, and, when the unit arrives, install it according to simple directions. These electric units give a convenient, flexible, accurate, safe, clean and economical source of heat.

Another bulletin recently published by General Electric is "Improving Power Factor for Profit" with G-E Capacitors, pyranol-treated. This goes into a very thorough discussion of the power factor and the means by which it can be improved. Equipment is illustrated and many tables are given descriptive of the equipment and results to be obtained.

Spur-Geared Chain Hoists—An improved model of the chain hoist is announced by Wright Manufacturing Division of the American Chain Company, Inc., York, Pennsylvania. The improvements have been made to increase durability, efficiency and usefulness.

One innovation is the zinc coating of all exposed parts, making the hoist practical for outdoor use and for service in moist and corrosive atmospheres. The addition of precision ball bearings with integral grease seals supporting all moving parts, is said to increase the efficiency by 10 per cent over former models. Wear is reduced to a minimum on all vital moving

parts by a system of continuous lubrication of the positively sealed precision bearings. Additional minor improvements include hardened pawl tip, load guard and ball spring covers on oil tubes.

Red hand chain guide and name plate on the zinc-coated exterior provides the distinguishing marks for the Wright hoist.

Cutless Bearings—The use of cutless rubber guide bearings as applied to hydraulic turbines is discussed in a technical paper by R. E. B. Sharp, hydraulic engineer, Baldwin-Southwark Corporation of Philadelphia, Pennsylvania, and which has been published by the B. F. Goodrich Rubber Company of Akron, Ohio.

There are now in operation 42 hydraulic turbines with cutless rubber bearings installed, and many more are contemplated or are actually being manufactured. The use is increasing from year to year.

The booklet contains illustrations and diagrams of actual installations, together with a complete discussion of the various features involved and the operating results obtained.

Robins Acquired Mead-Morrison—Robins Conveying Belt Company, 18 Park Row, New York City, has acquired the coal and ore handling business, patents, goodwill and personnel of Mead-Morrison Manufacturing Company of Boston. Mead-Morrison formerly did a business of \$3,000,000 to \$4,000,000 a year; while Robins annual sales normally amount to \$2,000,000 to \$2,500,000, though there has been a considerable dip in business during the past two years. Operations will be consolidated at the Robins' plant at Passaic, New Jersey.

Bulletin on Electric Plants—A new bulletin covering electric power and lighting plants has just been released by Harnischfeger Corporation, 4400 West National Avenue, Milwaukee, Wisconsin. Attractively printed in purple and gold, the company's anniversary colors, this bulletin describes alternating and direct-current units for use in portable service on excavation machinery, mines, boats and construction camps.

Small Oil Circuit Breakers—A new catalog covering the complete line of oil circuit breakers up to 50,000 Kv-a. has recently been issued by Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pennsylvania. Included are tables which give the proper type of breaker, indoor, outdoor, or subway for any Kv-a needed. Also a complete table of contents, with reference to specific sections for each type of breaker is included.

LOS ANGELES PREPARES FOR BIG MINING SHOW

A big mining show is to be held at the Machinery and Equipment Exposition in the Shrine Auditorium in Los Angeles, July 30 to August 4, during Los Angeles Market Week. It is being sponsored by the Mining Association of the Southwest and will have many interesting features, contests and exhibitions of latest mining machinery and methods.

Los Angeles ranks among the leaders as a market for all types of mining machinery, equipment and supplies, and a visit to the mining show will afford those interested in mining an opportunity to see the latest and most effective equipment and methods in the mining field. Admission tickets may be obtained, without charge, from manufacturers and dealers, who are exhibiting at the exposition.

Classified Advertising

5¢ per word for the first insertion and 4¢ per word for subsequent insertions, minimum price \$1.00. Box number counts for 10 words to cover cost of forwarding replies. If desired in larger type and displayed, \$2.50 per inch per insertion.

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FOR LEASE. LARGE TUNGSTEN PROPERTY. Big naval program starting. Sale for tungsten thereby assured. On highway, timber, water. Have offer from New York people to sign contract for all concentrates we can produce. It is a matter of placing mill and starting ore through it. Appointment by letter to meet manager on property. Merged Mines, Inc., 1831, Globe, Arizona. 4-15

FOR SALE: Undivided one-half interest in a bonded 10-year lease of gold and silver producing mine. New development, \$50 values in sulphides. Inspection invited. S. F. Lawrence, McAllister, Montana. 4-15

EULALIO GUTIERREZ offers for sale or lease 25 mines. Production shows splendid values in gold, silver and lead. Situated in the mineral district of Concepcion del Oro y Mazapil, Zacatecas. Make your offers. Ramos Arizpe 117, Zactillo, Coahuila, Mexico. 6-30

FOR SALE. Quicksilver property, partially developed; 267 acres patented. Ten miles to railroad, seven miles paved. Considerable equipment. Electric power. Satisfactory working conditions all year. For further information address Box E-14, The Mining Journal, Phoenix, Arizona. 4-15

WANTED. PARTNER to equip Silver-Lead mine for production. High-grade ore. Five thousand required. F. O. Bostwick, Banamichi, Sonora, Mexico. 4-30

GOLD-SILVER-LEAD, 105 acres Inyo County, California. Smelter returns 100 tons shipped show average 1¼ ounces gold, 4¼ ounces silver, 6 per cent lead. Water. Buildings and equipment good condition. \$5,000 cash. Balance bond and lease. or will join experienced operators in development of property. H. N. Stabeck, 404 Guaranty Bldg., Hollywood, Calif. Phone GL 4098. 4-15

DISTRIBUTOR WANTED

WANTED distributor for gold mine nearing production. Large tonnage of developed ore. Letner, 8161 San Fernando Rd., Los Angeles, Calif. 4-15

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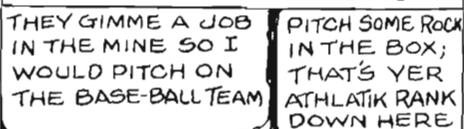
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Mining Men and Their Activities

About men who are well known and prominent in the mining circles of the western states.

Richard C. duPont of the duPont Powder Company is a southern California visitor.

Theodore W. Carter of Fort Worth, Texas, is in Mogollon, New Mexico, investigating mining properties.

H. L. Dotson, Jr., mining engineer of Faywood, New Mexico, is en route to Taiyudong, Chosen, Japan, where he will be located.

Frank McKinley, since 1930 chemist for the Northwest Magnesite Company at Chewelah, Washington, has become a member of the A. I. M. E.

Alan P. Stramler, mining engineer, is located at Odessa, Texas, Box 698, in charge of the shaft sinking project of Texas Potash Corporation.

John M. Conrow of Livingston, Montana, and who received a degree from the Montana School of Mines last year, is operating an assay office at Bigtimber.

W. R. Bassick has been appointed receiver for the Joshua Hendy Iron Works at 200 Pine Street, San Francisco, California, succeeding the late F. J. Behneman.

W. H. Simons, state mine inspector for Idaho, has gone to Washington with Tasker L. Oddie, to work in the interest of securing federal assistance for gold miners.

Ralph Baverstock, 552 South Figueroa Street, Los Angeles, recently examined the Goleta mine in the Mono Lake district, California. This property has been closed down since 1904.

William Ross Wilson is foreman for the Montezuma Corporation, operating the old Freeland mine at Idaho Springs, Colorado. He graduated three years ago from the Colorado School of Mines.

Carl Carpenter, former flotation operator for the Idaho Maryland Mines Company at Grass Valley, California, has moved to Mina, Nevada. He may be reached through P. O. Box 152.

C. A. Lemke, smelter superintendent for the United States Smelting, Refining and Mining Company, has returned to Midvale, Utah, from a trip to the Bishop Creek mine at Bishop, California.

Norman Sather of Kellogg, Idaho, has gone to Fairbanks, Alaska, where he will accept a federal mining engineering position. Mr. Sather is a graduate of the Kellogg high school and of the University of Idaho.

Thomas Barton, Jr., 120 Broadway, New York City, was in Bisbee, Arizona, to attend the annual meeting of Shattuck-Denn Mining Corporation on April 18. Mr. Barton is vice-president of the corporation.

Roy A. Johnson of Ritzville, Washington, and Evan A. Gustafson of Hardin, Montana, are employed at the Gold Coin mine near Anaconda, Montana. Both men graduated from the Montana School of Mines last year.

NATIONAL MEETING OF GOLD MINERS CALLED FOR MAY 18



Harry Sears

The Sacramento meeting of April 7, called by the Mining Association of California, was represented by most every camp in the state and delegates were there from Nevada and New Mexico. Harry Sears president of the association, presided. Foremost in importance was the code for gold miners, which was adopted for presentation to

a national meeting to be held at Denver, May 18.

The principal features of the code, as prepared by Charles L. Gilmore, attorney for the association, provide that no person under the age of 18 years be employed in a mine; an eight-hour day and a 48-hour week, and a scale of minimum wages. In administering the proposed code, it was decided to split the mine area into 13 geographical divisions and to divide each division into four classes of mining, covering quartz, hydraulic, dredging and placer mining.

The scale of wages was referred to a specially appointed committee for further consideration. The committee was appointed by Mr. Sears and includes Ernest Johnson of Siskiyou county; Arthur N. Sweet of Auburn; Charles H. Segerstrom of Sonora; Errol MacBoyle of Grass Valley; Leroy A. Palmer and H. W. Klipstein of San Francisco and Thomas McCormack of Rio Vista.

A resolution was passed at the meeting making it possible for persons to obtain railroad land for agricultural and mining purposes at a more reasonable figure than now available and that an agreement be entered into with the railroads to sell large acreages held by government grants to the United States.

The association also went on record as favoring consolidation of all mining associations in the state and as opposed to the grazing bill pending in congress whereby the public domain would be placed entirely in the hands of the secretary of the interior.

When the code is finally approved it will be forwarded to Tasker L. Oddie, president of the Gold Mining Association of America, who has been in Washington two or three weeks working on the approval of the code. Mr. Oddie has announced that no public code hearing before the NRA administration for the gold industry of the United States will be held until after the national meeting at Denver.

Albert V. Quine, engineer and geologist, is engaged in mining in Boulder county, Colorado. His address is Salina Star Route, Boulder. Mr. Quine had been working for the West London Company of Alma.

4-3034
mining operations where hydroelectric power is desired.

Announcement is made of the resignation of three members of the faculty of the Colorado School of Mines at Golden. All are effective with the close of this school year. Dr. Sylvian Pirson will join a geophysical exploration concern at Tulsa, Oklahoma; Paul Stroud expects to join an oil company in Wyoming, and James Boyd plans to open an office at Denver. Mr. Boyd came to the school in 1930 as instructor in the geological department. He was born in England and educated there.

A description of a new test for molybdenum ores is included by George R. Fansett, mining engineer, University of Arizona, Tucson, Arizona, in the new edition of "Field Tests For the Common Metals," manuscript for which has just been completed. The new test was recently developed by the Bureau of Mines, University of Arizona, and is very simple and reliable. It makes possible the determination of the element itself, and not the compound. All that is needed to perform the new test is nitric and sulphuric acid and a teacup.

Deceased

Henry Milliken, twenty-eight-year-old mineralogist of Denver, Colorado, passed away April 2 of a heart ailment.

Fred Meyers, for many years a resident of Wardner, Idaho, died. He had a wide acquaintance in the district and was for a number of years a successful lease operator.

Frank J. Inman, who figured in the early mining history of Silverpeak and Goldfield, Nevada, passed away. He came to Nevada from Connecticut as a young man and spent nearly all his life in the state. When the camp of Candelaria was flourishing, Inman was engaged in the freighting business.

Myrl J. Falkenburg died suddenly of a stroke of apoplexy. Mr. Falkenburg was president of the firm of Falkenburg & Co., chemists and assayers, established at Seattle, Washington, in 1908. He was widely known in mining circles and had made numerous executive contacts in the metal mining field of the northwest territory.

Edward Connor, since 1908 a resident of Seattle, Washington, passed away. He had been ill several months. Mr. Connor went to Alaska during the gold rush, traveling over the Edmonton Trail, but during recent years devoted his time to real estate and to insurance underwriting. He was a past grand knight of the Seattle council of the Knights of Columbus.

Mitts Quenner, pioneer resident of Douglas, Arizona, died at his home on April 11. He was 82 years of age. For many years Quenner was employed by the Clark interests at Butte, Montana, and elsewhere. He mined and prospected from Alaska, through the Coeur d'Alenes, south into Mexico, making his headquarters in Douglas for a number of years. He invented and developed two machines, one for handling quartz and the other a dry washer for placer ground.

P. E. Groesbeck, better known to his friends as "Ted," was killed when he fell 500 feet down a mine shaft at Wahmonie, Nevada. Mr. Groesbeck and his partner, William R. McCrea, were working a lease at Wahmonie acquired a couple

of years ago from the Wingfield interests. He had started down the shaft to aid his companion, who had fallen to a platform 30 feet below the surface, when a rotten timber gave way and he fell through.

Cliff Collins was killed in a mine accident in the Divide district in Nevada when a 150-pound rock rolled from the wall of a stope in which he and George Wardle were working. He suffered a crushed chest, broken leg and internal injuries and died shortly afterwards in the Mines Hospital in Tonopah. Mr. Collins was 55 years of age. He had won many single and doublejack hard rock drilling contests and had been a resident of Tonopah and Goldfield since 1904.

FREDERICK J. BEHNEMAN

With the passing of Frederick J. Behneman at his home in Burlingame, California, the western mining world lost one of its finest, most upstanding, courageous figures; and the west's pioneer mining machinery manufacturing organization, the Joshua Hendy Iron Works, lost the "skipper" who had brought the historic old ship through the worst economic typhoon in its history.

While his death was not unexpected by his family and intimate friends, who had anxiously watched the inroads of the last four years' stresses upon him, it has brought grief to those who knew him in business. He persisted in carrying on his work in defiance of orders of his physician that he take a rest. Mr. Behneman was sixty-three the day after Christmas.

The last forty years of his life were given to the historic firm founded by Joshua Hendy. Twelve years after he had joined the firm, Samuel J. Hendy passed away, and he was made manager. When John H. Hendy died in 1920, Mr. Behneman was elected to the presidency.

As mining operations declined with its corresponding effect on machinery sales, the Joshua Hendy firm went into receivership in 1932 and therein was demonstrated the complete confidence of the associated financial interests in Mr. Behneman, whom the superior court of California named as receiver. He demonstrated that a receiver can be both honest and a builder rather than a wrecker. But the load he carried through the ensuing two years hastened his death.

CALIF. STATE MINES DIVISION ISSUES NEW BULLETIN

State Mineralogist Walter W. Bradley announces that bulletin 109 of the California State Division of Mines is off the press and ready for distribution. Its title is, "California Mineral Production and Directory of Mineral Producers for 1932."

The bulletin, covering 200 pages, is one of the series of annual statistical reports which have been issued for many years. It contains detailed data covering the amount and value of metallic and non-metallic minerals, sub-divided as to fuels, metals, structural materials, industrial materials and salines, both by substances and by counties. A directory of all producers (except for natural gas and petroleum) which adds much to its value, is included.

The bulletin may be purchased from the California State Division of Mines, Ferry Building, San Francisco, for the cost of printing, which amounts to 25 cents, plus shipping charges of 10 cents.

THE LOGAN STRIKE GIVES INDICATIONS OF PERMANENCY

Under development during the last fifteen days, the gold strike in the John A. Logan mine of the Stratton estate at Cripple Creek, Colorado, is increasing in importance, according to C. E. Jostin, superintendent for the International Gold Producers, Inc., and which is operating under 25-year lease. Drifting to the northwest and southeast has proven the ore for a length of more than 100 feet and crosscuts have been driven showing a width varying between 40 and 47 feet. The entire rock mass averages .5 ounce gold to the ton without sorting or screening.

Upraises for stopes are being started. All rock taken from development work has been shipped directly to the mill at Colorado Springs. During the week ended April 15, eight cars were shipped and several more were in bins but could not be shipped because of car and mill shortage. According to President H. E. Davis, the International Gold Producers can send several cars a day to the mill if the railway cars can be provided.

Financial arrangements for a big new mill on the Stratton estate apparently have been closed, with the first unit to be in operation about November 1. Thereafter, it will be possible to have the International ores milled without the expense of railway transportation and at a greatly reduced treatment charge.

AMERICAN ZINC INSTITUTE TO HOLD ANNUAL CONVENTION

The American Zinc Institute will open its sixteenth annual meeting in St. Louis on April 30, continuing through May 1. The opening session will feature an address by Oliver Roskill of London, England, on "World Zinc Conditions." The afternoon session of the first day will be devoted to the zinc code. Papers will be presented by R. M. Roosevelt, president of the American Zinc Institute, and by J. D. Conover, its secretary.

The second morning session will be given over to progress reports on the better galvanizing campaign, and to the position of galvanizing in the steel industry.

The last session will review the zinc mining conditions. The standing of the zinc industry in the various western states will be discussed by the following:

Washington—L. P. Larsen, Pend Oreille Mines and Metals.

Idaho—D. A. Callahan, Callahan Zinc-Lead Company.

Montana—W. B. Daly, Anaconda Copper Mining Company.

Nevada, Utah, Colorado—E. H. Snyder, Combined Metals Reduction Co.

New Mexico, Arizona — E. H. Wells, New Mexico School of Mines.

JULIAN BOYD GIVES SERIES OF FREE LECTURES ON MINING

A non-technical course in gold mining and mine administration is being offered through the adult education division of the University of Southern California, at Los Angeles. The opening lecture was April 2 and classes are being held every Monday and Thursday from 7 to 9.20 p. m. They are free to anyone wishing to enroll.

The first two lectures were given in Bridge Hall on the campus of the university and it is possible that classes may be transferred to the University College. Julian Boyd, consulting mining engineer, who is practicing at Los Angeles, is instructor. His experience in gold mining in Australia, Africa and Alaska and his

present affiliations combined to make him an authority on the principles of mining and on how gold mines should be worked. The courses comprise instructions in the origin and occurrence of gold; mineralogy and petrology, use of maps, tracing lodes; sampling; staking claims; developing lode and placer deposits; treatment of ores; valuation, organization and management of mining enterprises, including both metallic and non-metallic deposits.

The main object of these courses is to enable citizens of Los Angeles and neighboring counties to become better acquainted with mining and to be able to take an intelligent interest in the mining industry. The course will be very useful to investors, prospectors, operators, students and others. On Friday, March 30, at 2.15 p. m., Major Boyd broadcast over KRKD on, "Mining Education for the Public."

MONTANA SCHOOL OF MINES ANNOUNCES FELLOWSHIPS

In co-operation with the State Bureau of Mines and Geology, the Montana School of Mines of the University of Montana offers several research fellowships and graduate assistantships in geology, metallurgy, mining and ore dressing. These are open to college graduates who have had good scientific training in those sciences which are the foundation of the mineral industry and who are especially qualified to undertake research work.

Fellowships in metallurgy, mining and ore dressing are for nine months beginning September 1 and carry a stipend of \$400. Fellowships in geology are for 11 months beginning July 1 and carry a per diem allowance for field work during July and August and a stipend of \$400 for the remaining nine months.

Assistantships in ore dressing are for two nine-month periods beginning September 1 of two consecutive years and carry a stipend of \$800 for the two periods. Assistantships in geology are for two nine-month periods beginning September 1 of two consecutive years and for the intervening summer. They carry a stipend of \$800 for the two periods besides a per diem allowance for field work in the intervening summer.

Fellows and assistants will register as students in the school of mines and become candidates for the degree of Master of Science in geology, mining or metallurgy. All fees, except the diploma fee, are waived. They will live in the college residence hall, and charges for room and board will be \$37.50 per month.

Choice of a research problem will be made by conference between the fellow and his major professor, subject to the approval of the graduate committee. Problems, the investigation of which is under consideration for the coming year, include:

- A—(1) geology of metalliferous deposits, (2) supergene enrichment of sulfide ores, (3) areal geology of specific districts, (4) stratigraphic problems, (5) paleontological problems.
- B—(1) non-ferrous physical metallurgy and metallography, (2) electrometallurgy of aqueous solutions, (3) electrometallurgy of molten electrolytes, (4) equilibrium relations of metallic sulfides.
- C—(1) rock drilling and drill rounds, (2) mine ventilation, (3) mine haulage.
- D—(1) physical chemistry of flotation, (2) quantitative mineralogy as applied to flotation, (3) flocculation and dispersion of mineral pulps, (4) applied flotation problems.

Applications with certified copy of college record, statement of professional experience, recent photograph, and three references should be addressed before May 15, 1934, to A. M. Gaudin, Chairman, Graduate Committee, Montana School of Mines, Butte.

SOME TECHNICAL BOOKS CARRIED IN STOCK

Prices Postpaid

A. I. M. E. Series	Price	Low Temperature Carbonization—Wellington	Price
A History of American Mining—Rickard	3.00	Manual of Cyanidation—Hamilton	13.50
Mineral Economics—Turon and Eckel	2.50	Manual of Fire Assaying—Fulton & Sharwood	3.00
Choice of Methods in Mining and Metallurgy	2.50	Marketing of Metals and Minerals—Spurr	3.00
The Examination of Prospects—Gunther	2.50	Metallurgists and Chemists Handbook—Liddell	6.00
Technical Writing—Rickard	2.00	Metallurgical Analysis—Naish & Clennell	5.00
Aluminum, The Metal and Its Alloys—Corson	8.00	Metallurgy of Aluminum and Aluminum Alloys—Anderson	7.50
Architects' and Builders' Handbook—Kidder and Nolan	7.00	Mechanical Engineers Handbook—Marks	7.00
Compressed Air Plant—Peele	7.50	Methods of Non-Ferrous Metallurgical Analysis—Keffer & McNeil	4.00
Carbonization Technology and Engineering—Armstrong	17.50	Metals and Their Alloys—Vickers	7.50
Compressed Air Practice in Mining—Penman	1.75	Mineralogy—Kraus and Hunt	5.00
Concrete Designers' Manual—Hool	4.00	Mines Handbook, The, 2 vols.	20.00
Deep Borehole Surveys and Problems—Haddock	4.00	Mining Methods—Mitke	3.00
Economics for Engineers—Bowlers and Rountree	4.00	Mineral Deposits—Lindgren	6.50
Economic Geology—Reis	6.00	Mining Engineers Handbook—Peele 1 vol.	10.00
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THE MINING JOURNAL

PHOENIX ARIZONA

Concentrates from the Western States

Some high spots of the mining industry in the Western United States and Mexico.

ARIZONA

Under the direction of Tom Frazier, mine superintendent, the main shaft at the **Morgan Mine**, Sells, Arizona, is being sunk to a depth of 600 feet. The shaft is now down 400 feet, having been sunk on the incline, and is said to be in ore the entire distance. The vein has been opened up on the surface for about 3,000 feet in length. Fourteen men are employed on the present work. The mine has been completely equipped for the work in progress. A milling plant has been purchased and paid for, but not erected as so far the company has been unable to procure sufficient water in the immediate vicinity, and mill erection will be delayed until an adequate supply is located. The ore testing and metallurgical work were done by the late Arthur Crowfoot of Tucson. The Morgan mine has been held under bond and lease by an eastern group for the past two years.

Due to furnace conditions, the **United Verde Extension Mining Company**, Jerome, Arizona, did not close down its smelter until April 6, 1935, instead of March 1 as originally planned. The No. 1 reverberatory is being repaired, preparatory to another short campaign, but the date for starting up again has not been decided. Mining operations are being continued without interruption. March production for United Verde Extension totaled 2,021,016 pounds of copper, compared with 2,803,708 in March of 1934. George Kingdon is general manager of the company.

The **Lost Basin Gold Mining Company**, with property located 70 miles northeast of Kingman, Arizona, is considering equipping its mine with milling facilities. Joseph Hensen is superintendent, and H. A. Jensen, 1102 First National Bank, Salt Lake City, is general manager of the company.

James E. Wilson of Phoenix, Arizona, has acquired a placer property on Big Bug creek, Mayer, Arizona, and is employing 12 men in preliminary and construction work. He is arranging for installation of machinery capable of treating 300 yards of gravel daily. Burt Roby is engineer in charge.

The **Back Bone Mining Company**, whose property is located two and one-half miles north of Arivaca, Arizona, is said to have placed a number of additional men on the payroll and to be continuing development work. Houston L. Walsh, 122 North First Avenue, Phoenix, Arizona, is one of the principals on the company.

A refund of \$2,470 in 1934 taxes was ordered for the **Shattuck Denn Mining Corporation**, Bisbee, Arizona, in a judgment rendered by Judge Wilson Ross of the Cochise county superior court. The assessed valuation of the mining company was reduced from \$450,000 to \$389,000 in the judgment, a reduction of \$61,290.

The annual report for **Inspiration Consolidated Copper Corporation** for 1934 shows a net loss of \$1,283,481, after charges but before depreciation and depletion against net loss of \$1,506,213 similarly figured in the previous year. No depreciation was written off during either year, as this provision is calculated on the basis of units of production and operations at the company's mines at Inspiration, Arizona, were suspended for both periods.

ANNOUNCES NEW PRICE BASED ON 77.57 U. S. SILVER

The El Paso Smelter of the **American Smelting and Refining Company** has announced that "the price to be used in settlement for silver mined on and after April 24 is 77 cents which represents the mint price, less delivery costs, adjustment for fineness and added company expense incidental to compliance with Treasury requirements."

Crown King Consolidated Mines, Ltd., Crown King, Arizona, is employing an operating crew of 27 in the development work in progress at the mine. During recent months the company has completed its 150-ton cyanide-flotation mill, hoist house, office, shops and laboratory, and housing facilities for 50 men. The management expects to go on a regular production basis at an early date. The mine has been opened to a depth of 100 feet, with mine workings totaling 1,800 feet. It is planned to dewater and open the entire mine to the 500 level. The operating staff includes W. W. Edwards, general manager; C. O. Vowell, mine superintendent, and E. J. Farley, chief electrician. Victor L. Smith, president of the company is also located at the mine.

The contract for the construction of a 25-ton flotation plant on the **Johnson** group of claims in the Weaver mining district, Octave, Arizona, has been let to the Oil & Mining Equipment Company at Los Angeles, California. The property is owned by Frank S. Gochenour, Loyd E. Gale, Ralph Rosenberry and Isaac D. L. Williams, of 610 I. W. Hellman Building, Los Angeles.

Fletcher Merrill and **F. W. Moody** of Thatcher, Arizona, in association with Max Cohen of New York, have taken an option and lease on the old **Casterson** property in the Tonto Basin, near Payson, Arizona. Merrill, who is in charge of the work, states that for the past four months he has been drifting on the vein, which is from two to eight feet in width, assaying from \$8 to \$30 per ton. The vein has been opened for a length of 250 feet and to a depth of 125 feet. Plans are being made for installation of a 25-ton mill in the near future.

The **Gold Basis Mines, Inc.**, Prescott, Arizona, expects to soon start construction of its 50-ton daily flotation plant. Snows and rains have delayed plans somewhat, but in the meantime all ground work is being laid out for immediate action as soon as conditions are advisable. Now that the raise is completed, it is estimated that 12,000 tons of ore are ready for actual mining. The Gold Basis Mines rebuilt the old stamp mill last year, and for a while produced about one ton of concentrates daily. Robert N. O'Brien, vice-president and general manager, is en route from Detroit to Prescott to settle the final details of mill construction and production.

CALIFORNIA

The report of the **Walker Mining Company** at Walkermine, California, covering the year 1934 shows a net loss of \$59,853.83. The mine and mill were closed throughout the entire year, and only a

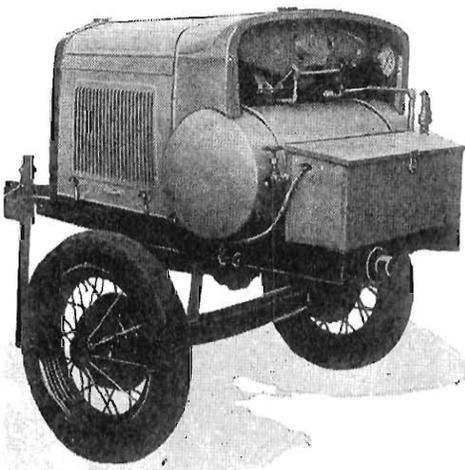
skeleton organization was retained to keep the premises in condition. Thirty tons of 60-per cent copper precipitate were recovered from mine water and stockpiled. A 375-horsepower Nordberg double drum hoist was purchased from the Engels Copper Company and carried to warehouse stock. The balance sheet as of December 31, 1934, shows current assets of \$488,946.26; ore and concentrates on hand at cost, \$268,784.63, and accounts receivable, \$2,263.70. Current liabilities were listed at \$7,749,308, in accounts and wages payable. The directors are J. R. Walker, B. R. Howell, R. May, J. O. Elton, J. B. Whitehill, H. A. Geisendorfer and Robert E. Dwyer.

The **Montezuma-Apex Mining Company** is mining and milling approximately 200 tons of low-grade gold ore a day at the Montezuma and Nashville mines near Placerville, California. Nearly all of the production is coming from the Montezuma mine, and work at the Nashville is largely development and shaft cleanup and repair. Since work began in 1932 the Montezuma shaft has been sunk to 1,500 feet from a depth of 900 feet on the incline. The Nashville mine has been unwatered and rehabilitated to a depth of 1,000 feet on the incline. The unwatering was accomplished when the Montezuma 1,200 level tapped the old lower Nashville workings. J. A. Norden, formerly general manager for the Utah Apex Mining Company, at Bingham Canyon, has been in charge of operations through the entire period. F. L. Wideman is chief engineer, and R. S. Cockle is his assistant.

Harry F. England of Oroville, California, gold dredge operator, and **Bing Clark** have leased the Wortel ranch, in Placer county, from George McAulay, Auburn banker. Equipment is being installed for the recovery of the gold contained in the gravels. England has three dragline dredges working in central California, handling in the neighborhood of 2,000 yards of gravel a day. One of these is working on the F. F. Ford land to the east of Palermo, Butte county. He operates as the **Wyandotte Gold Dredging Company**.

E. E. Myers, Route 4, Box 127, Chico, California, is building a portable dredge on Butte Creek, eight miles east of town, for L. E. McLain, channel miner of the Magalia district. A rather unusual feature is being carried out in that the recovery unit is not on the dredge and the boat does not float. It is being built on skids. An ordinary shovel will be used to move the gravel. It will be dumped into a hopper, and into a mixing chamber, consisting of a double trommel, the inside one having the larger mesh. The fines work down to the lower end, all material up to 3/4-inch going into a sump box. From here a sand pump lifts it to the sluices which are detached from the dredge. Gasoline engines will be used for power until such time as Diesels can be installed.

Litigation involving the Hoge Development Company, Henry Hussey, West Mines Corporation and the California Sierra Gold Mines, Inc., has been settled out of court. Announcement is made that the **Wiljobar Corporation**, controlled by substantial New York interests, has entered into an agreement to operate the Hussey mine, of the Hoge Development Company; and to operate the Queen Lil mill of the California Sierra Gold Mines, Inc., for treating the Hussey ores. John D. Bardill, president of the Wiljobar Corporation, is remaining at Nevada City, California, to direct operations; and G. M. Bettles, under whose engineering guidance the Hussey has been



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on profitable production, will be superintendent. A larger compressor is being installed, and Mr. Bettles is considering contracts for sinking the Hussey shaft another 200 feet. The new levels are to be established in the mine from the new depth of shaft. It is probable that the Queen Lil plant will continue to take custom business until such time as the Hussey mine demands full capacity.

Weekly shipments of bullion are being made from the Aunt Rosa mine, in the Caliente Canyon section, near Caliente, California. Five stamps are being used for crushing. The property has been active since late last fall, with R. E. Frasc as general manager.

Walter E. Trent, vice-president of the Trent Process Corporation, Whitehall Building, 17 Battery Place, New York City, and associates are reported to have purchased the smelter at Mojave, California, built last summer by the Mojave Smelting Company. The smelter is large enough to treat 50 tons of ore daily and since last fall has been accepting custom business.

By the end of May the Republic Gold Mining Corporation expects to be milling an additional 75 tons of ore from the Empress mine at Grass Valley, California, and to have added another 30 men to its payroll. The new ball mill brings milling capacity up to 375 tons a day. The eight-foot vein of ore opened on the 800 level a few months ago is holding well to a good milling grade. E. C. Jacobs is manager of operations.

The Golden Queen Mining Company, Charles Kumke, superintendent, has completed the foundations for its 200-ton mill at Mojave, California. George Zapp is construction engineer. The company employs 30 men.

The Sierra Consolidated Mines, Inc., operating the Silverado and Kentuck mines at Sweetwater, California, has let a contract to the Truscon Steel Company, of Youngstown, Ohio, for the erection of three all-steel buildings, including boarding and bunkhouses. These will be built at the head of the tramway a mile above the mill, and will replace those burned a few weeks ago. D. C. McKay, 419 Ralston Street, Reno, Nevada, has charge of operations.

New living quarters have been completed at the Bessie mine, north of Vidal, California. The operators are George B. Roberts, formerly of Grass Valley, and D. C. Wray of Vidal. They expect to have the mine in operation early in May.

E. M. Niquette has leased the Silver Moon Nos. 1 and 2 groups of mines, in the vicinity of Vidal, California, and is bringing in lumber and supplies to begin construction and development work. The property is owned by W. R. Baird.

Messrs. Applegate & Sutton have sold their respective interests in the Prosperity group of nine claims and the Prosperity Extension group to J. M. Niquette and Charles Milton. Exploration and development work is scheduled to begin soon.

Work has been resumed in the New York mine on Indian Creek, near Ft. Jones, California, following several months' shutdown on account of litigation. J. W. E. McCulley, superintendent, has a crew of 16 men. The working program calls for sinking the shaft from the 400-foot level to a point 128 feet vertically below; for the development of about 1,400 feet of new tunnel; and for the installation of an 85-ton ball mill. Hydraulic concentration and flotation units will be installed by the American Cyanamid Company.

T. H. Hilborn, who has been developing the Phoenix mine in the Hurlston district, near Oroville, California, for the last three years, reports he has a crew of 20 men working three shifts a day. Work centers on the 200-foot level from the main shaft. Harris & Rooker, Chico truckers, have a contract for hauling the concentrates to a smelter at Pinole.

G. J. Linsey of Oroville, California, has taken a lease on the Jennie May mine, near Jack's Ranch, in the vicinity of Magalia. Work is to start at once.

Mining has been resumed in the lower workings of the famous old Plumbago gold mine at Alleghany, California, by the Plumbago-Eldorado Gold Mining Company. Areas long closed to production have been unwatered and reconditioned and the management is seeking continuations of veins that once yielded substantial profit. The 20-stamp mill is running on a good grade of ore from the upper levels. In the Eldorado mine, a 600-foot raise has been driven to the surface from the main tunnel and the opening of new ground is progressing favorably. Arthur B. Campbell, formerly of Grass Valley, is superintendent of operations.

According to Harold Lynn, superintendent, the Idaho-Maryland Mines Company at Grass Valley, California, has just installed new pumping equipment that can lift 1,000 gallons of water a minute at the Brunswick mine. Another large garage has been built, directly back of the office; and a 32-ton shovel has been taken to the mine for use in excavating reservoirs and stacking timber.

The Newmont Mining Corporation reports a net income for 1934 of \$1,076,270. This includes \$207,780 net gain realized on securities sold, and after expenses, taxes, etc., equivalent to \$2.02 a share on the 531,646 shares of capital stock outstanding. For 1933 the company reported a net income of \$155,410, including \$92,537 realized on the sale of securities, equal to 29 cents a share.

R. Black & Sons, who a few weeks ago bonded the Solid Oak mine at Big Oak Flat, California, have cleaned out the shaft. According to Dr. John Roberts of Seaside, California, who has owned the property 35 years, several tons of high-grade galena sulphides and free gold have been produced but the vein yet requires a great deal of development work.

The Jumper, Golden Rule, New Era and Mazeppa groups of mines at Stent, about four miles south of Jamestown, California, are being operated under lease by a group organized in March of this year as the Federal Mining and Milling Company. The agreement also includes an option to purchase the ground. Malcolm Crowe, for 21 years vice-president of the Commercial National Bank, is president. Ralph Arnold, of the Arnold Exploration Company, is vice-president and consulting engineer; Edward L. Fries, treasurer and chief financial officer; John M. Bowen, secretary and counsel; and Albert Somkin, vice-president and assistant treasurer. Altogether the lease covers 174 acres, extending some 5,300 feet on the Slate or Jumper, Bull Quartz, Middle and the West veins. Crushing and grinding and cyanide equipment, adequate to treat 150 tons of ore a day, is being added to the 40-ton stamp mill. The installation of this is being rushed so as to place the mine on production in the minimum of time, the company reports. The compressor, hoists, blacksmith shop, assay shop, ore bins, flotation machine and pumps are ready for use.

The new 200-ton trommel of the **Gold Exploration Mining Company** at Smartville, California, has been in operation since April 1. A special feature is the installation of a vibrating feeder, which controls the flow of the gravel from the bin into the mill. Ore bins and building structures have been completed. The two shafts are being controlled from a single source, a double-drum hoist operating both skips which dump into the main bin. Air capacity has been increased with the setting up of a second compressor. Drifting up stream in the virgin channel is progressing and additional gravel is being blocked out for development. M. D. Paine is in charge. C. H. Carmichael is engineer.

Harley Sill, consulting metallurgist, 1011 South Figueroa Street, Los Angeles, has made a complete examination of the Golden Treasure mine, located on the Amargosa Mountains on the east side of Death Valley. This mine and the Standard are being operated by the **Gold Reservation Corporation, Ltd.**, sponsored by G. M. Ottis and B. S. Dennison, 408 South Spring Street, Los Angeles. Plans include replacing the old Lane mill with ball and flotation machinery.

B. T. Isgrig and Basil Prescott have taken over the **Omar** gold mine, located a half mile below the P. G. & E. power house in the Ophir district of California. Sampling and testing is being done with a view to mill installation. Both men are engineers with a great deal of experience in mine operation in the western United States, Canada and Mexico. Mr. Isgrig is making Hotel Auburn, Auburn, headquarters; and Mr. Prescott's office is 703 Richfield Building, Los Angeles.

Announcement has been made by W. S. Russell, vice-president, that the **Mojave Neenach Mining Company** has acquired the Russell-Myler lease, consisting of 15 acres of the Rogers-Gentry holdings in the Neenach mining district, near Mojave, California. The lease has been operated to a depth of 150 feet by an incline shaft, from which 400 feet of drifts have been driven. The oreshoot varies from three to seven feet in width, and is yielding 20 tons of \$40 ore daily. This is being treated in the Burton Bros. mill at Rosamond. The Mojave Neenach company was reported recently to have purchased the **Rosamond** mine at Tropic Hill from the Burton Bros.

It is reported that a definite program will be outlined for the **Icard Ranch Mines** at Grass Valley, California, with the early return from the Philippines of George Icard, the man responsible for the project. Several drifts are being driven from the 110-foot level of the Lincoln shaft. The West drift has cut a ledge of pinkish quartz very different in character from the Abe Lincoln ore. Encouraging results are being found in trenching the Fox Cover area of the ranch acreage. H. L. Henderson is foreman of mining.

The old Peabody shaft on the townsite of Grass Valley, California, is being reopened by the **Golden Center Mines, Inc.**, under the direction of L. S. Wincapaw. This shaft was caved years ago for safety reasons. The shaft will give a depth of 225 feet on a vein, believed to be closely related to the Gold Hill vein system.

The **Telegraph** mine, nine miles north of Downieville, California, has resumed operation under the management of Engineer John M. Sheedy. The program includes the development of a vein partially opened last fall before the mine was closed for machinery installations. Diesel power has been installed.

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ington, where he plans to build a 150-ton smelter. Plans for the latter are said to be in the hands of the machinery people and the plant is being built similar to one now working in Australia. It will take ore from the Yankee Boy mine and others, and it is reported that orders have been given to start work in the Yankee Boy, Pomona, Florence Rae, Kromona and other properties being leased by the smelting company.

J. E. Drain, mine broker, 725 Second Avenue, Seattle, Washington, has made a comprehensive compilation of statistical data covering United States and Canadian mining companies. It includes such information as capitalization, development, earnings, gold and silver production and mine reports.

Clifford Wamba is in charge of operations in the Oroville district, Washington, for the **American Rand Corporation**. A small mill is in operation using water power developed from Wannacut Lake. A substantial supply of ore is available for milling and averages close to \$10 a ton. J. M. Wamba of Seattle is president. This is the old Spokane mine, which was for a time operated by L. E. Tuthill and associates as the Oroville Gold Mining Company.

Jack Koch, pioneer resident of Newport, Washington, is pumping water from the **Ries** mine, not far from town. The property was purchased twelve years ago by A. L. Ries. Hartman L. Ries is now controlling owner. Recent examinations, made as the water was lowered, seem to confirm the reports of old timers that there are ledges of very valuable ore.

The **Cascade Chief Mining Company** is reported to have driven 270 feet of tunnel in the Dennett placers on Deer Gulch, near Ellensburg, Washington. Work is under the direction of I. L. Wortees and is being carried on systematically instead of the former plan of "follow the paystreak." Six to nine are employed and NRA recommendations are being complied with. The Cascade Chief has mines in Montana and California, and maintains headquarters in Seattle.

William Newstrum of Ellensburg, Washington, and associates have developed a good sized streak of pay material in his **Wall Street** mine, near the head of Cougar Gulch. Outside parties are reported to be making some tests on the property.

The **Free Gold Milling Company** is operating a custom plant in the Meagersville district, Washington, (Liberty post-office.) W. E. Bratt, who graduated with the '32 class at Washington State College at Pullman, is in charge. The plant is operated on steam power. It can run 72 tons of ore in 24 hours.

WYOMING

The **Kaycee Mining Company**, M. D. Harris, president, Lovell, Wyoming, has leased its mining property on the Kaycee structure near Kaycee, Johnson county to the **Blue Eagle Mining Company**, of Kansas City. The deal was closed on a 10 per cent royalty basis. It is reported that the Blue Eagle people have set aside \$100,000 for the sinking of a shaft to cut the various mineral-bearing strata to a depth of 650 feet. The shaft has already been sunk 100 feet and has penetrated a shale bed 40 feet thick which assays \$8.30 in gold and carries a trace of silver. Nodules of sulphide nuggets have been found, the formation assaying \$18 to \$22; but the biggest pay is expected at about 650 feet where they believe exists a prehistoric lake. J. K. Hawks is in charge of sinking the shaft.

CONTINUATION OF COPPER TARIFF URGED BY MIAMI

The annual report of Miami Copper Company, Miami, Arizona, for the year ended December 31, 1933, certified by independent auditors, shows net loss of \$521,187 after taxes, mine shutdown expense and research operations, depreciation, etc., and including \$234,560 gain on sale and adjustment in value of securities, but before depletion. This compares with net loss of \$1,816,956 before depletion in 1932.

Adolph Lewisohn, president of the company, in addressing stockholders, said that while there was some improvement during the past year, both in the price of copper and in the statistical position of the copper industry in the United States, the price of copper continued too low to warrant resuming operations and that the Miami mine remained closed down during the year, except for two short experimental runs of the new leaching plant.

"It is important that the American copper producers continue to receive protection against competition from foreign copper," Mr. Lewisohn stated. "At the present time such protection is being received by a temporary copper import tax of four cents a pound, but the industry must be protected in the future by a sufficient and permanent tariff."

Miami has made no plans for resuming operations under present market conditions, according to F. W. MacLennan, general manager.

PROGRESS REPORTED IN PLANS FOR LOS ANGELES MINING SHOW

Plans for the Mining Show at the Machinery & Equipment Exposition to be held at the Shrine Auditorium during Los Angeles Market Week, July 30 to August 4, are progressing most satisfactorily. The six days of the Show are to be dedicated to six areas that are logical for the Los Angeles market in mining machinery, equipment, supplies and services as well as road, power and construction machinery and equipment.

The days are dedicated as follows—Southern California Day, Mother Lode Day, Arizona, Nevada Day, Alaska Day, and Mexico Day. A grand Fiesta will be held for Mexico; the Sourdough Association is to participate in Alaska Day, and famous old timers from various sections will be on hand to greet those attending. Interesting exhibits of minerals, the old time relics, a prospector's camp, Indian village—these are but a part of the things to be seen at the Mining Show. A visit will be most instructive and entertaining.

Special railroad rates and hotel accommodations are being arranged for Los Angeles Market Week by the Los Angeles Chamber of Commerce.

Full details and information may be obtained from the Machinery & Equipment Exposition, Room 613, Chamber of Commerce Building, Los Angeles.

NEW EDITION OF BULLETIN ON MINERAL IDENTIFICATION

A new edition of the United States Geological Survey Bulletin 679, "The Microscopic Determination of the Nonopaque Minerals," has just been published as Bulletin 848 and may be obtained from the Superintendent of Documents, Washington, D. C. for 20 cents. The previous edition, which appeared in 1921, was the first reference work to place a systematic compilation of the optical properties of nonopaque minerals at the disposal of the

sciences and industries dependent on accurate mineral determination. This work, based primarily on the indices of refraction, determined under the microscope, as the most fundamental diagnostic property of this group of minerals, made possible the wide application of the most accurate method yet devised for their identification.

The new edition of 254 pages has been completely rewritten and the tables brought up to date by the introduction of about 500 new entries and 100 changes in old entries. About 250 new mineral species not given in the old edition are included, and tables have been added in which the data on the important mineral groups have been assembled. The new edition will therefore entirely supersede the earlier one and will be a necessary reference work for all those who have occasion to identify minerals.

HOMER WILLIAMS REPORTS FOR WHITE CAPS AT MANHATTAN

According to Homer L. Williams of Tonopah, manager of the White Caps Gold Mining Company at Manhattan, Nevada, 6,453 dry tons of ore were marketed last year and had a gross value of \$208,973.91 or \$32.38 a ton. However, due to heavy transportation and treatment charges, the net return was not high. Freight and treatment charges totaled \$70,974.87 and the hauling of ore from Manhattan to Tonopah involved an expenditure of \$36,815.72.

Since the reorganization effected on March 25, 1932, the company has been able to reduce its indebtedness from \$76,000 to \$56,000. By leasing the upper workings, enough income was realized to pay off current obligations, built up a small cash reserve and to purchase tailings on adjacent properties, estimated at 40,000 tons of tailings that averaged \$3.75 a ton when gold was \$20.67. On partnership with C. E. Chaffin, some 14,000 tons of tailings were worked, which paid 15 per cent royalty to the company and then the net profits were equally divided between Chaffin and the company.

During the past year 25 to 30 men have been actively engaged in leasing operations on the various levels from the surface to 800 feet. Most of the ore mined came from old pillars and stopes or extensions of old stopes and was shipped to the Utah smelters. Late in the year the workings were unwatered to the 1,100 level, and it is anticipated that considerable shipping ore is available to this depth. Extensive development work is being planned, because the oreshoots being mined by the lessees can not last indefinitely.

ARGENTINE GOLD MINE TO HAVE HYDROELECTRIC POWER

The Argentine Gold Mining Company, which a few months ago took over the Criley mines on the west slope of Independence Mountain, centrally located in a virgin area of the Georgetown quadrangle in Colorado, has constructed a working and ore delivery tunnel almost to the mother lode. This large vein is ten to forty feet wide and will be opened to 300 feet by the tunnel and to as much as 1,800 feet by the drift work that is planned. Gold and silver are the predominant metals.

The work was started several years ago by the Criley Bros., George, Con and Hal, who have also proven eleven intersecting cross veins varying in width from two to ten feet. The organization was effected to provide for equipment and more extensive development and is being sponsored by Denver men, with the exception

KENNECOTT COPPER AND SUBSIDIARIES DO BETTER

The report of the Kennecott Copper Corporation and subsidiaries for the year ended December, 1933, shows a net profit of \$2,307,734, after depreciation, taxes, shut-down expense and minority interest, etc., but before depletion. This compares with a net loss in 1932 of \$7,102,198, after depreciation, taxes, minority interest and a write-off of \$1,576,963 for current metal inventories and fabricating plants to market prices at December 31, 1932, but before depletion.

Current assets as of December 31, 1933, including \$21,295,507 cash and United States government securities at costs, amounted to \$54,848,668; and current liabilities, including reserves for taxes, were \$5,382,749. At the close of 1932 the company had current assets of \$36,091,150, including cash and United States government securities at cost of \$14,740,238; and current liabilities, including reserve for taxes, of \$3,128,825.

According to E. T. Stannard, president, 120 Broadway, New York City, copper production from all the properties and subsidiaries of Kennecott in Utah, Nevada, Arizona, New Mexico, Chile and Alaska, totaled 312,988,349 pounds. Deliveries against sales in the same period were 329,885,410 pounds. The average price received for electrolytic copper actually sold was 7.464 cents per pound.

The Utah Copper Company, Kennecott's largest subsidiary, reports a net income of \$928,275 for 1933, after deductions for expenses, credit for indirect earnings and obsolescence of retired property, etc., but before depletion. This is equal to 57 cents a share, \$10 par value. For 1932, Utah Copper reported a deficit of \$2,469,704 before depletion.

The company mined 3,521,425 tons of ore in 1933 as compared with 3,169,411 tons in 1932. The cost of mining was 41.06 cents a ton, before depreciation but including stripping and suspense charges. The cost of actual mining, exclusive of stripping, was 24.07 cents a ton, of which 12.46 cents represented direct mining costs, with fixed and general charges of 11.61 cents.

The gross revenue from the sales of copper, gold and silver during 1933 totaled \$5,535,667, copper sales accounting for \$4,445,865 and gold for \$961,959. Operating expenses amounted to \$5,261,539.

Production for the year, according to D. C. Jackling, president, amounted to 69,462,784 pounds of refined marketable copper, the cost of which, before federal income tax and depletion but including all other taxes together with all fixed and general expense and accounting charges for depreciation of plant and equipment and after crediting the value of gold, silver and miscellaneous earnings, was 6.455 cents per pound. The cost per pound of copper produced in 1932 was 8.48 cents.

The inventory of unsold copper on hand as of December 31, 1932, was carried at 5 cents per pound and the production of copper for the current year which was unsold and on hand as of December 31, 1933, was carried at 6.046 cents per pound, the latter figure being the cost of production before depreciation. The meagre demand for copper, which continued as an average matter through the year, necessitated operations at less than one-fifth of capacity, Jackling said.

During the last six months of 1933, Utah Copper operated steadily giving 15 to 17 days of employment per month, a system of staggering the labor. The first

part of the year, however, operations were on only a part time basis. The mine is now operating at about 25 per cent capacity, producing 10,200 tons of 1 per cent copper daily.

Kennecott Copper, during 1933, acquired full control of the Nevada Consolidated Copper Company, with properties in Nevada, Arizona and New Mexico. The combined production of this company was 67,140,754 pounds of copper.

Kennecott also controls the Braden Copper Company, in Chile. The Braden smelter produced 175,285,214 pounds of copper in 1933. The mill treated 4,719,420 tons of ore, with a copper content of 2.066 per cent, and recovered 86.95 per cent of the copper in the form of concentrates.

GOLDEN FLEECE-HIWASSEE MINES ARE REOPENING

The news that the world famous Golden Fleece mine on Hotchkiss Mountain, near Lake City, Colorado, and its almost as well known neighbor, the Ilma-Hiwassee, are to be reopened by Texas capital, has been received with more genuine optimism locally than any happening in mining that has marked the past decade. The belief is thoroughly grounded among the citizens of San Juan county that these mines are capable of more than duplicating their past production of three million dollars in gold and silver.

Control of the properties has been acquired by the Monitor Gold Mining Company, with headquarters at Amarillo, Texas, J. F. Bromert and R. J. Booth of that city are leaders in the organization, and W. L. Soens of Durango, Colorado, is active manager. Work is to be well underway by the first of May. A 1,400-horsepower heavy duty Diesel oil engine will be used to furnish power and lights for the mines and the mill. Arrangements will be made for the latest ore reduction and saving methods in the mill. Concurrently, a comprehensive program of deeper and more extensive development of the entire vein system will be carried on.

Production has been largely from the Golden Fleece mine which, during its active period, was the talk of the mining world because of the then unparalleled richness of its ore. When the big strike was first made by Charley Davis, actually engaged on what was meant to be his last shift on the lease, the first assays showed values of \$7,000 to \$52,000 in gold and silver. In taking out the first shipment, feverishly and hurriedly done to liquidate accumulated debts and meet his bills, Davis mined one piece of ore, 37x20x14 inches and weighing 485 pounds, which brought \$1697.50, while the total received for the 12-ton car marking the first shipment paid him \$19,130.42 net. For ten years following the Golden Fleece maintained its record for shipping the richest ore that went to market and during that time paid fifty consecutive monthly dividends of 2 to 5 cents a share on a capitalization of 600,000 shares.

While there is confidence among those who are best acquainted with the Golden Fleece and Ilma-Hiwassee veins that large bodies of rich ore are still to be opened in the properties, the work planned by the Monitor Gold Mining Company is based on the amount of mill ore blocked out in the mines and on the dumps. Nearly all of this ore was opened by the former operators during the extraction of the rich production referred to and will be responsive to modern mill methods to be installed by the Monitor company.

Prominent mining engineers place the net values of ore blocked out and in the dumps on the Golden Fleece at approximately three million dollars and on the Ilma-Hiwassee group at \$1,900,000, with the values ranging between \$8 and \$14 a ton in gold and silver, before the recent government increases in the values of these two metals. The company has acquired other properties on Hotchkiss Mountain, including the General Sherman mine.

ORIENTAL MINE AT ALLEGHANY TO BEGIN STOPPING MAY 1

The Oriental Gold Star Mines, Inc., recently shipped \$38,460 worth of gold bullion representing virtually a month's production of its Oriental Gold Star mine in the Alleghany district of Sierra county, California. According to B. C. Austin of the Mills Building, San Francisco, company engineer, the output was a substantial increase over production earlier in the year when efforts were directed principally along development lines.

The mine has been producing since last October, following a rich strike. Production to date has been from development work only and actual stopping will probably not begin before May. The mill is running two shifts a day and will then go on a three-shift basis.

In addition to the ore now being mined, a large tonnage of low-grade commercial ore is being developed in an area which has been diamond drilled and then partially opened by crosscuts and drifts on the 1,300-foot level.

B. & M. REPORTS BETTER VALUES AS SHAFT GOES DEEPER

A program of extensive development is being laid out for the B. & M. Mining Company, operating on the Fremont Grant, near Cathey, Mariposa county, California. C. Colcock Jones, consulting mining engineer of 725 South Figueroa Street, Los Angeles, has been retained as engineer in charge of the work and is on the ground making an exhaustive examination.

The syndicate holds 640 acres and from assays being made in the No. 2 shaft, now down to 45 feet, may equal and probably exceed the famous Princeton mine, which produced better than six million dollars. E. J. Barrett and F. A. Mansfield, the principal partners, report that assays have run from \$42 to as high as \$988.72 on the last sample submitted and on which returns are available. A shipment of the highgrade has been sent to the smelter. The syndicate has an office at 539 Roosevelt Building. Mansfield is mine superintendent.

MAGMA SHOWS PROFIT FROM 1933 MINING AND SMELTING

For the year ended December 31, 1933, Magma Copper Company and subsidiaries report a profit of \$5,770 after taxes, depreciation and other charges, but before depletion, compared with a net loss of \$556,627, before depletion, in 1932. The profit in 1933 is equal to one cent a share on its stock.

Current assets as of December 31, 1933, including \$3,336,802 cash, U. S. government bonds and other marketable securities, at cost, were \$4,721,431, and current liabilities \$179,209. At the end of the preceding year current assets amounted to \$4,777,950 and current liabilities to \$319,170.

Magma was on a production basis for only six months of the year, all work done during the last half of the year being of

The Manufacturers Tell Us

Improved Respirators—A line of new, improved respirators for protecting workers against inhaling lead, silica and similar dusts, and spray mists, has been developed by the Pulmosan Safety Equipment Corporation, after experiments and tests with the aid of dust control engineers. The new line is called the "M" series.

Among the improvements reported by the manufacturers are: An increased filter size, a direct breathing intake and coarser mesh wire screens, to permit easier breathing. Screens are bound with aluminum for strength and safety. A gas mask type exhaust valve is used, that is positive in action. A change from elastic headbands to all-rubber adjustable headbands for longer wear. Headbands are attached to a swivel joint that allows free movement of the head without respirator leaving the face. New construction prevents obstruction of wearer's vision. Goggles can be worn without interference. Knitted fabric covers the rubber face cushion to add comfort. Only tested filters are used.

Full details are provided in a circular issued by Pulmosan Safety Equipment Corporation, 176 Johnson St., Brooklyn, New York.

New Water Strainer is Self Cleaning—The Phillips strainer embodies a backwashing feature by means of which the strainer is cleaned while in operation without removing the strainer baskets. This strainer, which is manufactured by Fren Engineering Company, 310 South Michigan Avenue, Chicago, Illinois, comprises two baskets placed at 90 degree angles to each other, and through which the flow of water is controlled by two swing gate valves. The strainer basket is a cylinder, perforated to give the desired screen opening, the top and bottom of the basket being open.

Under normal operation both gate valves are in the position shown in the drawing. Water enters at the bottom as shown and divides, half passing through each strainer basket. To clean one of the baskets the bottom gate valve is closed, cutting off the inlet water to that basket. The by-pass valve on that basket is then opened, with the result that clean water from the discharge of the other strainer basket is forced through the first mentioned strainer basket in the reverse direction, flushing the dirt out of the baskets and through the by-pass valve. The by-pass valve is then closed and the gate opened. The frequency of backwashing is determined by the amount of foreign matter in the water being strained.

The swinging gate valves consist of a bronze disc, which is held against the bronze seat by the line pressure of the water. The disc is carried on a stainless

steel shaft which is held in live rubber bushings with the result that the shaft is free to shift its center to allow the swinging gate to seat perfectly.

The strainer baskets are made of brass with bronze rings at top and bottom. The baskets are provided with 1/8-inch to 3/8-inch or larger perforations as desired. The straining area in the baskets is considerably in excess of the area of the inlet. The strainer housing is made of cast iron for water pressures below 125 pounds per square inch, and in cast steel up to pressures of 200 pounds per square inch.

The manufacturers state that the Phillips strainer is adapted for cleaning the water used in general mine service, as well as the water required by the power plant.

Spectacular Contest Introduces New Drifter—The new Garner-Denver D-89 Selfeed drifter made its official bow in a spectacular drilling contest in which 53 two-man teams competed. The contest was held at Indio, California, and the competing teams were made up of workers on the Metropolitan Water District's Colorado River Aqueduct. Each team was required to set up, connect hoses, drill five and one-half feet of two and one-half inch bore hole in stiff rock, and then tear down—total time being taken.

The fastest drilling time on the five and one-half foot hole was three and a half minutes, made with the Gardner-Denver D-89 Selfeed drifter by Charles Carlson and Robert Banovich of the Metropolitan Water District's Wide Canon Camp. No competitive drill was under four minutes.

Five of the 53 teams finished under six minutes over-all time, and four out of these five teams were equipped with the Gardner-Denver Selfeeds.

The success of the drifter is attributed by company officials to the fact that the drills embody a self-feeding principle never before available in rock drills. The rate of feed is in step with the high speed with which the D-89 bites into the rock, it is explained, this synchronized action keeping the machine from feeding too fast or too slow. Thus the drill is held constantly in proper striking position. The company says that one of the outstanding advantages is that the new design permits an inexperienced man to drill as rapidly as an experienced one.

BOULDER DAM GENERATORS

TO BE WORLD'S LARGEST

Boulder Dam's electric generators will be the world's largest, both electrically and physically, it has been announced by the General Electric Company, to whom the contract for the first two units has been awarded by the United States Bureau of Reclamation, to be leased to and operated by the city of Los Angeles. Work is about to be started on the construction of the units at the Schenectady, New York, plant of the company, with the first unit scheduled for completed installation early in 1935 and the other later that year.

The generators are rated 82,500 kilovolt-amperes, unity power factor, three-phase, and are designed for 50-cycle generator at 150 r.p.m. and 13,800 volts or 60-cycle generation at 180 rpm. and 16,500 volts.

The 82,500-kv-a. Boulder Dam unit exceeds in capacity any other generator now in operation. Other large generators include the U. S. S. R. 77,500-kv-a. Niagara Falls 65,000-kv-a., Ariel 56,250-kv-a., Snier Falls 47,000-kv-a., and Conowingo 40,000-kv-a. units.

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FOR SALE OR LEASE

EULALIO GUTIERREZ offers for sale or lease 25 mines. Production shows splendid values in gold, silver and lead. Situated in the mineral district of Concepcion del Oro y Mazapil, Zacatecas. Make your offers. Ramos Arizpe 117, Saltillo, Coahuila, Mexico. 6-30

FOR SALE. Quicksilver property, partially developed; 267 acres patented. Ten miles to railroad, seven miles paved. Considerable equipment. Electric power. Satisfactory working conditions all year. For further information address Box B-14, The Mining Journal, Phoenix, Arizona. 4f

WANTED. PARTNER to equip Silver-Lead mine for production. High-grade ore. Five thousand required. F. O. Bostwick, Banamichi, Sonora, Mexico. 4-30

MACHINERY WANTED

LANE MILL wanted. State condition, size and selling price. Address Box L-5, The Mining Journal, Phoenix, Arizona. 4-30

POSITIONS OPEN

R-4347-S ASSAYER, experienced on assays of mine concentrates containing lead, zinc, gold and silver. Must be well recommended as to accuracy and reliability. Must be single, account of no accommodations for family. Salary \$180 a month, less \$1.25 a day for board. Location, Nevada.

R-4277-S ENGINEER, 30-45 years old, prefer technical graduate in mechanical or mining engineering with several years experience on gold dredging operations for assistant superintendent. Must speak Spanish. Salary \$350 a month and found. 2 yr. contract. Apply by letter with references. Location, Tropics.

R-4344-S MINE SUPERINTENDENT, experienced for silver mine now in operation. Salary open. Would prefer to deal with men who could handle the job on small salary and shares in the company. Apply by letter. Headquarters, San Francisco. Location, Arizona.

ENGINEERING SOCIETIES EMPLOYMENT SERVICE

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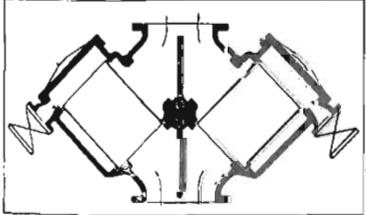
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EXPLORATION DEPARTMENT
Prospects of Merit Financed
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Supt. in Charge of Operations
Tonopah, Nevada

WANTED

Contractor with shovels, trucks and equipment to work placer project on yardage or royalty basis. Approximately 500,000 yards to be moved.

The Thomas J. Crowe Corporation
Pinos Altos, N. M.



Both gates are open in normal operation. Backwashing is accomplished by closing bottom swinging gate valve on the strainer basket to be cleaned and opening corresponding discharge valve.

has operated for a number of years. More recently Los Angeles parties have become interested in the mine and are directing the development.

The Victoria mine, south of Ajo, Arizona, being reopened by Parker I. Woodman, has been cleaned out to the 300 level. The workings, however, were so filled with gases that it has been necessary to put in ventilating equipment, which is now being done. The Victoria is an old Spanish mine which has extensive workings that have been hidden for many years.

CALIFORNIA

The Siskiyou Exploration Company is ready for the immediate purchase and installation of a power shovel of one-third to one-half yard capacity and a 20-horsepower Caterpillar tractor. A shovel with a working radius of 360 degrees, highly mobile and preferably of the Caterpillar type is wanted. The equipment is for use on the company's property on the Klamath River at Happy Camp, California. E. M. Elliott, 22 North Euclid Avenue, Pasadena, is president.

The Cardinal Mining Company, headed by Bernard Smith, 52 Wall Street, New York City, is giving the Wilshire gold mine at Bishop, California, a thorough sampling before going ahead with the rebuilding of a mill. The former plant was of 150-ton capacity but burned to the ground just as it was about ready to begin work. H. C. Carlisle, 315 Montgomery Street, San Francisco, is consulting engineer for the owners.

The Economy Milling and Mining Company, 5700 Santa Fe Avenue, Los Angeles, has taken a lease and option on property in San Diego county, California, and 12 miles southeast of Warner Springs. A Buchanan mill is being installed and is expected to be in operation within 10 days. The property had lain idle a number of years because people holding it had neither capital nor the knowledge necessary to operate it. When Frank L. Buchanan visited the property he discovered the possibility of launching a low-grade milling proposition. Sampling indicates that the whole mass has a value of \$5 a ton in gold from grass-roots on down. There are 100 acres involved and ample water from springs that flow the year round.

The demand for custom milling in the Nevada City area has increased to the point where the Queen Lil mill has gone on a 24-hour operating schedule instead of the 16 hours a day the plant had been working. The West Mines Corporation operated the mill primarily to treat its own ores. It has 10 stamps, followed by flotation and concentrating tables. According to Orlando McCraney of Nevada City, president, plans are being made to diamond drill north of the present workings on the 1,900 level of the Canada Hill mine. At the Hussey mine they have sunk a shaft 70 feet below the present stoping level and will soon start drifting on the vein from the new low level.

R. E. Anderson of Marysville is moving between 500 and 600 yards of tailings daily at the Champion mine at Nevada City. One shift a day is employed.

A. W. Hoge of the Hoge Development Company at Nevada City, California, reports the discovery of a new ledge in the footwall vein on the 1,000 level. Miners are crosscutting south and report the showing as good. The 75-ton mill and the

mine are each working two shifts a day, milling ore coming from the 600 and 700 levels as well as the 1,000 level. Twenty-five men are employed.

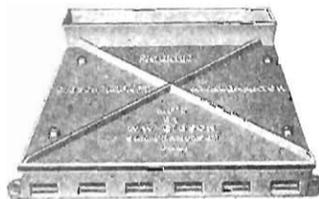
The Bradley Mining Company has 18 men working on the Boss mine at Sweetland, with C. J. Lyser as superintendent of operations. The vein is strong with excellent values and more than a hundred tons of ore are being shipped each month to Seattle, Washington, where it is being milled by special method.

J. Witt and associates of San Francisco have optioned the Comet mine near San Andreas, California, from Mrs. Reed, local resident. Witt is temporarily at San Andreas and has engaged S. M. Levy, once manager for the Calaveras Copper Company, as superintendent of operations. Eight men have been employed.

The Canyon Creek Placers, Ltd., is moving close to 10,000 yards of material daily on its two placer properties near Dedrick, California. Five No. 6 giants are being operated. This is the largest hydraulic mine operation in the state, and its operations are now at capacity of the equipment they installed. The water system embraces more than 26,000 feet of flumes and ditches, with 2,600 feet of 30-inch pipe extending from the reservoir to the operating location. The storage reservoir has capacity for a million gallons of water. George H. Bergin and H. G. Kenworthy, both of Weaverville, are general manager and engineer, respectively.

Dragline equipment has been added to the sluice box and centrifugal pumping apparatus at the McDonald tailings lease below the North Star mine. The tailings

The Gibson Impact Amalgamator

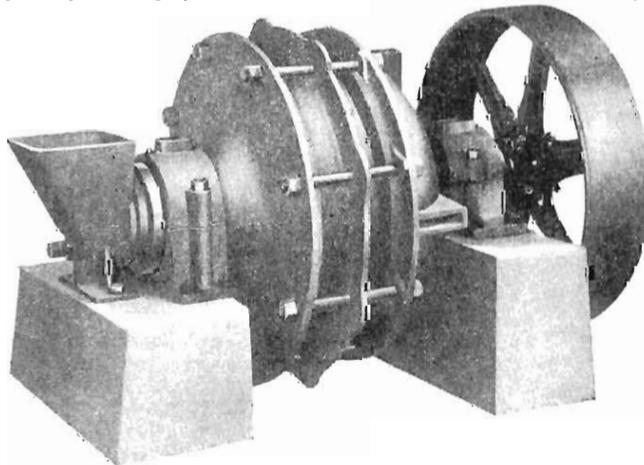


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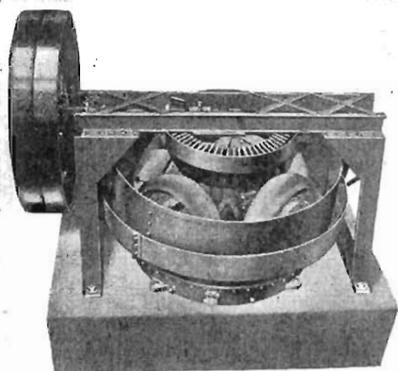
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were accumulated from the original operations on the old North Star mine and are being operated by C. I. Cook, the superintendent, E. W. Ellis, A. B. Campbell and C. H. Carmichael, all experienced Grass Valley mining men. The material has to be reground in a ball mill, which is working three shifts a day. They are reclaiming about \$3 a ton.

The second Hadsel mill of the Beebe Gold Mining Company at Georgetown, California, has begun crushing ore. Capacity is now about 400 tons in 24 hours. The initial unit had been taking 250 tons of ore a day, 55 tons being hauled from the Alpine mine and the remainder coming from the Beebe and Eureka ledges. Each Hadsel mill is equipped with 12 flotation units. A 24x36 jaw crusher is being used for preliminary crushing and a Blake crusher for regrinding. The Beebe employs 48 men with Byron E. Rowe as general superintendent. The Alpine is working one shift with 11 employes and Ed. Manning is mine foreman.

David Barnes, formerly of Seattle, and associates have opened an eight-foot ledge of good ore at 275 feet in the Bright Hope mine a mile northeast of Georgetown, California. Two other ledges in the mine are already under development. The latest discovery was made while opening an 800-foot tunnel, driven 40 years ago to tap the shaft ledge.

A run of ore is being made at the Raymond mine at Altaville, California, using a two-stamp mill that can take 12 tons of ore in 24 hours. Mining was resumed a few weeks ago, following a short shut down after Fred Spires, one of the six partners, lost his life by carbon monoxide poisoning. The operators are F. C. and J. B. Heath, formerly of Ketchikan, Alaska; Carl Howe of Vallicita; Norman Cheney of Stockton, Ted Wright of Modesto and F. M. Raymond of Altaville. Raymond and F. C. Heath own the property. They are working on the 200 level.

The Drumar Mining Company, Ltd., has increased its operations on the Donnie Lee mine at Oroville, California, to 12 men working day and night shifts. By mid-summer they hope to be able to employ the third shift. The night crew blasts and drills the gravel. During the day it is hoisted in quarter-yard buckets and elevated to a 40-foot tower where an automatic apron dumps the gravel into a chute and into the Huelsdonk concentrator. Gasoline furnishes power. The company is leasing from Edward Bennett of Oakland. V. D. Martin, manager, graduated from the University of Kansas in 1924 and took post work at the University of California. The intervening years he has been engaged in mine explorations in South America. The company is interested in another tract east of Oroville known as the Pilot mine. The Pilot ground covers 140 acres. It is planned to begin work there in about three months.

The Walker Mining Company reports a net loss for 1933 of \$38,424, after deductions for expenses and taxes. For 1932 the company reported a net loss of \$61,195. The company's mine at Walkermine, California, did not operate during the year. Control is held by the International Smelting Company and H. A. Geisendorfer, 810 Kearns Building, Salt Lake City, Utah, is general manager.

A gold ore strike is reported from the Bullion mine at Grass Valley, California, being operated by the Grass Valley Bullion Mines, Inc., C. A. Brockington, mine superintendent. The ore assays \$35 to \$40 and is in a shallow winze below the 1,500 level. The extent of the oreshoot as far

as investigated together with the geology of the district hint of important development.

Hayden F. Goss, 165 Eleventh Street, Richmond, California, and associates are preparing the Clark property a half mile east of Georgetown for operations. A trommel with a capacity of 250 yards in eight hours is on the ground and a tractor and two-yard automatic scraper will be used to bring the dirt to a 14x2-foot feeder to the trommel. Eight feet of regular sluice boxes and 600 feet of tailrace are being provided. The oversize will be taken care of with a 26-foot stacker belt. Water has been purchased from the Georgetown Divide Water Company and will be stored in a 400,000-gallon reservoir, now under construction. Dr. H. G. Ford, also of Richmond, and George R. Swift, mining man of Georgetown, are also interested in the project.

While waiting for quicksilver to hit a price that will permit operating the \$250,000 plant at the New Idria mines, at Idria, California, a half dozen men are sluicing from the foundations of the original reduction works there. Production is averaging 50 flasks per month. They have dug a pit 75 feet deep beneath the old condensers and are hoisting the pay dirt to the sluices above. William R. Moorehead, 1139 Merchants Exchange Building, San Francisco, is head of the company.

The remodeling of the reduction plant of the Leviathan Sulphur Company at Markleeville, California, is progressing rapidly, and when completed will have capacity for treating four tons of ore in an hour and 40 minutes. Concrete is being poured for the large retort in which the sulphur ore will be reduced. After it is taken from the mine, the ore is sent to a steam retort and with a pressure of 70 pounds the sulphur is separated from foreign matter. When in full operation the mine and reduction plant will employ 50 men. H. Kenyon Burch, 1010 Richfield Building, Los Angeles, is president.

Effort is being made to reopen property on Ramshorn Creek, four miles from Goodyear Bar, California, and owned by the St. Charles Mill Mining Company. The property has been idle since 1927, after 3,000 feet of bedrock tunnel had been driven to open the channel beyond the faulted area. Water trouble is said to have forced a shut down at that time. Comparatively little of the channel has been mined. Frank R. Wehe, attorney 74 New Montgomery Street, San Francisco, is president.

The Bagdad Metals Extraction Corporation at Barstow, California, placed its recovery plant in operation on the Bagdad Chase tailings on April 15. The plant is the old cyanide mill a half mile northwest of town that had long been a landmark, and would set an old timer guessing as to its original identity. The process of recovery is one invented by Ed. Eisenhauer, Phillips Building, Los Angeles, for leaching the gold from the copper silicates. He claims a recovery of 90 per cent of the gold value and 96 per cent of the copper values. The tailings are reported to run about \$6 in gold, 12 pounds of copper and to carry a little silver. The set-up includes a pebble mill that can take 300 tons of ore a day, driven by a 100-horsepower motor; three cyanide tanks, four Pachuca tanks and the huge bin from which the mill is being fed. The directors of the firm are: Elliott Sparling, president; S. P. Greenwood, vice-president; S.

A. Greenwood, secretary-treasurer; Boyd C. Johnson, assistant secretary-treasurer; Ed. LeBaron, J. Leland and George Hoffman. F. J. Roberts was in charge of mill construction. Eventually, custom ores will be received in 50-50 proportion to the tailings milled. It is probable that the owners of the Bagdad Chase mine will do some work underground on the strength of milling their ores in this plant.

Secretary Joseph B. Smith of the Argonaut Mining Company, Ltd., 1414 Humboldt Bank Building, San Francisco, reports net earnings for the first quarter of the year as follows: March, \$36,899; February, \$20,866, and January, \$23,994. This is before depletion and depreciation, and is the equivalent of 48 cents a share. Total net earnings for 1933 amounted to \$1 a share. A part of the March increase was dividends received amounting to around \$3,000, but the major lift in profits is credited to the new ore at the 5,700-foot level. The company is milling between 250 and 300 tons of ore a day. Alex. F. Ross of Jackson, California, is general superintendent.

The San Antonio Gold Mines, Inc., George W. Gallaher, manager, 2122 Palm Street, Bakersfield, California, has started milling in Red Rock Canyon, where a 40-ton mill and three semi-Diesel engines were installed last year. The mine, idle for a number of years, was discovered in 1893 and in the years that followed it is reputed to have produced \$65,000 worth of ore. Not long ago a series of 55 assays was made with a high of \$212 and a low of \$1.68, but the average was \$37.50.

Following the installation of a larger compressor and other mining equipment, two shifts have gone to work at the Buckeye-Pierce mine on the Table Mountain channel. George K. Mutschler, Route 1, Sonora, is superintendent. After careful examinations they have concluded that the tunnel must be driven another 350 feet to reach the objective gravel. It is already in 415 feet. Eight to 10 feet of progress can be made daily.

Frank W. Williams of Graniteville, California, is negotiating finances for the installation of a heavier mill on the Von Humboldt mine in the Alleghany district. This is a gold proposition, producing values from \$34 to \$157 a ton. The veins vary from 18 inches to seven feet. The location is good and there is a good road to the camp.

The West Coast Mining Company, at LaPorte, California, has leased the Suffolk and Riffle, adjacent properties near its West Coast mine. The Suffolk has been equipped and the 2,000-foot tunnel is being cleaned out. The Riffle will be worked through the Suffolk. The West Coast mine covers a mile of virgin channel and has been under development for two years. The 400-foot tunnel is to be driven another 200 feet to the center of the channel. F. B. Burns is head of the company. He expects to be washing gravel before the summer is past.

Wilson & Hutchinson, engineers of Happy Camp, California, have completed their tests on the Siskiyou Exploration Company's holdings on the Klamath River at Happy Camp. The gravel available for working is said to run to the millions of yards and to average 50 cents a yard at the old price for gold. E. M. Elliott, Colorado & Euclid Ave., Pasadena, and associates are backing the project.

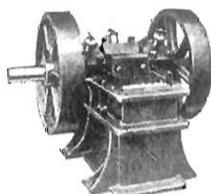
A. P. Linville, 1701 Allston Way, Berkeley, California, expects to start development work on his molybdenum deposit at the Three Sisters mine on the West Walk-

er River, eight miles from Coleville, Mono county. A test shipment of 30 tons is being prepared by hand and will be shipped to San Francisco. According to Linville, three parallel veins from eight inches to two feet wide cross the property. The claims were located by C. C. Coffman.

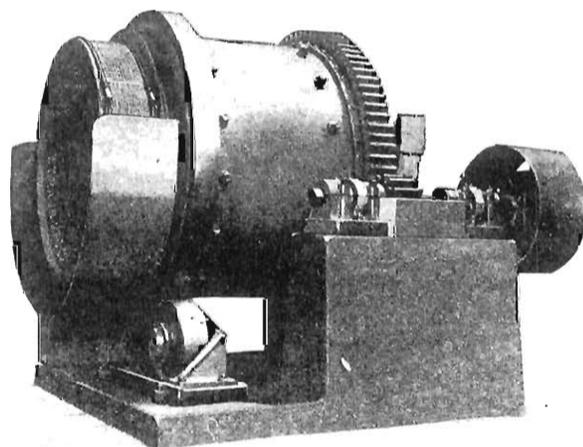
Further development of the Piedmont quartz property in the Salmon River mining district of Siskiyou county, California, is being arranged by Gertrude G. Chick, 1070 Pine Street, San Francisco. The claims are four miles from the King Solomon mine and were discovered 30 years ago by the late James Goforth, an uncle of Mrs. Chick. A 60-foot tunnel has been driven on one of the three veins proven on the property. They vary in width from eight inches to four feet.

The Austin Landes Mining Corporation, a newly organized firm with offices in Hotel Palos Verdes, San Pedro, California, is getting ready to do some mining in the vicinity of Randsburg. Austin Landes, former owner in the South Rand Mining Company and now leasing eight claims owned by that company, is president. H. H. Hurtubis is vice-president and treasurer, and Mrs. Hurtubis is secretary. Several years ago \$8,000 was reported to have been spent on this property, principally in sinking to 75 feet.

Charles J. Stoneham, mining engineer of 610 West Santa Barbara Avenue, Los Angeles, California, has installed a 50-ton extraction plant on Bristol dry lake, in San Bernardino county, near Amboy. Using the liquid amalgam system, recoveries are 80 cents to \$1.50 per ton, and



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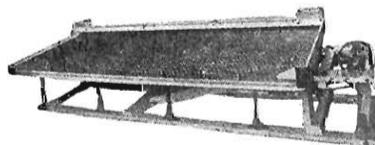
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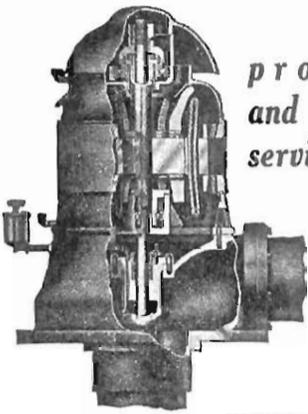
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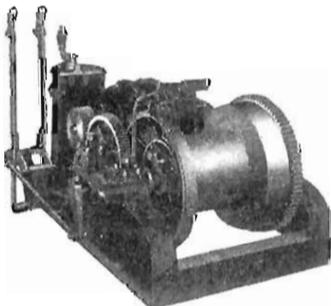
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some adjustments are being made which are conservatively estimated to double extraction. A 25-ton plant, using the same system, is being installed for Stelzer & Brenneman, on Rodgers dry lake, near Muroc, in Kern county. Satisfactory results are expected. Some 30 tests have been made recovering from \$1.25 to \$4.80 a ton. The Muroc plant is scheduled to go into operation May 15.

The West End Chemical Company made a net profit of \$66,945.92 last year, according to a statement just received by the stockholders. The annual report disclosed the fact that the company has \$222,766.99 invested in stocks and bonds. Operations are confined principally to refining borax from Searles Lake, in California.

The International Mining and Milling Company's cyanide plant at Randsburg, California, is taking 50 tons of ore a day since the Diesel plant went into operation. This is capacity. A third Dorr thickener is to be installed and flotation tests are being made. In addition to the production from the King Solomon mines, Superintendent T. E. Finnerty says the reduction plant is handling ore from the Windy and G. B. mines, both good producers. The International has a payroll of more than \$7,000 a month.

The Draper Vein Syndicate, a new California organization in which a number of prominent San Francisco investors are said to be interested, has taken over the Draper group of mines at Soulsbyville, California, and is reopening the mine in a businesslike manner. Frank L. Mitchell of Columbia, California, is in charge as superintendent. A contract has been let for completely rehabilitating the 630-foot shaft, which will include concreting the first 70 feet, installing an electric pump and hoist, new 20-pound steel rails, telephone system throughout the mine, and construction of a hoist building, 40-foot headframe and 50-ton two-compartment bin for ore and waste. The Draper has a large production to its credit, some claiming that it produced one and a quarter million dollars, but it has been idle several years.

John J. Hastings of Jamestown, California, and associates have started gravel mining operations with a dry land dredge at the Hoag placers, three and a half miles southwest of town. The project was launched in mid-April and it was announced that they expected to wash 1,500 cubic yards of gravel daily almost from the start. The deposit of gravel lies beneath an overburden several inches to 1 1/2 feet thick and from 600 to 800 feet wide. It is three-fourths of a mile long and has been proven to be as thick as 75 feet, with values ranging from a few cents up to \$2. Dragline installations is planned for later.

The Church and German gold mines, south of Eldorado, California, have been acquired by R. F. Haffenreffer and associates of the Utah Apex Mining Company, and are being equipped with modern mining and milling machinery. Both mines have been inactive 25 years but if plans go through as now contemplated up to 200 men will be employed. The Church property, located two and a half miles south of town, is opened to 1,500 feet and its production is said to be more than two millions dollars. The German is a smaller property, located three miles south of the Church. The Haffenreffer interests, are already operating the Montezuma and

Nashville mines in California and have resumed work at their Apex mine at Bingham Canyon, Utah. The eastern address is P. O. Drawer No. 3, Bristol, R. I. J. A. Norden, P. O. Box M, Placerville, California, is manager of operations in California.

Representatives of the U. S. Bureau of Mines at Washington, D. C., are in California investigating mineral assets other than gold and silver. Dr. Oliver Bowles of the bureau, while in San Francisco, stated that the government is interested in studying resources, technology, uses and marketing problems of building stone, feldspar, certain varieties of clays, pumice and the diatomaceous beds at Lompoc, California.

A small Buchanan mill is being installed on the Old Glory mines near Warner Springs, San Diego county, California, and adjacent to the Economy Milling and Mining operations. The property is owned and being operated by R. J. Stauch, 8805 Fifth Avenue, Inglewood, and associates, under the engineering direction of Frank L. Buchanan, 5700 Santa Fe Avenue, Los Angeles.

COLORADO

Lester England and associates have started hoisting ore from the Uncle Sam mine on the north slope of Bull Hill in the Cripple Creek district. They are using a gasoline hoist. Five hundred feet of line have already been laid connecting with the Teller County Air Company system and an ore bin has been built. One machine is working at the first level of the mine in ore that is estimated to run .5 ounce gold.

Through April the Golden Cycle mill at Colorado Springs handled an average of 1,226 tons of ore a day. This is an increase of 100 tons a day over February business. Other improvements now in progress will be reflected in the tonnage for the next month or two, with the expectation that within 60 days the mill will be running on 40,000 tons a month. The present rate of milling is 36,000 tons a month, L. G. Carlton, president, stated.

Thomas G. McGrath of the War Dance Mines, Inc., at Idaho Springs, Colorado, reports they are again breaking ore in the War Dance vein, following a 60-day suspension while they repaired a bad cave in the crosscut. A portion of the Silver Dollar claim has been leased to parties who are installing an air compressor, hoist, etc. The War Dance mill is working, some times two shifts a day, on company and custom ores. The mill has just finished a 70-ton run from the Gold Patch mine and the concentrates are being hauled to the local sampler.

D. H. Poole from the Kansas City office of the Royal Charter Mining Company is at Silverton, Colorado, to take up with George R. Pettit, Jr., resident manager, and J. R. Drennan, mine superintendent, the matter of increasing mine production. They have placed an additional shift in the mine, raising the number of mine and mill employes to 27. The new crew will devote most of its time to the production of crude ore. Headquarters is 2200 McGee Street, Kansas City.

The Bushelt Mining Company, promoted by J. I. Shelton and B. S. Bush of Denver, has a dozen men at work on the Delaware mine in the Jamestown district, Colorado. Bush's Denver address is 1836 Niagara Street.

The Manufacturers Tell Us

Coppus Appoints New Representative—Due to a marked increase in business in the southwestern territory, Coppus Engineering Corporation of Worcester, Massachusetts, announces the appointment of Lawrence K. Cecil, 1531 East Thirty-Fifth Street, Tulsa, Oklahoma, to handle sales in the Oklahoma and Texas territory. Mr. Cecil will handle the Annis air filters for air compressors and for industrial and ventilating applications.

Variable Speed Drives for Blowers and Pumps—Roots-Connersville Blower Corporation is now supplying some of its blowers, vacuum pumps, and gas pumps connected through a variable speed drive to a constant speed motor. It is pointed out by the manufacturers that, where variations in the volume are required, a unit of this type offers many advantages in the process industries.

In the rotary positive type of machine, the power consumption varies in almost direct proportion to the volume and the pressure being delivered; thus the use of a variable speed arrangement permits this economy to be carried through the entire operating range. Savings of this kind, coupled with the convenience afforded by flexibility as to volume and pressure, account for the growing use of this type of drive.

Variable speed drives have also been used in connection with cycloidal rotary pumps, which are built for heavy-duty service, including the handling of viscous liquids. Full particulars may be secured from Roots-Connersville Blower Corporation, Connersville, Indiana.

Sterling Engines—A Diesel engine with the weight, speed and power of a gasoline engine, with the same range of revolutions, is offered by The Sterling Engine Company, 1250-1270 Niagara Street, Buffalo, New York. It is claimed that this engine has fewer working parts, operates with less structural stresses, and affords the lowest upkeep costs and greatest reliability.

A 12-page bulletin, extensively illustrated, has just been issued, calling attention to outstanding features. In the Sterling crankless Diesel, there have been eliminated many engine parts that ordinarily require attention and replacements. There is no crankshaft, with its multiplicity of bearings. There are three main shaft bearings, oiled under pressure, and the use of a straight shaft, without crank throws and bends, avoids torsional vibrations and gives added strength.

The company states that the principle of the engine is not new for engines of this design have been working as gas engines for many years. It only remained to convert the well-known principles into a Diesel engine.

Insulation Problems—"High Temperature Insulation" is the title of a lecture prepared by the Johns-Manville engineering department, and used each year by schools of mechanical, chemical, metallurgical and ceramic engineering throughout the country.

This lecture comprises a short review of the principles of heat transfer; a discussion of the theory and practice of conductivity values of insulation and refractory insulation in boilers, kilns, oil stills, furnaces, regenerators and other typical industrial equipment operated at high temperatures. A standard formula for heat

transfer by conduction and a description of a method of determining heat flow through furnace walls are also included.

Reprints in the form of 32-page pamphlets have been printed by Johns-Manville, 22 East Fortieth Street, New York City, and are available to those interested in the subject.

Ball and Impact Mills—The El Dorado ball and impact mills are featured in a leaflet issued by Greenfield and McSpadden, 1835 East 62nd Street, Los Angeles, California, manufacturers of El Dorado milling equipment.

The El Dorado ball mill is made in one size only, in the belief that it is better to add units to give greater capacity. The mill is designed to reduce to 40 mesh from eight to 13 tons in 24 hours, using three horsepower for running and five horsepower for starting. Races are made of Duroloid steel and are interchangeable. The 17 manganese steel balls are four inches in diameter. The total weight of the mill is 1,065 pounds, with the heaviest part dissembled, 234 pounds.

The El Dorado impact mill was designed for large tonnage at a small price. It will grind to 40 mesh from 35 to 50 tons per 24 hours, using dry grinding only. The total weight of mill, including piping, cyclone separator, etc., is 875 pounds. The heaviest piece, the base upon which the mill is mounted, weighs 223 pounds. This mill requires from 5 to 7 horsepower to operate.

Other products manufactured by this same company, and described in the same leaflet, include the El Dorado crusher, rolls, concentrating tables and accessories.

FIRST LOS ANGELES DIESEL SHOW PROVES BIG SUCCESS

That Diesel power is here to stay was proved by the interest displayed at the first annual Diesel Show, recently held in the buildings of the Hemphill Diesel Engineering Schools of Los Angeles, California, when approximately 60,000 people thronged the show and bought \$150,000 worth of engines and equipment. Sponsored by Ralph Hemphill, president of the Hemphill Diesel Schools, and manufacturer of Diesel engines and equipment, the show broke all existing records for attendance and sales.

In commenting on the show and its influence in Diesel advancement, Mr. Hemphill speaks enthusiastically of the strides made in the development of the Diesel engine and predicts a great future for this type of power.

"The sensational world-wide demand for Diesels has created the new industrial giant of the century. Spreading to all industries in every land, the rise of Diesels heralds the dawn of a new day in world progress and opportunity. Diesels present the open road to bigger things—and men of ambition who learn Diesels now, are on the road to success and bigger pay."

The Hemphill Diesel Engineering Schools are said to be the original Diesel Training Schools in America and are located at Los Angeles, Seattle, and Vancouver, B. C., providing a complete school course or a combination home study theory and practical school course in Diesel Engineering. The school maintains an efficient Diesel employment service which is of value to the mining industry when in need of experienced men. Latest literature and complete information can be obtained by writing the Hemphill Diesel Engineering Schools at any one of the cities shown above.

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6¢ per word for the first insertion and 4¢ per word for subsequent insertions, minimum price \$1.00. Box number counts for 10 words to cover cost of forwarding replies. If desired in larger type and displayed, \$2.50 per inch per insertion.

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R-4360-S MINING ENGINEER, technical graduate. 30-35 years old, preferably single, for assistant manager of large property. Should have wide range of experience in metal mining, lead-silver-zinc. Speak fluent Spanish. Three-year contract. Salary open. Altitude 13,570 ft. Apply by letter with references and photo. Location, South America.

R-4382-S MINING ENGINEER, technical graduate, with some experience in Mexico so that he speaks Spanish and has active passport, for shift boss or engineering work. Salary \$175-\$200 a month with quarters. Permanent opportunity. Apply by letter. Location, Mexico.

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capacity of 300 tons daily. The mill is now handling 250 tons daily, the ore coming from company owned mines and from lessees in the district. Plans are now being considered by the Gold Standard, Earl F. Nicman, general manager, Box 632, Kingman, Arizona, for increasing the plant capacity. The Portland mine is held under bond and lease by a Texas group, headed by James A. Wood of Dallas. Mine development is directed by Clyde M. Becker, geologist, formerly of Oklahoma.

In his annual report William Koerner, general manager of **Magma Copper Company**, Superior, Arizona, makes reference to the encouraging results obtained from a drill hole that cut the ore body at the elevation of the 3,900-foot level, and also to the 31 winze being sunk to check this result. Since the date of Mr. Koerner's report the winze has been completed and a crosscut driven across the vein on the 4,000 level from this winze. He states that this crosscut shows the vein to be 44.8 feet wide at this point and to carry for this distance the following average values: Copper 3.73 per cent, silver 0.34 ounce, gold 0.006 ounce per ton. When this ore is extracted a narrower width of higher grade ore will be mined.

In a recent decision Federal Judge Fred C. Jacobs refused to declare the **National Gold Corporation** of Prescott, Arizona, as insolvent, and further ruled that the creditors' claims and stockholders' interests should stand as reported by the trustee with few exceptions. W. W. Linesba, Box 432, Prescott, president of the company, states that a reorganization plan will be presented June 6, one which he believes will be satisfactory to creditors and stockholders and which will assure the resumption of operations at an early date. **National Gold** was forced to cease operations in 1934 when drought conditions created a water shortage for the mill. The property is equipped with a 250-ton mill.

The **Morning Glory** and **High Grade** gold claims, belonging to George Grimes of Payson, Arizona, have been leased to W. D. Boardman of Payson. A 50-foot shaft has been cleared of water and ore is being taken out. These properties are east of the Verde, near White Mountain, about 12 miles from Payson. The low-grade ore is said to assay about \$30 per ton, while high-grade runs over \$100 per ton.

The **Snell Mining Company** of Miami, Florida, has purchased the old Grand Prize mine from Wm. Craig and Walter Lovelady of Payson, Arizona. The shaft, over 125 feet deep, is being cleaned out and a small mill installed. The road to the mine has been cleared to connect with the Pine-Payson highway, about a mile below the East Verde bridge. It has been about 34 years since the Grand Prize was worked, and the shaft has caved and partially filled with water. At present a crew of four men is employed under the direction of Tom J. Russell, manager, Tonto Basin, Arizona.

It is reported that the **Bullion Gold Mining Company**, Prescott, Arizona, has completed negotiations for the acquisition of the old Climax gold mine, located 14 miles south of Prescott in the Hassayampa district. The Climax gained fame some forty years ago due to very rich ore, although the bulk of production has been from milling ore of \$30 a ton value. Recently the mine has been under lease to George Schwabland, who has now become associated with Bullion Gold. It is expected that mining and milling will be resumed by the first of June. Bullion Gold is

headed by C. V. Riccardi, 1032 Bank of America Building, San Diego, California. Associated with him are J. E. Russell, mining attorney, and Henry Blachford, both of Prescott.

CALIFORNIA

The **General Mining Company**, organized by James G. Pierce of Detroit, Michigan, and associates, has taken over the Ambrose Madden property at Alleghany, California. R. E. Covert, mining man of San Francisco and who operated a property near Blythe some years ago, is vice-president; and Carl G. Genter is secretary. A truckload of tools and equipment has been taken to the mine where a small crew is already at work. Like all Alleghany properties, values occur in streaks and pockets in the ledges. Mr. Madden is said to have shipped 25 pounds of gold ore to Selby from one pocket alone that returned \$1,466 at the old price for gold.

The Tyler Bros., Grove L. and George C., expect to add cyanide tanks to the 40-ton mill at the **Sierra Vista** mine near Bishop, California. They leased this property a few months ago, sub-leased sections of the mine and plan to operate the mill themselves on ore produced from the leases and on custom ores from nearby mines. Among the new equipment that has recently been installed are a classifier, pump, flotation, bins, generator, etc. Fred Henderson has charge of mechanical work.

The **United States Aluminum-Silica Point Mining Company** will begin construction of a new plant at Sam Dimas, California, this summer, according to John H. Stratton, executive vice-president and general manager, 325 Empire Building, Milwaukee, Wisconsin. Plans call for a plant costing in the neighborhood of \$65,000, and for one that will pulverize to 200 to 300 mesh. Construction is to start in either August or September. Shipments will be made in dry form, from Long Beach. This company is owned by the same people who own and operate the North American Consolidated Mining Company, whose placer mines are located at Deer Lodge, Montana.

Duleke, Inc., which recently resumed work at Groveland, California, is working both its mine and mill on a one-shift basis. Edgar W. Smith is general superintendent and C. H. Sebenius is mill superintendent. The milling plant consists of an 8x12 jaw crusher; a Marcy ball mill of 25 to 30-ton daily capacity, operated by a 60-horsepower Holt engine; a Dorr classifier and Kraut flotation cells.

Preparations are being made to operate the **Ruth Pierce** mine, located four miles from Hornitos, California, under the direction of A. Stevenot, manager of the Tioga Hotel at Merced. The mine is one of the old producers of the district. Work ceased when the old mill burned down a few years ago. The tailings dump has been worked by the cyanide method for the last year or more at a very good profit.

The 50-ton ball mill installed at the **Mother's** mine at Bear Valley, California, has been placed in operation. It is being operated from a Diesel engine. The property has been under extensive development the past year by Phillips B. Dolman, who has a bond and option from the Mariposa Commercial and Mining Company. It was formerly known as the Oyer vein, and later as the Alice Bartlett mine. A new gasoline hoist and other machinery has been installed. The shaft is down 200 feet. Ten men employed.

30
5-15-34

Fifteen men are engaged in construction of a 3,500-foot flume, which will bring water from the Scott River for the mining of the townsite of historic Scott Bar, California. The work is contracted to Jack Gilmore of Redding by the **Scott Bar Mining Company**, John Williams, superintendent. Two huge turbines will be set just below Salmon Hole in the river. It will be several months before construction is completed and actual mining can be started.

George H. Bergin, former superintendent for the **Canyon Placers, Inc.**, at Dedrick, California, has leased a part of the company's property and has a crew of eight men working. His lease includes the old Clarke property, formerly owned by Julia Clarke of Canyon Creek. Since it was purchased by Canyon Placers two years ago a large sum of money has been invested in flumes and ditches to furnish water to work the upper mines near Dedrick.

The **Keysville Sunrise Mining Company** has been granted permission by the Commissioner of Corporations for California to issue 1,200 shares of its 2,500-share capital. Per value is \$10. The directors of the company are James B. Agnew, 225 South Rossmore Avenue, Los Angeles; Charles E. Moore, R. G. Boyd, Philip B. Heckler, Joseph S. A. Smith and Harry Miller.

The Oil and Mining Equipment Company, 2027 Santa Fe Avenue, Los Angeles, has contracted to furnish and install equipment for mine development at the **Top Mast** mine in the Dale mining district, near Twenty Nine Palms, California. The property is owned by E. Garcia Nunez and Joe Block of the Podolor Motor Company, 3700 South Broadway Place, Los Angeles.

L. W. Sockman has obtained a lease on the **Montezuma** silver-lead mine, located south of Big Pine, California. He is the owner of the concentrating plant on the McCain place, east of the river.

R. E. Dillon, district supervision; R. L. McKenzie, superintendent of Riverside county highways; and James L. Davis, managing secretary of the Riverside County Chamber of Commerce, are investigating the possibilities of better roads in the county connecting with the **Gold Crown Mining Company, Ltd.**, cyanide plant, located just south of the Riverside-San Bernardino county line, in the Pinto Basin area. The chamber of commerce has adopted as one of its objectives the obtaining of state aid for improving and surfacing of the Amboy Cutoff, which forms a link between the old Santa Fe trail at Needles and Highway 60 near Whitewater. Such a road will permit the cyanide plant to accommodate mines for 50 miles. The Gold Crown operates four shafts of its own besides handling ore from several other mines. Its water is piped 10 miles from the Dale mining area. Thirty men are employed. George A. Novell, Petroleum Securities Building, Los Angeles, is president of the company.

The City of Sonora, California, has received a 10 per cent royalty from the

Sonora Belle property southwest of town. The shipment was 10 tons of ore that returned \$184.50. J. W. Bates, Box 323, Sonora, and F. E. Martin, the operators, are sinking on a vein 10 to 20 inches wide, of free gold and sulphides. They will continue to ship to Selby until such time as they can build their own reduction works.

The **Belmont Osborn Gold Mining Company** at Angels Camp, California, is starting to reopen new territory below the 200-foot level, center of present operations. According to H. H. Poch, superintendent, the mine has been on production since it was reopened in January of last year. Seven men are working one shift in a drift at the 200 level and provide ore sufficient for the five-stamp mill.

The **Natomas Company** has made formal application to list its 995,820 shares of no par capital stock on the New York Stock Exchange, and it is expected the application will be acted upon at the next meeting of the Exchange's stock list committee. Application entails presentation of the necessary records and statistical data both to the Exchange in New York and the Securities & Exchange Commission at Washington. In view of the company's success in all preliminary negotiations, it is anticipated that formal listing will be forthcoming shortly.

J. F. Springer and Fred S. Owen are installing complete mining and milling equipment on the **Mina Oro Grande** mine near Jamestown, California, and have started sinking a shaft. Two veins have been prospected by shallow openings, with assays reported as high as \$30 in gold. A Straub mill of five to eight-ton capacity will be equipped with amalgamation plates and a Deister concentrating table, and should be in operation by June. A cabin has been built and a four-room house is planned. Mr. Springer is a geologist, graduate of the Royal Academy of Science, in Vienna, and has been identified with mining in various parts of the United States.

Installation of additional equipment for increasing the capacity of the **Carson Hill Gold Mining Corporation's** plant at Melones, California, from 600 to 1,000 tons per day is to be completed by the middle of April, according to President Charles H. Segerstrom of Sonora. A 37-inch Kennedy gearless gyratory crusher was added to the battery of two 12x26-inch Sturtevant jaw crushers in the primary crushing plant, and a new, strong magnetic pulley for removing all tramp iron from the ore was also installed in that department. Important additions were made in the mill proper and in the cyanide plant as well.

An important announcement has been made by the **Comanche Mining and Reduction Company** at Benton, California, to the effect that it will equip its mine for the milling of a hundred tons of gold-silver ore a day. Installation of all equipment is expected to be made within 120 days. According to George W. Adams of Los Angeles, president and general

manager, no recent development work has been done. The company ceased operations in 1930, on account of the low price of silver. Mine development will be resumed along with production. Headquarters are 725 Title Insurance Building, Los Angeles. Williams B. Tucker, State Building, in that city, is their consulting engineer.

The **Elephant-Eagle Mines** is rebuilding its 50-ton mill at Mojave, California, with enlargements. Amalgamation and cyanide have successfully treated the gold-silver ores produced on both company account and by lessees. Some 20 leases are being operated at the present time. Twenty-one men are employed under the management of Jess Knight, veteran mine operator. Goodwin J. Knight, 821 Bank of America Building, Los Angeles, is president of the company; L. C. Penhoel, of that city, is consulting engineer; Allen Hymes, Edw. Moser and G. Remington are mine superintendent, master mechanic and chief electrician, respectively.

Engineers of the staff of the **Idaho-Maryland Mines Company** at Grass Valley, California, are making a geological survey of the underground workings of the **Auburn-Chicago** mine at Penryn. The mapping is being done by Glen Waterman, assistant geologist for the Idaho-Maryland, and Ken Wilson, chief engineer at the Auburn-Chicago. Both are graduates of Stanford University.

Exploration and development work have been started on the **Mary Len** property, two miles east of Penryn, California, and covering what is believed to be an extension of the Auburn-Chicago vein. A compressor and hoist have been completed and construction of the headframe and ore bin is nearing completion. Plans are to lower the shaft 150 feet. This property is under lease to G. H. Scannel and Joe Demchok of Auburn; Harry Owen of Penryn; Kenneth Wilson, chief engineer for the Auburn Chicago Mining Company; and L. D. Shaves of Sacramento.

Thomas E. Campbell, former governor of the state of Arizona, and a few associates have become interested in mining property in the Rock Creek district, near Auburn, California. Their lease covers 710 acres, taken over with the understanding that they may purchase the ground; and their project is the **Lombardi Gold Mines, Ltd.**, organized under the laws of Arizona. Living quarters are being built and preparations made to sink a new shaft. They plan to use the old 70-foot shaft for ventilation, and the old mill to test the ore in preparation for a more modern plant. The mine is one that the famous Pike Bell made a rich strike in in early days. Indications are that it has not paid because of lack of knowledge of mining rather than due to lack of mineralization. Mr. Campbell is at 1525 North Van Ness Avenue, Los Angeles.

Patrick Sullane has resumed work on his **Big Gold** mine near Randsburg, California. Several tons of ore have been blocked out for mining. The last work done on this property was when it was

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BY JOHN BOWERS



SILVER TIP SAYS:

I EXPECT OUR NOBLE CONGRESSMAN TO RETURN HOME WITH AN ARM FULL OF HANDSHAKES AND A BRAIN LOAD OF EXPLANATIONS

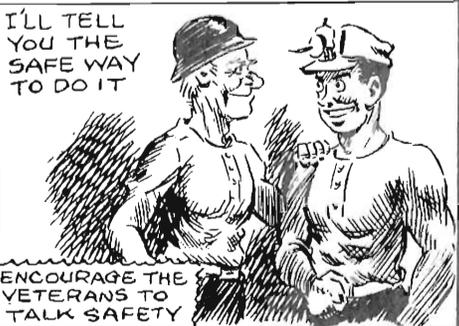


HOLD ON, THERE! WHAT ARE YOU DOING WITH THAT PIECE OF MINE TIMBER?

DE BOES DOWN IN DE JUNGLE DELEGATED ME TO RUSTLE TOOT' PICKS—SO WOT?



I'LL TELL YOU THE SAFE WAY TO DO IT



ENCOURAGE THE VETERANS TO TALK SAFETY

Mining Men and Their Activities

About men who are well known and prominent in the mining circles of the western states.

Franklin W. Wakefield, Box 86, Tucson, Arizona, is making a short business trip to Central America.

F. W. Nobs, manager of the Empire and Star mines at Grass Valley, California, is back from Washington, D. C.

Fred Dains is mill superintendent for the Cornucopia Gold Mines, which is enlarging its milling facilities at Cornucopia, Oregon.

Robert B. Dickson, 119 East 40th Street, New York City, is in the Oatman, Arizona, district where he plans to develop a gold property.

Richard H. Sneed, formerly of Fort Bliss, Texas, is employed at the Ground Hog Unit, Asarco Mining Company, Vanadium, New Mexico.

Frank Baldi, mining engineer, 509 Wilcox Building, Los Angeles, was in San Bernardino county, California, examining a copper-gold property.

G. F. Chock, mining engineer, formerly of Boise and Homedale, Idaho, is now employed by Gold Standard Mines Corporation, Kingman, Arizona.

L. M. Roberts, a mining engineer of San Francisco, has been appointed as superintendent of operations for the Maybert Gold Mines at Washington, California.

C. A. Bennett, mine superintendent for the Original Sixteen-to-One Mine, Inc., at Allegheny, California, is on a trip to New York. Mrs. Bennett accompanied him.

M. Cameron, who is directing the work in Hieroglyphic mining district for Edward Smith Exploration, has established headquarters at Box 744, Peoria, Arizona.

George M. Fowler, consulting geologist of 314 Joplin National Bank Building, Joplin, Missouri, has recently completed a two-weeks' professional trip to southern Arizona.

Walter Douglas, chairman of the board of directors of the Southern Pacific Railroad of Mexico, is making a trip to New York City from his headquarters at Mexico City.

J. A. Yeatman, formerly with the United Iron Works, is making a study of the grindability of ores. He is located at 523 Thirty-first Street, Oakland, California.

W. Tomas Moore, manager and attorney for Cia. Industrial Mexicana, S. A., Saltillo, Coahuila, is temporarily located at 724 South St. Mary's Street, San Antonio, Texas.

Samuel A. Lewisohn, vice-president and treasurer of Miami Copper Company, was re-elected chairman of the board of directors of the American Management Association.

David P. Hale, Jr., is employed at the Zulu Gold Mining Corporation, Payson, Arizona. Last year, Hale was a student at the Missouri School of Mines and Metallurgy.

Louis Rahn, mining engineer of Boston, is operating a mining property, near Mayer, Arizona. His temporary headquarters are 1748 West Adams Street, Phoenix, Arizona.

NORMAN L. WIMMLER GOES TO SIERRA CITY, CALIF.



Norman L. Wimmler

Norman L. Wimmler, San Francisco mining engineer, has gone to Sierra City, California, in charge of the H. R. Plate operations. The work includes the development of the Mountain, Phoenix and Euclid mines, located a mile east of town. Mr. Wimmler graduated in mining engineering from the University of Washington in 1908. In 1932 he completed a post graduate course in the administration of mineral industries, under the supervision of Dr. E. P. Mathewson of the University of Arizona, and received the degree of Administrative Engineer of Mines. His experience has to a large extent been outside the United States proper and, while otherwise diversified in scope, has been mainly in gold and tin lode and placer mining.

His early experience ranged from mucker to engineer and to superintending projects. He made coal investigations in British Columbia for the U. S. Geological Survey and also did some coal exploration for the Nicola Development Company there. Continuing northward into Alaska he was identified with the Kenai Alaska Gold Company at Seward, the Gold Bullion Mining Company in the Willow Creek district and the Alaska Treadwell Gold Mining Company at Douglas.

In 1914 he was employed by the William Boyce Thompson interests. His work took him to Alaska, the Orient and to Manitoba, Canada, involving scouting, mine examination, exploration and development work. The Orient projects included work in his special field of gold and tin.

The five years following 1922, Mr. Wimmler was engaged in mining investigations in gold placering in Alaska for the U. S. Bureau of Mines and the U. S. Geological Survey. For two years following he engaged in investigations in iron ore, coal and flux resources of the Pacific coast region for William H. Taylor, trustee for eastern interests. In 1930 he went to Russia as advisor to the Soviet Gold Trust, with headquarters at Irkutsk, Siberia.

C. R. Terrell of Tonopah, Nevada, has gone to Philadelphia and New York in the interest of financing further work on the Southgold Nevada mines, located 60 miles east of Tonopah.

G. M. Butler, Jr., Tucson, Arizona, a member of this year's graduating class from the University of Arizona, has received a scholarship from Massachusetts Institute of Technology, where he will seek a doctorate in industrial chemistry. A year ago Butler received his B. S. degree "with highest distinction," and this year his M. S. degree in metallurgy.

Bemis Phelps, consulting engineer, 514 Security Building, Pasadena, California, has just completed a ten-day trip to the Tom Reed Gold Mines Company at Oatman, Arizona. From Oatman he went to Tucson, then to the Allison mine, also owned by Tom Reed.

Franklin Harding, veteran mine operator, has returned to the state and is making headquarters in Reno. He is president and general manager of the Interstate Consolidated Mines Company, with property near Goldfield. A couple of years ago he moved to Portland, Oregon, and later to San Francisco.

George W. Agnew, president of the North Star Mines Company at Grass Valley, which turned its mine over to the Newmont Mining Corporation a few years back, is visiting old friends at Grass Valley. Agnew is associated with the Phelps Dodge interests and makes 82 Beaver Street, New York City, his headquarters.

M. W. von Bernewitz, whose mining and metallurgical experience has taken him throughout the United States, to the Netherlands, Indies, Australia, and New Zealand, and whose 21 years' editorial experience in the United States includes 12 years with the U. S. Bureau of Mines, is now with Battelle Memorial Institute, Columbus, Ohio.

Tom Wohlstrom of Susanville, California, sailed from New York for Lima, Peru, where he will accept a position as chief engineer with the Cerro de Pasco Copper Corporation. Mrs. Wohlstrom plans to join him within two months. Mr. Wohlstrom recently returned from China, where he helped install an electric system in Shanghai.

E. S. McCurdy, mining engineer, 10 Pent House, Mills Building, San Francisco, California, has returned from the east, where he had been on business for the Utica Mining Company. The company has property at Angels Camp and McCurdy was manager of operations until it closed down. He says there is a possibility that the mine will be reopened.

Thomas A. Jackson, assayer and chemist, has joined the staff of the Treadwell-Yukon Company, Ltd., at Tybo, Nevada. Jackson comes to Nevada from Kellogg, Idaho, where he had been employed with the Sullivan Mining Company. He had previously been employed in his own line of work with the Beebe Gold Mining Company at Georgetown, California.

Roy L. Cornell, vice-president of the California Testing Laboratories, has returned to headquarters, 1429 Santa Fe Avenue, Los Angeles, from a professional trip that took him to Amboy, California; the Stockton Hill district near Kingman, Arizona; the La Plata district near Durango, Colorado; and the St. Elmo district, about 80 miles north of Elko, Nevada.

Frank V. Johnson, well known California and Arizona mine operator, is at Mesa Grande, California, in charge of a property near the old Shenandoah mine. The property he is working was producing in the 90's. He is sinking a shaft to determine what was left from the earlier operations. Johnson moves to Mesa Grande from 938 Fairview Boulevard, Inglewood, California.

Elmer Poore has been appointed as superintendent of the Quaker Hill mine at Nevada City, California. Poore succeeds the late Thomas D. Botting, under whom he had worked for many months. **Morton F. Stearn**, owner of the property, was

PERCY E. WRIGHT TAKES CALIFORNIA ENGINEERING POSITION



Percy E. Wright

in the Pacific Northwest, where for 20 years he had been located in Seattle, Washington. He went there as district manager for the Jeffrey Manufacturing Company of Columbus, Ohio, and covered the Oregon, Washington, Idaho, British Columbia and Alberta territory. In 1913 the company had to curtail expenses and closed its Seattle office. Rather than return east, he opened his own office as a consulting engineer. Four years ago, Mr. Wright moved to Alto, New Mexico, as consulting engineer at the Silver Plume mine.

on the high seas en route to Europe at the time of Mr. Botting's death. The message reached him at the Rex Hotel in Genoa, Italy.

Thomas H. Oxnam, metallurgical engineer, who went to Russia for the Southwestern Engineering Corporation, is now doing their experimental work in the Los Angeles laboratory. Mr. Oxnam was for many years laboratory chief for Ray Con. at Hayden, Arizona, and as such took a leading part in the interesting flotation developments there. His personal address is 432 South New Hampshire Street, Los Angeles.

Elmer C. Atchison has returned to his old position as master mechanic with Cia. Minera Kildun y Anexas, Apt. 41, Matehuala, San Luis Potosi, Mexico. For the last year, during the shutdown of Kildun, he has been located at Claypool, Arizona. Operations were recently renewed through an agreement with American Smelting and Refining Company whereby that company has taken over the development of the mine.

Major John F. Duling, consulting engineer for the Grizzley Flat placer mine in Eldorado county, California, has just completed a geophysical survey of the property in association with Dr. G. Grossman, geophysicist of San Francisco. They were successful in tracing the north branch of the old Tertiary channel of the Mokelumne River under the andesitic mud flow. Major Duling maintains his offices in the Central Building, Los Angeles.

Frank C. Walker of Butte and New York City delivered the commencement address to the graduating students of the Montana School of Mines, June 7. Although Mr. Walker has made his residence in New York of late years, where he has been manager of a large chain of theatres, he still lists himself as a Butte resident. He is still in partnership with his brother, Senator Tom Walker, in the law offices of Walker & Walker at Butte.

Percy E. Wright, mining engineer from Alto, New Mexico, is now field engineer for Collins Pacific Company, at the Lucky John mine at Paradise, California. Mr. Wright has had varied and extensive experience. He is known in the mining fields of Canada and Mexico as well as in the United States.

He is probably most widely known

J. K. Richardson has returned to his position with the United States Potash Company at Carlsbad, New Mexico, after having served as safety engineer for the New Mexico Civil Works Administration since the first of January. He has been succeeded as safety engineer for the New Mexico Relief Administration by **George Dalrymple** who comes to his new work with excellent recommendations from the United States Bureau of Mines.

William R. Ellis has been appointed an assistant general manager of the explosives department, Hercules Powder Company at Wilmington, Delaware. For a number of years Mr. Ellis was connected with the Hercules' western coast office at San Francisco, only recently going to Wilmington as assistant to the general manager, C. A. Bigelow. He is well known in western mining and construction circles as an expert explosive engineer.

W. Harrison Loerpabel, superintendent for the American Smelting and Refining Company's Santa Eulalia and Descubridora units at Chihuahua, Chihuahua, has been transferred to the Cia. Minera Kildun y Anexas at Matehuala, San Luis Potosi. American Smelting and Refining has granted the Kildun company a long term lease on claims adjoining the Kildun holding and has contracted to manage Kildun operations. A new working shaft and deep development was agreed upon.

Charles L. Bell, director of the Turner-Newell Asbestos Company of London, and **O. C. Smith**, general manager of the Bell Asbestos Company of Thetford Mines, Quebec, Canada, are the guests of **Frank J. Lunn**, manager of the Bear Canyon Asbestos Company, Globe, Arizona. Both the Bell and the Bear Canyon companies are subsidiaries of the Keasby Mattison Asbestos Mining Corporation of Ambler, Pennsylvania, which in turn is a subsidiary of the Turner-Newell Company of London. Mr. Bell is geologist and chief engineer in charge of the company's mine in Rhodesia, South Africa.

Deceased

Ben Gomez, for many years a successful leaser of the Tonopah section of Nevada, died.

Oscar F. Jones, retired miner and native of You Bet, California, passed away at Sacramento.

A. E. Talbot, pioneer resident of Goldfield, Nevada, passed away following an apoplectic attack. Mr. Talbot was widely known as "Frenchy," and was for a number of years employed by the Deep Miners Company.

Dr. Thomas G. Parker, well-known chemist, died at his home in Los Angeles from a heart attack. Dr. Parker was a graduate of Ann Arbor, Michigan, and of Leipzig, Germany. He was formerly concerned with the non-metallic industry of southern California but, on account of ill health, had retired several years ago.

DeWitt Clinton Beightol, well known to mining men on the Mother Lode, passed away. He came to California as a youth from his native state of Ohio. With the exception of occasional absences when his trade as a millman called him to mines along the Mother Lode, he had lived at Nevada City for more than a half century.

J. Tom Lewis, safety engineer for the Arizona Industrial Commission, died on May 23 in Phoenix, Arizona, as the re-

sult of injuries suffered in a recent automobile accident. Mr. Lewis, 63 years old, pioneer of Gila County, was a former member of the state legislature. He was employed by Miami Copper Company for more than 20 years.

The body of Eugene Paimer, investment banker of San Francisco, was found in the Washington mining district of California ten days after he had been reported missing. Palmer had been in ill health, brought on by financial worries, and had gone to Washington two months ago to engage in gravel mining with his brother, LeRoy Palmer. He had evidently fallen 75 feet down a precipice.

Alton D. Rooney, superintendent of the California Silica Company at Brentwood, 40 miles northeast of Martinez, California, was killed when hurled 100 feet into air by pressure from a mine cavein that followed a dynamite blast. Mr. Rooney graduated in 1923 from the University of California and had been connected with mining projects in Peru; Ontario, Canada; and Rhodesia. Paul T. Turnbow, his assistant, was not seriously hurt.

Word has been received of the death of Captain Thomas Carlisle Archer, mining engineer, at the Josephine general hospital at Grants Pass, Oregon, May 20. Among his effects was found an identification card requesting the publication of this item in The Mining Journal. Capt. Archer was born in Toronto, Canada, seventy years ago. Although little is known of his family, it is thought a son, Arthur, a broker, lives in Alaska, and that two daughters also survive him.

John H. Williams, widely known mine operator and promoter, died at his home in Los Angeles, California, May 25, from a paralytic stroke. He was 73 years of age. Mr. Williams was general manager of the Inyo Mines, inc., and consulting engineer to El Canada Mines, Ltd., of New York City and operating in South America. He built a smelter at Magdalena, Oaxaca, Mexico, and operated it from 1905 to 1910. Later, he engaged in the development of copper-gold prospects in Arizona. Since 1920 his activities have been confined to South America, with the exception of a recent venture in silver-lead mining in Inyo county, California.

HYDRAULIC HEARINGS TO BE HELD AT SACRAMENTO

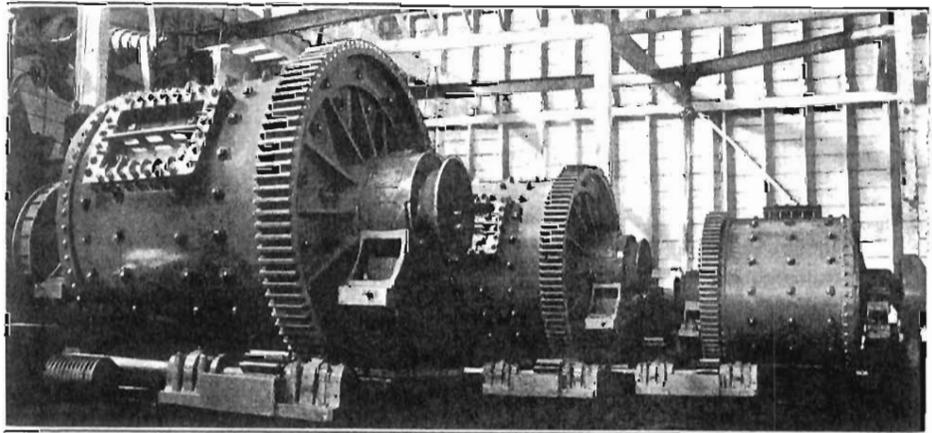
An immediate and exhaustive survey of the possibilities of hydraulic mining on the American, Bear and Yuba rivers in California has been ordered by Capt. John G. Drinkwater, United States army engineer, and the results will largely determine the future fate of that form of gold recovery. The investigation is being made under provisions of the national hydraulic mining bill and under supervision of the California Debris Commission.

Hearings are to be conducted in Sacramento, with the sites of proposed dams, geological surveys and estimates and other technical details gathered by backers of hydraulic mining over a long period of time presented for consideration.

A law enacted a few weeks ago through the efforts of Congressman Harry L. Englebright is responsible for the resumption of investigation into the possibilities of building hydraulic debris retention dams as a protection to valley lands.

Blank forms for taking advantage of the Exemption from Assessment Work law may be obtained from The Mining Journal Book Department. Price 5 cents each, 6 for 25 cents. A. W.

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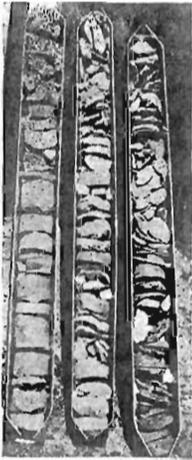
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FT. PIERCE, INC., IS ACTIVE IN NEVADA MINING

Fort Pierce, Inc., offers a service to the mining industry in engineering and financing. It was organized with the thought in mind of helping overcome two of the problems facing mining—owners desirous of financing development work had no place to turn for help, and, on the other hand, financial men found it difficult to find a service they could rely upon to furnish them with guaranteed information on properties.

The personnel includes an industrial executive, financial expert, prominent attorney, mechanical engineer, power engineer, mining and metallurgical engineer and a consulting geologist. James Ruddell is president; Vern Richards and Adolph Bergman, vice-presidents; Jules D. Herman, secretary-treasurer; Virgil H. Vargas, director and counsel and M. B. Lovelace, director and field manager. Headquarters is 12 New Market Street, Poughkeepsie, New York.

As its first activity, the company will operate and develop the Egan mine at Cherry Creek, Nevada. This mine was reopened and developed by Mr. Lovelace, and developed to the point where a substantial investment was justified. Work is being actively pushed on the property and when recently purchased machinery arrives, production will be greatly increased.

Mr. Lovelace is a graduate of Leland Stanford University, holding A. B. and E. M. degree from that institution. He has had considerable mining and milling experience in the western states and South America. For the last two and a half years he has been operating the Egan mine. His address is P. O. Box 675, McGill, Nevada.

NEW YORK MEN BUY INTO NORTHERN CALIFORNIA FIELD

Negotiations for the purchase of the large Igo hydraulic mines, situated at Igo, Shasta county, California, have been concluded and the control has passed to a New York group headed by J. F. Stratton. Stratton has recently entered the mining field in California with the purchase of the controlling interest in the Cory and Princess mines near Oroville. The purchase of the Igo property makes his group one of the largest mine operators in the state.

The Igo holdings cover approximately 2,400 acres, located 14 miles west of Redding, and including part of what is known as the Hardscrabble pit, an old time working that terminated with the Debris Act. On the west side, on what is known as Gaines Flat, the Armour's began their great fortune. Additional thousands of dollars were produced by the early hand miners in Dry Creek, which runs through the property; and the Tom White tunnel produced some \$190,000 operating as a drift mine.

Mr. Stratton is located at Oroville. He plans to begin work immediately and to equip the Igo property for treating 20,000 yards of gravel in 24 hours. A permit has been obtained from the Debris Commission. Water is to be purchased from the Happy Valley Irrigation District and pipe laid to bring it in. The construction of sluices is already in progress. The gravel has been thoroughly prospected and tested and they estimate they have some 180,000,000 yards with an average gold value of 40 cents.

MEXICAN LABOR BOARD ISSUES RULING ON SUNDAY HOLIDAYS

What is considered the establishment of a precedent in mining companies' wage disputes is the ruling of the Mexican labor board that Sunday is not an obligatory holiday for which workers can demand double pay.

This ruling was given by the board in upholding the contention of Compania Minera de Chontalpan y Anexas, S. A., operating at Taxco, Guerrero, that the national labor law does not designate the sabbath as a legal holiday. The department found that while the law demands that workers have one day of rest, with pay, after six days of labor, the statute does not specify which day shall be the weekly holiday. Therefore, those who serve on Sundays are not entitled to double pay for their shift.

1933 COPPER CONSUMPTION SHOWS ADVANCE OVER 1932

The year book of the American Bureau of Metal Statistics estimates the use of copper in the United States, during the peak in 1929, and the depression in 1932 to have compared with last year as follows:

	(In tons of 2,000 lbs.)		
Purpose—	1929	1932	1933
Electrical mfres. (a)	261,000	90,000	90,000
Telephones & telegraphs	164,000	27,000	18,000
Light & Power lines (b)	127,000	49,000	31,000
Wire cloth	9,000	4,200	5,000
Other rod and wire	106,200	30,000	48,000
Ammunition	6,900	3,900	10,500
Automobiles (c)	138,200	32,300	49,000
Buildings (f)	59,000	29,000	36,000
Castings, n.e.s. (d)	79,500	27,000	36,000
Clocks and watches	4,300	1,500	2,800
Coinage	1,200	100	100
Copper-bearing steel	2,600	800	1,500
Fire-fighting apparatus	2,400	1,000	1,100
Radiators, heating	2,100	1,000	2,400
Radio-receiving sets	15,500	7,000	11,500
Railway equipment	9,600	700	800
Refrigerators	17,200	9,000	11,400
Shipbuilding	2,400	2,100	1,800
Washing machines	4,500	1,500	1,000
Water heaters, household	2,300	1,000	1,500
Other uses	70,000	27,300	40,000
Mfres for export	74,900	22,600	15,600
Totals	1,159,800	368,000	415,000
Use in pounds per person	19.08	5.90	6.60
Shipments by refineries	1,119,409	385,965	381,729

- (a) Generators, motors, electric locomotives, switchboards, light bulbs, etc.
- (b) Transmission and distribution wire and bus bars.
- (c) Does not include starter, generator, and ignition equipment.
- (d) Bearings, bushings, lubricators, valves and fittings.
- (f) Excludes electrical work.

6-15-34

Okay—I'll meet you in Los

For You, Mr. Manufacturer!

During the six days from July 30th to August 4th, 1934—as part of Home Market Week, sponsored by the Los Angeles Chamber of Commerce—there will be staged the greatest Mining Show ever held in the West.—Judging from reservations now being made, every known type of mining equipment and machinery will be on exhibit.—There will be displayed and demonstrated the modern developments which have helped bring the Mining Industry back into the spotlight—and it will pay you to be represented.

Contact Your Customers and Prospects

This is the time to let former customers know that you are still in business. Here is the place for you to display that new product—that improved machinery! Here you will find an opportunity to contact both your customers and your prospects, at a time when they are eager to see what you have to sell. Here you can demonstrate full-size, moving machinery in a convincing manner—rather than depend upon models, photographs or literature at his office, to help the prospect visualize your products.

You will not be annoyed by having entertainment features distract the attention of worthwhile visitors to your exhibit, as all such attractions will be segregated elsewhere. Your exhibit and your representatives in attendance will have the undivided attention of the key men you wish to reach—for whose attention you would gladly pay many times the cost of space suitable to serve your needs.

Cost is Low—Results are certain

The low rental charge for space is in keeping with the times, when every dollar spent must produce results. Lighting, partitions, janitor service and many other extras are included in the nominal cost for floor space.

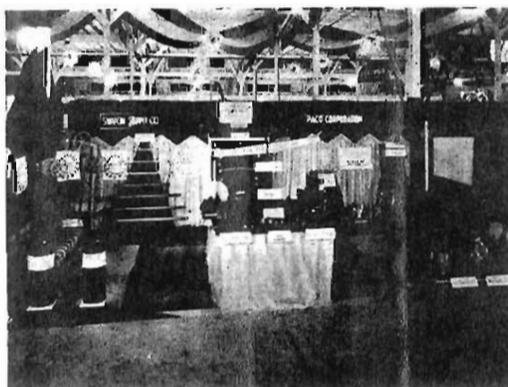
You may confidently expect full value for the nominal expenditure involved. Actual sales at the show, plus the direct contacts with thousands of key men should show you an immediate definite profit!

Find Out Now—Space is Limited

It will pay you to get all the details and make your reservations promptly. Already many spaces have been sold. Naturally the choicest locations are the first to go—and forward-looking manufacturers are making wise selections.

Don't expect to delay your decision until the last few days and then find that desirable corner space waiting for you. Although a large floor area is available in the beautiful Shrine Auditorium, all indications point to a "sell out" and exhibitors are placing contracts for space daily.

Telephone or write for details—you will not want to pass up this opportunity!



An attractive booth—certain to bring results.

EXHIBITS

- Mining Equipment
- Power Equipment
- Road Machinery
- Diesel Equipment
- Conveyor Equipment
- Construction Machinery
- Electrical Equipment and others



The conveniently located Shrine Auditorium during the show.

For Details contact
EXECUTIVE OFFICE
613 Chamber Street
Los Angeles, Calif.

JULY 30th to AUGUST 4th • Shrine Auditorium

Deals at the MINING SHOW..

For You, Mr. Miner

Here the leading manufacturers of mining machinery and equipment will present the greatest Mining Exposition ever held in the West.

Today the profits in mining are less and less a matter of luck, but are increasingly due to the use of the right equipment and methods to produce and handle ores in most efficient manner, with greatest recovery of values and at the lowest possible costs.

Today it is time to scrap old and inefficient methods and equipment and replace with modern, profit-making machinery such as will be exhibited in an array never before possible.

As a Matter of Business

In no other manner can YOU ACTUALLY SEE the many types and designs of equipment—have them DEMONSTRATED—talk with the men who make them—determine which EXACTLY MEETS YOUR NEEDS, which will LOWER YOUR COSTS—SPEED UP OPERATIONS—and INCREASE YOUR PROFITS.

Here you will have an opportunity to inspect competing makes of equipment—carefully analyze their merits, and make your unhurried selection of the type and size to meet your needs. You can eliminate all guesswork and haphazard buying, always present when you buy at the mine from literature, or through a sales representative, without demonstration, and often sight unseen.

Whether your mine is large or small, the chances are that you can save your expenses many times over, in addition to spending a delightful week or more in the nation's greatest playground.

And When It's Time to Play

You will find lots to do at the Mining Show where we are arranging a novel display that vividly portrays all the colorful history of mining in the west. Starting with the 49'r and his burro, this display will carry you through the years to a 1934 Quartz Mine and Placer Mine, including tunnel, timbering, ore cars, and all other equipment and accessories.

The Mining Association of the Southwest, the Alaska Yukon Society, and many other associations, chambers of commerce and schools are all contributing displays and exhibits where you may pleasurably and profitably spend your time.

And when business is over for the day, there will be specially planned entertainment at the Theatres, Night Clubs, Hotels, Beaches,—excursions to world-famous resorts—no dull moments but a lavish array of everything to make your visit a pleasant and lasting memory.

We Have Free Tickets for You

Railroad and Steamship Lines are arranging reduced rates—and we are setting aside free tickets to the Mining Show for all visiting mining men.—Write today to any Los Angeles Dealer or Manufacturer stating how many will be in your party, and they will send you free tickets.

Better plan for the entire week—you will not want to miss a single one of the big days listed to the left. Do you want reservations made at some favorite hotel—just let us know.

Ask your Railroad Ticket Agent about special reduced rates, and start today to make definite plans to be here—combine business with pleasure, and come!



Acres of interesting and educational displays.

PROGRAM

Alaska Day,	July 30th
Nevada Day,	July 31st
Mexico Day,	Aug. 1st
Arizona Day	Aug. 2nd
Mother Lode Day,	Aug. 3rd
So. Calif. Day,	Aug. 4th



Will be the center of attraction week.

Address:
MINING SHOW
 Convention Bldg.,
 8882
 Los Angeles, Calif.

Los Angeles • West's Greatest MINING SHOW!