THIRTY-SEVENTH
ANNUAL REPORT

OF THE

Mining Industry
of IDAHO

FOR THE YEAR
1935

ARTHUR CAMPBELL
Inspector of Mines

MARIE P. CARROLL
Secretary
HONORABLE C. BEN ROSS
Governor, State of Idaho
Chairman, Board of Control, Bureau of Mines and Geology
LETTER OF TRANSMITTAL

To His Excellency,
THE HONORABLE C. BEN ROSS,
Governor of Idaho.

SIR:
In compliance with the provisions of Section 46-111, Idaho Code Annotated, I have the honor to transmit herewith the annual report of the inspector of mines for the year ended December 31, 1935.

Respectfully submitted,

ARTHUR CAMPBELL,
Inspector of Mines.
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With profound sorrow, we note the death of one of Idaho's most respected and beloved citizens, Robert Norman Bell, born, February 16, 1864. Died December 1, 1935. He served the state with honor as Mine Inspector for eight terms 1903 to 1921 with the exception of two years 1909-10 when he was not a candidate for office.

Robert Norman Bell, economic geologist, was an authority on the history of mining and the mineral resources of Idaho. He was the author of the "Mining Industry of Idaho" and other works containing informative data on mining. The state is indeed fortunate to have these valuable records on file for present and future reference. Probably more than any one man he made Idaho known as the greatest mineral-bearing area of the west and assisted in many ways the development of the mining resources in Idaho.

In the passing of Robert Norman Bell Idaho loses an outstanding citizen and the mining industry a stalwart and learned advocate. He was a man loved by his associates and respected by all who knew him.
FOREWORD

This is a report on the activity of the mining industry for the year ending December 31, 1935 as well as information on the resources of the state. The form and general arrangement of the former reports are retained as they have proven to be very satisfactory in the past.

It is the only publication dealing with the economic phases of the industry. The cost is small compared with the magnitude of the operations and its possible future expansion. In the past these reports have proven exceedingly valuable, not only to the operators and engineers but to prospective investors, and every effort should be made to continue their publication and to make them as complete as possible.

In line with our safety-first program, we are introducing in this issue suggestions and advice on safety that we hope will cut the avoidable accidents to a minimum, and information that will be advantageous to those contemplating the search for minerals during the year 1936.

We are fortunate to have special articles pertaining to the work and accomplishments of several departments that contain material of special interest to the mining public. We take this opportunity to thank the following for their contributions:

Dr. John Wellington Finch, Director, U. S. Bureau of Mines;
Dr. A. W. Fahrenwald, Dean of the Idaho School of Mines and Director of the Idaho Bureau of Mines and Geology;
Mr. E. D. Gardner, member of the U. S. Bureau of Mines Staff;
Mr. James Wilson, Director, Central Mine Rescue Station, Coeur d'Alene Mining District;
Mr. W. R. Graham, Director of Aeronautics Division, State of Idaho.

Every effort has been made to cooperate with the various bureaus and departments for the best interests of the state and the mining industry.

Corporations that have forfeited their charters, and have failed to file their reports as required by law, have been considered as legally dead; therefore no mention is made of them.

PROSPECT LISTS

Many of the prospects were worthy of more prominent mention, but it was impossible to give more than the owner's name and address, name of mine and its general location, because the owner did not file any report with the Inspector. The furnishing of detailed information by owners of prospects not only assisted in displaying the mining possibilities of Idaho, but often proved an attractive advertisement of the property. Blank forms for reports were always furnished to individuals requesting them.

BIBLIOGRAPHIES

Much information concerning the geology, mineralogy, and mineral resources of Idaho has been collected and published by the U. S. Geological Survey, the U. S. Bureau of Mines, and the Idaho Bureau of Mines and Geology. Much is also contained in the various reports of the Inspector of Mines and in journals dealing with mining and geology. In order to make this information readily available to the public, this material has been indexed according to counties and subjects and published in the report. The indexing has been kept up to date, and so far as is known, each county bibliography contains references to all material of any importance that has ever been published concerning the county. Publications relating to specific minerals found in the State are listed also under the "General Bibliography." The usefulness of the Bibliographies has been further increased by including publishers' addresses and information as to whether each particular reference can be procured or not. Symbols have been added as a guide to facilitate explaining this information. Most of the publications listed are found in the Inspector's library. These publications may also be consulted in all large libraries.
FOREWORD

NEWSPAPERS

The visits which the Inspector has made to the numerous counties are necessarily so short that they were inadequate to enable him to keep directly in touch with all mining activities, so that it was necessary to supplement his personal information by that gleaned from the press. Some of the publishers located in mining communities furnished gratuitous subscriptions of their newspapers to the office of the Inspector. This courtesy was greatly appreciated and was of much assistance in enabling the Inspector to keep abreast of the mining news. Accordingly, the State of Idaho, through the Inspector of Mines, extends its thanks to the following: Arco Advertiser, Kootenai Valley Sentinel, Idaho Labor, Mackay Miner, Mullan News, Northern Idaho News, News from The Mines, Western Mineral Survey, Wallace Miner, Wallace Press Times and Weiser Signal.

MINERAL MARKET INFORMATION

As there has continued to be a demand for possible markets for uncommon minerals and metals, the list prepared, which includes the names and addresses of the purchasers or users, were revised and kept up to date as nearly as it was possible to do so.

LIBRARY

The library is believed to be the largest of its kind in the state. It contains nearly every publication of the U. S. Geological Survey and U. S. Bureau of Mines, most of the U. S. Mint Reports, numerous volumes published by the geological surveys of other states, and many volumes of journals dealing with mining and geology.

The following magazines are regularly received: Business Week; Du Pont Magazine; Economic Geology; Engineering and Mining Journal; The Engineers' Bulletin; The Explosives Engineer; The Mining Congress Journal and The Mining Journal. Complete files of these magazines have been preserved for reference use.

Visitors are always welcome to consult the books of the library or to read the magazines. In the absence of the Inspector, the secretary is glad to assist visitors in finding desired information.

MINING LAWS

The Inspector's office has generally published and distributed the mining laws since the office was established. The last issue was printed and distributed in 1931.

Many requests come to this office for copies of the mining laws. At present we have mimeographed copies of certain sections and general interpretations of the law for distribution. In this issue of the report we are including a few extracts from the 1932 Idaho Code Annotated, selected from the greatest number of requests we have received during the past year.

MINERAL EXHIBIT

Many new specimens were added to the splendid collection of minerals on exhibit in the rotunda of the Capitol Building.

In March, 1935, the Mining Department of the State of Idaho, was presented with a cabinet of miniature tools, by Mrs. Charles Garland, to perpetuate the memory of her husband, the late Mr. Charles Garland, who fashioned these tools in his spare time while mining at Aspen, Colorado, during the early part of the present century.
The United States Bureau of Mines and Cooperation with States

By JOHN W. FINCH, Director

The United States Bureau of Mines is not a geological bureau, but many features of its work are closely related to that of the various State Geological Surveys, particularly with respect to the development of the Nation's mineral resources. The Bureau endeavors to devise cheaper, safer, and more efficient methods of mining and treating minerals, and to provide statistical and economic data which may be of material assistance in obtaining profitable markets and insuring a larger utilization of mineral products. These are matters in which the Geological Surveys and Mining Bureaus of all of the States are greatly interested and in which they can profitably cooperate with the Federal Bureau of Mines.

ORGANIZATION AND HISTORY

The creation of the Bureau of Mines from the Technologic Branch of the Geological Survey by act of Congress in 1910 was due largely to an insistent public demand that something be done by the Federal government to insure safer conditions in the hazardous work of mining bituminous coal, following the occurrence of a number of disastrous coal-mine explosions in Pennsylvania, West Virginia and other states. Naturally the Bureau devoted its energies at first largely to coal-mine safety studies. The Technologic Branch of the Geological Survey had undertaken valuable research in fuel combustion and better utilization of coal, and these studies were continued vigorously at the Bureau's Central Experiment Station in Pittsburgh, Pennsylvania. As soon as practicable, studies of the more efficient production and utilization of petroleum and natural gas were initiated at the Petroleum Experiment Station, Bartlesville, Okla. As Congress provided funds for research at other stations established in the different mining areas, the Bureau's activities were extended to problems affecting the development of the precious-metal deposits of the Intermountain and Pacific Coast States, the iron ores of Minnesota and Alabama, the lead and zinc ores of Utah and the Mississippi Valley region, the copper deposits of Arizona, Montana, Michigan, and other States, and the important nonmetallic mineral deposits in various parts of the Nation, including the kaolins of Georgia and Washington, the graphites of Alabama, the phosphate rocks of Florida, the fluor spar s of Illinois and Kentucky, and the potash salts of New Mexico. In all of this extensive program looking toward the development of the Nation's bounteous mineral resources, the Bureau has been aided greatly by the cooperation of the different State Geological Surveys, and today the Bureau's published reports represent cooperation with more than a score of States.

The Bureau is essentially a field organization, with administrative headquarters in Washington and with experiment stations and field offices in the several mining and oil-producing regions of the country. It is organized in four branches—Technologic, Health and Safety, Economics and Statistics, and Administrative.

The Technologic Branch, which conducts most of the research, consists of six divisions; Mechanical, Mining, Metallurgical, Petroleum and Natural Gas, Experiment Stations, and Explosives.

The Mechanical Division is charged with the study of problems of fuel utilization and investigations dealing with safety lamps and mining machinery, especially the safety and efficiency of electrical equipment used in mining. This Division inspects and tests coal purchased by the government and advises other governmental departments on questions of fuel economy. Fundamental studies are made of the composition and properties of American coals in relation to combustion, carbonization, gasification and liquefaction. The Mining Division collects data on methods and costs of mining and milling with a view to increasing economy and efficiency and at present is beginning an inventory of the mineral deposits of the United States. The Metallurgical Division conducts research on improving the efficiency of ore dressing.
DR. JOHN WELLINGTON FINCH
Director of the U. S. Bureau of Mines
and smelting processes; and developing new processes suitable for low grade ores not now utilized. The Petroleum and Natural Gas Division is concerned with the production, transportation, treatment, and utilization of petroleum and natural gas. The Experiment Stations Division administers the 11 experiment stations (at Pittsburgh, Pa.; New Brunswick, N. J.; Minneapolis, Minn.; Tuscaloosa, Ala.; Rolla, Mo.; Bartlesville, Okla.; Reno, Nev.; Salt Lake City, Utah; Tucson, Ariz.; Berkeley, Calif.; and Seattle, Wash.), where most of the research investigations of the Bureau are conducted. Each station gives special attention to the problems of the mineral industries of the adjacent regions in addition to the nationally important problems which occupy the major attention of the staffs. This Division also conducts research on the beneficiation and utilization of nonmetallic minerals. The Explosive Division tests explosives, studies their safe use in mining, with particular emphasis on “permissible” explosives; and carries on fundamental physico-chemical studies on the mechanism of ignition and propagation of flame in mixtures of gases and vapors.

The Economics and Statistics Branch was reorganized on July 1, 1935, its activities being broadened to conform with recommendations made by the Science Advisory Board and approved by the Secretary of the Interior. It now comprises five major divisions which will conduct economic and statistical research incident to the preparation of surveys and investigations of mineral production, distribution, consumption, and other economic factors, both foreign and domestic.

The Coal Economics Division will collect, analyze, and publish statistical and other economic data, foreign and domestic, pertaining to the coal, coke and fuel briquetting industries.

The Petroleum Economics Division will collect, analyze, and publish similar data pertaining to the petroleum and natural gas industries.

The Metals and Nonmetals Division will collect, analyze, and publish basic economic data pertaining to all metals and nonmetallic minerals, other than fuels.

The Foreign Mineral Service Division is essentially a procurement agency responsible for the collection, compilation and publication of foreign production and trade statistics. General economic information pertaining to the production of and trade in mineral commodities in foreign countries also will be gathered and published. A comprehensive index file will be maintained of published data covering foreign mineral resources, mining laws, tariffs, cartels, and Government aids and restrictions in connection with production and international trade in minerals.

The Mineral Resources and Economics Division will conduct the annual statistical canvasses of metallic and nonmetallic minerals, except mineral fuels, incident to the preparation of the Minerals Yearbook; assemble, analyze, and publish, employment and man-hours statistical data; conduct all studies involving minerals that may be classified as national or international economic surveys, as required from time to time by other agencies of the Government; through field offices collect detailed statistical and economic information covering the mineral industries in all important producing areas of the United States; handle problems that involve statistical analyses of relation of supply to demand and price; make comprehensive studies of the problems presented by scrap and secondary metals and amplify the present statistical data concerning these commodities; and conduct studies of production costs, investment and profit, control of production and capacity, taxation and its relation to conservation and production control, and mechanization and its effect upon employment.

Results of these statistical and economic studies will enable the mineral industries to keep in touch with market trends and to solve business problems. Inquirers will be supplied with lists of possible buyers of their products and given other advice with respect to marketing them. The purchasing agents of industrial organizations will be told where they can obtain supplies of mineral raw materials which they require. Advice will be given concerning the types of machinery and equipment required. Possible new uses for minerals, inadequately utilized sources of minerals, and discoveries of
any sort that promise to afford opportunity for larger or more profitable use
of the Nation's natural resources will be called to attention through publica-
tions.

The Health and Safety Branch investigates hazards affecting the health
and safety of workers in the mineral industries. Its major activity is in-
sicction in mine safety and accident prevention and in mine rescue and
recovery work, but it also conducts investigations of causes of accidents and
methods of prevention. This year the Technologic and the Health and Safety
Branches will resume health studies in cooperation with the Public Health
Service upon dust diseases and other health hazards to which miners are
subject.

The Administrative Branch handles general routine business, edits and
supervises the publication of results of Bureau investigations, and is respon-
sible for motion-picture production and distribution.

All of this technologic and economic program is of interest to State
Geological Surveys and State Mining Bureaus, for its sole purpose is the
development of that great mineral empire which the geologists first must
find and explore. For instance, the Bureau's Mining Division has prepared
about four hundred reports giving practical details regarding methods and
costs at individual mining, milling and quarrying operations scattered through-
out the States. These reports furnish operators with comprehensive informa-
tion heretofore unavailable which should be of real practical value in solving
problems of methods and production cost so vital at this time.

The Petroleum and Natural Gas Division has prepared engineering re-
ports upon many important oil and gas fields, designed to assist operators
in overcoming technical difficulties, and conducts a coordinated group of
research studies in petroleum engineering and chemistry. This division also
operates the Bureau's great helium plant near Amarillo, Texas, which pro-
vides the entire supply of this strange nonflammable gas used in the operation
of Army and Navy dirigibles.

The Mechanical Division has analyzed 100,000 or more samples of coal
and furnished operators and consumers with information, otherwise unavail-
able, regarding properties and characteristics of coals from all States and
fields, and has tested hundreds of mining machines and appliances for
permissibility. The Metallurgical Division has solved many problems which
had retarded development of the large low-grade complex ore deposits in the
Western States. In all of this work, the Bureau of Mines, lacking funds,
frequently has utilized laboratories and equipment provided by the State
Geological Surveys and Mining Bureaus.

Typical examples of cooperation between the State organizations and the
United States Bureau of Mines are: studies, made in cooperation with the
North Dakota State Geological Survey, which have pointed the way toward
greater economic utilization of vast stores of lignite underlying portions of
this and other States; investigation of placer-mining methods undertaken in
cooperation with the Nevada Bureau of Mines; and studies of coal-mining
operations, coal-mine subsidence, and the manufacture of water-gas from
Illinois bituminous coals, undertaken in cooperation with the Illinois State
Geological Survey Division. Other examples of such cooperation are studies
of the metallurgy of zinc with the Missouri Geological Survey and the Mis-
souri School of Mines and Metallurgy; utilization of manganiferous iron ores
with the Minnesota Mining Experiment Station; metallurgy of complex ores
with the University of Utah; copper milling with the Oregon State Survey;
ore dressing research with the Idaho Bureau of Mines and Geology; anthra-
cite and bituminous coal losses and mining methods in Pennsylvania with the
Pennsylvania Topographic and Geologic Survey; coal washing and beneficia-
tion, also ceramics studies, with the state of Washington; the preparation of
engineering reports on numerous Oklahoma oil and gas fields with the State
of Oklahoma; the disposal of oil field brines with the State of Kansas;
washing and better preparation of Alabama coals with the University of
Alabama and the State Geological Survey; and a study of the natural-gas
resources of Michigan in cooperation with the Michigan Geological Survey.
Glancing through the list of publications of the Bureau of Mines, one finds report after report giving the results of studies designed to encourage the development of the mineral resources of the various States; many of these studies were made with the help of State bureaus. Thus we find reports on the carbonizing properties of coals from Maryland, Pennsylvania, West Virginia, Virginia, Kentucky, Alabama, Illinois, Utah, and other States; the development of a new American mineral industry in the mining and treatment of potash in New Mexico and Texas; the utilization of mineral pigments in Washington and other States in competition with imported foreign products; Alabama graphite, New Jersey greensand, Georgia and Washington kaolins, Colorado oil shale, and Wyoming black oils. There is a series of Technical Papers giving detailed information regarding the analyses, heating values, and characteristics of thousands of coals from each of the important coal-producing States; there are other papers furnishing analyses of the crude petroleums from many States. A series of some fifty or sixty Information Circulars embody in concise, readable form, general information on the occurrence, production, technology and economics of mineral after mineral—radium, beryllium, asbestos, mica, manganese, soapstone, diatomite, silica, sulphur, barite. A series of papers contains information on the various gem minerals. Several of these Information Circulars relate to little-known minerals such as gallium, germanium, caesium, rubidium, thallium, meerschaum, cyanite, dumortierite. Then there is, of course, the Minerals Yearbook, containing in more than sixty chapters, the story of a year's development in the history of all the minerals in all the States.

A random glance through the Bureau's annual report tells of mineral studies and investigations which should be of interest to state geologists. These include the classification of coal, geophysical prospecting, the investigation of the economic value of Michigan natural gas, gas wastes in the Texas Panhandle, the utilization of chalks and whities from Washington, and the development of methods for direct production of iron and steel from the ore.

The Bureau's studies relating to geophysical prospecting which have already extended appreciably the known reserves of our mineral wealth, especially in petroleum discovery, are of special significance to State geologists. Outlining the boundaries of certain oil pools in Kentucky by geophysical methods has been found possible. Investigations have shown that some bodies of sulphides and certain iron deposits are amenable to geophysical methods of exploration. Extensive underground bodies of water have been located in Nevada. Abstracts of articles on geophysical prospecting, particularly those published in foreign countries, are issued by the Bureau each month and mailed free to applicants.

In the short space available, I have endeavored to give an outline of the Bureau's organization, its purposes and its activities. This brief review, it is hoped, may afford some idea of the opportunities for profitable cooperation between State bureaus and the United States Bureau of Mines.

The Bureau of Mines is prepared to assist by furnishing publications containing information relating to practically all of the commercial minerals. The advice of its specialists and technologists is available on any matter that concerns the general economic welfare. It undertakes to furnish facts and figures regarding mineral markets and prices, demand and supply, and the names of buyers and sellers of mineral products. Under certain conditions, where funds and facilities can be provided, it may be able to conduct extended studies and to make detailed tests and experiments looking toward the development of a particular mineral area. These would seem to be matters in which the State Surveys and the Federal Bureau can work together with profitable results to the mineral industries. In conclusion, I venture to hope for an increasingly close and cordial cooperation.
PROSPECTING WITH DIAMOND DRILL,
COEUR D'ALENE DISTRICT

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Wallace
Prospecting for Lode Gold and Locating Claims on the Public Domain

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INTRODUCTION

This paper discusses prospecting for lode gold and lists the principal laws and regulations pertaining to locating lode claims on public lands. It is a preprint of a part of a bulletin being prepared by the United States Bureau of Mines entitled "Equipping, Developing, and Operating Small Gold Mines."

The increased interest in gold mining manifested during the past few years (1932-1935) has stimulated prospecting. Many adventurers have taken to the field to search for new gold deposits. A large percentage of them have had no previous experience in prospecting for lode gold; this paper has been written with the hope that it might assist these newcomers.

PROSPECTING

A majority of the metal mines in the United States have been discovered by qualified prospectors who were searching for valuable minerals at the time. Chance, however, always has played a large part in finding mineral deposits. Some of the discoveries of the past were made by men on other errands, such as rounding up burros or hunting game. Accidental discoveries of ore bodies have been made in building roads and trails and in excavating for mine structures. Evidence of ore has been brought to the surface by burrowing animals and by ants; gold found in the craws of fowl has led to discoveries of deposits. Important discoveries have been made by men who had no knowledge of rocks or minerals; on the other hand, many ore bodies have been found by experienced prospectors, sometimes after hundreds of untrained men had already passed over the ground.

The prospector who carries on his work diligently and intelligently is of course more likely to be rewarded for his efforts than the lazy or unintelligent worker; nevertheless, it is obvious that if valuable deposits do not exist at the place being prospected none will be found. Conscientious and painstaking efforts to trace gold to its source usually disclose nothing more valuable than some narrow, unworkable seams; however, many deposits that were developed into profitable mines were found by this method of prospecting. Although some prospectors have made several lucky strikes, many others have spent their working lives searching for mineral without finding anything worth while. Probably only one prospector out of several thousand ever finds anything worth developing. Moreover, only 1 out of every 300 or 400 properties developed becomes a profitable mine.

Prospecting began in the Western States in the fifties as the miners looked for the source of gold found in placers. The search for gold has been continuous since that time; the number of prospectors in the field at any one time, however, has varied greatly. Except in some desert regions, practically all of the placer fields now being worked were discovered by oldtimers; most of the important gold districts also were found by early prospectors. Important discoveries of lode mines, however, have been made from time to time. Most of the area in the mining regions of the West has been gone over many times by prospectors, and nearly all of the easily found deposits have been located, but it is reasonable to expect that new gold mines will continue to be found. Most of the future discoveries undoubtedly will be of deposits that do not outcrop. Prospecting for such deposits requires considerable digging.

Several important discoveries were made in 1934. One of these, the Rogers-Gentry gold mine at the edge of Antelope Valley in Los Angeles County, Calif., was found by an experienced prospector on an old patented homestead a number of miles from the nearest producing mine. The initial discovery at this mine was an iron-stained, decomposed, silicous limestone outcrop, with no vein structure evident at the surface, near a small, barren quartz outcrop and a water seep. Another discovery, the Silver Queen gold
mine, in the same general region and near Mojave, Calif., was found by an experienced miner on an open fraction 400 by 1,400 feet in size between two old properties which were thought to have been worked out years ago. The Silver Queen discovery was made as the result of finding a single piece of float unlike any ore in the region. The vein did not outcrop; the discovery point was under 6 feet of cover.

To prospect for lode gold one should know first of all how to take care of himself in the hills or on the desert. He should be physically able to stand hard work and know how to use a pick and shovel. Most prospectors also have occasion to drill holes by hand and know how to use explosives. To prospect for lode gold intelligently one should be able to identify gold and the minerals usually associated with it, besides being able to distinguish one general class of rock from another.

Most prospectors work alone and are accustomed to solitude. As discoveries that can be sold for cash are few and far between prospectors must have some other resources for subsistence. Many prospectors work in the mines in the winter and prospect in the summer. Others do the assessment on claims for owners to earn enough money to buy supplies for prospecting. In the old days many prospectors were grubstaked by merchants, individuals, groups of individuals, or companies, usually on a 50-50 basis. The practice now is followed less than formerly, but a professional prospector of good repute usually can get a backer.

FAVORABLE AREAS

Although the old saying that "Gold is where you find it" is quite true, the probability of finding gold in paying quantities will be increased greatly if prospecting is done in areas geologically favorable for the occurrence of gold. Regions in which gold is known to occur naturally are more favorable for prospecting than those where no gold has ever been produced.

The important known gold deposits in the United States occur in regions where intense igneous activity has occurred at some time. The most promising fields for finding new deposits of gold, therefore, should be in or near igneous rocks 3/. Not all igneous formations, however, are favorable for the deposition of gold. It probably would be a waste of time to prospect in dark lava flows. Large masses of granites or related coarsely grained crystalline igneous rocks are unlikely to contain gold deposits unless cut by dikes or other intrusions of finer-grained and usually light-colored igneous rocks, such as porphyry, rhyolite, or andesite.

Areas are favorable for prospecting where the principal rocks are granites (as suggested above), schists, slates, greenstones, or related rocks cut by later intrusives. Areas in which the principal rocks are the light-colored, finer-grained igneous rocks, especially if of several varieties, are also favorable.

One of the most favorable areas for the occurrence of gold is where the country rock is made up of surface flows, sills, dikes, and other intrusions of these light-colored igneous rocks.

Profitable gold deposits sometimes are found around the borders of great masses of granitic rocks, both in the granites and in the surrounding rocks but more often in the latter.

Large areas of sedimentary rocks 4/, such as shale, sandstone, and limestone, are unfavorable for prospecting unless the sediments are cut by the light-colored intrusions previously mentioned, and even where so cut the sedimentary areas seldom contain workable quantities of gold unless they have been metamorphosed (changed by pressure and heat) to slate, quartzite or marble.

3/ According to Dana's Manual of Mineralogy, 14th ed., issued in 1929, p. 345, "Igneous rocks, as the name indicates, are those which have been formed by the cooling and consequent solidification of a once hot and fluid mass of rock material."

4/ According to Dana, p. 350, "Sedimentary rocks are secondary in their origin, the materials of which they are composed having been derived from the decay and disintegration of some previously existing rock mass."
GOLD LODES AND ORE SHOOTS

Gold in paying quantities does not exist indiscriminately in country rock but where it has been deposited in definite zones usually termed "lodes." Solutions containing the gold have arisen from great depths and have been deposited by relief of pressure, cooling of the solutions, or other causes. For a lode deposit to have been formed there must therefore be some form of opening or zone of weakness through the rocks along which the solutions may rise. Earth movement or faulting commonly causes zones of weakness. Therefore, in prospecting it is well to keep a look-out for fracturing.

Parts of the lodes that contain gold in sufficient quantity to be ore (that is, material that can be mined at a profit) are called "ore shoots." Shoots seldom extend between walls but may be confined to a relatively narrow streak or streaks. Gold-ore shoots usually are relatively small. After a gold-bearing lode is located considerable work may be necessary to find an ore shoot; frequently the gold will not occur in sufficient quantity for any part of the lode to be worked at profit.

The simplest and most common form of gold lode is what is termed a "true fissure vein" by the miners. Fracturing, with or without faulting, has occurred in a relatively narrow zone with well-defined walls. The ore minerals have been deposited in this zone and may fill the space between walls completely. Usually, however, fractured country rock and, if the movement has been great, gangue or slickensides occupy part of the space.

Another type of lode is the shear zone. Here the walls usually are not well-defined. The ore-bearing solutions have deposited the gold and associated minerals in the cracks made by the fracturing. If present, ore shoots may occur anywhere in the fractured zone. Usually they overlap and occasionally may be parallel.

The contact between two different kind of rocks, especially an igneous rock and something else as schist, is generally a line of weakness. Ore-bearing solutions may have been able to rise along the places of weakness and form ore bodies. Such a lode is called a contact vein. Gold ore also may occur in bedded sedimentaries where a fissure cuts a contact, particularly between limestone and quartzite, where conditions are otherwise favorable geologically for the deposition of ore.

SEARCHING FOR GOLD DEPOSITS

In looking for gold deposits vein or lode outcrops are sought and when found are examined for gold-bearing material. Portions of the veins have been eroded away; on steep hills part of the outcrops may have broken off and rolled down the hillside. Mineral-bearing fragments of vein material are called "float." Many deposits have been found by tracing float to its source. In prospecting, a lookout always is kept for such material. Float in the gravels of large streams may have come from many miles distant. In such instances the presence of the float indicates only that the gold-bearing material exists in the watershed above. Where float is found on a hillside the fragments are sought upward until no more are found. If the surface is covered with overburden trenching will be necessary to disclose the lead.

Lodes also may be located by panning loose material below for free gold. Placers are formed from disintegration of rock containing gold. During the ages gold lodes are eroded away at the surface, the gold-bearing rock is ground to powder, and the gold is concentrated in stream beds or desert deposits. The gold of rich placers, however, may have come from a multitude of narrow or low-grade streaks that could not be worked at a profit. The presence of placer gold in a stream bed indicates that the region above contains or has contained lode gold. In seeking for lodes in such a region the gravel of stream beds or debris of dry washes is panned to trace the gold to its source. If the gold suddenly plays out in the main watercourse attention then is directed to the side gulches, which in turn are followed up until no more placer gold is found. The debris on the mountainsides is then panned and the gold traced to its source. At this stage of prospecting float in the over-burden may help in the search or be the key to the source of the gold.
Occasionally rich accumulations, called pockets, of free gold are found in the hillside debris. Especially in California pocket hunters have made a living by searching out these accumulations. The same procedure is followed whether the search is for a lode or a pocket. Valuable deposits in place have been found by pocket hunters.

As placer gold travels from its source it becomes flattened or rounded. Angular or jagged gold usually has not traveled far. The same is true of float. Well-rounded fragments of vein quartz may have traveled far, while angular pieces are not likely to have been transported a great distance. In flat, glaciated country float or free gold may have come from hundreds of miles away and may signify nothing as far as the immediate region is concerned.

Quartz, which usually is a constituent of gold ores, is hard and resistant to weathering. Furthermore, frequently the mineralization of a vein is accompanied by silicification of the vein filling and the immediate wall rock, which increases the resistance to weathering and erosion. Hence, a majority of veins containing gold ores outcrop above the surrounding surface. In flat regions, however, the outcrops may be covered with overburden brought down by floods. In some instances the vein may be badly fractured; any quartz present may be in narrow seams in a gangue of shattered country rock. When this is the case the vein at the surface may be softer than the adjoining wall rock and cause a depression. Trenching, therefore, is necessary to disclose the lode in place.

In searching for a hidden vein the following features which may be caused by the existence of a lode should be noted: 5/

1. A natural trench or ditch that does not run directly down the slope of the hill or mountain.
2. A sudden change of slope.
3. A sharp notch that crosses a ridge that has a rather uniform altitude on both sides of the notch.
4. Several springs in a line.
5. A sudden change in the kind or quantity of vegetation (may indicate a contact or, if the change in vegetation is found over a narrow strip of ground, a lode may be beneath).

Although many other possible causes may be responsible for these structural features some trenching would be justified if float was found immediately below and not above any particular one of them.

Iron sulphides, which frequently are associated with gold, oxidize to red or yellow oxides when exposed to the surface elements. The presence of a lode very often is disclosed by the stain of these iron minerals.

Present-day prospectors examine old cuts or other workings on abandoned claims. It is possible that with the increased price of gold and the improvements in metallurgy since the original work was done material passed up by the oldtimers may now be valuable.

With a few notable exceptions, the gold in lode deposits occurs as the native metal. At Cripple Creek and some of the other Colorado districts the gold is a constituent of telluride minerals; in general appearance these minerals resemble the iron sulphide minerals.

GOLD AND ASSOCIATED MINERALS

Gold can be identified readily by sight. It is the only soft, yellow substance with a metallic luster occurring in nature. It can be flattened easily without breaking and be cut or scratched readily with a knife. It is sometimes confused with pyrite, chalcopyrite, or other sulphide or with plates of yellow mica. Pyrite is too hard to be scratched with a knife, and sulphides that resemble gold crush into black powder. Yellow mica yields a white powder when scratched with the point of a knife. When any doubt exists the suspected substance ordinarily is not gold.

The principal gangue mineral in gold deposits usually is quartz. This mineral is distributed widely in mineralized areas, but a very small percentage of it will be found to contain gold. Glassy or what is called "bull quartz" by the miners seldom if ever is gold-bearing. Massive quartz leads may be very persistent but generally are barren, except in some cases where secondary quartz with more of a porcelain appearance has been deposited. In the Mother Lode region of California the gold usually is associated with this secondary quartz.

With a few exceptions gold below the zone of oxidization generally is associated with or accompanied by sulphides. The principal sulphide ordinarily is pyrite; in some cases, however, chalcopyrite, arsenopyrite, or galena may be the important gold carrier. Gold may occur, however, in quartz without the associated sulphides or their oxidization products or in veins where quartz is not important. For example, in the Oatman (Ariz.) district all the gold is free, and the principal gangue mined is calcite.

Iron streaks or vugs (cavities, usually lined with a crystalline incrustation) in quartz-lead matter are promising places for native gold to occur. Frequently if present it can be seen by the naked eye or with a glass, therefore the prospector is on the look-out for iron-stained or honeycombed quartz. Outcrops, consisting mainly of iron oxides or lead matter heavily impregnated with iron (called gossan), when found in a mineralized region always should be tested for gold; the gossan may be at the top of copper or lead ore bodies with the latter two metals leached out. Sometimes the gossan carries paying amounts of gold.

Any outcrop or float of iron-stained, fractured, light-colored, igneous rock recemented with silica or showing evidence of silification and banding should be investigated. The ore of the Silver Queen mine near Mojave, Calif., is of this latter type.

In glaciated regions and occasionally elsewhere sulphides occur at the surface. Moreover, float containing sulphides occasionally is found. Both outcrops and float usually are tested for gold by the prospector. Frequently the outcrop of a lead 6/ is shown by green or blue copper stain. Should the original copper sulphide have been associated with gold the possibility of a deposit of gold ore exists.

Prospectors usually do not confine their efforts to the search for gold but will locate any deposit that promises to be of value, irrespective of the kind of contained mineral. To be present in sufficient quantities for the material to have value as an ore the base metals must occur in amounts readily discernible by the eye; the base metals, however, may have been removed from outcrops by leaching.

SAMPLING AND PANNING

As mentioned before, gold occasionally is visible in vugs or high-grade seams, but usually the gold in its ores is not visible either to the naked eye or with a glass. Rock suspected of containing gold may be tested by assaying or panning. Of course, the former method is to be preferred, but the cost ($1 to $1.50 per determination) precludes its general use by most prospectors. Some of the large mining and smelting companies, however, will assay free a reasonable number of samples sent in by bona-fide prospectors. In this way they may be the first to learn of new discoveries.

Gold prospectors make a practice of panning (or horning) likely looking rock. The sample is first ground in a mortar or otherwise pounded into powder. A small frying pan from the 10-cent store appears to be preferred by most prospectors for panning rock samples. Although the greater reliability of relatively large samples is realized most prospectors when grinding the

6/ Commonly used as a synonym for ledge or lode. Many mining-location notices describe the locator's claim as extending a certain number of feet along and so many feet on each side of the "lode, lead, vein, or ledge." The word is pronounced "leed" and should not be confused with the metal lead.
rock by hand and panning in the field use 1 or 2-ounce samples. In prospecting, the best-looking material is panned. After the rock has been shown to contain gold the value per ton should be ascertained by assaying. Samples for assaying should be cut over a definite width of the exposed vein.

A competent panner can estimate fairly closely the gold content of ore with which he is familiar. An expert panner with a 1-ounce sample can detect gold in rock that will assay only about 0.02 ounce of free gold per ton. A milligram of gold in an assay ton (29.168 grams) indicates 1 ounce of gold per ton of 2,000 pounds. An ounce avoirdupois is 28.350 grams.

Not all gold-bearing rock pans. Where the gold is associated with or contained in sulphides, grinding in a mortar may not liberate enough of the gold to be detected in the pan. In the United States, however, the gold in outcrops usually has been liberated by oxidation to such an extent that it can be panned.

In searching for gold most professional prospectors carry a mortar and a canteen of water. Likely looking rock is panned as found. By this procedure a load of rock is not accumulated, and many samples are tested that would not be carried to camp. Furthermore, there is no confusion regarding the location of the gold-bearing material, as often is the case when samples are accumulated.

Although an experienced man may identify gold telluride in the ore or in the pan the sample should be assayed when their presence is suspected. Assays also are of course necessary to tell whether sulphides contain gold.

All major exposures of veins or other structures that appear favorable for the occurrence of gold should be sampled and assayed. No ore should be shipped without being assayed; almost invariably when this is done the shipper is disappointed. As mentioned above, samples should be cut across definite widths of the vein. Hand and grab samples of ore to be shipped are almost always high.

SURFACE WEATHERING

Weathering and leaching by surface solutions may remove the base metals from surface outcrops. Gold, however, is very resistant to leaching, and the weathering of the iron and associated minerals may increase the value per ton of surface ore; hence, it can not be expected that the value of gold deposits will increase with depth; usually the contrary is true.

PROSPECTING ON PATENTED GROUND

Prospectors are reluctant to prospect on patented ground, as anything found would belong to the owners of the land. The author believes, however, that opportunities occur for finding new deposits on some of the thousands of idle patented mining claims held throughout the West. Many of these claims are held by estates. Even where the owners of idle claims would be willing to draw up papers to the effect that a discoverer of new ore would benefit from his findings, the average prospector would decline to go to this trouble and conduct his searches elsewhere.

PROSPECTING OUTFITS AND PROVISIONS

The outfit to be taken on a prospecting trip depends upon the mode of transportation, the work contemplated, and the funds available. Enough equipment should be taken, but unnecessary articles make extra work. When a more or less permanent camp is established added equipment for personal comfort and efficiency can be obtained. Usually a cabin is built for a permanent camp.

TRANSPORTATION

An automobile is to be preferred for transportation if the region is one where it can be used. It has the advantage that a complete outfit can be

carried and trips can be made out for supplies with relative ease. Most present-day prospectors use automobiles, especially in the desert regions. In mountainous regions away from roads the old stand-by, the burro, still finds favor. A prospector working alone generally uses two burros; occasionally, however, one animal suffices. A string of six or more burros will be used by a party; in this case a packer will be needed to look after the stock. About 150 pounds can be packed on each animal. A burro can live off the country and can go almost any place a man can get afoot. The principal objection to the use of burros is that they must be rounded up each day to keep them from wandering off beyond reach; a prospector will spend about a fourth of his working time chasing his burros. Mules or horses are used under some conditions but on the whole are less satisfactory for prospecting than burros. A horse cannot live off the country, and both mules and horses must be hobbled to keep them within reach.

Some prospectors prefer to get as near as possible to the area they wish to prospect by car and then carry supplies in on their backs to “spike” camps rather than bother with animals. Each year as more roads are built new country becomes accessible by car.

CAMP OUTFITS

A roll of 3 or 4 blankets (the number depending upon the climate) in a canvas cover, a tent, a tight wooden box with a lid for storing food away from insects and rodents, and a canvas “war bag” for clothes usually make up the minimum camp outfit. A stove will be needed if prospecting is done in cold weather. A folding cot is desirable; in a permanent camp a bunk usually is built, as well as other needed furniture.

TOOLS

A full-sized ax and a good pocketknife are the first requirements for camping. A saw and a hammer with 2 or 3 pounds of assorted nails will be needed for fixing up a camp. A 50-foot length of ¼-inch manila rope usually comes in handy. A miner’s acetylene lamp provides a good light; a 5-pound can of carbide will last a camp all summer. A flashlight and a supply of batteries are conveniences that may be well worth their cost. A 2-quart canteen with a shoulder strap usually is needed for carrying drinking water or water for panning. A 2-gallon canteen and a 5 or 10-gallon water keg are necessary in some districts.

A pick, a long-handled, round-pointed shovel, a gold pan, and a prospector’s pick are indispensable. If claims are to be staked a compass will be needed for running out the lines. A hand magnifying glass is a great help in identifying minerals. A mortar and pestle, a horn spoon, or a small pan will be needed for testing rock for free gold or other heavy minerals. A blowpipe outfit and determinative tables are of service to those who know how to use them. Bags for taking out samples usually are needed. Double paper bags with rubber rings cut from old automobile tubes for closing them permit large numbers of samples to be collected with little expense for bags.

A single-jack hammer with 2 or 3 moils will come in handy for taking samples and for loosening rock found in making cuts.

Some prospectors carry 1 or 2 sets of hand steel and several pounds of powder. A few rounds may be drilled and blasted before the steel has to be resharpened. If any extensive rockwork is to be done a forge and a set of blacksmith tools are necessary; usually these are brought in later.

COOKING EQUIPMENT

For a 1 or 2-man party a frying pan, a coffee pot, a large and a small stew pan or pot, and a Dutch oven are needed. A knife, fork, spoon, cup, and plate are required for each man. A few extra plates come in handy. A good butcher knife, a water pail, a can opener, and a few tea towels complete the outfit. Other dishes can be taken according to personal preferences.
The variety of food taken on prospecting trips depends upon the method of transportation and the prospector's pocketbook. If the supplies are to be packed on animals bulky foods, such as potatoes and canned articles, are omitted. If there is need for economy in making purchases the list will consist mostly of dried staples and vegetables, if available locally.

Bacon, flour, beans, oatmeal, dried or canned fruit, coffee, syrup for hot cakes, and sugar and canned milk for the coffee are the stand-bys in prospectors' camps. As funds get low more beans and less bacon are eaten, and canned fruit is omitted. Canned tomatoes are in common use; they are cheap and supply needed food elements not contained in dry staples (for example, they help to prevent scurvy). Where available locally Irish potatoes, onions, and other vegetables are eaten. Fresh meat is not used much in camps in summer on account of the difficulty of keeping it.

A proper balance should be made in compiling a "grub" list so that needed items will not run short. Everyone prefers certain articles of food, and these likes should be followed as much as practicable. It has been found by experience, however, that fancy groceries are the ones left over, and the first supplies to be used are bacon, potatoes, and flour. Plain, wholesome fare seems to be preferred in camp, especially where hard work is done.

The following weekly allowance of food for one person to give a balanced diet is condensed from suggestions made by Doctor Smith: Three 1-pound cans evaporated milk; 2 pounds potatoes; 4 pounds onions, cabbage, beets, or other vegetables; 3 pounds citrus fruits, 6 pounds fresh apples, or equivalent dried prunes, apricots, etc.; 3 pounds dried beans; 6 to 8 pounds cereals, wholewheat flour or bread, rolled oats, shredded wheat, etc.; 2½ pounds dried meat, bacon, ham, or cheese (fresh meat or eggs may be substituted if available); 3 pounds sugar; 1 pound coffee; ¼ pound salt; ½ pound butter; and baking powder.

The cost of provisions for prospecting in the West will average about 50 cents per day per man. Many prospectors live in the hills when short of funds on as little as 25 cents per day each; they are not well-nourished, however, and do not have a balanced diet.

In many districts of the Southwest water must be carried. The quantity required depends upon the time of year and the amount of work done by the miner. Men working where temperatures range from 100 to 110 degrees drink 2 gallons or more of water per day; under such conditions a 10-gallon tank would last one man 3 days, allowing for cooking but not for the radiator of a car. In cooler weather a 10-gallon tank should last one man a week or 10 days.

The most important item of clothing is a pair of stout, thick-soled shoes of good quality, preferably hobnailed. If an extensive trip is planned a second pair may be needed. Other clothing can be patched, but when a prospector's shoes go to pieces his trip is ended. A pair of rubber boots will prove a comfort if much placering is done.

Woolen socks to wear under the heavy shoes help to prevent blisters; several pairs may be worn out in a season.

Other clothes are chosen for the climate and service. A leather jacket is very serviceable and comfortable in cool weather, or a sheepskin coat may be needed when it gets colder. Many prospectors in mountainous regions wear flannel shirts and woolen underwear. Overalls are a common garb.

A complete change of clothing should be taken on all but the shortest trips to permit changing into dry clothing after being caught out in the rain or working in water all day.

FIRST-AID SUPPLIES

As prospectors are likely to be away from medical aid, some medical and first-aid supplies should be taken along. These should consist of a laxative (castor oil or salts), iodine or mercurochrome to disinfect cuts or bruises, and a first-aid kit. A snake-bite kit may also prove invaluable.

LOCATION OF LODE CLAIMS ON PUBLIC LANDS

Lands to Which Mining Laws Apply

The laws (Act of May 10, 1922) pertaining to acquiring mining claims on vacant public lands apply to Arizona, Arkansas, California, Colorado, Florida, Idaho, Louisiana, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oregon, South Dakota, Utah, Washington, Wyoming and to Alaska (subject to certain modifications). Vein deposits of metalliferous ores can be located and patented on the public domain, national forests, and stock-raising homesteads, on land entered under other agricultural laws but not patented where prospecting can be done peacefully, and on land within railroad grants for which patent has not been issued. Public land temporarily withdrawn from settlement, location, sale, or entry and reserved for water-power sites, irrigation, classification, or other public purposes shall be open at all times for exploration for metalliferous minerals and purchase under the mining laws. However, power or reservoir sites withdrawn by Congressional action or Executive order are not subject to mineral location. Placer claims can be acquired in the same manner except in case of some withdrawals.

Mining claims cannot be filed upon patented land, except where the minerals have been reserved to the United States, on Indian or military reservations, or in national parks or monuments. Land below high tide, lake beds (except Searles Lake, Calif.), or the beds of navigable rivers are not subject to mineral location.

New lode locations can be made over abandoned earlier locations.

Public land known to be valuable for minerals cannot be patented, except under the provisions of the mining law, and valid mineral locations take precedence over other forms of land entry.

A lode claim can be located legally on known lodes in place containing valuable mineral on an unpatented placer claim held by the lode locator or others in the same manner as if the placer location did not exist. A lode deposit cannot be held under a placer location, but once a placer claim is patented the owner owns and may mine all lodes not known to exist at the time the patent was issued.

MINERAL DISCOVERY

The first requirement for locating a lode claim is to make a mineral discovery. This should consist of a "vein," "lode," "ledge," or "crevice" containing valuable "mineral" in place. It is not required that the mineral showing be of sufficient size or grade to be mined at a profit. The finding of float, even if present in sufficient quantity that it may be collected at a profit, does not constitute a mineral discovery. Although technically a valid claim cannot be located until actual valuable mineral has been found in place it is common custom to post a location notice on open ground where hidden leads are being sought by excavating. If valuable mineral is found by this work the prospector is afforded some protection by having the location posted should an effort be made to "jump" the ground.

LOCATION OF LODE CLAIMS

Mining locations may be made by citizens or those who have declared their intention to become citizens, by an association of qualified persons, or

9/ General Land Office, Department of the Interior, United States Mining Laws; Circ. 430, 1922.
10/ General Land Office, Information in Regard to Mining Claims on the Public Domain; Circ. 1278.
by a domestic corporation. Locations can be made without regard to age, sex, or residence of the locator. A locator may include as colocators other qualified persons who may or may not have seen the ground; moreover, a person may make valid locations for other qualified parties.

No limit is placed by the Federal statutes on the number of lode locations that may be made in the United States by an individual or a company. Both lode and placer claims may be amended and the boundaries changed at any time, provided that such changes do not interfere with the rights of others.

A location notice must contain the names of the locator or locators, the date of location, and a description of the claim by reference to some natural object or permanent monument that will identify it. Lode claims must be marked distinctly on the ground so that their boundaries can be traced readily. State laws define how the location notice must be posted, what the size of the discovery cut or shaft shall be, and how the claim boundaries shall be marked. The location notice should be filed as required by the State laws.

Lode claims are limited to 1,500 feet in length and 300 feet on either side of the lode or vein at the surface, subject to State laws or district regulations. The maximum size of a claim is a parallelogram 600 by 1,500 feet (20.66 acres). End lines must be parallel. A claim does not need to be of full size or rectangular. If a vein on which a claim is staked curves the side lines of the claim may be broken to make the location fit the vein. The lines of a claim may be laid out only to include the open ground in a fraction between prior locations, or a full-size claim may be staked; in the latter event the only rights obtained are to the open ground. A full-size claim may be staked to cover two or more noncontiguous fractions of open ground.

ASSESSMENT WORK

To hold the possessive title to a mining claim not less than $100 worth of work must be done or an equivalent value of improvements made upon or for the benefit of each claim each year, regardless of its size. Where a number of contiguous claims are held in common the aggregate expenditures for the group may be made on one claim. Locations connecting only at the corners are held to be noncontiguous. The period within which the annual work must be done begins at noon of July 1 succeeding the date of location. Failure to do the annual assessment work will subject a claim to location by others unless work is resumed before such relocation. It has been held that a claim is not subject to relocation if work is being done on the ground at the end of the required period. In other words, if work is begun by noon of July 1, 1930 on a claim located in September, 1928 and diligently carried on thereafter to completion it is not subject to relocation. Additional work would be required for the period beginning July 1, 1930. Annual expenditure is not required after entry is made at the Land Office for patent.

The annual assessment work may be omitted on a claim for 1 or more years, and the location will still be valid if work is resumed on the ground, provided no interfering interests are affected or no other location has been made on the ground. Most States have provided for filing proofs of labor for the annual assessment work.

Where one of several locators fails to contribute his share of the required expenditures made for the benefit of a claim the co-owners at the expiration of the period may give notice personally or in writing or by advertising in the newspaper published nearest the claim at least once a week for 90 days; if upon the expiration of 90 days after the personal notice or upon the expiration of 180 days after the first newspaper notice the delinquent co-owner shall have failed to contribute his proportion of such expenditures or improvements, his interest in the claim passes by law to his co-owners who have made the required expenditures.

SUSPENSION OF ASSESSMENT WORK

Congress suspended the assessment work on all claims for the assessment year ended July 1, 1932. All claim owners who were exempt from the pay-
ment of Federal income tax were relieved from making the required annual expenditure for the years ended July 1, 1933 and July 1, 1934. During 1933-34 the suspension applied to only 6 lode claims or 120 acres of placer ground held by an individual or 12 lode claims or 240 acres of placer ground held by a partnership, association, or corporation.

**INDIAN RESERVATION**

The Secretary of the Interior has been authorized by Congress (Act of June 30, 1929) to lease unallotted lands on Indian reservations for mining purposes in Arizona, California, Idaho, Montana, New Mexico, Oregon, Washington, and Wyoming. After declaration by the Secretary that the lands are subject to lease claims may be located as on the public domain; a duplicate of the location notice must be filed with the superintendent in charge of the reservation within 60 days. The locator has 1 year's preference right to apply for a lease through the reservation superintendent to the Secretary of the Interior. Leases are for 20 years, with provision for 10-year renewals.

**NATIONAL FORESTS IN MIDDLE ATLANTIC STATES**

As stated before, mineral lands in national forests in the public land States may be entered as on the public domain. In the Middle Atlantic States (where the Federal mining laws do not apply) special regulations have been promulgated by the Department of Agriculture permitting prospecting, development, and utilization of the mineral resources on national forest lands.

Prospecting may be carried on without a permit, but no extensive excavations can be made or structures erected without a permit. For a fee of $5.00 exclusive prospecting permits, one to a person, will be issued to qualified persons to explore a specified area not to exceed 100 acres. Permits may be renewed.

Upon application, after the discovery of valuable mineral deposits, a mining permit will be granted for 5 to 20 years at a rental of not less than $1.00 or more than $2.00 per acre. In addition a royalty of 2 to 8 per cent of the value of the minerals mined will be charged. Rules are laid down by the Forest Service as to cutting timber and how the mining work shall be conducted.

**STATE LANDS**

When statehood was conferred upon the Western States Congress granted to them sections 16 and 36 of each township for school, road building, or other purposes. Sections 2 and 32 were also granted to Arizona and New Mexico. Some special land grants have also been made to most of the Western States. By the terms of the original grant the States were required to take lieu selections for lands already occupied at the time of the grant or known to be mineral at the time the land was surveyed. Congress, however, by the Act of January 25, 1927, granted the States the minerals on all State sections subject to existing claims.

Most of the mining States provide for leasing minerals found on State land. After discovery application for a prospecting or mining lease should be made to the authority having charge of State lands. Regulations on the granting of prospecting or mining leases vary in different States.

**MINING CLAIMS ON STOCK-RAISING HOMESTEADS**

Patents to stock-raising or grazing homesteads contain a reservation that all coal and other minerals are reserved to the Government. Any qualified locator may go upon the lands entered or patented under the stock-raising homestead act to prospect for coal or other minerals, provided he does not damage the permanent improvements of the entryman; he also is liable for all damage he does to crops.

Anyone who has acquired the right from the United States to mine the minerals may reenter and occupy as much of the surface as is required for mining purposes (1) by obtaining a written consent or waiver from the homesteader; (2) by payment for crops or tangible improvements to the owner under agreement; (3) by posting a bond of at least $1,000 to cover any dam-
ages that might be awarded by a court of competent jurisdiction. The bond must be approved by the register of the Land Office if the homesteader protests. The Land Office will allow mineral and coal applications on stock-raising homesteads, whether patented or held under entry, and patent will be issued in the regular manner except that it will contain the notation that the land is subject to occupancy and used in accordance with the Act of December 29, 1916.

STATE MINING LAWS

By the Act of May 10, 1872, Congress authorized State and Territorial legislatures to pass laws regulating the location, holding, and patenting of mining claims on the public domain. The States in which the mining laws apply have made regulations in addition to those passed by Congress regarding mining claims. By the Act of May 17, 1884 the Federal mining laws were extended to Alaska. Congress has since passed supplemental laws in regard to locating and patenting mining claims in that Territory.

SIZE OF CLAIMS

Except for South Dakota and North Dakota the maximum size of lode claims prescribed by Congress (600 by 1,500 feet) is permitted by State laws. In South Dakota the claims are full width, except where a county at a general election may determine on a narrower width, but not less than 25 feet on either side of the center line. In North Dakota the standard lode claim is 150 feet on either side of the center line, except that by the same procedure as above the width may be increased to 300 feet on either side of the center line. Claims were limited to 150 feet in Gilpin, Clear Creek, Boulder, and Summit Counties on either side of the center line in Colorado before 1921, at which time the law was amended to allow full-size claims.

LOCATION NOTICES

All the States require location notices to be posted at the point of discovery on both lode and placer claims except Idaho, where the notice for a placer claim can be posted on one of the boundary monuments. The notice is to be posted on a monument similar to a claim corner in most of the States. The Federal Statutes prescribe that the location notice for lode claims shall contain (1) the name of the claim or lode, (2) the name of the locator or locators, (3) the date, (4) a description of the claim by reference to some natural object or permanent monument that will identify the claim; in addition, Arizona, California, Idaho, Nevada, Oregon, South Dakota, Utah, and Wyoming require the notice to state (1) the general course of the vein as near as may be, (2) the distance claimed on either side of the center line or discovery cut, (3) the distance claimed both ways along the lode from the point of discovery either on the location notice or certificates filed for record. In addition to the above, Idaho requires the location notice to contain the name of the mining district, county, and State. In addition to the general Federal requirements a lode-location notice in Alaska must state the number of feet claimed along the veins each way from the point of discovery and the width on each side of the center line; in Colorado a notice must state the number of feet claimed on each side of the discovery shaft and the general course of the lode as near as may be; in Montana the notice must give the approximate dimensions of the claim.

Blank forms of location notices can be purchased from printing establishments or at stores handling stationery in most mining districts. These forms are a convenience in making locations and show the requirements to be followed in the particular State.

FILING CERTIFICATE OF LOCATION

All Western States require a copy of the location notice or a certificate of location to be filed for record. Thirty days from the date of making the discovery or posting the location notice is allowed for filing in California, Colorado, Idaho (for placers), Utah, and Washington (for placers); 60 days
PROSPECTING AND LOCATING CLAIMS

in Arizona (for placers), Montana, North Dakota, Oregon, South Dakota, and Wyoming (for lodes); 90 days in Alaska, Arizona, Idaho (for lodes), Nevada, New Mexico, Washington (for lodes), and Wyoming (for placers). In Arizona, California, Colorado, Idaho, and North Dakota location notice and proofs of labor are filed with the county recorder; in Alaska with the district mining recorder for record; in Montana, New Mexico, and Wyoming with the county clerk; in South Dakota with the register of deeds; and in Washington with the county auditor. In Nevada and Utah notices are filed with the district mining recorder (in duplicate) if there is one, otherwise with the county recorder. In Oregon notices are filed with the recorder of conveyances if one, otherwise with the county recorder.

MARKING BOUNDARIES

In all Western States the boundaries of lode locations must be marked before the location notice is filed for record. In Montana and Oregon the boundaries must be marked within 30 days; in Idaho, 10 days; and in Nevada, 20 days after the location notice is posted.

In California, New Mexico, and Utah there are no State regulations as to marking corners, except that they shall be marked distinctly. In California a description of a placer claim by legal subdivision is deemed equivalent to marking the claim. In Idaho, Montana, and Washington the corners or angles of the claims (four or more corners) shall be marked with substantial monuments. In Alaska, Arizona, Colorado, Nevada, Oregon, and Wyoming each corner and center-end lines of lode claims and each corner of placer claims shall be so marked. In North Dakota and South Dakota each of the four corners, the center-end line, and the center-side lines of lode claims shall be marked and the corners of placer claims by monuments. In Alaska and Washington the claim boundaries must be marked by cutting brush or blazing trees if claims are covered by such growth.

In Alaska the claim corners of lode claims must be marked by posts at least 3 inches in diameter and 3 feet above ground or by mounds of earth or stone 3 feet high and 3 feet in diameter. The corners must be marked with the name of the claim, the number or position of the corner, and the direction of the boundary lines. In Arizona the monuments must consist of a 4-foot post or a mound of stone 3 feet high; in Colorado and Idaho when posts or Trees are used they must be marked. In Montana a corner can consist of an 8-inch tree blazed on four sides, a 4-inch square post 4½ feet long surrounded by a mound 4 feet in diameter and 2 feet high, or a square stump with mound, a stone 6 by 18 inches two thirds in the ground with a mound 4 by 2 feet nearby, or a boulder 3 feet above ground; each corner is to be marked. Requirements for corners in Nevada are similar to those in Montana. In North Dakota and South Dakota corners are to consist of substantial posts hewed or glazed on the side or sides facing the claim and marked with the name of the claim and the corner. In Oregon the corners must consist of posts at least 4 inches square and 3 feet high or mounds at least 2 feet high; in Washington similar monuments are required, except that mounds must be 3 feet high. In Wyoming substantial corners of stone or posts sunk into the ground are required; they must be marked on the side or sides which face the claim.

DISCOVERY EXCAVATIONS

No discovery shafts or excavations are required in Arizona (for placers), California and Utah; in Alaska only enough material need be removed to disclose a vein or lode in place. Each of the other Western States requires a discovery shaft to be sunk before the location notice is filed; this shaft must be 10 feet deep at the lowest part of the rim, except in Arizona, which requires an 8-foot shaft for lode claims. In the above cases any excavation that equals the shaft in amount and cuts the vein 10 feet below the surface is equivalent to the shaft. In Arizona and Nevada the shaft must be at least 4 by 6 feet in section; in Idaho (lode claims) it must be 16 square feet in cross-section or contain 160 cubic feet; in Montana it must contain 150 cubic feet, part of which can be elsewhere, but 75 cubic feet must be excavated at
the point of discovery. In Idaho a discovery for a placer must contain 100 cubic feet. In Nevada $20 worth of labor must be expended for a placer discovery excavation, and in Washington $10. An affidavit that the discovery excavation has been made is required at the time of filing in Idaho, New Mexico, and Washington (for placer claims).

**PROOFS OF LABOR**

In most States a certain form is required for filing affidavit of proof of labor for a claim. The affidavit must be filed within 90 days after the period for which the work is required in Alaska and Arizona; 60 days after the end of the period in Idaho and New Mexico; 60 days after the end of the period in Washington and California; and 30 days after the completion of the work in Utah. Twenty days after the period is allowed in Montana and six months in Colorado.

**STATUS OF UNPATENTED LODE CLAIMS**

A valid lode claim held by right of location may be sold or leased like any other real estate. Ores may be mined and sold from claims held under location, as from patented claims. Unpatented lode claims cannot be taxed as real estate, although buildings and their contents placed upon them may be taxed.

**TIMBER RIGHTS**

Timber and stone on national forests may be used free of charge by bona fide settlers, miners, residents, and prospectors for minerals, firewood, fencing, building, mining, prospecting, and other domestic purposes under regulations set forth by the Forest Service. Timber on unpatented claims may be used for mining purposes but not sold.

**PROCEDURE TO OBTAIN PATENT TO LODE CLAIMS**

Valid locations or groups of locations on which not less than $500 has been expended for the benefit of each claim may be patented. Proceedings for patent are instituted in the district Land Office. The claims or claim must be surveyed by a deputy U. S. mineral surveyor; the application for a survey is made to the public survey office. Notice of the application is required to be posted on the land before the application is filed and published by the register of the Land Office after the application is filed. Information as to patent procedure can be obtained from the register of the Local Land Office or from the General Land Office in Washington.

**ADVERSE CLAIMS**

An adverse claim must be filed under oath with the register of the Land Office before the period of advertising expires. The adverse claim must set forth fully the nature and extent of the interference or conflict, whether the adverse party claims as a purchaser or as a locator. If the former, a duly certified copy of the original location notice, the original conveyance or an abstract of title from the office of the proper recorder should be furnished; if verbal, the circumstances should be narrated. If as a locator he must file a duly certified copy of the location notice from the office of the proper recorder.

The adverse claimant must also file a plat showing his entire claim and its relative position with regard to the one which he claims conflicts, unless he is claiming by legal subdivision.

Upon filing the protest the register of the land office will give notice to the parties that adverse claim has been filed, informing them that the adverse claimant will be required within 30 days from the date of such filing to begin proceedings in a court of competent jurisdiction to determine the question of right of possession and to prosecute the action with reasonable diligence to final judgment, and should he fail to do so his adverse claim will be considered waived and the application for patent will be allowed to proceed on its merits.—Reprinted from U. S. Bureau of Mines. Information Circular No. 6848.
Purpose, Problems, and Accomplishments of the Idaho Bureau of Mines and Geology

MOSCOW, IDAHO

By A. W. FAHRENWALD, Director

Board of Control: Honorable C. Ben Ross, Governor of Idaho, Chairman; Arthur Campbell, Inspector of Mines; L. E. Hanley, President of the Idaho Mining Association; F. B. Laney of the School of Mines faculty, University of Idaho; A. W. Fahrenwald, Dean of the School of Mines, Director, and Secretary of the Board of Control.

Since this bureau publishes only technical reports of investigations and no annual report of its activities, the Inspector of Mines has kindly invited the director of the bureau to outline its purposes and projects for inclusion in his annual report upon the mining industry of Idaho. The bureau's duties are distinct from those of the Inspector of Mines, but both serve the mining industry and work in close and cordial cooperation.

The bureau was established by act of legislature in 1919 to investigate, under the Board of Control, the technical aspects of the mineral resources of the state, mining, metallurgical and geological problems, do topographic and
geologic mapping, hydrographic surveys, and publish reports. The legislature in 1933 amended the original act so that the bureau is now authorized to carry on necessary technical studies and cooperate in the investigations for which it was created with any federal or state department or bureau, in order to accomplish increased results at a minimum cost.

There are large unmapped areas in Idaho that are highly promising for valuable mineral deposits. The method of the bureau is to carry on systematic scientific field and laboratory studies of these areas. Results of this work have led to economic operations in numerous places in Idaho. Bulletins and papers are published each year as funds permit.

**GEOLOGICAL STUDIES**

Cooperative work with the U. S. Geological Survey is being continued on a large scale as funds appropriated by the legislature will permit. Because of the better economic conditions surrounding gold and the wide scattered interest and location of gold districts in Idaho, cooperative geologic field studies have been designed to aid and encourage the finding and production of this metal. Placer and lode gold mining is in much evidence in scales of operation ranging from one-man sluicing and panning operations to huge dredges and modern flotation and cyanide plants. Old districts are well along on the comeback trail and new districts are in prospect. The cooperative geologic studies during the great depression years have had for their main purpose the production of geologic data that would aid the gold miner. Preliminary reports and bulletins covering recent field work are in progress of preparation.

**Bayhorse project.** The report by Mr. Clyde P. Ross on the Bayhorse quadrangle, the field work of which was begun in 1930, which has been in manuscript for some time, and which has not been published for lack of funds, is expected to be issued soon.

**Boise Basin project.** The Boise Basin report has been in process of preparation during the past several months. Mr. Alfred L. Anderson, who spent the summers of 1933 and 1934 making detailed studies in the field, remained at his office and laboratory last summer devoting all his time to preparing his report. It will contain detailed geologic data and is expected to be ready for publication as a professional paper early in the spring of 1936. The following article is an outgrowth of Mr. Anderson's studies in this district:

"The valley of Grimes Creek in the Payette Canyon," Jour. of Geol. vol. 43, August-September, 1935.

**Yellow Pine-Edwardsburg project.** As stated in the Inspector of Mines' report of last year, it has been impossible for Mr. Philip J. Shenon of the U. S. Geological Survey to complete his field studies in this district due to an insufficient topographic base map. A preliminary report is in process of preparation which Mr. Shenon hopes to have ready for publication this winter or in the early spring.

A preliminary report dealing only with the eastern part of the Yellow Pine mining district, the field work of which was done by Mr. L. W. Currier of the U. S. Geological Survey in 1932, was published by the bureau.

**Placer ground studies in the Burgdorf and Florence districts.** This project has been continued by Mr. John C. Reed in the Burgdorf-Warren district and in Florence. This work has opened up a tremendously large and important field of study and it is hoped that it may be continued next summer. Mr. Reed has already obtained and mapped geologic data which, when published, will be of great aid to gold miners. This work is a continuation of the studies of the ancient gravel deposits south of Grangeville and extending to Florence, reported in Pamphlet No. 40—"Gold-bearing gravels of the Nezperce National Forest, Idaho County, Idaho."

**Murray-Pritchard project.** Murray, Idaho, is the location of much gold production in the early days and of considerable promising mining operations in recent years. Mr. P. J. Shenon and party devoted the entire summer to a detailed geologic study of this district, particularly in the vicinity of Murray. Mr. Shenon will prepare his report this winter and should have it ready for publication in the spring.
MINING AND METALLURGICAL RESEARCH

It is the aim of this division of the bureau to contribute in any way possible toward efficient and economic utilization of the state's mineral resources; the initiation of new methods and improvement of old ones; reduction of waste and cost. Help is given in all ways possible under the condition of limited finances. Metallurgists in the School of Mines attempt to keep abreast of technological advances in the art and science of processing so that operators in Idaho may have recourse to aid of this kind.

Efforts also are made, by research and experimental methods, to develop new methods and improve existing methods of metal recovery. At the present time, efforts are confined to studies bearing directly, or indirectly, on gold recovery and extraction processes.

This year we have three research Fellows, one whose stipend of $540 per annum is provided by the U. S. Bureau of Mines. These research men devote approximately one-half of their time to laboratory study of an assigned metallurgical problem; the other half of their time is for study in the University of Idaho. At the end of the year, upon satisfactory work, the Fellow is awarded his master's degree.

The problems under study are (1) flotation of non-metallic minerals, (2) study of the crushing rolls, (3) theories of flotation and chlorination of gold concentrates.

The work is conducted by and under instruction of the School of Mines metallurgical staff.

GENERAL SERVICES TO THE PUBLIC

Many people of the state who own mines, or are seeking mineral deposits, visit the offices of the bureau. A far larger number write letters, asking for information and suggestions. Their inquiries are answered by the director, or members of the technical staff. Questions upon the various aspects of prospecting, gold-mining, and milling, requests for pamphlets, and for the identification of minerals, have totaled from 2000 to 3000 per year. The minerals of approximately 1000 samples and specimens were identified for mining people in the 1933-34 biennium.

ASSAYS. Occasionally prospectors and others desire to learn through the bureau the assay value of ore. It is not possible for the bureau to do free assaying because (1) it would require a considerable appropriation, (2) it would compete with private commercial assayers, (3) the bureau would be submerged with requests for assays in numbers impossible to handle. When, however, it is urgently desired, the samples are turned over to a competent chemist for assay, who charges standard fees and in whose work the bureau has full confidence.

As required by act of legislature in 1931, the bureau has kept informed upon drilling for oil and gas, and has samples of cores of the beds drilled in the Payette-Weiser regions.

The War Department has been supplied with information upon sources of metals in the state. Two irrigation districts have expressed appreciation for help given in cooperation with the State Bureau of Reclamation. Cooperation with the federal and state reclamation services in the survey of underground water resources of the Snake River plains has been completed.

Cordial relations have been established with the Forest service, which has given prospectors courteous assistance, and has done much to make accessible the interior gold areas by building roads and trails.

The bureau stands ready, so far as its funds permit, to cooperate with other state bureaus in geological studies of artesian water possibilities, prevention of soil erosion, preservation of grazing ranges by soil development and protection, prevention of alkali accumulations on irrigated lands, and location of materials available for road work.

The value of geological study in mining is winning popular appreciation. It is realized that ore deposits, when formed, sought certain rock formations in preference to others. One class of rock (igneous) has a peculiar importance, because ore solutions originated with these before the deposition of ore in veins. The geologist can point out the favorable and unfavorable formations
and structures after all details have been mapped. Underground development is expensive and geological study can warn against doing such work in the wrong places or in the wrong direction, besides aiding in ore-finding.

Mining and metallurgical research of the bureau has shown how to make profit from ore left in the ground when methods were crude; laboratory discovery from time to time creates a profit where there had been a loss. These activities pay for themselves many times over in money saved and new wealth made by mining people.

Bureau publications during 1935 follow:


Pamphlet No. 43—"A preliminary report on the geology and ore deposits of the eastern part of the Yellow Pine district, Idaho," by L. W. Currier.

Reports and articles which the bureau could not print and distribute, because of lack of funds, the scientific societies and journals have been glad to publish. Those who are interested in reading them may find them in university and city libraries. Such articles published in 1935 are as follows:


"The Valley of Grimes Creek in the Payette Canyon," by Alfred L. Anderson; Jour. of Geol., vol. 43, August-September, 1935.

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Publications of the Idaho Bureau of Mines and Geology

MOSCOW, IDAHO

*Publications out of print.

*BULLETIN NO. 1—"The copper deposits of the Seven Devils and adjacent districts," by D. C. Livingston and F. B. Laney. 1920.


*BULLETIN NO. 5—"Geology and ore deposits of Alturas quadrangle, Blaine County, Idaho," by Samuel M. Ballard. 1922.

*BULLETIN NO. 6—"Geology and water resources of Goose Creek Basin, Cassia County, Idaho," by Arthur M. Piper. 1923. (Prepared in cooperation with the U. S. Geological Survey.)

*BULLETIN NO. 7—"Geology and gold resources of north central Idaho," by Francis A. Thomson and Samuel M. Ballard. 1924.

BULLETIN NO. 8—"Geology and oil possibilities of Bonneville, Bingham, and Caribou Counties, Idaho," by Virgil R. D. Kirkham. Prices 50 cents. 1924.


BULLETIN NO. 11—"Geology and metalliferous resources of the region about Silver City, Idaho," by Arthur M. Piper and Francis B. Laney. Price 50 cents. 1926.


* PAMPHLET NO. 1—"Interfacial tension measurements and some applications to flotation," by Robert B. Elder. 1921. (Prepared in cooperation with the U. S. Bureau of Mines.)

* PAMPHLET NO. 2—"Size of mineral particles in relation to flotation concentration," by A. W. Fahrenwald. 1921. (Prepared in cooperation with the U. S. Bureau of Mines.)

* PAMPHLET NO. 3—"Testing ores for flotation," by A. W. Fahrenwald. 1921. (Prepared in cooperation with the U. S. Bureau of Mines.)

* PAMPHLET NO. 4—"Differential flotation," by A. W. Fahrenwald. 1921. (Prepared in cooperation with the U. S. Bureau of Mines.)

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Member, Board of Control, Bureau of Mines and Geology


*PAMPHLET NO. 7—"Notes on the geology of eastern Bear Lake County, Idaho, with references to oil possibilities," by Virgil R. D. Kirkham. 1923.

PAMPHLET NO. 8—"Ground water supply at Moscow, Idaho," by F. E. Laney, V. R. D. Kirkham, and A. M. Piper, 1923.

*PAMPHLET NO. 9—"Ground water in Pahsimeroi Valley, Idaho," by Oscar E. Meinzer. 1924.


*PAMPHLET NO. 11—"Geology and water resources of the Bruneau River Basin, Owyhee County, Idaho," by Arthur M. Piper. (Prepared in cooperation with the U. S. Geological Survey.)

PAMPHLET NO. 12—"Possibilities of petroleum in Power and Oneida Counties, Idaho," by Arthur M. Piper, 1924.


PAMPHLET NO. 16—"Ground water for municipal supply at Idaho Falls, Idaho," by Arthur M. Piper and Virgil R. D. Kirkham, 1924.

*PAMPHLET NO. 17—"Ground water for municipal supply at St. Maries, Idaho," by Virgil R. D. Kirkham, 1926.


*PAMPHLET NO. 20—"A disseminated lead prospect in northern Boise County, Idaho," by Clyde P. Ross, 1926. (Prepared in cooperation with the U. S. Geological Survey.)

*PAMPHLET NO. 21—"The Vienna district, Blaine County, Idaho," by Clyde P. Ross, 1927. (Prepared in cooperation with the U. S. Geological Survey.)

*PAMPHLET NO. 22—"The geology and ore deposits of the South Mountain mining district, Owyhee County, Idaho," by Robert E. Sorenson, 1927.

PAMPHLET NO. 23—"Ground water for municipal supply at Potlatch, Idaho," by Virgil R. D. Kirkham, 1927.


*PAMPHLET NO. 31—"Geology and silver ore deposits of the Pend Oreille district, Idaho," by Edward Sampson, 1928. (Prepared in cooperation with the U. S. Geological Survey.)

*PAMPHLET NO. 32—"Geology and ore deposits of the Lava Creek district, Idaho," by Alfred L. Anderson, 1929.

*PAMPHLET NO. 33—"Geology and ore deposits of the Seafoam, Alder Creek, Little Smoky, and Willow Creek mining districts, Custer and Camas counties, Idaho," by Clyde P. Ross, 1930. (Prepared in cooperation with the U. S. Geological Survey.)

*PAMPHLET NO. 34—"The geology and mineral resources of the region about Orofino, Idaho," by Alfred L. Anderson, 1930.


PAMPHLET NO. 36—"Prospecting for gold ores," by John W. Finch, 1932. 10c.

PAMPHLET NO. 37—"Recovery of gold from its ores," by A. W. Fahrenwald, 1932. 10c.

*PAMPHLET NO. 38—Biennial report on the activities of the Bureau, by John W. Finch.

*PAMPHLET NO. 39—"The Dome mining district, Butte County, Idaho," by Clyde P. Ross, 1933. (Prepared in cooperation with the U. S. Geological Survey.)


PAMPHLET NO. 43—"A preliminary report on the geology and ore deposits of the eastern part of the Yellow Pine District, Idaho," by L. W. Carrier. 25c.


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Issued by the U. S. Geological Survey

In cooperation with the Idaho Bureau of Mines and Geology


BULLETIN NO. 846-d—"Some lode deposits in the northwestern part of Boise Basin, Idaho," by Clyde P. Ross, 1934. (Obtainable from the Superintendent of Documents, Washington, D. C., for 35 cents.)

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*BULLETIN NO. 205—"Flotation tests of Idaho ores,” by Clarence A. Wright, James G. Parmelee and James T. Norton, 1921.

TECHNICAL PAPER NO. 403—"Hydraulic classification, theory, mechanical development and application in ore dressing,” by A. W. Fahrenwald, 1927. (Obtainable from Superintendent of Documents, Washington, D. C. Price 15 cents.)

REPORT OF INVESTIGATION, SERIAL NO. 2933—"Effect of sieve motion on screening efficiency,” by A. W. Fahrenwald and S. W. Stockdale, 1929.

REPORT OF INVESTIGATION, SERIAL NO. 2949—"The relation of table feed preparation to table efficiency,” by A. W. Fahrenwald and W. F. Meckel, 1929.


NOTE: All publications marked * (out of print) may be consulted in public libraries and libraries of instructional institutions.

Publications in Technical Magazines


"Effects of reagents on aqueous suspensions of pulverized materials and relation of this effect to flotation concentration," by A. W. Fahrenwald, American Chemical Society, 1932.


"Composition and origin of certain commercial clays of northern Idaho," by Edward L. Tullis and F. B. Laney, Vol. 28, No. 5, Econ. Geol., 1933.

"Thunder Mountain mining district," by Clyde P. Ross, Vol. 28, No. 6, Economic Geol., 1933.


The foregoing Bulletins now in print may be obtained upon application to the office of the Bureau of Mines, University of Idaho, Moscow, Idaho.
Mine Rescue Work in the Coeur d’Alenes During 1935

By James Wilson, Director

The Central Mine Rescue Station is located in Wallace, Idaho, the approximate center of the Mining district of Shoshone county, long famous for its production of lead, silver, zinc and copper. Other ores found include gold, antimony and tungsten. Shoshone county boasts the first, third and fifth largest lead producing mines in the United States, the Bunker Hill, Morning and Hecla mines. The largest silver producer, the Sunshine, is also located in Shoshone county. There are a large number of other mines either in the production or development stage.

The Central Rescue Station is housed in a railroad coach instead of a building as this will allow it to be sent directly to the scene of the fire at any mine served by a railroad. This is a very definite advantage as it reinforces the equipment on hand at the mine by all the equipment of the Central Station. The car itself was inspected by the Union Pacific during the past few months and necessary repairs made to keep it ready to move at a moment's notice.

During the past year there have been two major fires in the district, one at the Jack Waite mine of the Federal Mining Company, and the other at the Gold Hunter mine at Mullan. The fire at the Jack Waite destroyed all the buildings except the compressor room. It also destroyed about four hundred feet of snow sheds leading to the mill, as well as all surface tracks. Among the buildings destroyed were the dry room, blacksmith shop, pipe rack, framing shed, etc. By the prompt closing of the fire door at the portal of the tunnel all poison gas and smoke were prevented from entering the mine. All men on duty were notified of the fire and left the mine safely through other exits. There was no damage to the mine proper except the portal sets, which have been replaced by concrete for a distance of about twenty-five feet. A new steel portal door has also been installed.

The recent fire at the Gold Hunter mine at Mullan occurred about six P.M. when all the men were out of the mine. It was probably caused by defective wiring. It destroyed the hoist, ropeway and sheave wheels as well as all equipment in the hoist room. The fire broke out in the hoist room, which is several thousand feet from the portal. A stope running parallel to
the ropeway was also set on fire near the sheave wheels. This stope was about sixty feet long and fifty feet high and as it was not filled, was completely destroyed. All the work at the present time is being done by leasers who are operating in the upper workings and were thus not seriously affected by the fire.

During the past three months a representative of the United States Bureau of Mines has been in the district, checking all mine rescue men and conducting first aid classes. First aid and Mine Rescue Bureau of Mines certificates have been issued to all men completing the course of training. All men in the mine rescue crews have passed a rigid examination as to their physical fitness by a competent physician during the past year. Upon completion of the work being done by the Bureau of Mines representative, he will have conducted first aid classes at all the major mines of the district and will have examined all helmet men.

Oxygen breathing apparatus, commonly known as safety helmets, are a rather complex device and a complete course of training is necessary before their use can be undertaken with safety. Such courses are held during the year at the various mines of the district, a complete course consisting of four classes of four hours each. The men taking the course are paid by the company for whom they work for the time thus spent. A half hour course in First Aid is a part of each day's instruction. A crew of trained helmet men with sufficient equipment is a very real asset to any mining company. Mine fires, in common with surface fires, can often be placed under control if taken in hand at once, but with any considerable delay, the fire has often gained such headway controlling it is frequently a long and costly process. Such conditions in the majority of cases mean the shut down of the mine as far as production is concerned, with the accompanying loss of work for the men and revenue to the company.
Helmet men are chosen for their physical fitness, their ability to think for themselves in any emergency and must also be familiar with the mine as a whole or with some particular portion or operation. These men are trained in crews of five, the largest number that can be handled with maximum efficiency. The course covers the principles, construction, and tests of breathing apparatus. Thus the men become familiar with the machine which they will wear, perhaps at a time when such knowledge or its lack would mean life or death, not only to themselves, but to others. The final portion of the course requires the wearing of the helmet either in smoke or formaldehyde gas with a normal amount of labor being performed. The men are also instructed in the care, cleaning, and sterilization of the equipment. Upon completion of the initial course, additional hours of training are given at intervals to enable the men to keep in practice and to acquaint them with new methods and equipment.

The standard apparatus in use in the Coeur d'Alene district is the type known as the "Paul." It costs two hundred and seventy dollars per set, weighs about forty pounds, and will last when fully charged under ordinary working conditions about two hours. As the "Paul" is an automatic feed machine, this period varies with the individual and the amount of work done. Machines have been worn in tests by a subject at rest for a period of fifteen hours.

In a closed circuit machine, such as the "Paul," the wearer breathes into and from a bag having no connection with the outside air, and in which the pressure is slightly higher than normal atmospheric pressure. For this reason, if a leak should develop, the oxygen would tend to escape without poisonous air being admitted to the machine. In this type of apparatus, the wearer breathes through two flexible tubes on either side of the breathing bag, which is carried on the chest when in use. These tubes terminate in a rubber mouthpiece having a rubber flange fitting between the teeth and the lips which is held in place by four straps attached to a "Safety" hat. A spring clip is placed on the nose so all breathing is done through the mouth.
The exhaled air passes downward through the left-hand tube to a regenerating can for purification. The caustic soda, or cardoxide, in the can absorbs the carbon dioxide gas, after which the purified air is passed through a cooler and thence back to the breathing bag where it is mixed with fresh oxygen. The oxygen supply is carried in a steel tank mounted in the frame of the machine and is carried on the back. The oxygen in the tank is under a pressure of over two thousand pounds per square inch, the pressure being reduced by a reducing valve before being admitted to the breathing bag. The reducing valve is controlled by another valve which is automatic in action and admits oxygen in any amount necessary for the wearer. By means of a by-pass valve, the high pressure oxygen may be admitted directly to the breathing bag in case of failure of either of the above valves. A finimeter gauge is also provided by which the wearer knows at all times the amount of oxygen remaining and is thus enabled to get out in time.

Twelve sets are carried on the Central Rescue Station car, together with a large amount of repairs and accessory equipment. This includes extra oxygen bottles for the machines and large storage tanks of compressed oxygen for refilling the small tanks. High pressure oxygen pumps are used for charging the small tanks, both electric and hand driven pumps being available. Regenerating cans for the purification of the exhaled air, as well as an ample amount of spare parts for the apparatus, repair materials, etc., are kept on the car. Various devices for testing the apparatus such as flow meters, pressure gauges, etc., are in frequent use. There are also a number of devices for testing for the various poisonous gases which may develop from mine fires, such as carbon monoxide, carbon dioxide, and methane or Marsh gas. Inhalators and resuscitating devices are used in conjunction with the Schaefer method of artificial respiration. Battery type searchlights are used by each helmet man. Large portable searchlights equipped with one thousand watt globes are fitted for use on the regular mine power lines and with long cables can be easily moved. This together with numerous regular and special types of fire hose fittings allow prompt and efficient action in case of fire.

In addition to the above equipment, each of the large mines of the district is equipped with from five to ten sets of oxygen breathing apparatus together with a supply of spare parts, regenerating cans, etc. In the event of a major fire in the district all equipment in the district could be concentrated at the fire in a short time.

During the past year approximately one hundred and sixty men have received training and review work. The Sunshine Mining Company started mine rescue training this year and has trained thirty-five men. Two hundred twenty-one men have received first aid training certificates upon completion of training. The Sunshine has taken an active part during the year in the training of men in both mine rescue work and first aid.

In addition to the Sunshine, men are being trained at the Jack Waite, Page, and Morning mines of the Federal Mining & Smelting Co., the Crescent and Bunker Hill mines of the Bunker Hill & Sullivan M. & C. Co.; the Hecla and Polaris mines of the Hecla Mining Co.; and the Star mine, jointly owned by the Hecla and Bunker Hill.

Upon completion of the first aid course now being conducted, approximately seventy-five per cent of the men in the district will have received United States Bureau of Mines First Aid Certificates. About one hundred and sixty men will have Mine Rescue Certificates, and in addition there are quite a large number of men trained at previous times who have one or both types of certificates. Thus it will be seen that the mines of the district are well equipped both as to trained men and equipment for any emergency.
IDAHO GEM CLUB

Idaho offers to the collector of precious and semi-precious stones a nearly virgin field. The wealth of material in this state is little known and has been exploited only to a limited extent.

Material of value to the collector may be found in nearly every county of the state. Agate, jasper, opal and various agatized and opalized woods are found associated with the great lava flows that cover the southern part of the state. Beautiful sapphires, rubies, and garnets are found in the central and western sections. The northern counties offer most excellent fossil flora in the great thicknesses of the sedimentary Latah formation. Beautiful opals of gem quality have been found in the Columbia lavas of this region.

Beautiful red, green, and purple jasper is found within a half mile of the city limits of Boise, Idaho's capital city.

Besides opal, some of which is of the precious variety, the deserts of Owyhee county yield innumerable varieties of the finest agate and jasper.

Beautiful fire opal resembling the Mexican variety, is found scattered throughout the lavas of Squaw Butte near Emmett in Gem county.

The bright yellow silicified wood which has a grain resembling that of natural oak found on Mann Creek, northeast of Weiser, is a great favorite of collectors everywhere. The opalized wood from Clover Creek in Lincoln county is also in demand.

Small, flawless pigeon blood rubies, sapphires, varying in color from light blue thru lavender to colorless, and fine pink garnets are found in the old Rock Flat placers near New Meadows, in Adams county. Some of the sapphires show asterism. Asterated garnets also have been found in Idaho.

The mordenite, one of the rarer zeolites, occurring south of Challis seems to be present in greater abundance and in better specimens here than at any other known locality for the mineral.

Fine crystals of amethyst are found near Hailey in Blaine county. Fire opal has been found not far from Moscow in Latah county. Fossil leaves as large as fourteen inches in diameter have been taken from the Latah formation near Whitebird, Idaho, where immense thicknesses of this formation are exposed.

To call to the attention of the people of Idaho the beauty of our natural stones and to foster the desire for collecting as a hobby with educational value and interest, the Idaho Gem Club has been organized. The aim of this club is to create a consciousness among the people of one of Idaho's natural resources which has heretofore been overlooked.

Collecting these stones makes not only an interesting and educational hobby but may prove to be remunerative as well, as many of these stones are in demand by private collectors, and museums. Some of the better stones such as smokey quartz crystals, best grade, are quoted at about $2.00 an ounce. Amethystine quartz crystals of the best grade bring about $2.00 per carat. Optical companies are in the market for clear calcite crystals, known as Iceland spar.

Several members of the Idaho Gem Club have installed their own cutting and polishing equipment and are doing excellent work. Considerable of the material which has been cut as well as some rough material has been placed in a display case which is now in the Carnegie Public Library at Boise.

The Idaho Gem Club was organized in May, 1935, and the following officers were elected to hold office for the ensuing year:

F. G. Pickett, Jr., President ...................................... Caldwell, Idaho
Howard Rice, Vice-President .............................. 1108 Hays Street, Boise, Idaho
H. D. Eslick, Secretary .............................. 602 Washington Street, Boise, Idaho
A. V. Farrell, Treasurer .................................. Route 4, Boise, Idaho
John T. Carpenter, Field Manager .................. 1219 N. 8th Street, Boise, Idaho
Men Employed and Wages

Better metal prices during the year 1935 had a stimulating effect on activities and more men were engaged in mining than for many years. Those operating, maintained a payroll which showed a decided increase in number of men employed and maintained a scale of wages equal to, and in many instances better than were paid in mining districts of other states.

There was an ample supply of labor throughout the year, and the turnover was comparatively small, so that operating companies were assured a constant working force of experienced men, without the necessity of breaking up the personnel with new and inexperienced crews.

It is practically impossible to obtain complete and accurate statistics of the number of men employed in the mines; a great many are employed by prospectors and small companies which do not maintain continuous work and do not report to the inspector of mines; and the different reports filed by mining companies vary as to the number of days. A conservative estimate covering all mining operations in Idaho for the past year would total approximately 6000.

The Coeur d'Alene district, where the deep seated lead-silver-zinc mines are located, accounted for more than half of this total and maintained production on a five-day weekly basis.

Under an agreement adopted on November 16, 1925, the wages in the Coeur d'Alene district were to be adjusted each month in accordance with a bonus rate based on the selling price of lead in New York. This scale was based on a wage of $3.75 per day for miners when lead is selling under 5½c per pound; the bonus to graduate upward for each additional half cent added to the purchase price.

If the bonus scale had been adhered to in recent years, wages would have been cut to a point entirely out of proportion to wages paid in other parts of the state and too low under high living costs, so the signatories to the bonus scale waived their agreement.

Wages in the state are not uniform. The following is the rate for the Coeur d'Alene district since June 1, 1935. Placer and hydraulic miners are classed as surface workers and receive less remuneration. The several gold mines have their own individual scale for their particular operation.

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miners</td>
<td>$5.25</td>
</tr>
<tr>
<td>Shovelers</td>
<td>4.75</td>
</tr>
<tr>
<td>Timbermen</td>
<td>5.75</td>
</tr>
<tr>
<td>Timber helpers</td>
<td>5.00</td>
</tr>
<tr>
<td>Machinists</td>
<td>6.00</td>
</tr>
<tr>
<td>Machinist helpers</td>
<td>5.00</td>
</tr>
<tr>
<td>Carmen</td>
<td>4.75</td>
</tr>
<tr>
<td>Motormen</td>
<td>5.50</td>
</tr>
<tr>
<td>Trainmen</td>
<td>5.00</td>
</tr>
<tr>
<td>Main hoistmen</td>
<td>6.50</td>
</tr>
<tr>
<td>Small hoistmen</td>
<td>6.00</td>
</tr>
<tr>
<td>Nippers</td>
<td>5.00</td>
</tr>
<tr>
<td>Shaft men</td>
<td>6.25</td>
</tr>
<tr>
<td>Pump &amp; compressormen</td>
<td>$5.50</td>
</tr>
<tr>
<td>Surface laborers</td>
<td>4.50</td>
</tr>
<tr>
<td>Ore sorters</td>
<td>4.50</td>
</tr>
<tr>
<td>Cagers</td>
<td>5.50</td>
</tr>
<tr>
<td>Pipe and trackmen</td>
<td>5.50</td>
</tr>
<tr>
<td>Shift bosses</td>
<td>6.75</td>
</tr>
<tr>
<td>Blacksmiths</td>
<td>6.00</td>
</tr>
<tr>
<td>Blacksmith helpers</td>
<td>5.25</td>
</tr>
<tr>
<td>Electricians</td>
<td>5.75</td>
</tr>
<tr>
<td>Millmen</td>
<td>5.25</td>
</tr>
<tr>
<td>Mill repairmen</td>
<td>5.75</td>
</tr>
<tr>
<td>Mill swampermen</td>
<td>4.75</td>
</tr>
<tr>
<td>Carpenters</td>
<td>6.00</td>
</tr>
</tbody>
</table>

Other employees are generally on monthly salary—Office men, assayers, engineers, foremen and superintendent.

The cost of board and room at company boarding houses, hotels, and at private homes average from $1.25 to $1.50 per day. Many companies have built and are maintaining houses which are rented to their married employees, and some of the largest companies assist their employees in the construction of homes.

Many flagrant abuses have been noted during the year in the failure of labor and materialmen to be reimbursed for services rendered. This condition should be remedied, and legislation enacted that would give more protection to labor and materialmen in Idaho. Legitimate operators welcome these kind of laws as they would help checkmate unscrupulous promoters and at the same time remove an injurious element from the mining industry.
Drilling on 1700 Level—Sunshine

Courtesy
Best and Bradshaw Studios
Wallace
**Idaho Code Annotated, 1932, Official Edition**

**PROTECTION OF MECHANICS**

43-401. **EMPLOYERS TO MAKE STATEMENT.**—It shall be the duty of any person, persons, company or corporation engaged in working any mine, mines, mining premises or in developing any mining claim or claims, whether quartz or placer, or in the running of any tunnel, or in the erection or repair of any building or other structure, or in the construction of any canal, ditch, railroad, wagon road or aqueduct, in every case where mechanics or laborers are employed in or about the properties above-mentioned to make, record and publish a statement under oath, setting forth the following data:

1. The name or names of the owner or owners of the mine, mines, mining claims or premises, tunnel, building, canal, ditch, railroad, wagon road, aqueduct or other structure upon which work is being done or upon which it is intended to begin work.

2. The name or names of the person, persons, company or corporation engaged in, or who contemplates engaging in, work upon any of the properties or structures mentioned herein.

3. The conditions under which said person, persons, company or corporation is prosecuting said work, whether as owner, agent, lessee, contractor, subcontractor, contemplative purchaser or lien holder.

4. The principal office of said person, persons, company or corporation, and, if a corporation, the state or county where incorporated and the agent in this state on whom service may be had.

5. The day of the week or month when payment of the laborers, mechanics and materialmen will be made, and the place where said payments will be made.

6. A statement of all mortgages and liens against the property on which work is being done, with the amount of each of said encumbrances and whether or not the same is due.

Hist. 1899, p. 365, §§ 1, 2; compiled and reen. R. C. & C. L., § 1446; C. S., § 2311.

Cross ref. Mechanics' liens, § 44-501 et seq.

Notice by Agent. Notice posted at mine that certain person, as trustee for others was employer, is not sufficient to bind such others without their knowledge, since it is merely a statement by agent. Groome v. Fisher, 48 Idaho 771, 284 Pac. 1030.

43-402. **STATEMENT BEFORE EMPLOYING MECHANICS AND LABORERS—RECORDING AND POSTING.**—Any person, persons, company or corporation who shall engage in working, developing or prospecting any mine, mines, mining claim or premises, or in running any tunnel, or in repairing or erecting any building, or in constructing any canal, ditch, railroad, wagon road, aqueduct or other structure, and shall employ any mechanics or laborers in prosecuting said work, shall, before employing said mechanics or laborers or any of them, make a statement under oath containing the data provided for in the preceding section, and file the same for record in the office of the recorder of the county in which said labor is being done, and if there be a district recorder, then also in the office of said district recorder of the district where said mechanics or laborers are employed, and also to post similar statements in his or its office, at the place where the payment of wages is to be made, and in a public and conspicuous place where it can be easily seen at or near the place where said mechanics or laborers are employed.

Hist. 1899, p. 365, §§ 3, 4; compiled and reen. R. C. & C. L., § 1447; C. S., § 2312.

43-403. **VIOLATION OF CHAPTER, A MISDEMEANOR.**—Any person, persons, company or corporation, or any managing agent violating any of the provisions of this chapter shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be punished by a fine of not less than $100.00, or by imprisonment in the county jail for not exceeding three months.

ACCIDENTS

During the past year, a definite effort was made to bring about safer working conditions in the mines. As it is physically impossible for one man to carry out such a campaign all over the state and at the same time attend to the other duties of the office, this work was concentrated on a few of the mines having the most accidents. The records show that these mines have greatly improved their records in both the number and severity of their accidents since instituting their safety programs.

Most of the larger mining companies have, for many years, maintained their own safety organizations. These organizations give first aid training to the men and in general watch the workings for dangerous conditions, which are remedied as soon as possible. Since these companies employ by far the greatest number of men in the industry, it is to their efforts that Idaho's rating is among the best. However, there is still room for considerable improvement along this line.

In the medium size and smaller properties, conditions are not as good, particularly where partnerships and lesors are working, or where old properties are being reopened. At this class of workings there is a definite need for a much closer supervision, and instruction in first aid and safety work.

To carry on this work, in an intensive manner, which is the only successful way, a deputy inspector should be employed. This is provided for in the law but an appropriation has never been made for this purpose. This would enable the department to keep a continual check upon the work instead of a brief visit once a year, which is all that is possible under present conditions. The state would save money by this arrangement, on account of the reduction in the amount of compensation now paid out by the State Insurance Fund.

DESCRIPTIONS OF FATAL ACCIDENTS


Leroy Hansing, Herman Blaisner and Lloyd Dunkle, all of Smelterville, were on their way home after finishing a round in a drift while working night shift. When Hansing climbed on the motor and reached up to put the trolley on the wire above, his forehead came in contact with the wire.

Lloyd Dunkle saw what took place from a spot about 50 feet away. When he realized what was taking place he ran to Hansing's aid, called others and sent for a doctor. Artificial respiration was resorted to, yet nothing could revive him. Hansing died instantly.

The accident happened at the main shaft side track on the Kellogg tunnel level. The conditions have been improved at this particular place since the accident. Back was blasted down and wire raised.

March 14, Federal Mining and Smelting Company; Morning Mine, Mullan, Idaho. Alfred Strom, age 49, single, shaft foreman. Employed at this kind of work for 26 years.

The accidental death occurred by electrocution along the side of the West side of the 2250 level shaft station at a point located between the 4th and 5th station timber posts and in contact with an armored 2300-volt power cable which had been fastened on the inside of the station posts, (regularly hung about shoulder high from the floor of the station).

The power cable at the time of the accident hung along the face of the station posts regularly from the shaft to over a bracket on the 4th station post, out from the shaft, and then swung to below its former or its regular elevation where a bracket was missing on the 5th station post from the shaft. There had been a splice in the power cable near the 5th station post which did break down to leakage along the lead armor of the cable either before the accident or at the instant of and as a result of the incident. The cause of the cable sagging down to below its original mooring at the 5th post back from the shaft was not determined.
ACCIDENTS

Stored parallel to and on the west side of the station on 3-inch cross-pieces on the floor of the station was a supply of 3-inch by random widths, 9 ft. long plank lagging piled from one deep at the fourth plank away from the station posts to four deep along side of the station posts, so that the top of the pile of plank lagging nearest the station posts, even laid, would be about fifteen inches above the station floor. The top inside plank had evidently been lifted to a displacement so that its lower face staggered cross-wise somewhat ("rocked") over the top inner edge of the neighbor plank lying the second away from the station posts.

Prior to the accident an old single-handled discarded crosscut saw stood, handle up, on end leaning against the wall rock outside the midway area between the 4th and 5th station posts. After the accident this saw was found to have been moved a couple of feet Northerly and was stood on end (handle up) against the Northerly of the two station posts located on either side of the site of the accident which had occurred along the power cable at a point between these two posts.

Mr. Strom's hat and lighted carbide lamp had been set down on a pile of timber nearest the shaft before he moved to the site of the accident.

Deceased signalled the cager, (at about 10:30 A. M.), by giving the station signal on the call bell (electric buzzer) located on the third station post from the shaft. Within five minutes thereafter, the evidence given by those questioned indicated that deceased must have gone over on the station to the top of the lagging pile from where he could reach out to get the saw which could be seen from where he had rung the call signal. To move the old saw, as he did—probably to examine it—and when found to be one that was beyond repair, he would naturally reach out over the power cable while standing on the pile of plank lagging.

It was indicated that the deceased likely slipped on the "disturbed plank," which was later found to rock over the edge of the one below it when the body was being removed, and fell across the power cable.

His hands and face when he was found were extended to contact against the damp rock wall ledge outside the timber midway between the two station posts (4th and 5th). His body was electrically and severely burned on his right side across the hip area and less severely on the right side of his face and on the knuckles of both hands, which contacted the wall rock ledge, indicating that his body had grounded the cable from the right hip area to hands and face jointly extended against the damp wall rock to ground. There was lack of evidence of a ground through the feet, (with leather shoes), by the absence of burns thereon.

Deceased body was examined at the morgue and the mine premises revisited each three times alternately, and the following individuals were questioned in arriving at the determinable facts in this case.

Mr. Dewey Robinson, cager, and Mr. Ed Hill, shaft boss, the two men who first arrived at the site after the accident; Mr. Fred Fuller, head underground electrician; Mr. Tom Olson, skip tender; Mr. Charles E. Wethered, Mine Superintendent; Mr. Al Hodgins, chief electrician; and Mr. Vincent Demetrovich, the leaser employee on the 2250 level who last conversed with deceased.


At the Gilt Edge Mine the shaft was 200 feet deep. At the time of the accident Osterberg, employed as a laborer was assisting his foreman in de-watering the shaft by dumping the bucket as it arrived at the collar of the shaft. Osterberg fell down the shaft.

No one actually witnessed the accident, so it is hard to determine the cause. Clifton Gerrish, the hoistman, was in the hoist room and did not see Osterberg fall.

April 3, St. Joseph Lead Company, Boise Rochester Mine; Atlanta, Elmore County, Idaho. Frank Tater, Jr., age 29, married, miner.

Frank Tater, Jr. and his partner, Andrew Fineide, were working in a narrow stope about 18 feet below the sill of the 1450 level, in what is known
MINING INDUSTRY OF IDAHO

as the 600 stope. Prior to the accident these men were taking turns with a pick to make room for a hanging wall post and heading for a 4-foot cap which would complete a lead set east of No. 8 manway. Loose muck lay ahead. A slab on the wall needed a stull to hold it in place while the set was worked on.

At the time of the accident, Fineide was taking a measure for a stull to steady the slab. Tater was standing back and I assume he thought he was in the clear. Behind the slab was a slick slip. The slab gave way without warning, was deflected by the muck pile, missing Fineide but knocked Tater down and crushed his head against the floor cap of the working plane.

From the evidence at the inquest and from questions asked by the mine inspector, it was determined that these men were experienced, and at the time of the accident doing just what any experienced miner would do to avoid an accident. This would necessarily be classed as an unavoidable accident.

May 1, Crescent Mining Company, Crescent Mine; Kellogg, Shoshone County, Idaho. Sam E. Speaks, age 56, married, timber-helper.

Sam Speaks was helping Z. T. Maynard, timberman, repair track on the No. 1 Intermediate Level. This level was connected with a cribbed raise that was in use as a main skipway from the Alhambra Level to the Brooks stope for hoisting men and material.

Maynard told Speaks to rustle a plank. The deceased crossed the skipway, where he found the material needed. On his return with the plank Speaks fell with plank into skipway and five minutes later was found dead by John Granfell, hoistman on the Alhambra Sill.

The deceased fell 110 feet, and received broken neck, broken pelvis, broken ankle and internal injuries which resulted in instant death.

These men were working about 75 feet from the skipway. No one witnessed the accident. The place was dangerous with poor footing and no guards. This hazard has been improved by the installation of guards at the various levels. In fact this particular skipway was in bad shape from top to bottom and badly in need of repair. Proper suggestions were offered the management by the inspector during the investigation.

In respect to all rules of safety in mining this accident could have been avoided.

May 2, Federal Mining & Smelting Company, Morning Mine; Mullan, Shoshone County, Idaho. Lauri Aro, age 36, single, timber-helper.

Lauri Aro was helping Albert Marcon, miner, spit a round of holes in a waste raise on the 3000 ft. level near 27 west chute.

This waste raise was started from the sill floor on an incline of about 55 degrees to allow the waste rock produced to be used as filling in the stopes below the 3000 level sill.

The raise had been extended above the level sill about 25 feet and an additional round of 32 holes had been drilled in the face and back. The round had been prepared for blasting. Seven foot primers were used.

Albert Marcon, the miner, along with the deceased, Lauri Aro, helping him proceed to blast by lighting the fuses, each man taking for firing, the fuses on one side of the face and back of the raise. Marcon lit the center fuses first (to tear out the center cut) and had completed the lighting of the fuses on his side and Aro had lit all but about three of the fuses on his side when the first hole fired.

Marcon advises he had trouble lighting the second fuse and third fuse and had to cut the second one and third twice and respit. Aro was having similar trouble.

The raise was dry and the men were using carbide lamps for light and to spit round.

Joe Urguardi, timberman, and John Solheim, timber helper, waiting in the drift below, near the mouth of the raise thought that possibly two or three minutes elapsed between the first report and the following shots.

The deceased received a fractured skull and general lacerations of the body.
It is hard to place the responsibility for an accident of this kind as many factors have to be taken into consideration. There is the possibility of a quick fuse which is rare indeed. The men may have used primers that were underground for too long a time before being used. Marcon may have cut more than he intended from the second and third fuses. It is also evident that the men delayed too long firing the round and that blasting started before they got away.

May 10, Washington County, Idaho. Wm. V. Alverson, prospector.

Welser, Idaho,

May 16, 1935.

Arthur Campbell,
State Mine Inspector,

Dear Sir:

On May 10th, Wm. V. Alverson was killed in his placer claim, thirty miles below Huntington, Oregon.

He had been working there since last September and was barely making a living from the claim.

The deceased had started a drift into the hill, which is composed of sand and gravel. He was in about seven feet when it caved in on him. His pick struck Alverson on the head and he was smothered to death by the sand and gravel.

When he did not come to his tent for dinner, a neighbor investigated and discovered the accident.

Very truly yours,

L. C. Northam,
Coroner, Washington County.

June 8, Yellow Pine Company, Meadow Creek Mine; Stibnite, Valley County, Idaho. Eusabio Bilboa, age 35, married, miner.

Eusabio Bilboa, miner assisted by Delton Irish, shoveler, spit their drift round of only seven holes on the 400 foot level, at about 4:45 P. M. on June 8. For some unknown reason they stayed too long and were blasted.

The drift was in only 12 feet from the main level and was perfectly dry. The men had to walk only 12 feet to be around the corner and in the clear. The length of fuse used is 7 1/2 feet per hole.

The first shot apparently blew both men out of the drift. Irish being further from the blast was able to crawl some 50 feet down the main crosscut toward the shaft station, about 200 feet away and where an electric light was in view.

Irish was picked up by Dewey Fogg, cager, who had been waiting at the station for the men to appear after spitting their round. The cage tender carried Irish to the cage and took him on top. Then several men got on the cage and returned to the 400 foot level, where they fought the gas and smoke in an effort to find Bilboa. The deceased was found on his hands and knees about fifteen feet from the face of the drift and against the side wall of the main crosscut.

Both men were taken on stretchers to the basement of the new bunkhouse and given first aid. Dr. Ward was summoned to come from Cascade at once. As no airplane was available, the doctor and Mr. Robb arrived at the mine in an ambulance at 10:30 P. M. After redressing the men's wounds they started for Cascade and Boise at 11:30 P. M.

Eusabio Bilboa passed away before reaching the Boise Hospital.

November 6, Hecla Mining Company; Burke, Shoshone County, Idaho. Joe Vaughan, age 27, single, miner.

Ore was being drawn from the 1400 level shrinkage stope, east of 91 raise through a chute-lip located two floors below. The ore became arched above the chute opening and did not draw down from the top of the muck pile. This left the top of the pile intact but with an open space underneath it.

The deceased was told of this condition and warned not to walk over this particular section by the timberman who was attempting to draw it.
<table>
<thead>
<tr>
<th>MINE</th>
<th>Killed</th>
<th>Permanently Injured More Than 14 Days</th>
<th>Permanently Partially Injured</th>
<th>Slightly Injured</th>
<th>Time Lost Over 14 Days</th>
<th>Time Lost More Than 14 Days</th>
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<tr>
<td>UNDERGROUND</td>
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<td>1. Fall of rock or ore from roof or wall</td>
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<td>2. Rock or ore while loading at working face or chute</td>
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<td>3. Timber</td>
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<td>4. Explosives</td>
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<td>5. Haulage, Cars or Motors</td>
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<td>6. Persons falling down chute, winze, raise or stope</td>
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<td>7. Drilling (by machine or hand drills)</td>
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<td>8. Hand tools</td>
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<td>9. Machinery (other than motors or drills)</td>
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<td>10. Flying or falling objects</td>
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<td>11. Fall of persons</td>
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<td>12. Lifting</td>
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<td>13. Nails and splinters</td>
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<tr>
<td>14. Electricity</td>
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<tr>
<th>MILL</th>
<th>Killed</th>
<th>Permanently Injured More Than 14 Days</th>
<th>Permanently Partially Injured</th>
<th>Slightly Injured</th>
<th>Time Lost Over 14 Days</th>
<th>Time Lost More Than 14 Days</th>
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<tr>
<td>MILLING ACCIDENTS</td>
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<tr>
<td>1. Haulage (cars and locomotives)</td>
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<td>2. Railway cars or motors</td>
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<td>4. Tables, jigs, etc.</td>
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<td>5. Other machinery</td>
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<td>6. Falls of persons</td>
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<td>7. Falls in ore bins</td>
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<td>8. Falling objects (rocks, timbers)</td>
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<td>9. Scalding (steam, water or acid)</td>
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<td>11. Hand tools, axes, bars, etc.</td>
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<td>SHAFT ACCIDENTS</td>
<td>16. Haulage (cars, motors, etc.)</td>
<td>SMELTER ACCIDENTS</td>
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<td>15. Falling down shaft</td>
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<td>16. Objects falling down shaft</td>
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<td>17. Cranes</td>
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<td>19. Cage, skip or bucket</td>
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<td>18. Lead fumes</td>
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<td>21. Hand tools, axes, bars, etc.</td>
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<td>22. Burns from matte, slag or</td>
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<td>molten metal (pouring or</td>
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<td>spilling)</td>
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<td>23. Other causes</td>
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<td>SURFACE ACCIDENTS Yards, Shops</td>
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<td>21. Mine cars or mine locomotives, gravity or aerial trams</td>
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<td><strong>AUXILIARY WORKS ACCIDENTS</strong></td>
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<td>Quarries, Placers, Tramways and Dredges</td>
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<td>22. Flying and falling objects</td>
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<td>23. Lifting</td>
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<td>25. Flying and falling objects</td>
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<td>25. Nails and splinters</td>
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<td>27. Hand tools, axes, bars, etc.</td>
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<td>26. Hand tools, axes, bars, etc.</td>
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<td>28. Lifting</td>
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<td>27. Falls or run of ore in or</td>
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<td>29. Machinery</td>
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<td>from bin</td>
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<td>30. Handling hot materials.</td>
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<td>28. Machinery</td>
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<td>29. Other causes</td>
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Other men working in the same stope were also warned of the existence of danger.

In spite of the warning, Vaughan attempted to walk over the muck pile. The ore caved down under him and he was buried in the hole. It was necessary to draw the chute in order to get the man out. This was done promptly and artificial respiration was employed for over an hour. Subsequent examination, however, showed that his neck had been broken.

There was another exit to this stope and no need for taking a chance. Without cooperation on the part of the workers themselves, avoidable accident are bound to happen.

November 13, Hecla Mining Company, Hecla Mine; Burke, Shoshone County, Idaho. M. V. McNamee, age 60, married, timberman.

Deceased and helper were on the first floor above the 2200 level drift, hoisting a cap with a timber-crab (hand hoist). The man below gave an order to stop hoisting while he could shift the position of the cap.

The helper let go of and disengaged his handle of the crab. The weight was thrown to deceased and the handle was forced from his hands and struck him on forehead above left eye causing deep laceration over left eye extending laterally above the supra-orbital ridge, deep fracture of the frontal bone over the supra-orbital ridge, comminuted fracture of the nose and contusions of the right arm.

McNamee was able a few minutes after the accident to stand and climb down one ladder to the sill. From here he was taken to the surface and then to the hospital where he later passed away.

Examination of the equipment disclosed that nothing had broken, but that the safety device was not in place and had not been used while hoisting the cap.

In the last analysis this shows carelessness and a lack of co-ordination between men working together. One minute to think safely would have no doubt saved an experienced mining man's life.

THINK SAFETY AND WORK SAFELY.
SAFETY FIRST AT ALL TIMES.

Safety First

Mining has its hazards, as have all other industries, and in consequence, there will always be unavoidable accidents occurring in the course of underground operations, with accompanying injuries to workmen. Experience has demonstrated, however, that by far the greater number of accidents are not unavoidable, but are such as could be prevented by the exercise of a little foresight and caution by the workers themselves.

These SAFETY RULES are published in connection with a SAFETY FIRST PROGRAM inaugurated throughout the state, with a sincere hope they will encourage foresight and caution on the part of employees, as well as acquaint them and their employers with the nature of the hazards to be encountered, and the means of preventing accidents. They are the result of experience.

Members of the mining fraternity are expected to read these rules carefully, familiarize themselves with them and are urgently requested to cooperate with the Mine Inspector in their enforcement.

A good workman is a careful workman and one who will guard the safety of himself and his fellow employees.

It is the aim of this department to reduce the number of accidents to a minimum, and to make the safety of men employed of paramount importance. Every human being doubtless gives considerable thought to the
ONE AND THREE-FOURTHS MILES UNDERGROUND
BUNKER HILL & SULLIVAN MINING CO.
safety of himself and his fellow workers, and he must frequently think of ways and means by which this safety may be increased. It is desired that those connected with mining communicate ideas, as safety suggestions to the Inspector, in order that they may be considered and whenever practicable, acted upon.

The Mining Department of the state of Idaho, through the Inspector of Mines, extends its thanks to the Hecla Mining Company, and its officials, for cooperation and use of material in compiling the following instructions and rules to aid in the prevention of accidents.

We urge the use of this material by individuals and companies to the fullest advantage in cooperation with a Safety First Program.

L. E. HANLEY
President Idaho Mining Association
Member Board of Control, Bureau of Mines and Geology
Rules and Regulations

GENERAL

In handling Carbide, do not approach carbide containers with an open light. There may be an accumulation of gas, which might explode.

Do not crowd or jostle your companions in getting on or off cage. No playing or scuffling will be tolerated on stations or on cage.

Smoking will not be permitted on cages at any time.

When the shift is being lowered, or hoisted, all men on the cage must be alert.

No lighted lamps will be permitted on cages, except that cager may carry a light.

No one shall pull the electric signals or bell rope, except the cager, unless the hoistman has been previously notified. Then touch the signal bells only when the cage is spotted for you. After calling for a cage, either on the flash or on the phone, wait until the engineer spots cage and flashes you to get on. This flash will be several short flashes, followed by the station signal from which you called.

Tools of any kind will not be allowed on the cage when lowering or hoisting the shift.

No employee shall leave the shaft at any station without first seeing that the bars and doors are all closed and placed in position so as to prevent accident.

When traveling thru a haulage drift, look out for trains at all times. Always be sure that you are standing in a safe place when the train is passing.

Use care in passing under manways, slides and chutes. Something may drop on you.

No one except those employed thereon, will be permitted to ride on storage battery locomotives, trucks or ore cars, and motormen are instructed to refuse to move their trains if anyone insists on riding thereon.

Each man must ascertain, by a careful examination thereof, that the particular place in which he is employed is safe. If found to be in an unsafe condition from any cause whatever, measures must be taken to remove such danger at once and before proceeding to work, and if necessary, the Shift Boss or Mine Foreman must be notified.

When returning to any place after a blast, or blasts, each employee, upon entering such place, must make a careful examination for any loose rock or other element of danger by which he could be injured, and if any such be found, he shall immediately make it safe, or if unable to do so himself, shall report the same to the Shift Boss or Mine Foreman. Excepting that only the Timberman or Miner, depending upon the location of their work, shall be permitted to “bar down.”

It is the duty of each employee to warn his fellow employees and boss of any danger which threatens, or which may appear to threaten to cause injury to any person, or to the property of the Company.

Any machinery noticed to be defective must not be used until fully repaired by competent mechanics, and no one is permitted to run or operate any machine not in his charge, excepting timber hoists, unless authorized by the Foreman in charge of his department.

It is the duty of any employee seeing or knowing of any winze or raise, or any opening to be unprotected or uncovered, except the shaft, to protect, cover and make the same safe or to report it to the Shift Boss.

It is the duty of employees to take sufficient time to make the examination required in these rules, and to guard against any danger from accidents in the mine or its workings.

Do not leave timbers with projecting nails anywhere where anyone can step on, or bump against them. Bend the nails down and place the timbers securely out of the way.
Do not drive nails in timbers and leave them projecting in such a way that they may catch and injure someone passing by.

Do not attempt to cross an opening thru which rock is running. Stop, call to the workman above, and wait until no more rock is passing.

Do not attempt to travel thru stopes immediately after blasting time. Before proceeding, wait at least fifteen minutes after all shots have gone off.

Place sufficient footboards and guard rails over all open raises to provide a safe passage-way, and also around holes in the stopes when muck is being let down from the floors above.

The insulation on electric wires cannot be depended upon to protect you from shocks.

So far as possible, treat all electric circuits as though they were “live” even though you believe them to be dead.

Employees must learn the different openings to the surface from their working places. Maps showing these openings will be placed at convenient places throughout the mine.

Do not throw refuse food around the working places, or on the sill.

Dump carbide lamps in a mine car, if possible. Never practice dumping it in the same place around manways, stations or other working places, excepting in receptacles provided for that purpose.

Do not dump carbide in wet places, especially in the ends of drifts and crosscuts where there is a slow movement of air. This gas is highly explosive.

Do not hang carbide lamps in such a position that the flame is directed towards timber. The heat of a carbide flame may kindle a fire several inches away from the end of the flame.

Provide yourself with a water-proof match box and keep it filled with matches.

Should you be caught in the mine without a light, and unable to secure one, do not move around in the dark. Stop immediately and wait for someone.

Do not stand in a strained position, or with feet spread apart, when lifting. Lift with muscles of thigh and legs, and not with the back.

Smoking underground is not prohibited, but you are requested to use extreme caution in smoking, that no fire may be caused thereby. Do not smoke in dry, timbered places, where, if you dropped your cigarette or pipe it would start a fire. Be sure your cigarette is absolutely dead before you throw it away.

No man is permitted to go to work if under the influence of liquor and drinking liquor on shift is strictly prohibited.

Report all accidents, no matter how slight, to your Shift Boss. Remember that a slight scratch, or cut, may become infected if not properly cleaned and dressed.

Do not talk to anyone operating a hoist while the hoist is in motion. The hoistman should have his entire attention upon his work, and should not be disturbed.

**SHIFT BOSSES**

It shall be the duty of the Shift Boss to enforce the rules contained herein, and if the remedy is out of his jurisdiction, he must report the same to the Foreman immediately.

If a dangerous condition is reported to the Shift Boss by any one of his crew, it shall be the duty of the Shift Boss to immediately ascertain if such danger exists, and to remedy the same if possible, or to immediately call the Mine Foreman or the Mine Superintendent.

All working stations and working drifts must be well lighted, and kept in a clean and orderly condition.
Station turn-sheets must be free from timbers when the shift is being hoisted, or lowered.

No one man shall be put to work by himself underground. There must be someone within calling distance.

Timbers squeezing in on the track should be repaired at once.

The back of timber sets should be lagged tight, and side lagging used when necessary.

When drifts and crosscuts are not timbered, backs and sides must be kept barred down.

In holing into workings that are used for travel, all directions leading to the place to be holed thru should be guarded during the blast.

Ladders must be kept in good repair, and broken ladder rounds replaced as soon as possible.

Guard rails, chains or grizzlies must, where possible, be provided at all places where it might be possible for a man to fall into a manway, timber-slide, chute, stope, shaft or gob.

Manways must be kept free from obstructions and made safe from the falls of rock, by lagging the walls wherever necessary.

Ladders must project 18 inches above floors, or otherwise hand rails must be provided.

All manways in daily use shall be cleaned of all loose rock, and kept in a safe condition.

**SHAFTMEN AND CAGERS**

No tools or other loose material, excepting mine timbers, may be placed closer than five feet from any shaft, where such material is likely to cause stumbling, or is likely to be pushed into the shaft.

All shaft stations must be provided with proper guard rails or gates, and these must be in place to guard the shaft at all times, except when the cage is spotted at the station.

All hoisting ropes, cages, king bolts and safety catches must be regularly inspected by a competent person, and must be regularly oiled and kept in proper condition.

The cagers and top men shall keep a careful watch over the cages during their shift's work, and immediately report all defects and have them repaired, if necessary, before continuing their work.

A careful inspection of the shaft must be made immediately after any spill of muck or other material down the shaft, and cages or skips shall not be operated until such inspection has been made.

No person shall get off, or on, a cage, skip, or bucket while the same is in motion, or after the signal to move has been given.

No smoking will be permitted on the cages at any time.

No lighted lamps will be permitted on cages, except that cagers may carry a light. Shaft Repairman will also be permitted to carry lights.

When lowering, or hoisting the shift, all men must stand facing the bell cord. All safety doors must be closed and all screens must be in place.

Tools of any kind are not allowed on the cages when lowering or hoisting the shift.

A cager will ride the cage at all times when the shift is being hoisted or lowered.

Not more than nine men will be allowed to ride on the deck of a cage.

All guides and shaft timbers must be inspected daily by a competent person.

In no case shall men and material be placed on a cage, unless such material is placed in the special box provided for the cage. This box shall not be used when handling the shift.
No open lights shall be used by cager when oil, cotton, waste or other highly inflammable material is being carried.

When tools, timber or other material are to be lowered, or hoisted, in a shaft, their ends, if projecting above the top of the bucket, skip, or cage shall be securely fastened to the hoisting rope or to the upper part of the vehicle.

No hoisting shall be done in any compartment of a shaft while repairs are being made in that compartment, excepting such hoisting as is necessary to make such repairs.

Men working in shafts shall have a suitable covering to protect themselves from material falling down shafts. They shall instruct all hoisting engineers on duty at the time with respect to the place and nature of the work, so that the cage will not be let down upon them. They shall have their working platforms of sufficient size and strength to safely carry on their work.

**MOTORMEN AND TRAINMEN**

Motormen must keep their trains under control at all times and operate them at a safe rate of speed. This rate of speed shall not exceed eight (8) miles per hour on straight track, or five (5) miles per hour on curves, or when passing switches, or when passing repairmen working on levels.

Defects in tracks, drifts, chutes, switch signals or drift lights must be reported at once to the Shift Boss or Mine Foreman.

All trainmen operating large cars coupled with a link, must use a stick, instead of their hands, when coupling cars.

Ore pockets must be provided with a suitable cover to be used when no dumping is being done.

All underground motors shall be provided with a gong or siren.

No one except those employed thereon, will be permitted to ride on storage battery locomotives, trucks or ore cars, and motormen are instructed to refuse to move their trains if anyone insists on riding thereon.

Do not place long tools or materials on motor or on cars. Use a truck.

Do not push trucks ahead of motor or train.

Do not go up into a chute where ore or rock is hanging, in order to blast it. Do your work from the manway by taking out a lagging, if necessary.

There must be a light on the front end of all trains which are being pushed into a drift.

Motormen, or men running motor, shall report to the Electrician and to the Shift Boss or Foreman, any defective condition of the underground electrical equipment.

Motormen and trainmen must both carry lighted carbide lamps, with a clean reflector.

Do not ride on coupling bars between cars or trucks.

When a train is backing into a drift, trainmen must be at the back end of train and be prepared to stop train in case of danger.

Do not get on, or off, the front end of a moving train. Remain in your place until the train stops.

Do not stand upright on moving trains. Look out for chute lips and low timbers.

Motors and cars with defective brakes must not be operated. Any motormen finding such defects must report them at once to the Shift Boss.

Defective cars must be dropped from the train and placed on the car repair track, and also reported to the Car Repairman.

Do not climb over, or between cars when train is moving.

Do not try to adjust couplings when cars have collided and all cars are moving.
Do not hold open light over storage battery.

A bar placed across the track and having a light, or sign, mounted on it, indicates that the track is temporarily closed, and no one except the person who placed it there is permitted to remove or tamper with such a bar.

When blasting choked chutes, warning must be given in all directions, including up the manway, so that no one may come opposite, or too near such chute at time of firing.

The following signals must be used in operating trains:

**Whistle Signals**
- Stop (if in motion) ......................... One blast
- Proceed (if at rest) .......................... One blast
- Back up .................................... Two blasts

**Lamp Signals**
- Proceed .......................... Raise and lower lamp vertically
- Stop .................................. Swing lamp horizontally
- Back ............. Swing lamp in vertical circle across track

A train shall always be considered as going ahead, or proceeding, when the motor is pulling the cars, and as backing up when the motor is pushing the cars.

Trainmen must heed all blasting signals.

The trolley pole must follow, instead of lead the motor, except in cases where it is impossible. The motor must go slowly when it is necessary to have the trolley pole ahead.

The trolley pole must not be turned while the motor is in motion.

Where block signals are installed, they must be used whenever a train is operated.

Never enter a block unless the same is clear, with the signal lights dark.

Never run in a block unless the light ahead of you shows green. Never run against a red light, or with the block dark.

Be sure that the block is clear, or dark, when you leave it.

Motormen and trainmen are required to leave the ventilation doors in their proper position when not passing thru such doors.

**TIMBERMEN**

Timbermen should take special note of working conditions around them, and if any Miner, Shoveler, or Trammer is following an unsafe practice, he should inform them.

When entering a stope the first thing to be done is to examine the floors and see that all have a safe bearing.

Clean the working floors first, before barring down.

Keep all unused tools and other working material stacked neatly back out of the way while working.

Don't build flimsy, unsafe stagings. Make them strong.

Guard rails should be installed in manways on landings to prevent anyone falling into the timberslide.

When hoisting timber, or material, stand back out of the way in case something comes back down the slide.

Ladders must be kept in good repair and broken ladder rounds replaced as soon as possible.

Guard rails must be provided at all places where it might be possible for a man to fall into any opening.

Don't work under loose ground. If in doubt report to Shift Boss.

Lag over each set as you put it in. The back of timber sets should be lagged tight, and side lagging used when necessary.
Timbers must be watched and kept safe.
Brace securely all timbers in the course of erection, so that they can not fall.
Handle your tools and endeavor to stand so that neither you nor your partner may be struck by a missed, or glancing blow.
Men are warned against going down a chute to repair it without first notifying the men above, and then the chute must be securely lagged over.
Give ample warning when dropping timber thru raises and thru holes in stopes, and see that there is no one in danger below.
No timberman or repairman, or helper, is allowed to stick an axe, or any sharp tool of any kind up high on a timber. Place them in a post not more than one foot from the floor.
When lowering timbers thru timber-slides, all timbers must be securely fastened with timber chains or timber dogs. All timber dogs, chains and steel buckets must be fastened to the cable with a clevis, and in no other way.
When repairing in drifts, where trains are running, there shall be no trucks, or timber left on tracks. Repairmen must see that track is clear when train is coming. If not clear, train must be flagged in plenty of time and distance for the train to stop.
Posts should be framed on floor and not on horses, and should be securely blocked.
In passing tools from one floor to the floor above, the end opposite the handle should be passed up first.

MINERS

Miners should take special note of working conditions around them, and if any Shoveler or Trammer is following an unsafe practice, he should inform them.
Examine the back and sides before going to the breast, as the blast may have loosened something that was previously considered safe. Be sure that no one is under you when you are barring down.
Keep floor clean behind you so that in stepping back you will not stumble.
Keep all unused tools and other working material stacked neatly back out of the way while working.
When entering a stope see that the floors have a safe bearing.
Bar down before starting to set up.
Don't drill in loose ground without first making it safe by barring down, or timbering.
Examine the back and face and see that there are no missed holes before drilling.
Don't drill from an improper staging. Make it strong.
Don't drill from an insecure set-up.
Miners and timbermen, depending on the location of the work, shall be responsible for the safety of the roof and walls in their working places, and shall not permit a Shoveler to work under a place until it is considered safe.
Keep your machine properly oiled.
Steel should not be thrown down manways. It should be lowered with a rope, or passed from set to set.
Never blast at any time except blasting time, without special permission from the Shift Boss, and then only when employees in the vicinity have been properly notified.
When drilling with "stopers," stand in a proper position so that balance will not be lost if steel breaks.
The back should be watched while drilling, and any loose boulders should be barred down.
Read special rules under blasting.
SPECIAL BLASTING RULES

Don't be careless with powder. You might "get by" with it, but remember that it was made to explode.

Don't blast without giving proper warning and guarding all approaches.
Never blast unless you have a man with you.
In loading holes, don't leave powder and primers together in the face.
Bosses should notify men when they are close to other workings so that men working therein will not be in danger from blasts.

In tamping drill holes use only wooden loading sticks. Do not tamp by strokes, but by direct and steady pressure.

Miners in drifts and crosscuts shall count their shots and record any missed holes on the blackboards furnished for that purpose, and the blackboards must be examined by the shift coming on, for such reports.

Working places, with missed holes, shall not be entered for at least 30 minutes from the time of spitting. When necessary to fire a missed hole, do not attempt to extract the charge, but insert a fresh primer to fire it.

Caps or primers should not be stored with explosives.
Caps or primers should not be transported in the same vehicle or carried in the same case with dynamite or other explosives.

Powder and primers must be kept separate when being hoisted in stope.
Any powder not used by the miner on his shift, must be taken to the place prepared for the purpose. Leaving powder or primers in a working place will not be tolerated.

It shall not be permitted to carry explosives on electric locomotives, or in a car next to an electric locomotive.

Explosives should not be placed near "live" electric wires.

The fuse used by this company burns at the rate of not less than thirty (30) seconds per foot in length. No fuse shall be used of a shorter length than five (5) feet.

Miners must not carry powder or caps in their pockets or boots. Whenever less than one stick of powder is used, the stick must be cut with a knife, and not broken without cutting.

When electric primers are used, all shots must be fired from a blasting box, approved by the electrical department.
This blasting box shall be kept locked at all times, except at the time when the shots are fired, and the key to the blasting box shall be in the possession of the man in immediate charge of blasting.

SHOVELERS

Don't work under bad ground. See that the floor is tight over your head.
Be sure that grizzlies on chutes are well blocked, and guard rails in, before starting to muck.

All muck holes in floor must be closed when the loaded car is trammed to the chute.
Always look out for powder and caps in the muck pile.

TRAMMERS

When space will permit, timbers or other material should not be piled closer than two feet from rail of track that is used for traming.

Cars should not be left in places where they will unduly restrict the air currents or cause collisions.

All dumping places shall be protected when not in use.
Care must be taken in wedging cars when dumping at the chute.

TIMBER RUSTLERS AND NIPPERS

Powder magazines must be kept dry and well ventilated and free from rubbish.
Powder and caps should be kept at least 100 feet apart, and not on a main haulage way.

Powder, caps or fuse shall not be left in any stope, raise or drift or other place, except in the powder magazine or fuse station.

Use only wooden mallet and wooden wedge to open powder boxes.

When hoisting timber or material, stand back out of the way in case something comes down the slide.

It will not be permitted to hoist powder in any way in a timber slide, except in the bucket.

It will not be permitted for any employee to ride in any steel bucket, or in a timber slide, unless it has been fitted as a cage-way.

Steel shall not be thrown down manways. It should be lowered with a rope, or passed from floor to floor.

In hoisting or lowering timber or tools in a slide, they should be securely lashed and care must be taken that no one below is in danger.

Drills, timber, or other material must not be placed within five feet of any timber slide.

**ELECTRICIANS**

Do not handle "live" wire unless necessary, and then only those whose voltage does not exceed 440 volts.

All wires should be considered "live" at all times, and should be handled as if "live."

Insulation on wires should never be depended upon for protection. Do not handle "live" insulated wires unless suitably insulated yourself.

All high voltage apparatus, such as switchboards, hoist controls, etc., which are dangerous, must bear signs conspicuously displayed, advising of the danger.

All metal parts of electrical equipment which are not conductors, must always be permanently grounded.

Every man should have a good knowledge of the methods of artificial respiration.

Do not close any circuit without full knowledge concerning the circuit and the reason for the switch being open.

When switches have been opened to allow work on circuit, danger tag must be attached to switch. This tag must bear the name of the man opening switch, and the same must not be closed except by his instructions.

A man shall never do "hot work" alone, but must always have a helper. The helper must always be instructed what to do in case of accidental contact by the journeyman.

No person, whose duties do not require them to do so, must ever handle, or attempt to repair any electrical wires or equipment.

**TO A NEW EMPLOYEE**

You are just beginning work here and we are anxious to make you a loyal and efficient member of our organization. In order to do this we must have your co-operation. You will find the Safety Department, your Foreman and Shift Boss and your fellow workmen willing to help you in becoming familiar with your work, and the precautions necessary to guard you against preventable illness and injury. Don't hesitate to ask for information when required.

**TO AN OLD EMPLOYEE**

You were once a beginner, and no doubt would have liked to have some one take an interest in you the first few days of your employment here. Please try and help the new man to learn the work and the safe method of working.
FIRST AID

When a man has learned five simple but practical points in First Aid he may at any time be able to save the life of a fellow workman. These five points are:

1. How to stop serious bleeding.
2. How to avoid infection or blood poisoning.
3. How to splint and otherwise treat broken bones.
4. How to recognize and treat for nervous shock.
5. How and when to give artificial respiration.

Space will not permit a thorough description of how these things are to be done, but any employee of the Company can get this instruction free of charge by attending the First Aid classes that are held from time to time. The following, however, are some of the most necessary things to do:

If you see blood spurting from a wound, you may stop it by applying pressure with your fingers in the following manner:

1. If the wound is in the scalp, apply pressure just in front of the ear.
2. If the bleeding is in the arm-pit, apply pressure with your thumb in the hollow between the collar-bone and neck.
3. If the bleeding is in the arm apply pressure with your fingers along the inner seam of the coat sleeve between the large muscles of the arm.
4. If the bleeding is in the leg, at or near the groin, apply pressure in front directly over the hip joint.
5. If the bleeding is below the knee apply pressure with your fingers just back of the knee joint.

You will have to hold points 2 and 4 until the doctor comes, but you may tie a tight bandage with a pad over the pressure points 1, 3 and 5. This is called a tourniquet.

Any time the skin is broken, no matter how slight, there is danger of infection. To avoid this you should not wash the wound or touch it with anything except sterile gauze. Do not apply any medicine or salves except to paint the wound with iodine and always cover it thoroughly with sterile gauze. Do not put any iodine on the gauze and put only one light coat of iodine on the wound. Let the doctor do the cleaning. Don't use iodine when the flesh is badly lacerated or torn, as in deep wounds.

When you see a man with a broken bone, do not move him more than is absolutely necessary. Examine the injury and if the bone sticks through the skin, apply a sterile gauze dressing and stop the bleeding, if any, then tie the broken bone with splints made of pieces of wood with plenty of padding, in such manner that the broken part can not move. If the bone does not stick thru the skin apply the splints without a sterile dressing. If you are in doubt that the bone is fractured, treat it for a fracture.

Nervous shock is a condition of the nervous system caused by injury or fright and is sometimes very dangerous. When you see an injured man with a pale face, trembling or talking excitedly, lay him down with his head low, cover him with blankets, keep him warm, give him fresh air, hot coffee, hot tea, or other stimulant and get him to a doctor as soon as possible.

ARTIFICIAL RESPIRATION

Artificial respiration should be given only when a man is unconscious from electric shock, gassing, drowning, or an overdose of some kind of poison, such as morphine, alcohol, etc., except in some other cases under the direction of a doctor. When a man has become unconscious from any of the above causes and is not breathing sufficiently to keep him alive, you should act quickly. Don't wait for help or to carry the man any distance, except to fresh air. Fold your coat or jumper and place it under the patient's abdomen just below the stomach. Open his mouth and clean out any loose substance that might be drawn into the windpipe, pull the tongue forward, place the patient's forehead on one wrist and extend the other arm upward
from the body. Kneel straddle of the patient's thighs. Place your hands on the small of the back, two inches above the hips. Then swing forward, throwing your weight on the patient. Swing back again to upright position, keeping up this alternate pressure and release at the rate of sixteen times per minute until your patient revives, or at least two hours or more. If assistance is available you should have the patient kept warm by covering, hot water bottles, or any other means at hand, such as rubbing the limbs toward the heart to stimulate circulation.

A very good idea is for you to attend First Aid classes and take the complete First Aid course, as it takes some practice in all of these things to reach the maximum proficiency.

UNDERGROUND FIRE PREVENTION

All employees are especially urged to be extremely careful regarding underground mine fires. Carelessness on your part in this respect is liable to hazard the lives of many men, the Company property, and to cause the stopping of operations for many days, throwing yourself and others out of employment.

MINE RESCUE CREW—COEUR D'ALENE DISTRICT

Smoking is not prohibited underground, but all employees are urged to use extreme care in smoking, that no fire may be caused thereby. Do not smoke in dry, timbered places, where, if you dropped your cigarette or pipe, it would start a fire. Be sure your cigarette is absolutely dead before you throw it away.

Do not hang carbide lamps in such a position that the flame is directed towards timbers. The heat of a carbide flame may kindle a fire several inches away from the end of the flame.

VENTILATION

Mine ventilation still remains one of the big problems in mining, both from a practical and technical standpoint. Especially is this true in our deep seated mines.

It is the desire of this department to make the best possible working conditions for the men employed. This calls for cooperation on the part of all connected with the mining industry.
Do not place obstructions in the airways.

All employees are directed to familiarize themselves with the direction of the air currents in their section of the mine. If it is noticed that these air currents have changed, or stopped, you should be on guard for possible danger.

Please report any defects in ventilation doors to your Shift Boss at once.

**STENCH WARNING**

In case of emergency, it is necessary at times to call the crew from a mine. To handle this situation stench warnings have been introduced by many of the larger operators into the ventilation currents and the compressed air lines.

The stench most commonly used is "ETHYL MERCAPTON" which gives a strong odor resembling garlic. It is a general practice to place a bottle of this stench at one or more strategical points and have employees familiarize themselves with the odor and the operation of the warning system.

When this odor is observed, unless it has previously been announced as a test, all underground employees should:

- Leave their place of work at once in a quick and orderly manner;
- Give warning to all fellow workmen in their vicinity; and
- Go to the nearest safe exit.

**Note:** These instructions and rules to aid in prevention of accidents are used by the Hecla Mining Company, Burke, Idaho.

With a few exceptions (that are not applicable to each particular mining operation) the inspector of mines urges their adoption throughout the state, to fit in with the "Safety First" program of the mining department, in preventing avoidable accidents to a minimum in the industry.
General Safety Provisions

Operation and Equipment of Mines

46-401 REGULATIONS FOR ALL OPERATORS: The rules, regulations and methods prescribed in sections 5486-5513 shall be observed and followed by each and every person, employee, firm or corporation operating mines within the state of Idaho.

FIRE PROTECTION AND EXITS

46-402 FIRE PROTECTION FOR FRAME STRUCTURES: Shafts or tunnels which at the present time are covered with frame buildings, such as shaft houses, blacksmith shops, machine shops or engine rooms, shall be provided with fire protection. In all cases, dry hand grenade fire extinguishers shall be available at convenient points around the buildings, and water protection under sufficient natural pressure, with at least one hydrant, with hose and nozzle attachment, located outside of the building, shall be provided wherever water is available.

46-403 FIRE DOORS: Every working adit or crosscut tunnel entrance where wooden buildings exist, at or near the portal of same, shall be provided with a fire door not less than 50 feet in from the earth portal of the tunnel. This door shall be hung and so adjusted that, upon being released, it will close of its own accord, either by its own weight, when hung from the top of the tunnel, or by means of suspended weights, when hung from the side. The door shall be held open by a rope passing over a pulley, terminating outside of any of the buildings at the mouth of the tunnel and shall be so fitted that, when closed, it will cut off the circulation of air as completely as possible. Where electric haulage is used in said adit or crosscut tunnel, a door consisting of two doors hung from the sides and closing tightly can be used.

If there be no other exit which can be reached from the underground workings connected with such entrance tunnel, then such entrance tunnel shall further be provided with a short raise and ladderway to the surface immediately inside of the fire door.

46-404 MORE THAN ONE EXIT FROM UNDERGROUND WORKINGS: All mines employing underground more than 15 men, and where the vein has been driven on and stoping commenced, shall be provided with more than one exit, and where there is no such escapement raise or exit, work on such outlet shall be commenced immediately, and be diligently carried on until completed.

46-405 SHAFT LADDERWAYS: Shafts sunk to a greater depth than 100 feet must have two or more compartments, one compartment to be used for a manway, and to be fitted with a good, substantial ladderway, provided with platforms or cross pieces at intervals of not to exceed 20 feet, and where practicable, the ladders should be in lengths of not to exceed 20 feet, and inclined at a convenient angle.

46-406 SAME: EXIT: Where wooden buildings exist, at or near the collar of a shaft, and where there is no other exit which may be reached from this shaft, through underground workings, then the manway compartment of the shaft must be partitioned off from the other compartments, and provided with a trapdoor, over the manway compartment, at the surface, which must be kept closed or so arranged that it can be closed from a point outside of the building by the releasing of a rope, and said manway compartment shall in addition be connected with the surface by a short drift or raise starting at a point not less than 25 feet below the collar of the shaft and terminating outside of the building.

46-407 CONSTRUCTION OF BUILDINGS AT ENTRANCE: The construction of new buildings, for mechanical plant, timber sheds, blacksmith shop or for any other purpose over or at the entrance to a mine, shall be prohibited, excepting in high, snowy countries where a shed may be permitted between the buildings and the entrance to the mine, which can be
rapidly destroyed in case of fire, but all frame buildings shall be placed at a distance of not less than 25 feet from the entrance.

**46-408 PROTECTION OF SHAFTS AND OPENINGS:** The collar of all shafts shall be fixed and protected, so that persons and foreign objects can not fall into the shafts, and all openings in mines such as chutes, winzes, timber slides and mill holes, when not in use for any considerable length of time, shall be protected by a plank or guard rail, and all abandoned or unused surface shafts or raises to the surface shall be securely fenced off or covered.

**SHAFTS AND HOISTS**

**46-409 SHAFT CAGES AND BUCKETS:** It shall be unlawful for any person to sink or operate a vertical or steeply inclined shaft to a greater depth than 250 feet without having the same equipped with a mine cage, skip or bucket fitted with safety clutches.

Where a bucket is used the same must be attached to a fixed safety crosshead by two chains or cables. Loose heads for shaft buckets are strictly prohibited.

Where a cage or skip is used; it must be provided with a bonnet in addition to safety clutches. The bonnet must be made of boiler sheet iron of at least three-sixteenths inch thickness, and must cover the top of the cage in such manner as to afford the greatest protection to life and limb from any falling objects.

Where a cage and skip are used together, in the same compartment of the shaft, the bonnet may be dispensed with, if the skip is placed above the cage: PROVIDED, This chapter does not apply to skips, cages or buckets used solely to hoist or lower materials.

**46-410 SAME: SAFETY DEVICES:** All gallows frames shall be equipped with automatic chairs, or some other automatic device, placed in such a position as to catch the cage or skip, and prevent its falling, in case of overwinding and consequent breaking of the cable.

**46-411 GALLOWS FRAMES:** After a shaft has reached 200 feet in depth and stoping commenced, the gallows frame shall not be less than 40 feet in height between the collar of the shaft and sheave wheel.

**46-412 HOIST INDICATOR:** Wherever a steam, electric, gas, air or water driven hoist is used, in the handling of men, in mines, it shall be equipped with an indicator, placed in clear view of the hoist engineer, and geared positively to the shaft or drum of the hoist, and so adjusted with dial or slide as to provide a target or indicator that will at all times show the exact location of the bucket, cage or skip.

**46-413 INSULATION OF WIRES:** Electric power cables, where used underground shall be thoroughly insulated; and, where electric haulage is used underground, the trolley wires must be protected by inverted U-shaped guards, placed along the trolley wires, opposite any handloading chutes.

**46-414 HOIST SIGNAL DEVICES:** Every shaft that is equipped with a bucket, cage or skip operated by a hoist shall be supplied with a pull bell, and also with an electric bell and flashlight signal, where practicable.

**46-415 HOIST SIGNAL CODE.** At all mines where hoisting apparatus is used in the state of Idaho, the following code of bell signals shall hereafter be adopted and used:

- One bell, hoist.
- One bell, stop (if in motion).
- Two bells, lower.
- Three bells, hoist men (run slowly).
- Four bells, blasting signal. Engineer must answer by raising bucket or cage a few feet and letting it back slowly; then one bell, hoist men away from blast.
- Nine bells, danger signal (fire, accident or other danger), followed by the station call where the danger exists.
No other person other than the cager shall ring the signal bell except in case of absolute necessity, and then only after giving seven bells, thereby notifying the hoist engineer that someone other than the cager is ringing the bell.

### STATION SIGNALS

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46-416 SAME: POSTING. Every mining property using hoisting apparatus within the state of Idaho shall keep one copy of this entire code posted on the gallows frame, and a copy of the bell signals before the hoist engineer, and on each station. Signals to meet local demands and not in conflict with the above may be added by individual operators, but the same must be posted in clear and legible form in conjunction with the above code.

46-417 SAME: ENGINEER TO BE ADVISED WHEN MEN ARE HANDLED. It shall be unlawful for any cager or other person to ride upon a cage or skip except after having given a bell signal known by the engineer to be a signal for the handling of men. No private or short signals will be allowed when men are to be hoisted or lowered.

46-418 SAME: SIGNALS BY OTHER THAN CAGER. It shall be unlawful for any one, excepting the cager, to ring the hoist bells without first giving a special signal, notifying the hoist engineer that some one other than the cager is ringing the bell.

46-419 PERSONS WHO MAY ACCOMPANY SUPPLIES. It shall be unlawful for men to travel on a cage or skip loaded with steel supplies or material, other than the cager or those who are assisting him in the loading and unloading of such material.

46-420 RIDING IN DANGEROUS POSITION UNLAWFUL. It shall be unlawful for any person, whether working for himself or whether he be in the employ of any other person, company or corporation, to ride upon the bail or cable of a hoisting bucket, cage or skip.

46-421 ENGINEER TO ACT ONLY ON SIGNAL. It shall be unlawful for any hoist engineer to raise or lower a bucket, cage or skip except upon bell signals.

46-422 HOIST ENGINEER MUST BE QUALIFIED. When a man is being broken in as hoist engineer and when he is under the tutorage of a qualified hoist engineer, and a signal is given to hoist or lower men, the qualified hoist engineer there present must take charge of the hoist, the new man not being allowed to handle the hoist when men are on the cage or skip until he has qualified as a hoist engineer.

46-423 HOIST ENGINEER MUST ATTEND EXCLUSIVELY TO DUTY. It shall be unlawful for any hoist engineer, while on duty, to answer questions or converse with any one in any manner whatever, excepting such persons as may be assisting him in the operation of the hoist, and then only when necessary. When approached by any one desiring to converse with him, he shall bring the hoist to rest and descend from the bridge before answering any such inquiry, or entering into conversation.

46-424 SPEED REGULATIONS. It is unlawful for any person, company or corporation to hoist or lower the men when going on or coming off of shift, after the cage has remained idle several hours, until one round trip has been made with the empty cage; and when a shaft is equipped with
chairs at the several levels, the hoist engineer must slow up when passing
stations where men are on the cage or skip.

46-425 DRUNKARDS AND MINORS INELIGIBLE. No person addicted
to the use of intoxicating liquors or under 21 years of age shall be employed
as hoisting engineer, and no person under the influence of liquor shall be
permitted under ground, either in the capacity of employee or otherwise.

EXPLOSIVES AND OILS

46-426 STORING OF EXPLOSIVES. It shall be unlawful for any mining
company or person to store more explosives in the underground workings of
any mine where men are employed than is required for 24 hours' use, and it
shall also be unlawful to store or thaw powder in any buildings used as a
dwelling or in which men are employed in any capacity, excepting in the
storing, thawing or removing of the same, and storage places for powder
shall be situated not less than 200 feet distant from any dwelling or working
place for men, unless some impregnable natural object intervenes, and then
only in a properly designated building or an underground excavation to be
used exclusively for that purpose, and conspicuously marked as such.

Powder thawers using fire, candles, lanterns or light of any kind are
hereby prohibited in mines employing more than 15 men.

46-427 TAMPING BARS. No person, whether working for himself or in
the employ of another person, company or corporation, while loading or
charging a hole with nitroglycerine, powder or other explosive, or in remov­
ing powder frome same, shall use or employ any steel or iron bar; nor shall
any mine manager, superintendent, foreman or shift boss, or other person
having the management or direction of mine labor, allow or permit the use
of steel, iron or other metal tamping bar by employees under his management
or direction.

46-428 STORAGE OF OILS. Oils and other inflammable materials shall
be stored or kept at a safe distance from the mine buildings, and at a safe
distance from the powder magazine, and their removal from said building for
use shall be in such quantities as are necessary to meet the requirements of
one day only.

ENFORCEMENT

46-429 PENALTIES FOR VIOLATIONS. Any person, firm or corporation
operating mines within the state of Idaho who shall fail, neglect or refuse to
comply with any provisions of this article relating to the duties of employees
shall be guilty of a misdemeanor, and upon conviction shall be fined and
the sum of not more than $300 or imprisonment for not more than six months,
or by both such fine and imprisonment.

And any employee in any mine who shall fail, neglect or refuse to comply
with any of the requirements of this article relating to the duties of em­
ployees shall be guilty of a misdemeanor, and upon conviction shall be fined
the sum of not more than $300 or imprisonment for not more than six
months, or both such fine and imprisonment.

46-430 DUTY OF PROSECUTING ATTORNEY. It shall be the duty of
the prosecuting attorney of the proper county to prosecute the violation of
the provisions of this article, upon the furnishing of the necessary informa­
tion by or at the direction of the inspector of mines:

46-431 PUBLICATION OF REGULATIONS. It shall be the duty of the
state inspector of mines to have printed a sufficient number of copies of this
article for distribution.

DUST PREVENTION

46-501 DUST PREVENTION APPARATUS: OPERATOR MUST FUR­
NISH. It shall be unlawful for any owner, operator or person in charge of
any underground mine to cause to be drilled or bored by machinery a hole
or holes in any stope or raise in ground that causes dust from drilling, unless
said machinery is equipped with a water jet or spray or other means equally
efficient to prevent the escape of dust.
46-502 SAME: EMPLOYEE MUST USE. Where machinery used for drilling or boring holes in stopes or raises is equipped as required by the preceding section it shall be unlawful for any person or persons to drill or bore a hole in said stope or raise without using said appliance for the prevention of dust.

46-503 PENALTY FOR VIOLATION. Any person who violates either of the two preceding sections, or any owner, operator or person in charge of any underground mine who hires, contracts with or causes any person to violate the two preceding sections shall be guilty of a misdemeanor, and upon conviction thereof shall be punished by a fine of not less than $100 nor more than $500, or by imprisonment in the county jail not more than six months, or by both such fine and imprisonment.

46-504 DEFINITIONS. The words "person," "operator," "owner" and "person in charge," wherever used in this article, shall be deemed to include corporations and associations existing under or authorized by the laws of either the United States, the laws of the territories, the laws of any state or the laws of any foreign country.

ARTHUR CAMPBELL
Inspector of Mines
Member Board of Control, Bureau Mines and Geology
LOCATION OF MINING CLAIMS

46-601. LODE CLAIMS—DIMENSIONS.—Mining claims hereafter located upon veins or lodes of quartz or other rock in place bearing any of the metals or other valuable deposits mentioned in section 2320 of the Revised Statutes of the United States, may extend to 300 feet on each side of the middle of the vein or lode; provided, that when the locators have set stakes, posts or monuments described in the following section, to indicate the line of the vein, ledge or lode, such stakes, posts or monuments must be taken, for the purpose of such location, to mark correctly the line thereof, and such line must not afterward be changed so as to affect rights acquired, or interfere with any locations made, subsequent thereto.

Hist. (See 1881, p. 262, § 1) R. S., § 3100; am. 1895, p. 25, § 1, reen. 1899, p. 237, § 1, reen. R. C. & C. L., § 3206; C. S., § 5520.

Cross ref. Mechanics' and materialmen's liens on mining claims, § 44-501 et seq.


Excessive Location.

Where the exterior boundaries of a mineral location include such an unreasonably excessive area that such boundary lines can not be said to impart notice to prospector of mineral location or discovery within reasonable distance of a lawful claim as located under statute, such location will be held void. Nicholls v. Lewis &c. Min. Co., 18 Idaho 224, 109 Pac. 846, 28 L. R. A. (N. S.) 1029.

46-602. Location monument and notice.—The locator, at the time of making the discovery of such vein or lode, must erect a monument at such place of discovery, upon which he must place his name, the name of the claim, the date of discovery and distance claimed along the vein each way from such monument. Within ten days from the date of discovery he must mark the boundaries of his claim by establishing at each corner thereof and at any angle in the side lines, a monument, marked with the name of the claim and the corner or angle it represents; also at the time of so marking his boundaries he must post at his discovery monument his notice of location in which must be stated: First, the name of the locator; second, the name of the claim; third, the date of discovery; fourth, the direction and distance claimed along the ledge from the discovery; fifth, the distance claimed on each side of the middle of the ledge; sixth, the distance and direction from the discovery monument to such natural object or permanent monument, if any such there be, as will fix and describe in the notice itself the location of the claim, and seventh, the name of the mining district, county and state. When from any cause, a monument can not be safely planted at the true corner or angle, it may be placed as near thereto as practicable and so marked as to indicate the place of such corner or angle. Monuments may be made of any such material or form as will readily give notice, and when of posts or trees, they must be hewn and marked upon the side facing toward the discovery, and must be at least four inches square or in diameter. Monuments must be at least four feet high above the ground, and trees must be so hewn as to readily attract attention. At the time the locator so marks the boundaries of his claim he may do so in any direction that will not interfere with rights or claims which existed prior to his discovery.

Hist. (See 1881, p. 262, §§ 2, 3), R. S., § 3101; am. 1895, p. 25, § 2, reen. 1899, p. 237, § 2; am. 1899, p. 440, § 1, reen. R. C. & C. L., § 3207; C. S., § 5521.

Construction.

Provisions of this section as to erecting monuments and placing thereon name of locator and claim are mandatory. Buckeye Min. Co. v. Powers, 43 Idaho 532, 257 Pac. 833.
Necessity of Discovery.

Vein or lode must be discovered before valid location can be made thereon; one can not locate quartz claim on porphyry, granite, limestone, or quartzite unless he has previously discovered vein or lode. Ambergris Min. Co. v. Day, 12 Idaho 108, 85 Pac. 109.

Location by Agent.

Agent for locator may do things required by this section in locating claim. Dunlap v. Pattison, 4 Idaho 473, 42 Pac. 504, 95 Am. St. 140.

 Sufficiency of Notice.

Location notice must describe claim by reference to some natural object or permanent monument which will identify claim and will furnish reasonable certainty that locus of claim has not been, and can not well be changed; reference must be such as will enable skilled engineer to identify claim without reference to contiguous claims, location of which are uncertain, and courses and distances from permanent monument to discovery stakes or corner stakes must be stated with reasonable accuracy. Brown v. Levan, 4 Idaho 794, 46 Pac. 661.

Where location certificate contains reference to land-mark, it should not be declared insufficient upon mere inspection of certificate and in absence of evidence, unless it clearly fails to identify claim. Morrison v. Regan, 8 Idaho 291, 67 Pac. 955.

Where the location of mining claim is made in good faith, court will not hold locator to a very strict compliance with the law in respect to his location notice. If by any reasonable construction, in view of surrounding circumstances language employed in description will impart notice to subsequent locators, it is sufficient. Natural objects or permanent monuments referred to in statutes may be on ground located, or off, as case may be. Bismarck Mountain Gold Min. Co. v. North Sunbeam Gold Co., 14 Idaho 516, 95 Pac. 14; Snowy Peak Min. Co. v. Tamarack &c. Min. Co., 17 Idaho 630, 107 Pac. 60; Law v. Fowler, 45 Idaho 1, 261 Pac. 667.

Intent of law is to require locator to make his location so definite and certain that from location notice and stakes and monuments on ground, limits and boundaries of the claim may be on ground located, or off, as case may be. Flynn Group Min. Co. v. Murphy, 18 Idaho 266, 109 Pac. 851, 138 Am. St. 201.

Location notice is not required to describe exterior boundaries of claim. Flynn Group Min. Co. v. Murphy, 18 Idaho 266, 109 Pac. 851, 138 Am. St. 201.

Sufficiency of description of property or tie to a natural object or permanent monument is open to explanation by other evidence than notices to show whether or not property could be definitely identified from such description. Humphreys v. Idaho Gold Mines Dev. Co., 21 Idaho 126, 120 Pac. 823, 40 L. R. A. (N. S.) 817.

Description which is so erroneous as to be delusive and misleading renders location void. Swanson v. Koeniger, 25 Idaho 361, 137 Pac. 891.

Location notices must not only be placed upon monument but in manner sufficiently conspicuous to be observed. Buckeye Min. Co. v. Powers, 43 Idaho 532, 257 Pac. 833.

Whether notice and description of claim are sufficient to apprise other prospectors of its precise location is question of fact and not of law. Law v. Fowler, 45 Idaho 1, 261 Pac. 667.

Notice Held Sufficient.

Location notice describing claim as “Commencing at this stake and notice which is situated about 300 feet in a northwesterly direction from the Minnesota mine; that it is an extension of the Red Jacket mine and running thence along the vein or lode in an easterly direction to a similar stake and notice,” is sufficient. Morrison v. Regan, 8 Idaho 291, 67 Pac. 935.
Located mining claim is natural object or landmark, or fixed object which may be referred to in location notice. Morrison v. Regan, 8 Idaho 291, 67 Pac. 955; Law v. Fowler, 45 Idaho 1, 261 Pac. 667.

Presumption is that claim named as monument in location notice exists, and burden of showing nonexistence is upon party attacking notice. Law v. Fowler, 45 Idaho 1, 261 Pac. 667.

**Notice Held Insufficient.**

Location which is tied to a natural object or permanent monument, described as the mouth of Big Canyon, and which fixes the discovery stake at six hundred feet from such monument, without indicating direction from point of discovery is void. Clearwater Short Line Ry. v. San Garde, 7 Idaho 106, 61 Pac. 137.

Location notices placed on flat rock or in tobacco can on ground held insufficient. Buckeye Min. Co. v. Powers, 43 Idaho 532, 257 Pac. 833.

**Actual Notice.**

If locator had actual notice that ground in controversy had been located, as well as constructive notice by an examination of recorded notice, no technicalities will be resorted to to sustain his relocation of the same ground. Flynn Group Min. Co. v. Murphy, 18 Idaho 266, 109 Pac. 851, 138 Am. St. 201.

Object of statute is to give notice of location of claim, and when subsequent locator has actual knowledge of location of claim, he is not misled by deficient description and can not take advantage of it. Sellers v. Taylor, 48 Idaho 116, 279 Pac. 617.

**Marking Exterior Boundaries.**

It takes more than posting of a discovery notice to constitute a valid location. It is just as essential that exterior boundaries be marked. Nicholls v. Lewis &c. Min. Co., 18 Idaho 224, 109 Pac. 846, 28 L. R. A. (N. S.) 1029.

**Excessive Location.**

Where in locating claim amount included is by mistake in excess of that allowed by law, excess may be rejected and claim held good for remainder, unless it interferes with rights previously acquired. Stemwinder Min. Co. v. Emma &c. Min. Co., 149 U. S. 787, 37 L. ed. 941, 13 Sup. Ct. 1052.

Where an excessive mineral location has been made through mistake, while locator was acting in good faith, location will be void only as to excess; but where locator has purposely included within his exterior boundaries an excessive area with fraudulent intent of holding entire area under one location, such location is void; or if made so large that the location can not be deemed result of innocent error or mistake, fraud may be presumed. Nicholls v. Lewis &c. Min. Co., 18 Idaho 224, 109 Pac. 846; Flynn Group Min. Co. v. Murphy, 18 Idaho 266, 109 Pac. 851, 138 Am. St. 201.

**Adverse Possession.**

Under U. S. R. S., § 2332 (Mason's U. S. Code, tit. 30, § 38; U. S. C., tit. 30, § 38) claimant to mineral lands, who has been in open, exclusive adverse possession of a claim for a continuous period equal to that required by local statute of limitations governing adverse possession of real estate, is relieved of necessity of making proof of posting and recording a notice of location and such other proofs as are usually furnished by county recorder. Humphreys v. Idaho Gold Mines Dev. Co., 21 Idaho 126, 120 Pac. 823.


**Conflicting Claims.**

Location and discovery on land withdrawn quoad hoc from public domain by valid and subsisting mining claim is absolutely void for purpose of found-

Since rights of conflicting locators to unpatented mining claim are subject to paramount title of United States, they can be subject of only possessory action and not action to quiet title in true sense of that term. Hedrick v. Lee, 39 Idaho 42, 227 Pac. 27.

Complaint in actions of conflicting claims should describe same by metes and bounds or set forth location notices, but reference in complaint to location notices on file in office of county recorder will save it as against general demurrer. Hedrick v. Lee, 39 Idaho 42, 227 Pac. 27.


Provisions of Mason's U. S. Code, tit. 30, § 38; U. S. C., tit. 30, § 38, are intended to obviate necessity for proof of posting and recording notice of location in cases where claimant has been in actual, open, and exclusive possession for period equal to that prescribed by local statute of limitations, governing adverse possession of real estate. Law v. Fowler, 45 Idaho 1, 261 Pac. 667.


46-603. SHAFT MUST BE SUNK—RELOCATION.—Within sixty days after such location, the locator or his assigns must sink a shaft upon the lode to the depth of at least ten feet from the lowest part of the rim of such shaft to the surface, and of not less than sixteen square feet area. Any excavation which shall cut such vein ten feet from the lowest part of the rim of such shaft and which shall measure 160 cubic feet in extent shall be considered a compliance with this provision. Any located claim upon which work has been done in compliance with the above requirements is not, unless abandoned, subject to relocation for a period of ninety days from and after the date of location.


Cross ref. Official patent survey as development work, § 46-618; as assessment work, § 46-619.

Construction and Purpose.

Discovery work must be performed in substantial compliance with provisions of statute or there can be no valid location of claim. Hedrick v. Lee, 39 Idaho 42, 227 Pac. 27.

Purposes of this section are to exact good faith and prevent holding of mineral ground for purposes of remote speculation without intent of development. Hedrick v. Lee, 39 Idaho 42, 227 Pac. 27.
Time Essential.

Work required to be done must be performed within time limited as a condition precedent to vesting of title; neglect in this respect can not be cured by performance of the work after time limited, but before institution of an adverse claim. Kramer v. Settle, 1 Idaho 485.

Fencing.

Neither government of United States nor State of Idaho has enacted any statute requiring locator of mining claim to fence same or in any way protect or inclose any pits, shafts, or excavations on such claim against livestock. Strong v. Brown, 26 Idaho 1, 140 Pac. 773, 52 L. R. A. (N. S.) 140, Ann. Cas. 1916E, 482.

Development and Assessment Work.


Work by claimant on adjacent mining claim under mistaken belief that it was his own does not serve as assessment work on his own. Weigle v. Salmino, 49 Idaho 522, 290 Pac. 552.

46-604. NOTICE MUST BE RECORDED.—Within ninety days after the location of the claim the locator or his assigns must file for record in the office of the county recorder of the county, or of the deputy recorder of the mining district in which the claim is situated, a substantial copy of his notice of location.


Notice is Prima Facie Evidence.

Location notice or certificate, when recorded, is prima facie evidence of all facts statute requires it to contain, and which are therein sufficiently set forth. Bismarck Mountain Gold Min. Co., v. North Sunbeam Gold Co., 14 Idaho 516, 95 Pac. 14.

Adverse Possession.

Under U. S. R. S., § 2332 (Mason's U. S. Code, tit. 30, § 38; U. S. C., tit. 30, § 38), claimant to mineral lands who has been in adverse possession for continuous period equal to that required by local statute of limitations is relieved of necessity of making proof of recording a notice of location. Humphreys v. Idaho Gold Mines Dev. Co., 21 Idaho 126, 120 Pac. 823, 40 L. R. A. (N. S.) 817.

It still remains for persons who assert claim by adverse possession to have mineral discovery and perform assessment work. They must also mark boundaries of claim so as to afford actual notice of extent of possession and exclude all adverse claimants for full period of statute. They must likewise maintain possession and occupancy during subsequent period when adverse locator attempts to initiate right by locating claim. Law v. Fowler, 45 Idaho 1, 261 Pac. 667.

Possession of unpatented mining claims is actual possession not constructive possession. "Actual possession" means something more than mere compliance with requirements of assessment work. Law v. Fowler, 45 Idaho 1, 261 Pac. 667.

Adverse claimant of mining right must institute action within thirty days from filing adverse claim or within ninety days of first publication of notice, or court has no jurisdiction to pass upon his claim. See Mason's U. S. Code, tit. 30, § 29; U. S. C., tit. 30, § 29. Little v. Morris, 48 Idaho 740, 284 Pac. 1029.

46-605. RECORD OF ADDITIONAL CERTIFICATE.—If at any time the locator of any mining claim heretofore or hereafter located, or his assigns, shall apprehend that his original certificate was defective, erroneous, or that the requirements of the law had not been complied with before filing, or shall be desirous of changing the surface boundaries, or of taking any part of an overlapping claim which has been abandoned, or in case the original certificate was made prior to the passage of this law, and he shall be desirous of securing the benefits of this chapter, such locator or his assigns may file
an additional certificate subject to the conditions of this chapter, and to con­
tain all that this chapter requires an original certificate to contain: provided, 
that such amended location does not interfere with the existing rights of 
others at the time when such amendment is made.

C. S., § 5524.

**Amended Locations.**

Amended location may be made by any one having authority to make 
same, and such authority need not be in writing. Morrison v. Regan, 8 Idaho 
291, 67 Pac. 955.

Proviso of this section that amended locations do not interfere with 
existing rights of others at time of amendment, only applies to changes of 
boundaries or to cases where part of an overlapping claim which has been 
abandoned is taken in, and does not apply to amended locations by which 
surface boundaries are not changed, or where no part of an overlapping 
claim is taken in. Morrison v. Regan, 8 Idaho 291, 67 Pac. 955.

Amended certificate may cure a defective or erroneous original certifi­
cate and relates back to date of original certificate, unless such original is 
absolutely void, or where rights of others have intervened between date of 
original and amended locations. Morrison v. Regan, 8 Idaho 291, 67 Pac. 955.

Amended locations, where they do not interfere with existing rights, 
relate back to date of original locations. Bismarck Mountain Gold Min. Co. 

**46-606. AFFIDAVIT OF PERFORMANCE OF LABOR—FEE—EFFECT**

**AS EVIDENCE:**—Within sixty days after any time set or period allowed 
for the performance of labor, or making improvements upon any lode or 
placer claim, the person in whose behalf such work or improvement is per­
formed, or some person for him, must make and record an affidavit in sub­
stance as follows:

State of Idaho, county of ________, ss.

Before me, the subscribed, personally appeared ___________, who 
being first duly sworn says, that at least ___________ dollars worth 
of work or improvements were performed or made upon _________-
claim, situate in _______ mining district, county of ________, 
state of Idaho:

That such expenditure was made by, for, or at the expense of 
___________, owner of said claim, for the purpose of holding said 
claim; all stakes, monuments or trees marking boundaries of said 
claim are in proper place and position.

Subscribed and sworn to before me this __________ day of 
__________, 19____.

The fee for administering the oath and recording the foregoing affidavit, 
when taken before any county recorder or deputy mineral recorder, shall be 
fifty cents: provided, however, that any number of claims in the same mining 
district, belonging to the same person or persons, association or corporation, 
may be included in one affidavit without the additional charge. The fee 
for recording the same when the oath is taken before any other officer 
authorized to administer oaths shall be fifty cents.

Such affidavit, or a certified copy thereof in case the original is lost, 
shall be prima facie evidence of the performance of such labor. The failure 
to file such affidavit shall be considered prima facie evidence that such 
labor has not been done.

**Hist.** R. S., § 3100; am. 1899, p. 237, § 6; am. 1899, p. 440, § 2, reen. R. C., 
§ 3211; am. 1913, ch. 72, § 1, p. 308, reen. C. L., § 3211; C. S. § 5525.

**Cross ref.** See notes, § 46-603.

**Official patent survey as development work, § 46-618; as assessment work, 
§ 46-619.**

**Fee.**

Prior to the 1913 amendment of this section, the fee for recording affi­
davit of labor was fifty cents for each claim named in such affidavit. Empire Copper Co. v. Henderson, 15 Idaho 635, 99 Pac. 127.
Correction of Affidavit.

If a mistake is made in such notice, it may be corrected by oral evidence. Fact as to whether work was done is main question, and not its method of proof. Bismarck Mountain Gold Min. Co. v. North Sunbeam Gold Co., 14 Idaho 516, 95 Pac. 14.

Prima Facie Evidence Overcome.

When prima facie evidence is met and overcome by positive evidence that labor had not been performed, it then devolves upon the respondent to show by evidence of a positive and affirmative nature other than affidavit that work had actually been performed. Dickens-West Min. Co. v. Crescent Min. &c. Co., 26 Idaho 153, 141 Pac. 566.

46-607. LOCATION OF ABANDONED CLAIM.—The location of abandoned claims shall be done in the same manner as if the location were of a new claim; but the locator may, instead of sinking a new discovery shaft, sink the original discovery shaft ten feet deeper than it was at the time of his location, or he may drive the open cut, or tunnel, ten feet further along the course of the lead, lode or vein, and must erect new posts or monuments.


Cited in Weigle v. Salmino, 49 Idaho 522, 290 Pac. 552.

46-608. NOTICE MUST CLAIM ONLY ONE LOCATION.—No location notice shall claim more than one location, whether the location is made by one or several locators, and if it purport to claim more than one location it is absolutely void.


46-609. SECURITY TO SURFACE OWNERS—INJUNCTION.—When the right to mine is in any case separate from the ownership or right of occupancy of the surface ground, the owners or rightful occupants of the surface ground may demand satisfactory security from the miners, and if it be refused or not given, may enjoin such miners from working such ground until such security is given. The court granting the writ of injunction shall fix the amount and nature of the security.


46-610. DEPUTY RECORDERS—APPOINTMENT—TERM OF SERVICE.—For the convenience of prospectors and locators, the county recorders of the several counties shall appoint a deputy at any place where they may deem it necessary, the term of service of such deputy to terminate at the discretion of the county recorder.

Hist. (See 1881, p. 262, § 4); R. S., § 3103; am. 1895, p. 25, § 9, reen. 1899, p. 237, § 9, reen. R. C. & C. L., § 3215; C. S., § 5529; S. L. 1931, ch. 114, § 1.

Subdeaputies.

Deputy recorder has no power to appoint another deputy to act in his place, and an affidavit sworn to before deputy so appointed by him would be void. Van Buren v. McKinley, 8 Idaho 93, 66 Pac. 936.

46-611. AFFIDAVIT OF LOCATORS.—At or before the time of presenting a location notice for record, whether it be for a quartz or placer claim, one of the locators named in the same must make and subscribe an affidavit, in writing on or attached to the notice, substantially in the following form to wit:

State of Idaho, county of ________—ss.

I, _________________, do solemnly swear that I am a citizen of the United States of America (or have declared by intentions to become such), and that I am acquainted with the mining ground described in this notice of location, and herewith called the ____________ ledge, lode or claim; that the ground and claim therein described or any part thereof has not, to the best
of my knowledge and belief, been located according to the laws of the United States and this state, or if so located, that the same has been abandoned or forfeited by reason of the failure of such former locators to comply in respect thereto with the requirements of said laws, and (in the case of quartz claims) that I have opened new ground to the extent or depth of ten feet as required by the laws of Idaho.

Subscribed and sworn to before me this ___ day of ___, 19__.

Signature


Validity and Construction.

This section in requiring an affidavit to location notice prescribes a reasonable regulation and is not in conflict with U. S. R. S., § 2322 (Mason's U. S. Code, tit. 30, § 26; U. S. C., tit. 30, § 26). Van Buren v. McKinley, 8 Idaho 93, 66 Pac. 936.

Affidavit as required by this section is necessary to a valid location. Van Buren v. McKinley, 8 Idaho 93, 66 Pac. 936.

Affidavit by Agent.

Agent or attorney in fact may locate a mining claim for his principal and may make affidavit required by this section. Dunlap v. Pattison, 4 Idaho 473, 42 Pac. 504, 95 Am. St. 140.

46-612. MANNER OF RECORDING NOTICES—FEES.—The location notice herein required to be recorded must be recorded by the deputy appointed for the district (when the legal fee therefor is tendered), in a book kept for that purpose. Said book must be indexed, with the names of all the locators arranged in alphabetical order, according to the family or surname of each. The fee to be tendered for making such record, administering the oath to the locator and certifying the same, for indexing the names appearing on the notice, and to include recording the notice by the recorder as hereinafter required, and the indexing by said recorder, is two dollars, which fee must be equally divided between the county recorder and the deputy, and no other additional sum of money must be demanded or received by either of them, for any services connected with the recording of any location notice made pursuant to the requirements of this chapter: provided, that in counties where no deputy has been appointed, the fee shall be one dollar.


46-613. TRANSMISSION OF NOTICES TO COUNTY RECORDER—INDEX OF NAMES.—The deputy recorder of mining claims of each district, or the person elected as hereinbefore provided to make the record in case of the failure of the recorder to appoint a deputy, must, at least once in each month, transmit to the recorder at the county seat, all the notices of location filed with him for record and not previously transmitted, which must at once be recorded by said recorder in a book to be kept in his office, to be known as the book of mining claims. The names of all persons appearing in every notice of location must be indexed by the recorder, said names being arranged in said index in alphabetical order, according to the first letter of the surname of said locators.

Hist. (See 1881, p. 262, § 7) R. S., § 3106; reen. R. C. & C. L., § 3218; C. S., § 5532.

46-614. TRANSMISSION OF NOTICES TO DEPUTIES—DUTIES OF RECORDERS.—It shall be the duty of the county recorder of the several counties of this state, within fourteen days after receiving them, to transmit
to the deputy mining recorder of the district wherein the claims located are situated, all location notices, both quartz and placer, which shall not have been already recorded in the office of the deputy mining recorder. It shall be the duty of such deputy mining recorder to record in his records all such notices received by him, and he shall receive as compensation therefor from the recorder sending them, one-half the fee authorized by law to be charged for the recording of mining claims. After recording such notices the deputy mining recorder shall return the same to the county recorder.

**Hist.** 1903, p. 290, § 1; am. R. C. & C. L., § 3219; C. S., § 5533.

**46-615. SEAL OF DEPUTIES—LIMITATION ON POWERS.**—The deputy recorders provided for in this chapter are not, by virtue of the provisions hereof, authorized to perform any other than the special duties herein specified. They must keep an official seal, and the records in their custody are public records, but the seal of a deputy recorder must not be attached to any paper except for the purpose of authenticating certificates attached to transcripts of the records in his custody as deputy recorder.

**Hist.** (See 1881, p. 262, § 8) R. S., § 3107, reen. R. C. & C. L., § 3220; C. S., § 5534.

**46-616. PLACER CLAIMS—LOCATION.**—Placer claims, as mentioned in section 2329 of the Revised Statutes of the United States, may be located for the purpose of mining deposits and precious stones after the discovery of such deposits.


**46-617. PLACER CLAIMS—MONUMENTS—NOTICE—EXCAVATION—RECORD OF NOTICE.**—The locator of any placer mining claim located for the purpose of mining placer deposits or precious stones must, at the time of making the location, place a substantial post or monument, as is required in the location of quartz claims, at each corner of the location, and must also post on one of the same a notice of location containing the date of the location, the name of the locator, the name and dimensions of the claim, the mining district (if any) and county in which the same is situated; and must also give the distance and direction from said post or monument to such natural object or permanent monument, if any such there be, as will fix and describe in the notice itself the location of the claim. Within fifteen days after making the location, the locator must make an excavation upon the claim of not less than one hundred cubic feet, for the purpose of prospecting the same. Within thirty days after the location, the locator must file for record in the office of the recorder of the county, or the deputy recorder of the mining district in which the claim is situated, a substantial copy of his copy of notice of location, to which must be attached an affidavit such as is required in case of quartz claims.

**Hist.** 1895, p. 25, § 12; am. 1897, p. 13, § 1, reen. 1899, p. 237, § 12, reen. R. C. & C. L., § 3222; C. S., § 5538.

**Sufficiency of Notice.**

In case difficulties attend location of mining claims, this section does not require the impossible; and, if, by any reasonable construction under circumstances, language used in the description in location notices of claims would impart notice to subsequent locators, it is sufficient. Independence Placer Min. Co. v. Knauss, 32 Idaho 269, 181 Pac. 701.

**46-618. LODE AND PLACER CLAIMS—OFFICIAL PATENT SURVEY AS LABOR ON IMPROVEMENT.**—It is hereby declared that an official patent survey of a lode or placer mining claim or claims by a United States Mineral surveyor constitutes and is labor performed upon an improvement made upon or for the benefit of an unpatented lode or placer mining claim or claims.

**Hist.** C. S., § 5536-A, as added by S. L. 1929, ch. 194, § 1.
46-619. LODE AND PLACER CLAIMS—OFFICIAL PATENT SURVEY AS CREDIT ON ANNUAL ASSESSMENT WORK.—An official patent survey of a lode or placer mining claim or claims by a United States mineral surveyor may be credited to annual assessment work or labor, but in no case shall the credit for such survey and its attendant expense exceed the required assessment for one year on the claim or claims surveyed. When credit is sought for such work or improvement, the claimant must file in the recorder's office in the county in which such claim is situated the affidavit of such United States mineral surveyor, showing the cost of such survey, and when so filed the actual cost of such survey shall be deemed and considered as labor and improvements done and performed upon said claim or claims.


General Interpretations

Numerous and constant inquiries to the inspector's office for information on mining law have proved the need of including in this report certain sections of the law with a few general interpretations and citations of court decisions pertaining to annual labor. It must be distinctly understood that these are not complete and that competent legal advice should be sought on each specific question of interpretation.

ANNUAL LABOR

According to the United States law, the locator of a mining claim must do $100 worth of work annually in order to hold his claim. The period within which this work is required to be done commences at 12 o'clock meridian (noon) on the 1st day of July following the date of location. For example: If a claim was located on August 4, 1935, the period within which the annual labor is required to be done would commence at noon of July 1, 1936, and end at noon of July 1, 1937. On the other hand, if a claim was located on June 4, 1935, the period within which the annual labor is required to be done would commence at noon of July 1, 1935, and end at noon of July 1, 1936.

Annual Labor on Group. Annual labor for a group of claims may be done on any one of the claims if they are contiguous (adjoining), and if the work done on the one claim tend to develop the whole group. Chambers vs. Harrington (Utah, 1884) 111 U. S. 350, 4 S. Ct. 428, 28 L. Ed. 452.

Annual labor is required on placer as well as on lode claims.

All persons who may locate lode claims may locate placer claims.

According to the United States law, no location shall exceed more than 20 acres for each individual locator, but permits two or more persons up to the number of eight to locate an association claim 20 acres to each person. For example, two persons may locate 40 acres, three may locate 60 acres, and eight may locate 160 acres; and the association claim constitutes a single claim. It is not necessary to set corner posts for each 20 acres. A person cannot, by the use of names of his friends, relatives, or employees as dummies, locate for his own benefit a greater area of placer ground than is allowed by law. Cook v. Klonos (Alaska 1908) 164 F. 529.

Idaho requires an excavation of 100 cubic feet within 15 days after location. This should not be confused with the annual labor required by United States law.

WHAT COUNTS AS ANNUAL LABOR

Apex outside. Annual labor may be done on a lode having its apex outside of the surface lines of the location. Justice M. Co. v. Barclay (Nev. 1897) 82 F. 554.

Board. Board received by laborers in addition to their wages. Fredericks v. Klauser (1908) 52 Ore. 110, 96 P. 679.


On one of a group. Annual labor can be performed on one claim of a group of claims if the work tends to the development of the entire group. Chambers v. Harrington (Utah 1884) 111 U. S. 350, 4 S. Ct. 428, 28 L. Ed. 452.

On or below the surface. Work either on the surface or below it. Justice M. Co. v. Barclay (Nev. 1897) 82 P. 554.

Road building. Constructing a road to a mine. Doherty v. Morris (1891) 17 Colo. 106, 28 P. 85.

Services of horses. Reasonable compensation for the services of horses used in development work. Fredericks v. Klauser (1908) 52 Ore. 110, 96 P. 679.

Surveying for patent. An official patent survey of a lode or placer mining claim or claims by a United States mineral surveyor may be credited. Idaho '29, c. 194, § 2, p. 362.

Wages of watchman. If a mine is idle, the time and labor of a watchman or custodian may be treated as annual labor. Lockhart v. Rollins (1889) 2 I. 540, 21 P. 413.

Outside of boundaries: Annual labor can be performed outside of the boundaries of the claim if it tends to the development of the claim. Wailes v. Davies (Nev. 1907) 158 F. 667, aff. 164 F. 397.

WHAT WILL NOT COUNT AS ANNUAL LABOR

Building a cabin. Building a house off the claim for the use of miners while working the claims will not count. Remington v. Baudit (1886) 6 Mont. 138, 9 P. 819.

Purchase of horses. The purchase of horses to be used in developing a mine will not count as annual labor. Fredericks v. Klauser (1908) 52 Ore. 110, 96 P. 679.

Tests. Picking rock from the walls of a shaft, making tests and carrying it away and making assays of it, do not add to the value of the claim and will not count as annual labor. Bishop v. Baisley (1895) 28 Ore. 119, 41 P. 938.

Transportation of supplies. Transportation is not a proper charge. Fredericks v. Klauser (1908) 52 Ore. 110, 96 P. 679.

Unused material. Material taken to the claim but not used cannot be reckoned as an improvement. Fredericks v. Klauser (1908) 52 Ore. 110, 96 P. 679.


Outside of boundaries. Annual labor cannot be performed outside of the boundaries of the claim unless it tends to the development of the claim. Wailes v. Davies (Nev. 1907) 158 F. 667, aff. 164 F. 397.

Affidavit of annual labor. The United States law makes no provision for an affidavit of performance of annual labor, but many of the states do, and Idaho is one of them. The statute does not make the filing of an affidavit compulsory, nor does the failure to file forfeit the claim and render it open to relocation, Murray Hill M. & M. Co. v. Havenor (1901) 24 Utah 73, 66 P. 762; nor will such failure impair the right of the claimant to a patent, Hazard v. Johnson (1919) 45 Cal. App. 19, 187 P. 121; but if an attempt is made to "jump" or relocate the claim, or if the claim should become involved in a legal controversy, the owner must prove that his annual labor has been done. If the affidavit has been filed, it will be accepted as evidence that the work has been done, unless the opponent can prove that the work has not been done and that the affidavit is false. On the other hand, if the affidavit has not been filed, the locator would have to prove that he had actually done his work. In other words, filing the affidavit puts the locator in the most favorable position possible before a court; while failure to file puts him at a great disadvantage and unnecessary expense. One affidavit is sufficient for a group of claims.
Landing Fields for Mining Operations

By W. R. Graham

INTRODUCTION

Early in the fall of 1929, it was found necessary to place additional supplies into Deadwood. An early fall of snow had made the roads impassable and the dog team or the airplane were the only means of transportation into this mountainous district. The airplane was given a trial and found to give such excellent service that it was substituted for the dog team for mail service into Stibnite and other settlements of this district.

Great improvements have been made since that time in airplane service. Planes now fly on schedule from the following points:
- Cascade to Yellow Pine, Stibnite and Deadwood. (Four days were required for this trip made in 25 minutes by plane.)
- McCall to Warren and Burgdorf.
- Boise to Atlanta.
- Boise to Mountain City, Nevada.
- Call service is now maintained out of Boise, Cascade, McCall, Lewiston and Pocatello to almost any mining district.

LANDING FACILITIES

Under dangerous and hazardous conditions, the pioneers of these winter air trails carried their cargo of passengers, mail and express. Established landing fields were unknown. The pilot selected what appeared to be a fairly level spot near his destination and made a landing. He found it necessary to slip or fish-tail into a landing because of tall trees or other obstructions, which precluded any possibility of taking off with heavy loads.

Thanks to the far-sightedness of Uncle Sam's Forest Service, the mining companies, the Citizens Conservation Corps, the Civil Works Administration, and the Idaho Emergency Relief Administration, this condition has been greatly improved. Land has been set aside for landing fields. Timber has been cleared from level areas, stumps removed, the ground leveled, approaches cleared.

TYPICAL LANDING FIELD
FIELDS ESTABLISHED

First to recognize the need of a landing field in cases of emergency, the mining companies have grown to consider regular service a necessity. Perhaps next to recognize the importance of the airplane was the United States Forest Service which soon established Forest Emergency fields for forest aerial patrol, freight carrying and the transportation of men and equipment into isolated sections to fight fire. The Citizens Conservation Corps, the Civil Works Administration and the Idaho Emergency Relief Administration have further assisted in this work.

With the cooperation of the United States Forest Service, the State Aeronautics Division, the Citizens Conservation Corps, the Civil Works Administration, the St. Joseph Lead Co., and the Stibnite Mining Co. in their construction, landing fields were established, prior to 1933, at the following points:

1. Atlanta—Mining Company Field.
8. Moose Creek, Junction Moose Creek and Selway River—U. S. Forest Service Field.

NEW LANDING FIELDS, 1933 & 1934

During the year of 1933 improvements were made to the landing fields enumerated above and additional fields established at the following points:

14. Cold Meadows, on the ridge between Chamberlain Creek and Big Creek—U. S. Forest Service Fields.
15. Soldier Bar, on Big Creek—U. S. Forest Service.
16. Bernard Creek, on the Middle Fork of the Salmon River—U. S. Forest Service Field.
17. Cameron Ranch, on the Middle Fork of the Salmon River—U. S. Forest Service Field.
18. Cape Horn, Stanley Basin—U. S. Forest Service Field.
19. Yellow Pine, Idaho—CCC and CWA.
20. Landmark, Idaho—CCC.

SUMMARY

A brief summary of the flying activities on these fields shows that:

1. During the winter months, scheduled service was maintained for mining purposes from Boise, Atlanta, Bryant Ranch, Cascade, McCall, Stibnite and Warren.
2. Call trips for passengers were made at frequent intervals to Moose Creek, Dixie, Elk City and Chamberlain Basin during this same period.
3. From Lewiston to the mining settlement of Florence on Slate Creek an intermittent schedule was conducted. On account of poor landing facilities at Florence it was necessary to use a light plane. It was impossible to land even a light plane on several occasions and supplies were dropped from the plane.
4. There was no schedule service to the above mentioned points during the summer months. Call service for emergency trips to these localities was maintained, which consisted mostly of carrying fishermen, hunters and prospectors to remote regions. Guests to Dude ranches made use of this service.
5. During the dry season the most important service rendered was furnishing transportation for men and equipment to fight forest fires. Over 1700 men with attendant supplies and equipment were carried from McCall alone into Chamberlain Basin during July.

6. Scheduled flying was resumed in the fall and winter. In certain sections fog and the singular absence of snow delayed flying around Christmas time. Miners and prospectors in the Middle Fork region were unable to get home for the holidays.

7. During the recent flood in the Coeur d'Alene Mining District, the airplane came into its own in an outstanding manner. Communication with the outside was seriously disrupted and ground transportation was barred. Owing to the fortunate location of the fields at Wallace and Kellogg, which were left intact by the flood waters, flying activities could be carried on. Passengers, mail and express came through by air as well as quantities of freight.

RECOMMENDATIONS

The work, however, is not yet complete. With the increase of mining activities more fields must be constructed. Improvements should be made on the landing fields mentioned above. Additional landing fields are needed at the following points:

22. Picket Mountain
23. Grandjean
24. Trinity Mountain
25. Smith Prairie
26. Alexander Flats
27. Bear Valley
28. Indian Creek
29. Norton Ridge
30. Idaho City

To one familiar with conditions in our mining districts, the utility of airplane service is very apparent. Equally apparent is the fact that safe transportation by air cannot be had without safe landing facilities. Perhaps only in spectacular cases like flood or forest fire is the ordinary activities and utility of the airplane brought forcibly before the public. The passage of a plane overhead seems only a very ordinary occurrence and seldom conveys the real meaning of its service.

It is hoped that the readers of this article will support in every possible way the activities and service of this very modern and, in Idaho's mountainous districts, essential utility. We ask your influence to be used to continue the good work carried on by the United States Forest Service, the Citizens Conservation Corps, the Civil Works Administration, the Idaho Emergency Relief Administration, the W. P. A. and the State Aeronautics Division.
General Bibliography
OF
Idaho's Mineral Resources

Idaho contains an area of 83,888 square miles. The state is divided into 44 counties, 36 of which can be classed as having minerals of commercial importance. In 22 of these counties there are producing mines.

In the past practically all mining has been confined to the five principal metals: Lead, silver, gold, zinc, and copper, which are widely distributed throughout the state. In addition to these a great variety of uncommon metals and minerals occur in sufficient extent to be of commercial importance.

This great diversity of mineral wealth establishes Idaho as one of the principal mining States of the Union. It also makes mining the second most important industry in the state.

The importance of Idaho's mineral wealth is well shown by statistical facts based on the production and exploitation of the five principal metals, lead, silver, gold, zinc, and copper.

Total metal production since 1860, more than $1,300,000,000.
Average annual production for past 28 years, more than $26,000,000.
Average annual mine payroll, more than $9,000,000.

See Pages 109, 110 for publisher's address, meaning of reference marks, and abbreviations.


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An old erosion surface in Idaho, by J. B. Umpleby: Jour. Geology, vol. 20, pp. 139-147, 1912.§
Mineralogy of some black sands from Idaho, with a description of the methods used for their study, by E. V. Shannon, No. 2398: U. S. Nat. Museum Proc., vol. 60, art. 3, pp. 1-33, 1921.‡


Zonal distribution of gold, silver, lead, and copper ores in Idaho, by F. A. Thompson and Fritz McGonigle: Eng. and Min. Jour., vol. 120, pp. 218-218, Aug. 8, 1925.§


Mesozoic and Tertiary granitic rock in Idaho, by C. P. Ross: Jour. Geology, vol. 36, No. 8, November-December, 1928.**


Some pseudo-eutectic ore textures, by Alfred L. Anderson: Econ. Geol., vol. XXIX, No. 6, 1934.


Contact phenomena associated with the Cassia batholith, Idaho, by Alfred L. Anderson: Jour. of Geol., vol. XLII, No. 4, 1934.


ANTIMONY

Deposits of antimony, principally the sulphide (stibnite), are found in Shoshone county, Valley, Boise, Blaine, Idaho, Owyhee, and Custer counties. Those in the Coeur d'Alene district of Shoshone County have been extensively de-
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Developed; a number of mills for the concentration of the ore have been constructed; and in the past a large tonnage has been produced and marketed. The deposits in Blaine, Valley, and Owyhee counties contain a high-grade ore, most of which can be shipped without preliminary treatment. During the war, when antimony commanded a high price, a large tonnage was produced and shipped from the mines in Valley county.

Antimony occurs as an accessory mineral in many lead-zinc ore bodies, also in stibnite-bearing veins in which it is the dominating metallic mineral. All of the antimony ores carry more or less silver, and many of them, particularly those of Blaine County, are more valuable for this mineral than for the antimony.

In all the above-mentioned counties there are many deposits containing a large available tonnage of commercial ore, which can be readily marketed when freight and market conditions will permit it to be produced at a profit. Antimony and quicksilver deposits in the Yellow Pine district, by F. C. Schrader and C. P. Ross: U. S. Geol. Survey Bull. 780, pt. 1, 1925.*

The Livingston mine, Custer County, Idaho, by J. B. Stewart: Mining and Metallurgy, vol. 7, No. 233, pp. 223-224, May, 1926.§


ARSENIC

Deposits of arsenic, principally the sulphide (arsenopyrite), occur in Blaine, Gem, and Boise counties. These deposits, although not fully developed, show a large available tonnage containing sufficient arsenic to be valuable for this metal, which can be readily marketed when the demand for it will permit profitable production. Arsenic occurs also as arsenopyrite in Ada, Elmore, and Kootenai counties, but the deposits in these counties have not been sufficiently developed to ascertain the possible tonnage. Arsenical ore deposits in the United States, by R. H. Sayre: Eng. and Min. Jour.-Press, vol. 118, pp. 929-932, Dec. 13, 1924.§

ASBESTOS

Commercial asbestos occurs in two forms: The chrysotile variety, which is adapted to spinning; and the amphibole variety, which is not adapted to spinning but is used extensively in shingles, insulation materials, paper stock, cements and paints.

Amphibole asbestos occurs extensively in Idaho County, near Kamiah. There is a large demonstrated tonnage, but the demand is small, on account of market and freight rates. Deposits containing chrysotile have been reported in Fremont, Teton and Idaho counties.


BARYTES

Barytes (barium sulphate) is used in the rubber, paper, linoleum, ink, and paint manufacturing industries. Its principal use is in the manufacture of lithopone, a white pigment consisting of about 70 per cent barium sulphate and 30 per cent zinc sulphide. Some of the largest deposits of high-grade barytes found west of the Mississippi River occur in the Deer Creek and Muldoon sections of Blaine County. A new and large deposit of Barite in Idaho, by Arthur Lakes: Min. Reporter, Aug. 16, 1906.


BENTONITE

Bentonite, a plastic clay, is valuable for its high absorbent qualities; it has a capacity of absorbing three times its weight or about seven times its volume of water. It is used in beauty clays; for refining oil; as a filler in paper
and soaps; as an adulterant in drugs and candies; and as a packing for horses' hoofs.

Bentonite occurs in commercial quantities in Clark and Custer counties, and it has been reported to be found in Cassia, Owyhee, and Oneida counties. A geologic reconnaissance of Clark and Jefferson and parts of Butte, Custer, Fremont, Lemhi, and Madison counties, Idaho, by Virgil R. D. Kirkham: Pamphlet No. 19, Idaho Bureau of Mines and Geology, 1927.

**BERYLLIUM AND BERYL**

Beryllium, or glucinium, is often listed as a rare element, though it probably is more abundant in the earth's crust than many of the minor metals that are ordinarily considered rather common. **Beryllium is very light and exceptionally hard and strong, and many believe that it is destined to share with magnesium and aluminum in the fast-growing demands for light metals to be used in the construction of air craft. It is very light, having about the same specific gravity as magnesium, and is almost as hard as quartz.**

The mineral beryl, which seldom contains more than about 5 per cent of the element, is the only recognized ore of beryllium. It is a common accessory in pegmatite veins and is also found in clay slate and mica schist, but heretofore only the gem varieties, including emerald and aquamarine, have been actively sought.


**BISMUTH**

Bismuth, occurring as a sulphide, has been found in Blaine County unassociated with other metals, as well as in association with many of the lead ores. It also occurs in the gold ores of the Gold Hill, Balshazzer, and Buckskin mines, Boise County, in association with lead, probably galenobismuthite or similar lead-bismuth minerals.

**BUILDING STONE**

Sandstone exceptionally adapted to building purposes is found in Ada, Bear Lake, and Cassia counties. One of the principal enterprises in Ada County is that of the Boise Stone Co. in quarrying and converting sandstone to building purposes.


**CLAY**

The different kinds of clay have so many uses that it is probably impossible to list them all, but the following rought classification will serve to point out the great variety of products that contain clay: Structural products: Common brick, tile, etc. Refractories: Fire clay brick and special refractories. Pottery: Tableware, kitchenware, sanitary ware, etc.

Clay suitable for structural purposes is found in almost every county in the state, the better grades occurring in Benewah, Cassia, Kootenai, Latah, Lewis, Idaho, Power, and Washington Counties.

Clay suitable for refractories and pottery is found in Latah County. The refractory clay is high-grade. One deposit is being exploited, and the manufactured articles are in great demand throughout the Pacific Northwest states.


Composition and origin of certain commercial clays of northern Idaho, by Edward L. Tullis and F. B. Laney, vol. 28, No. 5, Econ. Geol. 1933.
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COAL

Bituminous coal of commercial importance occurs in Teton, Bonneville, Fremont, and Clark counties. No attempt has been made to exploit any of the deposits commercially except those in Horseshoe Basin, Teton County.

In Owyhee and Boise counties several beds of low-grade lignite occur. The largest and best developed of these is that on Reynolds Creek, Owyhee County, which has been shipping considerable fuel for local domestic use.


The Horseshoe Creek district of the Teton Basin coal field, by E. G. Woodruff: U. S. Geol. Survey Bull. 541, pp. 379-388, 1912. (Teton County.)


COBALT

Cobalt is found in Lemhi County. During the World War, when this metal commanded a high price, the deposits were actively developed; a small mill was constructed, and concentrate with a high cobalt content was produced. This metal is reported to have been found also in Kootenai and Latah counties.


Geology and ore deposits of Lemhi County, by J. B. Umpleby: U. S. Geol. Survey Bull. 528, 1913.


COPPER

Idaho is an important producer of copper and holds a high position among the ranking States of the Union. The many copper mines which are now under development and the numerous discoveries but undeveloped veins indicate that the production of this metal will be greatly increased; the State will then be elevated to a rank higher than it now holds.

Gold and silver are found associated with practically all the copper ores, and in some counties, notably in Custer and Bonner, the silver content is more valuable than the copper.

Custer, Lemhi, and Shoshone are the most important copper-producing counties: Adams and Washington counties may eventually become large pro-

DIATOMACEOUS EARTH

Diatomaceous earth is more commonly known as infusorial earth, and is sometimes referred to by its German name of kieselguhr. It is composed of the siliceous remains of minute aquatic plants known as diatoms.

The principal uses of diatomaceous earth are: Sawdust for refractory and insulation purposes; filter material at sugar factories; light-weight filler in concrete; in polishing powders; absorbent in dynamite, and in thermal insulator compounds.

Extensive beds of this mineral, in which it can be measured by the acre, are found in Owyhee, Elmore, Camas, Payette, Washington, and Idaho counties. A small tonnage has been obtained from Elmore County for use in Idaho sugar factories.


FELDSPAR

Common feldspars are crystalline compounds of silica, alumina, and one or more of the bases: potash, soda, and lime. There are two principal classes of feldspar—the one including the potash and potash-soda varieties; the other including the soda, soda-lime, and lime varieties. Pure potash feldspars are orthoclase and microcline. The principal use of feldspar is in the manufacture of pottery, chinaware, porcelain, enamel ware, and enamel brick and tile.

Deposits of high-grade feldspar, occurring as orthoclase, are found in Latah and Adams counties.

GARNET

Garnet is a common accessory mineral in a large variety of rocks, occurring abundantly in contact metamorphic zones and in metamorphosed crystalline limestone. Deposits of garnet possessing the necessary qualifications for ornamental or industrial use and so situated with regard to transportation and markets that they can be exploited commercially are relatively small and occur in only a few areas throughout the United States.

The principal uses of garnet are: As settings in jewelry; jewel bearings in watches; and as an abrasive. Abrasive garnet is utilized either in the form of a manufactured paper similar to sandpaper, or as loose grain or powder for grinding and polishing.
Extensive deposits of garnet adapted to abrasive purposes occur in Adams, Lemhi, Custer, and Cassia counties.

**GOLD**

Gold is found in most counties of the State and is one of the most widely distributed metals. Prior to the World War, Idaho was an important producer of this metal, but during the war period many of the mines of which the principal product was gold were closed down and have not been reopened, so at the present time the State ranks only seventh in the United States in gold production.

Gold occurs associated with almost all the lead, zinc, copper, and silver ores, and very commonly in a free-milling condition. A large amount of gold is obtained from placer deposits; at one time Idaho was among the principal placer-mining States in the Union. The greater part of the placer ground which could be hydraulicicked has been exhausted, but many acres suitable for dredging still remain and the gold lode-deposits offer greater opportunities than those of almost any other State.

The most important counties in which gold occurs are Boise, Idaho, Lemhi, Owyhee, Elmore, Shoshone, Custer, Blaine, Camas, Clearwater, Gem, and Valley.


An Idaho silver-gold camp (Florida Mountain district), by F. G. Corning: Eng. and Min. Jour., vol. 60, p. 244, Sept. 14, 1895.§


Geology of Thunder Mountain and central Idaho, by R. N. Bell: Eng. and Min. Jour., vol. 73, pp. 791-793, June 7, 1902.§


The north side of the Coeur d'Alene district, by H. S. Auerbach: Eng. and Min. Jour., vol. 86, pp. 65-70, July 11, 1908.§


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Thunder Mountain mining district, by Clyde P. Ross: vol. 28, No. 6, Economic Geol., 1934.


SNAKE RIVER GOLD


The origin of the fine gold of the Snake, by R. N. Bell: Eng. and Min. Jour., vol. 73, pp. 143-144, 1902.§

The origin of the fine gold in the Snake River, by J. H. Schockley: Eng. and Min. Jour., vol. 73, pp. 280-281, 1902.§


Annual reports of the Idaho Inspector of Mines, 1899 to 1919.*

Flotation of gold from river sand and black sand, by A. W. Fahrenwald: the Mining Journal, Phoenix, Arizona, April 30, 1933.


**GRAPHITE**

Graphite is a soft, black, greasy form of carbon, sometimes referred to in trade as “plumbago” and “black lead.” It occurs in nature in two forms, crystalline and amorphous, each having its own peculiar uses.

The physical properties of graphite—insusibility, chemical inertness, high conductivity, extreme softness, and low specific gravity—fit it for a large number of uses. The manufacture of crucibles and other refractory products; lubricants; “lead” pencils; paints; stove polish; foundry facings; and various types of electrical appliances.

Graphite of commercial importance is found in Blaine County, but, owing to the fact that at the ordinary price of graphite it is possible to mine only the most favorably situated deposits; the known deposits in Idaho have never received much attention.

**GYPSUM**

Gypsum is a natural hydrated sulphate of lime. It is a soft, white chalk-like material, found widely distributed in single crystals and in thick beds. The natural product is generally very pure.

The principal uses of gypsum are as structural material—wall plaster, gypsum boards, blocks and tile—and is an ingredient of Portland cement and plaster of Paris.

Extensive deposits of high-grade gypsum are found in Lemhi, Bear Lake, and Washington counties. These deposits have never been developed, as the low price of the crude product limits production to those States located near the centers of population.

**LEAD**

Lead is the most important metal found in Idaho, and this State ranks second in the United States in the production of lead, Missouri ranking first, and Utah third. Idaho produces over one-fourth of the total amount of lead mined in the United States. Lead is widely distributed throughout the State, and occurs as galena (lead sulphide) and as the oxide and carbonate; silver is always associated with it, and occasionally zinc, gold and copper.

The largest lead mine in the United States is in Idaho—the Bunker Hill & Sullivan M. & C. Co., at Kellogg. This is one of the few companies in the world that mine, mill, smelt, refine, manufacture, and market lead and lead products.

The principal lead mines in the State are those in Shoshone County, which produces 85 per cent of the State total. Blaine, Boundary, Bonner, Custer, Lemhi, Boise, Butte, Valley, and Camas counties are the other important lead-producing counties.
A bibliography of mining, milling and metallurgical methods will be found under the county in which the plant or mine is located.


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Geology and ore deposits of Lemhi County, by J. B. Umpleby: U. S. Geol. Survey Bull. 528, 1913.*


Origin and distribution of ore in the Coeur d'Alene, by O. H. Hershey, published for the author as a pamphlet by the Min. and Sci. Press, 32 pp., 1916.**

Geology and ore deposits of the Mackey region, Idaho, by J. B. Umpleby: U. S. Geol. Survey Prof. Paper 97, 1917.‡


A reconnaissance of the Pine Creek district, Idaho, by E. L. Jones, Jr.: U. S. Geol. Survey Bull. 710, pp. 1-36, 1919.‡

Linarite and leadhillite from Idaho, by E. V. Shannon: Am. Mineralogist, vol. 4, No. 8, pp. 93-94, August, 1919.§


Big silver-lead producer in Idaho (Hecla mine), by W. E. Carr; Compressed Air Mag., vol. 30, pp. 1375-1379, September, 1925.


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LIMESTONE

Limestone is mined in Bannock, Butte, Boise, Clearwater, Teton, and Bonner counties; Blaine and Bear Lake counties also contain deposits of importance. The limestone mined in Bonner County is shipped to Spokane, Washington, where it is manufactured into Portland cement; the limestone mined in Butte and Teton counties is shipped to the sugar factories of Idaho and Utah, where it is used in the refining of sugar; the limestone mined in Bannock County is manufactured into cement, the plant being located adjacent to the quarry; the limestone mined in Boise and Clearwater counties is sold to the agricultural and poultry industries and burnt to form plaster lime.

There are unlimited deposits which are suitable to the foregoing industries.

MANGANESE

Manganese occurs in Bannock, Lemhi, Owyhee, Shoshone, Butte, and Washington counties. Some of the deposits are high in manganese content and others in manganese-iron. A substantial tonnage has been produced and marketed from the mines of Bannock County; and the deposits of Lemhi County constitute a large potential resource.


MARBLE

Marble is dense crystalline calcium carbonate, formed from limestone by the pressure of overlying sediments and the action of underground water. The value depends on the color, which may be white, gray, red, black, or veined, and on the grain of the structure. Its principal use is for building and monumental purposes.

Marble suitable to commercial purposes occurs in Nez Perce, Butte, and Cassia counties. The deposits in Nez Perce and Butte counties have been slightly exploited.

MICA

The principal physical properties which give value to mica are: Its cleavage, transparency, resistance to decomposition, and nonconduction of electricity and heat. The important uses of mica are: Short mica, in the electrical industries and as glazing for stoves, screens, goggles, and lantern projection; ground mica, in fancy paints, wallpaper, tiles, concrete, rubber goods, roofing materials, lubricants, and insulating compounds.

Deposits of commercial importance occur in Latah, Adams, and Idaho counties, although they have never been prospected or developed in proportion to the possibilities which they offer.

Ground water for municipal supply at Potlatch, Idaho, by V. R. D. Kirkham: Idaho Bureau of Mines and Geology Pamphlet 23, 1927.**
The development of Idaho’s nonmetallic mineral resources, by E. L. Tullis: Pit and Quarry, vol. 23, pp. 22-27, Mar. 23, 1932.**

MINERAL WATERS

Mineral springs of various types occur at a great many places throughout the State, the principal types being calcareous chalybeate, sulphurated, and saline. The temperatures of the different types vary from “cold” to “hot” with some of the latter exceeding the boiling point. Hot springs are more numerous, and at many of them sanitoriums and bathing resorts have been erected.

The chalybeate springs of Caribou County are particularly efficacious from a therapeutic standpoint, although they have never been exploited.
MOLYBDENUM

Molybdenum, occurring as the sulphide disseminated in intrusive rocks and as a molybdate of lead in fissure veins in limestone, is found in Elmore, Boundary, Custer, Idaho, and Lemhi counties.


MONAZITE

The mineral monazite consists chiefly of the phosphate of cerium and variable amount of thoria, the value depending primarily upon the thoria content. It is a resinous golden-yellow mineral occurring as a placer in practically all of the gold placer mines of the State; the quantity varies, and in some of the deposits it is not sufficient to be of commercial importance. The placer deposits of Ada, Idaho, Lemhi, and Owyhee counties contain an appreciable amount of this mineral, and those of Boise and Clearwater counties contain sufficient to be of commercial importance.

The principal use of thorium is in the manufacture of incandescent mantles for gas lighting. Practically all of the monazite used in the United States is imported from Brazil and India.


NICKEL

Nickel is found in Lemhi County. During the late war considerable development work was done on the veins in which it occurs. These deposits are described by Frank L. Hess under "Cobalt" in U. S. Geological Survey Mineral Resources of the United States, pt. I, 1917.

NITRATES

The occurrence of nitrate in Bannock, Bingham, Bonneville, Camas, Caribou, Clark, Custer, Elmore, Fremont, and Owyhee counties has been reported. Nitrate deposits in southern Idaho and eastern Oregon, by G. R. Mansfield: U. S. Geol. Survey Bull. 620, pp. 19-44, 1915.


OIL AND GAS

The same formations which are oil-producing in Wyoming are present in structures highly favorable to the accumulation of oil and gas in Caribou, Bonneville, Teton, Bear Lake, and Bingham counties. A small amount of drilling has been done in Caribou and Teton counties, but the wells were never completed to a sufficient depth to determine the possibilities of the occurrence of oil.

Gas has been developed in Payette and Washington counties.


MINING INDUSTRY OF IDAHO


Oil and gas possibilities of eastern Oregon, by J. P. Buwalda: Oregon Bureau of Mines and Geology, vol. 3, No. 2, 1921. (Southwestern Idaho.)


PHOSPHATE ROCK

The greatest potential mineral resource in Idaho is the immense phosphate rock deposits in Bear Lake, Caribou, Bannock, Bingham, and Bonneville counties. Conservative estimates by members of the U. S. Geological Survey, accredit Idaho with over 85 per cent of the total phosphate resources of the United States in 268,299 acres out of a total of 396,612 acres.


Geography, geology, and mineral resources of the Fort Hall Indian Reservation, Idaho, by G. R. Mansfield: U. S. Geol. Survey Bull. 713, 1920.‡
Geography, geology, and mineral resources of part of southeastern Idaho, by G. R. Mansfield: U. S. Geol. Survey Prof. Paper 152, 1927.**
The Idaho phosphate field, by G. R. Mansfield: Mining and Metallurgy, vol. 9, No. 253, January, 1928.§

PYRITE

Pyrite of commercial importance is found in Washington County. The development work which has been done on these deposits indicates an immense available tonnage.

QUICKSILVER

Cinnabar, the sulphide of mercury, has been found in the placer deposits of Custer and Valley counties and in lode-deposits of Valley, Blaine, and Cassia counties. The quicksilver lode-deposits of Valley County are being extensively developed, and a little mercury has been produced from an experimental plant. The other deposits have never been opened.

Quicksilver and antimony discoveries in Central Idaho, by R. N. Bell: Idaho Mining Department Bull. 1, 1918.*

RUTILE

The occurrence of rutile in Clearwater County has been reported. Rutile, the natural titanium oxide, is used in paints; arc-light electrodes; dyes; and in the manufacture of leather.

SALT

The pioneers evaporated the brine from the salt springs of Caribou County, and this salt was transported to all of the northwestern States before the building of the railroad. The salt obtained from these springs is above the average of the commercial salts of the United States in purity and compares favorably with some of the best salt produced.


SILVER

Idaho was again the largest producer of silver in the United States, followed by Montana. The output of silver in Idaho in 1935 was about 10,150,000 ounces.

The largest producer of silver in the United States is the Sunshine mine in Shoshone County.

Silver is found associated with all the lead, copper, zinc, and antimony ores of the State, and occasionally in associations in which it is the principal metal. It is one of the most widely distributed metals, and its occurrence is such that the mining of silver can hardly be separated from that of the other metals. Shoshone County produces more silver than any other county in the State; the other important silver-producing counties are: Lemhi, Custer, Bonner, Boundary, Blaine, Butte, Owyhee, Boise, Camas, Valley, Washington, Idaho, Elmore, Adams, and Cassia.
The bibliography for those ores in which silver is a secondary metal, will be found classified under the principal ore. Mining, milling and smelting methods will be found under the county in which the plant is located.


An Idaho silver-gold camp (Florida Mountain district), by F. G. Corning: Eng. and Min. Jour., vol. 60; p. 244, Sept. 14, 1895.§


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The Vienna district, Blaine County, Idaho, by C. P. Ross: Idaho Bureau of Mines and Geology Pamphlet 21, 1927.**


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SULPHUR

Sulphur occurring in extensive deposits and as sulphur springs is found in Caribou County. During the World War a slight attempt was made toward the commercial development of the deposits.

**IDaho Mineral Resources**

**Talc**

Talc suitable to the electrical and powdered-talc industries occurs in Idaho County in sufficient extent to be of commercial importance.

**Tin**

Tin has been found in the placer mines in the Gravel Range mining district of Lemhi County.


**Tungsten**

Tungsten, in the form of scheelite and wolframite, occurs in commercial value in Shoshone, Idaho, Camas, Lemhi, Boundary, Bonner, Blaine, Valley, and Butte counties. The deposits in Shoshone County have been extensively exploited, and during the war period of high prices a large tonnage was produced and marketed; at the same time a small amount was obtained from Boundary and Camas counties. Sufficient work has been done on all of these deposits to indicate that tungsten is one of the State's substantial mineral resources. Tungsten, cinnabar, manganese, molybdenum, and tin deposits of Idaho, by D. C. Livingston: Univ. of Idaho School of Mines Bull. 2, vol. 14, 1919.**


**Zinc**

Zinc is found associated with lead in many of the lead mines of Idaho, although there are numerous deposits in Shoshone and Blaine counties in which it is the principal metal. In Shoshone County it occurs as sphalerite (zinc sulphide), and in Blaine County as sphalerite and smithsonite (zinc carbonate).

Selective flotation revolutionized the art of ore-dressing, and it is now possible to treat mixed lead-zinc ores which could not be separated by gravity concentration methods. As a consequence, the zinc content which was formerly lost is recovered, and many mines which at one time could not be profitably operated are now being reopened in Blaine, Camas, and Shoshone counties. As a result of these modern ore-dressing methods, Idaho is one of the largest zinc-producing States in the Union.

The principal zinc-producing counties, in the order of prominence, are Shoshone, Blaine, Camas, Custer, Lemhi, Bonner, Boise, Boundary, and Butte.

The bibliography for those ores in which zinc is a secondary metal, will be found classified under the principal ore. Mining, milling and smelting methods will be found under the county in which the plant is located.


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Geology and ore deposits of the Seafoam, Alder Creek, Little Smoky and Willow Creek districts, Custer and Camas counties, by C. P. Ross: Idaho Bureau of Mines and Geology Pamphlet 33, 1930.*

ABBREVIATIONS AND SYMBOLS

NAMES, ADDRESSES, ABBREVIATIONS AND SYMBOLS USED IN BIBLIOGRAPHIES

Am. Geology .............................................. American Geology†
Am. Inst. Min. Eng. Trans. .............................................. American Institute of Mining and Metallurgical Engineers Transactions
29 West 39th St., New York City
Am. Jour. Sci. .............................................. American Journal of Science
Tuttle, Morehouse & Taylor Co., 123 Temple St., New Haven, Conn.
Am. Mineralogist .............................................. American Mineralogist
Princeton, N. J.
California Jour. Tech. .............................................. California Journal of Technology
University of California, Berkeley, Calif.
Ottawa, Canada
Canadian Min. Inst. Jour. .............................................. Canadian Mining Institute Journal
Drummond Bldg., Montreal, Quebec, Canada
Columbia School of Mines Quart. .............................................. Columbia School of Mines Quarterly
Columbia University, New York City
Compressed Air Mag. .............................................. Compressed Air Magazine
Bowling Green Bldg., 11 Broadway, New York City
Econ. Geology .............................................. Economic Geology
University of Illinois, Urbana, Ill.
Eng. and Min. Jour. .............................................. Engineering and Mining Journal
Tenth Ave. & 36th St., New York City
Eng. and Min. Jour.-Press .............................................. Engineering and Mining Journal-Press†
Franklin Inst. Jour. .............................................. Franklin Institute Journal
15 South 7th St., Philadelphia, Pa.
Geol. Soc. America .............................................. Geological Society of America
Museum of Natural History, Columbus Ave. & 77th St., New York City
Inspector of Mines, Boise, Idaho
Idaho Bureau of Mines and Geology, Moscow, Idaho
Int. Min. Cong. Proc. .............................................. Proceedings International Mining Congress
International Mining Congress, Washington, D. C.
Jour. Geology .............................................. Journal of Geology
University of Chicago Press, Chicago, Ill.
Mines and Minerals .............................................. Mines and Minerals†
Min. Con. Journal .............................................. Mining Congress Journal
American Mining Congress, 841 Munsey Bldg., Washington, D. C.
Min. and Eng. World .............................................. Mining and Engineering World†
Mining and Metallurgy
American Institute of Mining and Metallurgical Engineers, Inc.
29 West 39th St., New York City
Min. Mag. .............................................. Mining Magazine†
Min. Reporter .............................................. Mining Reporter†
Min. and Sci. Press .............................................. Mining and Scientific Press†
Min. World .............................................. Mining World†
Nat. Geo. Mag. .............................................. National Geographic Magazine
National Geographic Magazine Society, Hubbard Memorial Hall,
Washington, D. C.
New York Academy of Science, New York City
No. .............................................. Number
Northwest Min. News .............................................. Northwest Mining News†
Northwest Science, Spokane, Wash.
Pacific Miner .............................................. Pacific Miner†
p., pp. .............................................. page, pages
Pan.-Am. Geologist .............................................. Pan-American Geologist, Des Moines, Iowa
pt. .............................................. part
Salt Lake Min. Review .............................................. Mining Review
Walker Bank Bldg., Salt Lake City, Utah
Sci. Am. Suppl. ........................................... Scientific American Supplement
New York City
ser. ......................................................................... series
sess. ............................................................................ session
U. S. Bureau of Mines R. I. ... U. S. Bureau of Mines Reports of Investigations
U. S. Geol. and Geog. Survey...... U. S. Geological and Geographical Survey
U. S. Geol. Survey Prof. Paper ... U. S. Geological Survey Professional Paper
Univ. of Idaho................................. University of Idaho, Moscow, Idaho
vol. ................................................................. volume
211 Church St., Easton, Pa.

SYMBOLS

*—Available in libraries only. Publication out of print.
**—Can be procured from publisher.
§—Not available for general distribution; may possibly be procured from publisher. (Also section reference in law citations.)
†—Can be purchased from Superintendent of Documents, Government Printing Office, Washington, D. C.
†—Publication suspended.
‖—Address: Washington, D. C.
ADA COUNTY

County Seat: Boise. Area: 1,154 square miles. Population: 37,925. Principal Industries: Irrigated farming, stock raising, fruit raising and mining. Highways: Main highway, Oregon Trail; county roads excellent. Railroads: Main line of the Union Pacific. Mineral Resources: Boise was the principal distributing point for miners’ supplies when the rich placer diggings of Boise County were worked in the early days. At that time mining was based on free gold operations and Ada County’s small mountainous area was the scene of many active operations.

Base ore was encountered at a shallow depth causing a shutdown of the various properties. This field offers good opportunities to prospector and operator.

The chief mineral resources are: building stone, gold, lead, silver, zinc and arsenic.

Review of Year’s Operations

Some activity was evident in the Black Hornet district during the year. The Adlemann brothers of Boise built a pilot mill, water supply tank and did exploration work on the surface at the Black Hornet mine.

Fourteen men were employed by the Shirley Gold Mining Company and 370 feet of tunnels were driven.

Mr. Mallor and associates worked the Desert View property at a small margin of profit.

BERGDAHL OIL CO.

BOISE MINING, MILLING & SMELTING CO.

NAMPA GOLD DREDGING CORPORATION

RELECES-GOLD MINING CO.

SHIRLEY GOLD MINING CORP.
ADAMS COUNTY

NAME OF MINE | MINING DIST. | OWNER | P. O. ADDRESS
--- | --- | --- | ---
Big Foot Bar | Unorganized | Archie T. Winter | Mt. Home
Blue Grouse Ext. | Black Hornet | Goodwin & Thacker | Boise
Blue Grouse et al. | Black Hornet | A. G. Adelman | 622 Idaho St., Boise
Five Mile Gr. | Shaw Mountain | J. M. Roberts | 110 E. Ban. St., Boise
Gold Eagle Gr. | Black Hornet | C. C. Anderson | Boise
Hidden Treasure | Black Hornet | W. P. Richards | Boise
Maynard Bros. | Highland | H. T. Maynard | Boise
Monitor Placer | Highland | W. E. Johnston | Boise
Sorrell Horse et al. | Black Hornet | N. R. C. Adelman | 221 Jeff. St., Boise
White Mineral | Black Hornet | H. J. Leppert | 506 S. 3rd St., Boise

BIBLIOGRAPHY
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ADAMS COUNTY

County Seat: Council. Area: 1,366 square miles. Population: 2,867. Principal Industries: Agriculture, fruit raising, live stock raising, and mining. Highways: North and South Highway. Branch roads to outlying communities kept in good condition. Railroads: Pacific and Idaho Northern, Weiser to New Meadows and Oregon Short Line branch on Snake River. Rivers: Snake River forms western boundary; Weiser River flowing south and Little Salmon flowing north. Relief: 90% of the county is mountainous. Chief range is the Seven Devils, noted for ruggedness and grandeur. Mineral Resources: In the eighties and early nineties many mines were in operation; a railroad projected into the district; a smelter in operation and three town established. The boom died in the panic of 1893 and the district has been practically dormant since.

The ores of the Seven Devils District are principally copper-gold-silver ores. The ores of Indian Creek section are: silver-copper and lead-zinc-silver.
In addition to these, deposits of mica, feldspar and garnets of commercial importance occur in this county.

This is a favorable district for the prospector and operator and when the mineral resources are properly exploited, the county will be recognized as one of the principal mining counties of the State.

Review of Year's Operations

The Gold Coin Mining & Development Co., built a camp, installed a concentrator, and did some development work on the North Hornet Group, 18 miles northeast of Council.

Prospecting and development work was evident in the Seven Devils district and a few cars of ore were loaded at Council en route to the smelter.

BLACK HORSE GROUP


GOLD COIN MINING & DEVELOPMENT CO.


IDAHO COPPER CO.

Office: 745 Rowan Bldg., Los Angeles, Calif. Officers: O. H. Griggs, Pres., Los Angeles, Calif. Inc.: Jan. 10, 1920, as Idaho Copper Co., Ltd.; name changed May 24, 1926. Charter forfeited 1935. Capital: On Feb. 9, 1925, the capital was increased from 50,000 shares, par value $10, to 100,000 shares, par value $1; 9,664,755 shares issued. Property: Red Ledge group; 30 patented, 40 unpatented claims, Seven Devils dist.; R. R. and P. O. Homestead, Ore., 18 miles. Development: 3 tunnels on Deep Creek: No. 1, 450 ft. long; No. 2, 1400 ft. long; No. 3, 100 ft. long; tunnel No. 4 at Eagle Bar, 700 ft. long. In addition to the tunnels, approximately 10,000 ft. of diamond drilling has been done on the property. Plant: 600 cu. ft. T-R compressor, driven by 120 h. p. Diesel engine; complete mining equipment and came at No. 4 tunnel. Ore: Copper. Remarks: The company's properties have been foreclosed under mortgage. No activities for 1935.

IDAHO COPPER CORPORATION


IDAHO MINES CO., LTD.

ADAMS COUNTY

LIME PEAK COPPER COMPANY (not incorporated)

RED LEDGE, INC.

TRIAD MINING COMPANY

NAME OF MINE  MINING DIST.  OWNER  P. O. ADDRESS
Alaska et al.  Seven Devils  Mrs. S. J. Stephens  Cuprum
Amadore et al.  Seven Devils  Mrs. Anna Dimick  San Antonio, Texas
American Flag et al.  Mountain View  Mary Z. Finney  Cleveland, Ohio
Andy O'Toole Gr.  Seven Devils  L. A. Aplington  Homestead, Ore.
Arkansaw  Seven Devils  E. C. Westervelt  11 Broadway, New York City, N. Y.
Azurite Gr.  Seven Devils  John Bottcher  Tacoma, Wash.
Bald Eagle  Seven Devils  Mrs. Mabel Sprouls  Cuprum
Big Indian et al.  Seven Devils  Loren Gogochea  Ontario, Ore.
Black Garnet  Seven Devils  Ellen Kleinschmidt  Berkeley, Calif.
Black Hawk Gr.  Seven Devils  E. C. Spencer  Homestead, Ore.
Blue Bird Gr.  Seven Devils  Mose Fuchs  Baker, Ore.
Blue Bucket Gr.  Seven Devils  Irene Imhaus  Madison Park Apt., Portland, Ore.
Bryan et al.  Seven Devils  Mose Fuchs  Baker, Ore.
Camp Ground et al.  Seven Devils  Martin Bradley  Cuprum
Chameleon Gr.  Mountain View  Thos. G. Potter  Pollock
Chieftain et al.  Seven Devils  Jas. A. Stewart  Indian Valley
Cliff et al.  Seven Devils  Mrs. P. L. Gaarden  Bear
Copper Belt Gr.  Seven Devils  G. W. McCarty  Homestead, Ore.
Copper Bottom  Seven Devils  Frank Shelton  Cuprum
Copper Queen et al.  Unorganized  Lynn Snow  Newburg, Ore.
Decorah  Seven Devils  R. E. Wilson  Cambridge
Decorah  Seven Devils  Mary Steele  1516 S. Negley Ave. Pittsburgh, Pa.
Deep Creek Gr.  Seven Devils  Frank Lauzon  Cuprum
Faye L.  Seven Devils  Anna Adams  Cuprum
Glenn G.  Unorganized  J. F. Glenn et al.  Fruitvale
Gold Coin Gr.  Seven Devils  Adams County  Council
Grandview Gr.  Seven Devils  Frank Shelton  Cuprum
Grant Gr.  Seven Devils  J. A. Walsh  Helena, Mont.
Greénhorn Gr.  Seven Devils  Collins Lynes  Cuprum
Green Horn Gr.  Unorganized  R. A. Weddle et al.  Council
Hollister Gr.  Seven Devils  L. A. Darland  Cuprum
Idaho Standard  Seven Devils  Owen Hill  Homestead, Ore.
Iowa & Josie  Seven Devils  E. D. Ford  Weiser
Kinney  Seven Devils  Chas. Warner  Bear
Last Chance Pl.  Seven Devils  Walter James  Cuprum
Last Chance  Seven Devils  I. R. Smith  Boise
<table>
<thead>
<tr>
<th>NAME OF MINE</th>
<th>MINING DIST.</th>
<th>OWNER</th>
<th>P. O. ADDRESS</th>
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<tr>
<td>Little Bill et al.</td>
<td>Seven Devils</td>
<td>Joseph M. Healey</td>
<td>Homestead, Ore.</td>
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<td>Lockwood et al.</td>
<td>Seven Devils</td>
<td>J. C. Barton</td>
<td>Weiser</td>
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<tr>
<td>Lola Group</td>
<td>Seven Devils</td>
<td>A. J. Cole</td>
<td>Oakland, Ky.</td>
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<tr>
<td>Mammoth Gr.</td>
<td>Seven Devils</td>
<td>Chas. Anderson</td>
<td>Cuprum</td>
</tr>
<tr>
<td>Margaret Gr.</td>
<td>Seven Devils</td>
<td>Frank E. Smith</td>
<td>Weiser</td>
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<tr>
<td>Mayflower Gr.</td>
<td>Seven Devils</td>
<td>Mrs. F. Hildebrand</td>
<td>Council</td>
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<tr>
<td>Mineral Hill Gr.</td>
<td>Seven Devils</td>
<td>Frank Shelton</td>
<td>Cuprum</td>
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<tr>
<td>Monarch Mica Gr.</td>
<td>Unorganized</td>
<td>Gillman Rinehart</td>
<td>Council</td>
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<tr>
<td>Moonlight</td>
<td>Seven Devils</td>
<td>J. A. Reynolds</td>
<td>Homestead, Ore.</td>
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<tr>
<td>Newton Hill Gr.</td>
<td>Seven Devils</td>
<td>Chas. R. Sowder</td>
<td>Myrtle Creek, Ore.</td>
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<tr>
<td>North Alaska</td>
<td>Seven Devils</td>
<td>A. O. Huntley</td>
<td>Council</td>
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<td>North Hornet Gr.</td>
<td>Unorganized</td>
<td>W. E. Freehafer</td>
<td>Council</td>
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<td>North Peacock</td>
<td>Seven Devils</td>
<td>Mrs. O. H. Martin</td>
<td>Ashland, Ore.</td>
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<td>Paducah</td>
<td>Seven Devils</td>
<td>J. M. Dennis</td>
<td>Cuprum</td>
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<tr>
<td>Rabbit's foot et al.</td>
<td>Unorganized</td>
<td>Chas. A. Theobold</td>
<td>Cuprum</td>
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<td>Red Mountain</td>
<td>Seven Devils</td>
<td>Collis Lynes</td>
<td>Cleveland, Ohio</td>
</tr>
<tr>
<td>River Queen Gr.</td>
<td>Seven Devils</td>
<td>Bernard Haas</td>
<td>Weiser</td>
</tr>
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<td>Ruby Bell</td>
<td>Mountain View</td>
<td>Mary Z. Finney</td>
<td>Pollock</td>
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<td>Schley et al.</td>
<td>Seven Devils</td>
<td>Geo. A. Jones</td>
<td>Boise</td>
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<tr>
<td>Silver 1 &amp; 2</td>
<td>Seven Devils</td>
<td>F. Alers</td>
<td>Council</td>
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<tr>
<td>Star Gr.</td>
<td>Mountain View</td>
<td>Thos. G. Potter</td>
<td>Kendrick</td>
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<td>Virginius</td>
<td>Seven Devils</td>
<td>Andrew Wilmot</td>
<td>Council</td>
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<tr>
<td>Walker</td>
<td>Seven Devils</td>
<td>Orrill Lewis</td>
<td>Homestead, Ore.</td>
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<tr>
<td>Wild Horse Gr.</td>
<td>Seven Devils</td>
<td>Mrs. C. R. Braasch</td>
<td>Homestead, Ore.</td>
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</tbody>
</table>

**BIBLIOGRAPHY**

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Diamond drilling in the Seven Devils Mountains, by F. A. Kennedy: Eng. and Min Jour.-Press. vol. 113, pp. 521-523, Apr. 1, 1922.§

BANNOCK COUNTY  


Principal Industries: Distributing center, R. R. division and shops. Highways: Oregon Trail and Yellowstone Park highway; excellent branch roads. Railroads: Oregon Short Line, shops and division headquarters in Pocatello. Mineral Resources: Phosphate rock, limestone, manganese, copper, silver, gold and building stone. The limestone is suitable for cement and the phosphate rock for fertilizer. Manganese deposits near Cleveland and Lava Hot Springs were discovered in 1924 and reports indicate that there is a large tonnage of high grade ore available.  

Review of Year's Operations  

The Idaho Portland Cement Company, near Inkom, employed an average of 50 men in the manufacture of 'Eagle Brand' cement. It was reported that this company enjoyed a satisfactory business during the year 1935.  

CHATTERTON MINING CO.  


EMERALD OIL & GAS CO.  


IDAHO PORTLAND CEMENT CO.  


LEAD BELL MINING CO.  


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See pages 109-110 for publisher's address, meaning of reference marks, and abbreviations  

Geography, geology, and mineral resources of the Fort Hall Indian Reservation, Idaho, by G. R. Mansfield: U. S. Geol. Survey Bull. 713, 1920.‡  


BEAR LAKE COUNTY


Idaho is credited with 85% of the known phosphate resources of the world and the largest and most accessible areas are in Bear Lake County. These deposits are practically untouched and represent one of the greatest potential resources of the state. (See U. S. G. S. Professional Paper No. 152 by G. R. Mansfield.)

Many structures similar to the Wyoming producing oil fields are found in the county and it is reasonable to expect future production on the Idaho side of the State line.

Review of Year's Operations

The Gold Star Mining Company, located near Paris, kept their buildings in repair and reset stakes in position. This company filed intentions to hold for 1935.

At the Sunset Mining Company a tunnel was advanced by hand mining to cut the ore body at depth. The mineral sought is lead, silver and copper.

All phosphate mines were idle due to lack of demand and inability to produce under present conditions.

THE COPPER RESERVE MINING & REDUCTION CO.


GOLD STAR MINING CO.


PARIS MINING AND MILLING CO., INC.

SAN FRANCISCO CHEMICAL CO.

SOLAR DEVELOPMENT CO., LTD.

STOCKHOLDERS' SYNDICATE

SUNSET MINING CO.

UTAH-IDAHO MINING & MILLING CO.

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BENEWAH COUNTY


Triassic and Jurassic formations in southeastern Idaho and neighboring regions, by G. R. Mansfield: Am. Jour. Sci., vol. 50, pp. 53-64, July, 1920.§


Geography, geology, and mineral resources of part of southeastern Idaho, by G. R. Mansfield: U. S. Geol. Survey Prof. Paper 152, 1927.:f:

The Idaho phosphate field, by G. R. Mansfield: Mining and Metallurgy, vol. 9, pp. 19-20, January, 1928.§

BENEWAH COUNTY

County Seat: St. Maries. Area: 786 sq. miles. Population: 6371. Principal Industries: Timbering, agriculture and mining. Transportation: Boats on Coeur d'Alene Lake and St. Joe River; a good state highway system; Spokane-Wallace branch of the O. W. R. & N. Co. and main line of Chicago, Milwaukee and St. Paul Railroad. Rivers and Lakes: St. Maries River which runs northwest through the eastern part of the county empties into the St. Joe River which flows west through the northern parts of the county and empties into Lake Coeur d'Alene, whose southern end touches the north boundary of the county. Relief: The county is rugged and heavily timbered except a small area along the rivers and in the northwest corner of the county. Mineral Resources: The principal mineral resources are gold, copper, silver, lead, zinc, iron and clay. These deposits have been given very little attention in the past. The St. Joe district which lies east of St. Maries, and the Hoodoo and Camas Cove Districts in the southeastern corner of the county have received the greatest attention.

Review of Year's Operations

Prospecting and assessment work with development on various properties contemplated during 1936.
**MINING INDUSTRY OF IDAHO**

**BUTTE MINING CO.**

**OTHELLO MINING CO.**

**RAINBOW MINING & MILLING CO., LTD.** (See Shoshone and Kootenai counties).
Office: W. 118 Second Ave., Spokane, Wash. Officers: Geo. Austin, Pres.-Mgr., Spokane, Wash.; Orland A. Scott, Vice-Pres., Coeur d'Alene; E. H. Polworth, Sec.-Treas., Spokane, Wash. Inc.: June 20, 1907. Capital: 1,200,000 shares; par value 25c; increased July 25, 1913, to 2,000,000 shares; par value 25c; changed Jan. 16, 1931, to 1,108,998 shares preferred; 891,002 shares common; par value 25c; changed Feb. 21, 1931, by increasing the par value of 381,229 shares of preferred stock from 25c to $1 per share. Issued: 727,769 shares preferred; par value 25c; 1,500 shares preferred, par value $1; 523,332 shares common. Property: Rainbow No. 3 group; 14 patented and 5 unpatented claims; Medimont dist. Development: 3120 ft. of tunnels; 3000 ft. of diamond drilling. Plant: Modern camp, necessary mine equipment to carry development program to completion. Ore: Lead-silver. Remarks: The Rainbow and Butte Companies nearly completed 1½ miles of new road which connects with the old road about ½ mile below Rainbow Camp.

**ROUND TOP MINING CO.**

**SILVER STAR MINING & DEVELOPMENT CO.**

**NAME OF MINE** | **MINING DIST.** | **OWNER** | **P. O. ADDRESS**
---|---|---|---
Mosquito | Unnamed | Rainbow M. & M. Co. | Spokane
Rex, et al. | St. Joe | George Austin | Spokane
Rock Lode, et al. | St. Joe | Butte Mining Co. | Spokane
Silver Star Gr. | St. Joe | Silver Star Min. & Development Co. | St. Maries
Golden Age | Camas Cove | C. A. McLean | Santa
Lucky Strike | Hoodoo | A. M. Vanderpoel | Emida
Big Boy | Hoodoo | J. Johnston | Emida
BINGHAM COUNTY

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meaning of reference marks, and abbreviations

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Preliminary report on the clays of Idaho, by F. H. Skeels: Idaho Bureau of
Mines and Geology Bull. 2, 1920.*
Coeur d'Alene Lake, Idaho, and the overflow lands, by R. W. Davenport: U. S.
Ground water for municipal supply at St. Maries, Idaho, by V. R. D. Kirkham:
Idaho Bureau of Mines and Geology Pamphlet 17, 1926.*
Some Miocene and Pleistocene drainage changes in northern Idaho, by A. L.
A geological reconnaissance of the St. Maries region, Idaho, by A. L. Anderson:
Idaho Bureau of Mines and Geology Pamphlet 30, 1928.*
Composition and origin of certain commercial clays of northern Idaho, by

BINGHAM COUNTY

Industries: Agriculture. Transportation: An excellent system of state
highways; Aberdeen, Mackay and Pocatello-Butte branches of the Oregon
Short Line. Rivers: The Snake River flows from the northeast to the south­
west diagonally through the country. Relief: Lies mostly within the Snake
River Valley. Mineral Resources: Phosphate and coal beds crops out in the
eastern part of the country but have received little attention. Fine gold is
known to exist in the sands of Snake River.

Review of Year's Operations

A small amount of prospecting was done along the Snake River but noth­
ing of importance was accomplished.

MARY LEE GOLD MINING CO.

Office: Gallipolis, Ohio. Officers: Harold Wolfe, Pres.; J. V. Lee, Sec­­
Treas., both of Gallipolis, Ohio. Inc.: Jan. 29, 1919. Capital: 1,000,000
shares; par value $1; 500,000 shares issued. Property: 46 acres patented

NAME OF MINE      MINING DIST.      OWNER      P. O. ADDRESS
Eagle Bend Pl.    Snake River     Alma Clough  Pingree
Eldorado Placer   Snake River     Robert Wheeler Sterling
Oborn & Coler Pl. Snake River     John Oborn  Blackfoot
Parson Placer     Snake River     G. W. Parsons Aberdeen
Snake River Pl.   Snake River     G. E. Campbell Blackfoot
Woodruff Bend Pl. Snake River     James G. Walsh Blackfoot

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meaning of reference marks, and abbreviations

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A geological reconnaissance in southeastern Idaho, by A. R. Schultz and R. W.
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Geology and ore deposits of the Mackay region, Idaho, by J. B. Umpleby: U. S. Geol. Survey Prof. Paper 97, 1917.†
Geography, geology, and mineral resources of the Fort Hall Indian Reservation, Idaho, by G. R. Mansfield: U. S. Geol. Survey Bull. 713, 1920.‡
Mineralogy of some black sands from Idaho, with a description of the methods used for their study, by E. V. Shannon: U. S. Nat. Mus. Proc., vol. 60, art. 3, pp. 1-33, 1921.‡
Geology and oil possibilities of Bingham, Bonneville, and Caribou counties, Idaho, by V. R. D. Kirkham: Idaho Bureau of Mines and Geology Bull. 8, 1924.**
Geography, geology, and mineral resources of part of southeastern Idaho, by G. R. Mansfield: U. S. Geol. Survey Prof. Paper 152, 1927.‡

BLAINE COUNTY

County Seat: Hailey. Area: 2797 sq. miles. Population: 3768. Principal Industries: Mining, animal raising and agriculture. Transportation: O. S. L. Wood River branch; Sawtooth Park state highway, state highway No. 22 and a fair system of county roads into all mining districts. Main roads kept open all year. Rivers: Big and Little Wood rivers flow southerly through the county. Relief: The county is, in the main, rugged with a few level areas along the rivers and creeks. Elevation from 4500 ft. in the southern part to Hyman Peak in the Sawtooth Mountains, elevation 12,078 ft., the highest point in Idaho. Mineral Resources: Silver, lead, gold, zinc, copper, arsenic, antimony, bismuth, quicksilver, graphite, barytes and limestone. The first ore was shipped from this district in 1880 and since then the country has been a persistent and prolific producer.

The ores are high grade, making an ideal operation for the small operator. The possibilities for future discoveries are excellent and the district is a favorable one for prospectors, development companies and leasors.

Review of Year's Operations

Due to surplus stocks of base metals and the uncertain market, mining in Blaine County was practically nil during the past year, and far from reaching the activity noticed in this mineral zone during a normal year.

It is reported that Stratton & Stratton have made a deal with I. E. Rockwell of Bellevue, and contemplate an exploration program in an effort to solve the faulting problem at the Minnie Moore Mine. This property at one time was a large silver producer.

The Lark employed six men in sinking and it is reported a vein of galena was cut which runs as high as 300 oz. silver and 60% lead in the high grade streak.

A crew of men were working on Deer Creek under the supervision of Frank Plugoff of Hailey, during the year.

On the Floyd Wilson property joining the Democrat, a discovery was made which was said to be a true fissure of high grade galena, five or six feet wide.

Leasers were active on properties between Hailey and Ketchum and on placer ground from Ketchum toward the Trail Creek Summit, while prospecting was evident in the vicinity of Galena Summit on the way to the Stanley Basin.

A. M. Jensen is in charge of a crew of men engaged in unwatering the Hailey-Triumph property in preparation for extraction and shipment of ore on an extensive scale.

There is an important development campaign on at the Fairview mining property, eight miles southwest of Bellevue, backed by a Pocatello syndicate. J. W. Wright is in charge and plans to sink 250 feet and further explore the property.
ARGOSY MINING & MILLING CO., LTD.

BALTIMORE & VICTORIA MINING CO.

BLACKJACK MINES CORPORATION

BOULDER BASIN MINES, INC.

ERVINE MINING CO.

EUREKA DEVELOPMENT CO., LTD.

FEDERAL MINING & SMELTING CO. (See Shoshone County)
Office: Wallace. Officers: F. H. Brownell, Pres.; J. L. Martin, Sec., both of 120 Broadway, New York City; H. G. Washburn, Mgr., Wallace. Property: Independence, North Star, Koeninger, and Malta groups; 45 patented, 4 unpatented claims, 762 acres, Warm Springs Creek dist.; Hailey, 12 miles. Development: Approximately 10 miles of underground workings, the principal of which is the Plummer, or main haulage tunnel, which is over 6000
ft. long and connects the North Star and Independence groups. **Plant:**

**MINE:** 1 English Iron Works 202 single-drum 25 h. p. electric hoist; 1 Lidgerwood 8x10 air hoist; 1 I-R 420 cu. ft. compressor; 1 C-P 765 cu. ft. compressor; all electrically driven; electric haulage through Plummer tunnel; one Waugh drill sharpener and complete mine equipment; 4400 ft. Riblet aerial tram from Plummer tunnel to mill, capacity 20 tons an hour; shops, timber sheds, and bunk houses. **MILL:** 500-ton concentrator; jaw and gyratory crushers; rolls; Marcy ball mills; Hancock jigs; drag classifiers; Willfrey tables; Dorr thickeners; Oliver filters; electric power. **Ore:** Silver-lead. **Remarks:** Operations ceased Aug. 1, 1923. Since then operated by lessees.

**FIELDS MUTUAL DEVELOPMENT CO.**

**Office:** 34 S. E. 52nd St., Portland, Oregon. **Officers:** Al. W. Field, Pres.-Mgr.; V. F. Rodgers, Sec., both of Portland, Ore. **Inc.:** Nov. 6, 1926. Formerly known as Fields Mutual Mining Co. **Capital:** 500,000 shares; par value $1; 101,045 shares issued. **Property:** 14 unpatented claims, Kelly Mountain, Mineral Hill dist.; Hailey. **Development:** Approximately 3105 ft. of underground workings; principal tunnel 1278 ft. long. **Ore:** Lead-silver. **Remarks:** Some road work and 105 ft. of development during year.

**HAILEY TRAMWAY CO.**

**Office:** 218 Felt Bldg., Salt Lake City, Utah. **Officers:** George W. Snyder, Pres.-Mgr.; G. M. Snyder, Sec., both of Salt Lake City. **Inc.:** Aug. 28, 1929. **Capital:** 200,000 shares; par value 50c; all shares issued. **Property:** Triumph group; 14 unpatented claims, Warm Springs Creek dist.; Hailey. **Plant:** An aerial wire rope tramway 4 1-10 miles long connects the Triumph mine and the railroad. **Remarks:** Idle.

**HAILEY TRIUMPH MINES CO.**

**Office:** 218 Felt Bldg., Salt Lake City, Utah. **Officers:** George W. Snyder, Pres.-Mgr.; Guy M. Snyder, Sec., both of Salt Lake City; R. B. Wells, Statutory Agt., Hailey. **Inc.:** Aug. 23, 1929. **Capital:** 1,000,000 shares; par value 25c; all shares issued. **Property:** Triumph mine, owned by Ivanhoe Mining Co., Warm Springs Creek dist.; Hailey. **Development:** Principally by a vertical shaft 500 ft. deep in which there are 5 levels; total development approximately 18,000 ft. **Plant:** Electrically driven double-drum hoist and 700 cu. ft. compressor; steel sharpener; complete mining equipment; complete modern mining camp. **Ore:** Lead-zinc-silver. **Men Employed:** 1. **Remarks:** Idle.

**HOMESTAKE MINES CORPORATION**

**Office:** Ketchum. **Officers:** H. L. Kaufman, Pres.-Mgr., Ketchum; A. J. Anderson, Sec., Seattle, Wash. **Inc.:** July 27, 1927. **Capital:** 1000 shares, par value $100; increased Oct. 30, 1931, to 1,000,000 shares, par value $1; 400,000 shares issued. **Property:** Homestake group; 1 patented, 12 unpatented claims, Warm Springs Creek dist.; Ketchum. **Development:** Approximately 6000 cu. ft. of workings, the principal tunnels being: No. 3 tunnel, 500 ft. long; No. 4 tunnel, 800 ft. long; No. 5 tunnel, 1500 ft. long; No. 6 tunnel, 1895 ft. long. **Plant:** Gas-driven C-P compressor; complete mining equipment. **Ore:** Lead-silver-zinc. **Remarks:** Idle.

**IDAHO MINERAL PRODUCTS CO.**

**Office:** Hailey. **Officers:** G. P. Williams, Pres., Wellman Apts., Boise; J. G. Hedrick, Sec., Hailey. **Inc.:** July 6, 1920. **Capital:** 1,000,000 shares, par value $1; all shares issued. **Property:** Vienna group; 35 patented, 5 unpatented claims, held under lease and option, Sawtooth dist.; Ketchum. **Plant:** MINE: 75 h. p. Diesel engine driving compressor. Complete mining equipment. **MILL:** 75 ton modern flotation plant powered by 200 h. p. F. M. Diesel engine with generator. **Ore:** Silver-gold. **Remarks:** Report not filed for 1935.
IVANHOE MINING CO. (See Custer County)

JENNIE R. MINING CO.

LIBERTY GEM MINES, INC.

MIDVALE MINING CO.

THE MINT, INCORPORATED
Office: 44 Wall St., New York, N. Y. Officers: E. G. Burland, Pres., 125 E. 84th St., N. Y.; Eva M. Winberg, Sec., 353 W. 57th St., N. Y. Inc.: May 31, 1933. Capital: 1500 shares; par value $1; 500 shares issued. Property: Mint group; 4 unpatented claims, Hailey dist.; Hailey. Development: Approximate total development, 1000 ft. Ore: Silver-gold-lead. Remarks: Plans are under way to continue the lower tunnel by means of compressed air drills. A crew of 5 men has been employed to prepare a surface road, construct a shop, install track, etc., preparatory to commencement of work.

QUINCY JUNIOR MINING CO.

RED ELEPHANT CONSOLIDATED MINES CO.

SILVER SPAR MINING CO.
SILVER STAR-QUEENS MINES, INC.

TIP TOP GROUP MINING CO.

UNITED MINES CO. OF IDAHO, INC.

UTAH-BELLEVUE MINES CO.

WOOD RIVER MINING CO.

NAME OF MINE | MINING DIST. | OWNER | P. O. ADDRESS
---|---|---|---
Ajax | Mineral Hill | Leo Barrett | Hailey
Alabama | Little Wood R. | Joe Longono | Muldoon
Alexander | Warm Spgs. Cr. | Oscar Griffith | Ketchum
Alturas & Scotia | Sawtooth | Frank Becker | Hailey
Amazon | Mineral Hill | Chas. R. Walters | Shoshone
Anabelle | Mineral Hill | Sibbie Tandy | Hailey
Anna | Mineral Hill | Mrs. P. McMonigle | Hailey
Anna et al. | Warm Spgs. Cr. | Frank Langell | Hailey
Bald Eagle | Mineral Hill | Cecelia J. Thomas | Hailey
Barbara | Mineral Hill | John Utsch | Hailey
Battling Jack Gr. | Sawtooth | John F. Garrett | Obsidian
Bavarian | Mineral Hill | H. J. Vorberg | Hailey
Beaver Gr. | Sawtooth | Thos. Mizer Est. | Hailey
Belmont Gr. | Mineral Hill | Jos. Silker | Hailey
Big Mint | Mineral Hill | H. R. Plughoff Est. | Hailey
Black Barb | Mineral Hill | E. B. Williams | Boise
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<th>NAME OF MINE</th>
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<td>Magnolia Gutches</td>
<td>Hailey</td>
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### BLAINE COUNTY

**NAME OF MINE** | **MINING DIST.** | **OWNER**                  | **P. O. ADDRESS**
--- | --- | --- | ---
Silver Crown | Warm Spgs. Cr. | S. L. Schwartz | Hailey
Silver King | Mineral Hill | A. D. Hunter | Bellevue
Silver King | Sawtooth | F. E. Riddle | Tulsa, Okla.
Silver Knob | Mineral Hill | W. A. Sullivan | Hailey
Silver Pick | Mineral Hill | T. A. Blakeley | San Bernardino
Sitting Bull et al. | Mineral Hill | Joe Day | Hailey
Slab Sides | Warm Spgs. Cr. | H. M. Young | Hailey
Smuggler | Little Wood R. | H. L. Watkins | Muldoon
Standard | Warm Spgs. Cr. | Richard Hays est. | Hailey
Star | Mineral Hill | Leo. J. Falk | Boise
Stockholder | Mineral Hill | Ira L. Kilgore | Hailey
Sunrise Gr. | Warm Spgs. Cr. | R. J. Blakeley | Hailey
Surprise | Little Wood R. | F. J. Long | Wendell
Susie S. | Mineral Hill | John Hailey Est. | Boise
Tiger | Mineral Hill | Guy U. Lee | Butte, Mont.
Tiger Frac. | Mineral Hill | Fred Reinhard | Hailey
Tom Cat | Mineral Hill | Chas. Sonneleitner | Hailey
Triumph et al. | Warm Spgs. Cr. | M. W. Wood | Boise
Tungad | Mineral Hill | Peter L. Kent | Hailey
Vindicator Gr. | Warm Spgs. Cr. | Archie Bell | Hailey
Wheelbarrow | Warm Spgs. Cr. | A. T. Farnlund | Ketchum
White Elephant | Warm Springs | Jas. Obenchain | Ketchum
White Wing | Unorganized | C. C. Starcher | Carey
Wolftone | Mineral Hill | W. T. Riley | Boise
Wonder Gr. | Mineral Hill | Robert Justus | Hailey
Wood River Pride | Mineral Hill | Alice Holland | St. Louis, Mo.
Woodrow Gr. | Mineral Hill | V. T. Clark | Bellevue
Woodrow Wilson | Warm Spgs. Cr. | M. A. Morris | Ketchum

**BIBLIOGRAPHY**

See pages 109-110 for publisher's address, meaning of reference marks, and abbreviations

Graphitic anthracite in the Parker mine, Wood River, Idaho, by W. P. Jenny; Columbia School of Mines Quart., vol. 10, pp. 313-315, 1889.*


BOISE COUNTY

County Seat: Idaho City. Area: 1840 sq. miles. Population: 1847. Principal Industries: Mining, stock raising and lumbering. Transportation: Well served by Federal and State highways and a good system of county roads. The Nampa-McCall branch of the O. S. L. serves the western part. Rivers: Included within its area is part of the drainage basin of the Payette River, most of the south fork of the Payette River and all of the drainage basins of Grimes and Moore's creek which comprise the area known as the Boise Basin. Relief: The district is one of general ruggedness, high wooded mountains and deep canyons. Mineral Resources: Gold, silver, lead, zinc, copper, bismuth, antimony, monazite, lime and coal are known to occur.

History and Future

The history of Boise County dates back to the formation of the State in 1860, when placer gold was first discovered near Pierce City (Clearwater County). The overflow from this stampede resulted in the discoveries at Elk City, Florence, and Boise Basin, in quick succession, and by 1863 Boise Basin was one of the most thriving communities in the western part of the United States. In July, 1864, more than nine thousand 20-acre placer claims had been recorded in the three principal mining districts.

During the first few years after the discovery of gold all mining was confined to the placers which were susceptible to hand methods. After these became less profitable, numerous ditches 5 to 30 miles in length were constructed, and hydraulic mining of the higher bench gravels was started. These operations were conducted for many years, and a few have survived to the present day.

Shortly after the placer rush had subsided, attention was given to quartz mining; many discoveries soon were made, mills were constructed, and deep mining was started. The principal discovery was the Gold Hill mine at Quartzburg. In 1863 the vein was exposed by placer mining, and by 1867 a mill had been built and was in operation. Except at brief periods when it was being repaired, the mill was operated continuously for 12 years. The mine has been in almost continuous operation since the day of discovery and is credited with a production of six to eight million dollars. The record gives it the distinction of being the oldest and largest producing gold mine in the State. The vein has been opened to a vertical depth of 1,090 feet below the creek level; at this point the ore is still persistent and has greatly increased both in grade and extent, and there appears to be no reason why it should not continue deeper.
In addition to the Gold Hill, many other gold mines have a large production record. This production, combined with that derived from placer mining, both hydraulic and dredging, held Boise County in first place in gold production in the State until the year 1923, and it regained this position in 1928. The opening of the ore bodies on the 1,090-foot level of the Gold Hill mine, the past production from the Belshazzar mine, and the new ore disclosures made during 1932 were instrumental in attracting much attention to the county.

As the early-day miner was interested only in the precious metals, gold and silver, which could be recovered by the methods then in use, he disregarded all veins containing the sulphide or base ores. Before these ores became valuable, prospecting had practically ceased, with the result that this county offers one of the best fields in the State to prospectors or small development companies in search of lead-zinc-silver ores. Deposits of these metals, which contain also high values in gold, are widely distributed throughout the county, and a few have been partly developed. When properly exploited and intelligently managed, they will become an important factor in the future prosperity of Boise County and the City of Boise and will give the State an additional lead-zinc producing district.

Review of Year's Operations

The Boise Basin, as well as the other gold bearing districts of this county, was the scene of considerable activity during the year.

The largest dredge in the state was put into operation by the Fisher & Baumhoff interests on the Horton estate near Centerville. This boat has a digging capacity of 6000 yards daily.

At Pioneerville the dredge of the Idaho Gold Dredging Corporation was rebuilt and operated by the Grimes Company, an Idaho corporation, with success during the year.

A new dredge was built on Moores Creek, below Idaho City, and will operate in 1936.

The Idaho Placer, at Idaho City, was worked by the Earl C. Anthony Company. This is the largest hydraulic placer in Idaho. They use two giants and employ a crew of 20 men.

Some development work was done at the K. C. property and the mill revamped.

A road was built to the Washington mine.

Activity on Hayfork progressed and good recovery was made on the Jarvis properties.

The Banner property had a crew engaged in rehabilitating and repairing the mine.

At Grimes Pass, the Mountain Queen, Bruiser and the Babies Mines were active during the year.

The Mineral Mining Company had their mill in operation and also did some work at the Twin Sisters Mine in the Pioneerville district.

The Come-Back mine was worked by leasers and shipped some very high grade gold-silver ore. Thirty men were employed. A new camp was erected.

The Birthday Gold Mines Company, twelve miles up the Payette River from Lowman, installed equipment and carried out an extensive development program during the year.

An important discovery was made on a gold property three miles above the power dam on the Payette River, below Lowman.

A crew of men were employed on the Ox-Bow diversion tunnel in preparation to mine the river bed near Lowman.

The Granite Creek Dredging Company, W. L. Smith, president and manager, installed a dragline and washing plant near Placerville.

Fred T. Peck operated a dragline near Placerville while the water lasted.

A. C. Gallupe had a crew of 16 men working at the Chief, which is on the same vein system as the Belshazzar.

The Blue Rock and the Silver Hill, controlled by the Consolidated Mines Syndicate, Frank Johnesse, Boise, Idaho, president and manager, performed
assessment work and contemplate an extensive development program for the coming year.

The Harris Mines Corporation operated the Gold Hill Mine until their lease expired October 1st. A crew of 70 men were employed. The property has reverted to the Talache Mines Corporation, who are operating the mine at present.

At the Cloverleaf, in the Elk Creek district, a crew of ten men are employed opening up old workings under the direction of Mr. Wm. W. Eimers.

A lease is being operated on the Sunshine Mine in the Placerville district by three partners.

At the Mascot a new mill and camp were built.

**ALANDOC MINING CO.**


**BIG BEN MINING CO.**


**BLUE ROCK MINES CORPORATION**


**COME-BACK MINING CO.**


**CONSOLIDATED MINES SYNDICATE**

(See Camas, Elmore and Idaho counties.)


**CONSOLIDATED MINE & DREDGING COMPANY**

CROESUS GOLD MINING CO.

CURRY DITCH PLACER MINES ASSOCIATION

THE FIRST SECURITY MINING CO.

FRANKLIN PLACER CO.

GOLDEN SEAL MINING & MILLING CO.

GOLD DREDGING & POWER CORPORATION
Officers: S. K. Atkinson, Pres.; W. A. Buis, Sec., both of Boise. Remarks: This corporation was succeeded by the Idaho Gold Dredging Corporation and the latter in turn by the Mineral Products Company, a trust. This was accomplished by an exchange of shares. The directors and shareholders are practically the same. All the property and equipment formerly belonging to this corporation is now owned by the Idaho Gold Dredging Corp. This corporation is being kept legally alive and may be used at a later date.

GOLD PRODUCTION CO., A TRUST

GRANITE CREEK DREDGING COMPANY
THE GRIMES COMPANY

HALLEY PLACER CO.

HARRIS MINING CORPORATION

IDAHO GOLD CORPORATION

IDAHO GOLD DREDGING CORPORATION

THE IDAHO METALLIC MINING AND MILLING COMPANY

IDAWA GOLD MINING CO.

IRON DYKE MINES CO.
MASCOT GROUP (Partnership)

MAYFLOWER GOLD MINES, INC.

MINERAL MINING CO.

MINERAL PRODUCTS COMPANY, A TRUST

MISSOURI MINING CO., LTD.

MOORES CREEK DREDGING COMPANY

NATIONAL MINING & DEVELOPMENT CO.
OLD LIBERTY MINING COMPANY

O. K. MINING SYNDICATE

ORO MINING COMPANY (Partnership)

OX-BOW GOLD MINING CORPORATION

PENN MINING CO.
Office: Idaho City. Officers: W. W. Miller, Pres.; Paul C. Moore, Sec., both of Franklin, Pa.; E. F. Blain, Mgr., Boise. Inc.: Jan. 8, 1929. Capital: 200,000 shares preferred, 750,000 shares common; par value $1; 41,000 shares preferred issued. Property: Coin Bond group; 12 unpatented claims, Placerville dist.; Placerville. Ore: Gold-lead-silver. Remarks: Prior to the 1931 fire a 1250 ft. tunnel was driven. Every effort is now being made to rebuild and open up the property.

PIONEER DEVELOPMENT CO.

PITTSBURGH-IDAHO HYDRAULIC MINING CO.

RED LODE MINING COMPANY, INC.

SEMI-ANTHRACITE COAL MINING CO.
TALACHE MINES, INC.
Office: 611 Idaho Bldg., Boise. Officers: A. H. Burroughs, Jr., Pres.-Mgr.; B. K. Burroughs, Sec., both of Boise. Inc.: Apr. 21, 1917, as Armstead Mines; name changed June 8, 1922. Capital: 1,000,000 shares common, 600,000 shares preferred; par value $1; 1,580,233 shares issued. Property: Gold Hill & Iowa mine: 19 patented and 28 unpatented claims, Quartzburg dist.; Quartzburg. Development: Principally by an 1100-ft. 3-compartment, vertical shaft with 8 intermediate levels; total development over 40,000 ft. in Gold Hill mine. Plant: MINE: 75 h. p. single drum hoist; 8x8 and 7x7 compressor; complete underground equipment and mining camp. MILL: 30-ton electrically driven amalgamation mill. Ore: Gold. Men Employed: Average, 25. Remarks: 119 ft. of development work during the year. “During the late summer plans were made for enlarging the mill and increasing the scale of operations from 25 to 100 tons per day. Construction work started the latter part of September. On Oct. 1, 1934, a contract was entered into with the Harris Mining Corporation and enlargement of the mill and construction of camp facilities was carried on completion shortly after the first of the year.” According to newspaper accounts the above contract expired October 1, 1935.

WASHOE MINING CO.

NAME OF MINE MINING DIST. OWNER P. O. ADDRESS
Adonis Unknown Herman Schultz Boise
Alameda Unknown Wm. S. Bella Boise
Alpine Gr. Alpine J. T. C. Harrington Nampa
American Girl Gr. Gambrinus Louise D. Stewart Boise
Annie Lee West View Chas. Smith Horseshoe Bend
Argonne Forest Gambrinus H. Mauernhaimer Boise
Ashcroft Pl. Placerville H. Ashcroft Placerville
Banner Banner V. A. Thorn Idaho City
Atlast Unknown J. F. Thompson Horseshoe Bend
Beaver Cr. Pl. Banner J. D. Demming Idaho City
Belmont Gr. Quartzburg Murty Driscoll & F. Daly Quartzburg
Big Ben Centerville Frank H. Cooper Boise
Blackbird Pioneerville Extra Lightfoot Pioneerville
Blackbird et al. Cold Springs Anderson & Newbrand Idaho City
Black Crook Gr. West View Bincord Realty Co. Denver, Colo.
Black Hawk Centerville Homer Granger Centerville
Black Jack Summit Flat Jerry Dowling Idaho City
Blue Bird et al. Banner G. R. Moland Boise
Blue Jet Pl. Centerville Archie R. Koppes Centerville
Blue Grouse Unknown Thos. C. Mayne Idaho City
Blue Rock Dry Buck Lee Davis Horseshoe Bend
Blue Ribbon Gr. Quartzburg Allen B. Eaton Boise
Blue Rose Idaho City Henry Holmsmeier Idaho City
Blue Stone Placerville Wm. W. Thorn Centerville
Boston Girl Elk Horn Pat. Moriarty St. Idaho City
Boulder Gr. Dry Buck Lee Davis Boise
Boundary Elk Creek Frank Cooper Horseshoe Bend
Buffalo Gr. Boise River I. I. Youngblood Boise
Bull Durham Pl. Boise H. C. Granger Centerville
Bummer Hill Quartzburg G. Faull Horseshoe Bend
Calumet West View
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See pages 109-110 for publisher's address, meaning of reference marks, and abbreviations.


The Boise Basin district in Idaho, by S. M. Ballard: Idaho Bureau of Mines and Geology Bull. 9, 1924.**


**MINING INDUSTRY OF IDAHO**

**BONNER COUNTY**

County Seat: Sandpoint. Area: 1748 sq. miles. Population: 13,152. Principal Industries: Lumbering, mining, agriculture and stock raising. Transportation: Boats ply Lake Pend d’Oreille, one of the largest bodies of water in the State. Two State Highways and a system of excellent county roads reach almost every district. Three transcontinental railroads traverse the county, Mineral Resources: Silver, lead, zinc, copper and limestone.

History and Future

Mining history started with the discovery of silver ores near Lakeview in 1888. Since that time there has been a small amount of mining but the county did not attract a great deal of attention until the Talache mine on the west shore of the lake proved to be a successful operation.

This was followed by the discoveries in the vicinity of Clark Fork which have added another profitable lead and silver producing district to the State’s resources.

This county, particularly the districts around Clark Fork and on the east side of Lake Pend d’Oreille are very favorable for prospectors, operators and investors.

Review of Year’s Operations

The Federal Mining and Smelting Company had a small crew working at the Auxer Gold Mines Company, near the town of Hope.

Engineers representing eastern capital have examined the Whitedelf and submitted their reports. 288 cars have been shipped from this mine, carrying
a high silver content. Its operations have attracted wide attention and its possible sale to a strong financial concern would mark an expansion of activities and a general renewal of mining interest in Bonner County, where several properties are slated for larger programs during the coming year.

Work was carried on at the Hope Mining Company the early part of 1935, with an average crew of fifteen men. O. A. Holte of Coeur d'Alene is president of the Hope Company. It is rumored that Albert M. Nash, mining engineer of Kellogg, Idaho, representing coast capital, has been negotiating for the purchase of this property which consists of the Elsie K. group of 14 unpatented claims, in the Pend d'Oreille district of Bonner County, near Clark Fork.

AMALGAMATED GOLD MINING CO.

AMERICAN EAGLE MINING CO.

AUXER GOLD MINES CO.

BIG FIVE MINING CO.

BINARCH CREEK MINING CO.

BONNER MINING CO. (not incorporated)

CAMP BIRD MINING & DEVELOPMENT CO.
CAROLINA CLAIMS, INC.

CENTENNIAL CLAIMS INC.

CLARINDA COPPER MINING CO.

DEL MONTE CLAIMS, INC.

EMPIRE TUNGSTEN MINING CO.

EXPLORERS PROSPECTING CO.

FALLS CREEK MINING CO.

HOPE MINING CO.
Office: Coeur d'Alene. Officers: O. A. Holte, Pres.; H. F. Minster, Sec., both of Coeur d'Alene. Inc.: Nov. 19, 1927. Charter forfeited 1935. Capital: 1,500,000 shares; par value 10c; increased Aug. 13, 1930, to 2,000,000 shares; increased April 2, 1932, to 2,500,000 shares; 1,961,758 shares issued. Property: Elsie K. group; 14 unpatented claims; Pend d'Oreille dist.; Clark Fork. Development: By 5 tunnels, the principal one of which is No. 4, 1500 ft. long; total development about 8500 ft. Plant: MINE: Electrically driven 700 cu. ft. compressor; complete mining equipment. MILL: 100-ton flotation concentrator. Men Employed: 12. Ore: Lead-silver. Remarks: 1000 ft. of drifting during the year.
IDAHO LAKEVIEW MINES CO.
Office: Trail, B. C., Canada. Officers: D. M. Drumheller, Jr., Pres., Cutbank, Mont.; E. G. Randall, Sec., Trail, B. C. Inc.: June 28, 1928. Capital: 2,100,000 shares, par value 20c; increased Nov. 23, 1929, to 2,300,000 shares; increased April 3, 1930, to 2,510,000 shares; par value 20c; 2,250,415 shares issued. Property: Hewer group; 4 patented, 7 unpatented claims, Lakeview dist.; Lakeview. Development: Principally by 1 tunnel 2200 ft. long, in which is an inclined shaft 1372 ft. long; total development approximately 13,500 ft. Plant: MINE: 500 cu. ft. I-R compressor; electrically driven hoist; 75 kw. generator, driven by 100 h. p. semi-Diesel engine; complete mining equipment. MILL: 100-ton concentrator, fine grinding and flotation; driven by semi-Diesel oil engine. Ore: Silver-lead-zinc. Men Employed: 1 watchman. Remarks: Maintenance only.

KANIKSU MINING CO.

KEEP COOL MINING CO.

KING SOLOMON'S MINES CO.

LAWRENCE CONSOLIDATED MINING CO.

LUCKY STRIKE MINING CO.

MILWAUKEE MINES, INC.
Office: 501 City Hall Bldg., Spokane, Wash. Officers: Arthur L. Hooper, Pres.-Mgr.; W. W. Greenwood, Sec., both of Spokane, Wash. Inc.: April 6, 1928. Capital: 2,000,000 shares, par value 25c; increased Jan. 22, 1930, to 5,000,000 preferred, par value 10c, and 5,000 common, no par value; changed July 30, 1930, to 250,000 preferred, par value $10, and 500,000 common, no par value, changed Feb. 4, 1932, to 3,500,000 shares, par value $1; Dec. 12, 1933, reduced capital stock to 1500 shares, no par value; 680 shares issued. Property: Milwaukee group; 12 claims; Priest River. Men Employed: Average 3. Ore: Gold and silver. Development: Main cross-cut tunnel 254 ft. with drift of 116 ft. Remarks: 95 ft. of development work.
MINERVA SILVER, INC.

NEVADA MINES

OPPORTUNITY MINING CO.

PONDERA MINING & POWER CO.

PRIEST RIVER MINING CO.

REGAL MINING CORPORATION

R. J. PRICE MINING CO.

SILVER LEAF MINES CORPORATION
WHITEDELFL MINING & DEVELOPMENT CO. MILL

SILVER MOUNTAIN MINING CO.

TALACHE MINES, INC. (See Boise County.)

WHITEDELFL MINING & DEVELOPMENT CO.
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<tr>
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<th>OWNER</th>
<th>P. O. ADDRESS</th>
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<td>Alamo Gr.</td>
<td>Pend d'Oreille</td>
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<td>American Eagle</td>
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<td>Sandpoint</td>
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<td>John Elsasser et al.</td>
<td>Sandpoint</td>
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<td>Lakeview</td>
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<td>Last Chance</td>
<td>Priest Lake</td>
<td>Bert Fry et al.</td>
<td>Priest River</td>
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</tbody>
</table>
BONNER COUNTY

NAME OF MINE       MINING DIST.       OWNER              P. O. ADDRESS
Lincoln            Pend d'Oreille      Harry Churchill   Spokane, Wash.
Little Bench       Pend d'Oreille      C. A. Johnson     Clark Fork
Little Geraldine Fr. Priest Lake Alex Judge        Box 1734,
Little Three       Priest Lake        L. G. Brown et al Priest River
Lookout            Pend d'Oreille      W. W. Derr et al  Clark Fork
Lucky Strike et al. Priest Lake        F. C. Fredericks Spangle, Wash.
Morning Star       Pend d'Oreille      F. S. Hayes        Hope
Nest Egg           Pend d'Oreille      J. O. Derr         Clark Fork
North Star Pl.     Lakeview           S. R. Catlow       Clark Fork
Ontario et al.     Lakeview           Rott. Rennie       Lakeview
Rainbow et al.     Pend d'Oreille      Goat Mt. Mng. Co.  Clark Fork
Ready Cash         Lakeview           Bruyere & Hanchett Bayview
Red Horse           Pend d'Oreille      Ed Hammon         Sandpoint
Scotchman           Pend d'Oreille      Dr. C. P. Stackhouse Sandpoint
Silver Fox Gr.     Priest Lake        J. A. Adams        Sandpoint
Silver Star        Pend d'Oreille      C. O. Olsen        Lindelle Bldg.,
Snowbird           Pend d'Oreille      Walter Blossom     Spokane, Wash.
Snow Slide          Pend d'Oreille      Foster & Bixel     Clark Fork
T. Bone            Lakeview           Frank Brown       Lakeview
Tiger              Priest Lake        Alex Judge         Spokane
Triangle           Lakeview           Ralph Henrichs    Hope
True Fisher        Pend d'Oreille      Fred Vogel        Clark Fork
Twilight et al.    Pend d'Oreille      C. B. Stuart       Sandpoint
View Point          Pend d'Oreille      Ernest Becker      Clark Fork
West Point          Pend d'Oreille      Henry F. Phillips Clark Fork

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See pages 109-110 for publisher's address,
meaning of reference marks, and abbreviations.


Geology and silver ore deposits of the Pend d'Oreille district, Idaho, by Edward Sampson: Idaho Bureau of Mines and Geology Pamphlet 31, 1928.**
Contact metamorphism of the rocks in the Pend d'Oreille district, northern Idaho, by J. L. Gillson: U. S. Geol. Survey Prof. Paper 158-F, 1929.**
Sequence of ore deposition in north Idaho, by A. L. Anderson: Econ. Geology, vol. 25, pp. 160-175, March-April, 1930.**
Geology and ore deposits of the Clark Fork district, by A. L. Anderson: Idaho Bureau of Mines and Geology Bull. 12, 1930.**

BONNEVILLE COUNTY


History and Future

The county was the scene of many active mining operations during the early day gold rush when placer gold was discovered on McCoy and Gray creeks in the Mt. Pisgah or Caribou districts. This activity had long since died down until the search for gold in the last few years led placer miners to again explore the creeks.

The resources most likely to provide a future mining industry for this county are petroleum and phosphate rock.

No lode mining operations were conducted during the year; however, the placer resources along McCoy's and Gray's creeks in the Mt. Pisgah district received more attention than in many years, and there was an increase in the amount of placer gold produced.

THE CALIFORNIA CO.


IDAHO CONSOLIDATED PLACER MINING CO.


IDAHO GOLD MINING CO.


NAME OF MINE MINING DIST. OWNER P. O. ADDRESS
American Placer Mt. Pisgah W. H. Stocks Gray
Anderson Baretal. Mt. Pisgah Helmer Ronback, Agt. Gray
Oneida Gr. Mt. Pisgah Fred Brenzinger, Agt. Gray
Oneida South Mt. Pisgah Miles Schneider, Agt. Gray
BOUNDARY COUNTY

NAME OF MINE | MINING DIST. | OWNER | P. O. ADDRESS
---|---|---|---
Pisgah Gr. | Mt. Pisgah | Fred Brenzinger, Agt. | Gray
Silver Bell Gr. | Mt. Pisgah | Fred Brenzinger, Agt. | Gray
Timber Line | Mt. Pisgah | Leroy Layland | Gray
To way | Mt. Pisgah | J. C. Beatty | Soda Springs
Wolfe Bar | Mt. Pisgah | Amos S. Clark | Unknown

BIBLIOGRAPHY

See pages 109-110 for publisher's address, meaning of reference marks, and abbreviations.

Triassic and Jurassic formations in southeastern Idaho and neighboring regions, by G. R. Mansfield: Am. Jour. Sci., vol. 50, pp. 53-64, July, 1920.§
Geology and oil possibilities of Bingham, Bonneville, and Caribou counties, Idaho, by V. R. D. Kirkham: Idaho Bureau of Mines and Geology Bull. 8, 1924.**
Oil possibilities of southeastern Idaho, by V. R. D. Kirkham: Mining and Metallurgy, vol. 6, No. 218, February, 1925.§
Ground water for municipal supply at Idaho Falls, Idaho, by A. M. Piper and V. R. D. Kirkham: Idaho Bureau of Mines and Geology Pamphlet 16, 1926.**
Geography, geology, and mineral resources of part of southeastern Idaho, by G. R. Mansfield: U. S. Geol. Survey Prof. Paper 152, 1927.§

BOUNDARY COUNTY


History and Future

In the past a number of properties have been operated profitably and the many favorable areas make this county a favorable one for the prospector although heavy overburden and dense vegetation makes prospecting expensive.
Review of Year's Operations

A pilot mill was constructed by the International Molybdenum Company on its Hottentot group of eight unpatented claims near Porthill. Concentrates are to be shipped to a refinery near Spokane, Washington.

Development work was performed at the American Girl with a small crew. Some activity was evident at other properties on a small scale. This includes the Idamont Lead-Zinc Mines in the Yaak district.

AMERICAN GIRL MINING CO.

CLANCY MINING CO.

COPPER FALLS MINING CO.

GOLDEN SCEPTRE MINING CO.

IDAMONT LEAD-ZINC MINES CO.

INTERNATIONAL MOLYBDENUM CO.

LEAD CONSOLIDATED MINING CO.
BOUNDARY COUNTY

LUCKY ABE MINING CO.

MOLYBDENUM PRODUCTS COMPANY

NORTH IDAHO DEVELOPMENT CO.

NAME OF MINE MINING DIST. OWNER P. O. ADDRESS
Broken Shovel Moyie-Yaak A. E. Knittel Bonners Ferry
Continental Continental Idaho Cont. Co. Bonners Ferry
Golden Eagle, etc. Porthill J. A. Berry Bonners Ferry
Gopher Moyie-Yaak Chas. Hayes
Iron Duke Continental Moyie-Yaak A. Klockman
Iron Mask Moyie-Yaak L. M. Peters
International Moyie-Yaak Arthur Zimmerman
Juniper, etc. Moyie-Yaak Joseph Varcoe
Katie Fry Surprise Iowa Mining Co. Harwood, Wash.
Keno Surprise L. V. Eberhart
Mammoth, etc. Moyie-Yaak Carl Miller
Miners Rest Moyie-Yaak C. D. Armstrong
Osgweo, etc. Moyie-Yaak Joseph Daniels
Sunnyside Moyie-Yaak F. E. Brightman
Ten o'Clock Moyie-Yaak Middle Mountain J. W. Wilbur

BIBLIOGRAPHY
See pages 109-110 for publisher's address, meaning of reference marks, and abbreviations.


Geology of the region adjoining the western part of the international boundary, by R. A. Daly: Canada Geol. Survey Ann. Rept., vol. 14, pp. 39-51a, 1901.§


COUNTY SEAT: Arco.  AREA: 2048 sq. miles.  POPULATION: 1,943.  PRINCIPAL INDUSTRIES: Agriculture, stock raising and mining.  TRANSPORTATION: Two State highways and the Mackay branch of the O. S. L.  RIVERS: Big and Little Lost rivers.  MINERAL RESOURCES: Lead, silver, zinc, gold, tungsten, manganese, limestone and marble.  The distribution and abundance of high grade lead silver ores makes this county one of the principal producers of southern Idaho, and a favorable district for the prospector and operator.

REVIEW OF YEAR'S OPERATIONS

Assessment work at a few mines constitutes the activity for the year in Butte County.

A. D. Lee was stationed at the Horn Silver Consolidated Mines Company experimenting in the recovery of values from the complex ores of this district.

BADGER MINES CO.


HORN SILVER CONSOLIDATED MINES CO.


MAUDE ELLEN OIL CO.


METTA MINING CO., LTD.


RICHMOND DEVELOPING CO.  (Not incorporated)


WILBERT MINING CO., LTD.

Office: 220 Kearns Bldg., Salt Lake City, Utah.  Officers: J. A. Foley, Pres.-Mgr.; T. L. Mitchell, Sec., both of Salt Lake City, Utah.  Inc.: April 10, 1907.  Capital: 2,000,000 shares; par value 50c; 1,177,180 shares issued.  Property: Daisy Black group; 7 patented, 33 unpatented claims, Dome dist.; Howe.  R. R. Arco, 42 miles.  Development: Approximately 18,000 feet of underground workings, the principal of which is No. 4 tunnel, in which an inclined shaft 550 ft. long with 4 intermediate levels. When this tunnel was completed to 2800 ft. in length, a raise was put through at its end and connection made with the old workings.  Plant: MINE: Hoist and 2 compressors, one electrically driven, one oil-driven; complete mining equipment and camp.  MILL: 75-ton concentrator, electrically driven.  Ore: Silver-lead.  Men Employed: 1 watchman.  Remarks Annual labor only.
<table>
<thead>
<tr>
<th>NAME OF MINE</th>
<th>MINING DIST.</th>
<th>OWNER</th>
<th>P. O. ADDRESS</th>
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<td>C. H. Beck</td>
<td>Martin</td>
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<td>Apex, Apex 3</td>
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<td>Edward Dahle</td>
<td>Martin</td>
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<td>Hamilton</td>
<td>William Duesner</td>
<td>Howe</td>
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<td>Hamilton</td>
<td>Frank Peete</td>
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<td>Lava Creek</td>
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<td>Boise</td>
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<td>Ira Petty</td>
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<td>Second Chance</td>
<td>Lava Creek</td>
<td>Riley Kent</td>
<td>Arco</td>
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</table>
MINING INDUSTRY OF IDAHO

NAME OF MINE | MINING DIST. | OWNER | P. O. ADDRESS
--- | --- | --- | ---
Senator Gooding | Lava Creek | D. W. Nichols | Martin
Shail & Comstock | Dome | Shail & Comstock | Rexburg
Silent Friend | Dome | J. D. Powell | Howe
Silver Bell | Lava Creek | Ardell Gamett | Moore
Silver Bell | Lava Creek | P. J. McGuinness | Martin
Silver Horn et al. | Lava Creek | E. B. Jones | Martin
Sooge Gr. et al. | Hamilton | Louis Edmonds | Howe
Sunbeam | Dome | Isidore Fallert | Howe
Sunset | Hamilton | Wm. Peterson | Howe
West Idaho et al. | Lava Creek | W. H. Miller et al. | Arco

BIBLIOGRAPHY
See pages 109-110 for publisher's address, meaning of reference marks, and abbreviations.


CAMAS COUNTY


History and Future
The mines of this county have a good production record and although not active at present, offer excellent opportunities for the future. The chief need is the intelligent application of modern geologic and metallurgical principles.

Review of Year's Operations
The search for gold stimulated activity in Camas county. Active prospecting and testing was carried on in the Skeleton, Big Smokey and Willow Creek districts.

Some work was done near Hill City, Fairfield and on Soldier Mountain.

The Little Smokey Dredging Company enjoyed a fairly good season and operated at a profit during 1935.
CARRIE LEONARD MINING CO.

CLIPPER GOLD MINING & MILLING CO.

CONSOLIDATED MINES SYNDICATE
(See Boise, Elmore and Idaho counties.)

GLACIER GOLD PLACER MINING CO.

GOLD BLOSSOM MINING & DEVELOPMENT CO., INC.

GOLD MOUNTAIN MINES CO.

HIDDEN TREASURE MINE & MILLING CO.

IDAHO PLACER MINES CO.
A FOREST SERVICE HIGHWAY, LITTLE SMOKY MINING DISTRICT, CAMAS COUNTY
THE ISABELLA LEASING AND DEVELOPMENT CO.

THE LITTLE SMOKEY DREDGING COMPANY

THE PARADISE GOLD DREDGING COMPANY, INCORPORATED

RED HILL MINING & MILLING CO.

RICHARD ALLEN MINES CO.
SILVER STAR-QUEENS MINES, INC.

SMOKY MOUNTAIN GOLD MINES, INC.

TAFT MINE

NAME OF MINE MINING DIST. OWNER P. O. ADDRESS
Axalorr Skeleton Creek R. M. Angel Fairfield
Bear Creek Skeleton Creek R. S. Mockett Lincoln, Neb.
Blue Bird Little Smoky Robt. Leaper Fairfield
Climax Little Smoky Jas. Williams Fairfield
Dollarhide Little Smoky R. D. Leach Pocatello
Five Points Little Smoky Wm. Finney Soldier
Fourth of July Little Smoky H. D. Jones Hailey
Golden Star Little Smoky Chris Christofesen Fairfield
Hercules Big Smoky W. W. Counterman 209 So. 3rd St., Boise

Horn Silver Little Smoky P. E. Fletcher Fairfield
Idaho Chief Little Smoky Philip B. Becker Hailey
Isabella Little Smoky Edw. Somers Est. Hailey
Gold Bar Placer Skeleton Creek Chris L. Giskey Fairfield
King of the West Little Smoky Maylan C. Fox P. O. Box 774, Salt Lake City, U. S., Idaho.

Little Bob Little Smoky M. Ryan Fairfield
Manchuria Placer Rosetta H. D. Jones Hailey
Ohio Placer Little Smoky Geo. E. Ball Bridgeport, Conn.
Princess Willow Creek Roy Jones Fairfield
Silver King Little Smoky H. D. Jones, Agt. Hailey
Smoky Bullion Little Smoky Ernest Worswick Est. Reno, Nev.
Square Deal Little Smoky Robert Leaper Fairfield

BIBLIOGRAPHY
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CANYON COUNTY

Mineralogy of some black sands from Idaho, with a description of the methods used for their study, by E. V. Shannon: U. S. Nat. Mus. Proc., vol. 60, art. 3, pp. 1-33, 1921.‡
Geology and ore deposits of the Seafoam, Alder Creek, Little Smoky and Willow Creek districts, Custer and Camas counties, by C. P. Ross: Idaho Bureau of Mines and Geology Pamphlet 33, 1930.*

CANYON COUNTY

The only known mineral resources of this county are gold in the Snake river sands, diatomaceous earth, and clays of excellent quality.
A number of companies have been formed to drill for oil and gas, but to date no results have been obtained.

INTERMOUNTAIN COOPERATIVE GAS & OIL CO.

PARMA DEVELOPMENT CO.

UNITED DEVELOPMENT CORPORATION

UNITED UTILITIES CORPORATION

BIBLIOGRAPHY
See pages 109-110 for publisher's address, meaning of reference marks, and abbreviations.


CARIBOU COUNTY


History and Future

The tremendous resources of this county have only been scratched. A large part of five billion tons of marble phosphate rock estimated to be in Idaho, lies in this county. The Anaconda Mining Co. at Conda has the only development making use of this deposit. They have a modern plant for the production of ground phosphate rock which is shipped to Anaconda, Mont., for treatment. This company has expended more than $5,000,000 in its mine, mill, railroad, power lines and town site.

The salt deposits and mineral springs are other potential resources that are not being utilized.

A number of structures favorable for the accumulation of petroleum are found in the eastern part of the county.

ANACONDA COPPER MINING CO.: MINE AND MILL IN BACKGROUND
Review of Year’s Operations

The Anaconda Copper Company at Conda reinforced the main raise and stations with concrete, but did not produce at full capacity during the year. Some activity in the vicinity of Caribou Mountain resulted in the production of gold.

ANACONDA COPPER MINING CO.

Office: Anaconda, Mont. Officers: C. F. Kelley, Pres.; D. B. Hennessy, Sec., both of 25 Broadway, New York City; E. M. Norris, Local Mgr., Conda, Idaho. Inc.: Filed in Idaho, April 10, 1916. Capital: 12,000,000 shares; par value $50; 8,919,086 shares issued. Property: 23 patented claims, 3403 acres, unorganized dist.; Conda. Development: 3 adits, 45 ft. above railroad track level, 9x9 ft. inside of timbers; No. 1, 6650 ft. long; No. 2, 2660 ft. long; No. 3, 5987 ft. long. The main operating tunnels are equipped with 25-lb. rail, 36-in. gauge track, two 20-ton storage battery locomotives capable of hauling a 100-ton net load at a speed of 4 to 7 miles per hour, 10-ton side dump ore cars, power loading machines operated by compressed air and No. 4 sirocco fan; approximate total development, 50,888 ft. Plant: MINE: 1000 cu. ft. compressor; drill sharpeners; machine, blacksmith and carpenter shops with latest type power-driven equipment; switch boards and motor generator charging set; laboratory; electric substation, sawmill and preservative plant for treating mine timbers, all housed in fireproof gunited and steel buildings; 100 h. p. electrically driven hoist. MILL: Crushing and drying plant. The mill feed and storage bins are connected with the main tunnels by large trestles. The storage bins, with a capacity of over 4000 tons, and houses over them are protected with several inches of gunite. The main storage bin is equipped with an Ottumwa boxcar loader and modern railroad scales. The rock drawn from the mill feed bin, which has a capacity of 450 tons, passes over shaking grizzlies, the oversize going to a 12-in. Traylor gyratory crusher, which reduces it to about 2½ in. The product from the crusher and the undersize is elevated and passed over a Mitchell vibrating screen. The rock passing through this screen goes to the dryer feed bin, and the oversize to 22x54 in. Anaconda rolls that reduce it to three-fourths of an inch. The product from the rolls is elevated and again passes over the Mitchell vibrating screen. The crushed rock drawn from the dryer feed bins is conveyed into class A-12 Ruggles-Coles dryers by apron feeders. After leaving the dryer the rock goes over a shaking feeder to a chain bucket elevator. This elevator carries it to the top of the mill where it passes through a Vezin sampler, and it is then conveyed to the storage bins. The present capacity of the mill is 400 tons in 24 hours. This output can be increased to 1000 tons in the same time by adding another dryer. Railroad: 8-mile branch from Soda Springs to mine, with storage tracks that will accommodate 100 fifty-ton railroad cars, spurs to mill and coal bins, and Wyes at each end of the yards. The gradient of the storage tracks is such that the cars are operated by gravity to and from the storage bins. Town: The company has erected a model mine town consisting of modern homes, which are rented to the employees at a nominal figure. Company offices, bunk and boarding houses, superintendent's home, recreation hall, and a number of small homes have been erected. A fully equipped store is maintained by the company, a postoffice has been established, and a modern schoolhouse erected, and a school maintained. A complete water system for the town and plant has been installed; the water is piped a distance of 2 miles to a 100,000-gallon storage tank from which it is distributed. Ore: Phosphate rock. Men Employed: Average 56. Remarks: 2046 ft. of development during the year. Two Hummer screens for pulverizing plant and 1600 linear ft. of 6-in. steel water main for fire protection has been installed during the year.
MINING INDUSTRY OF IDAHO

BIBLIOGRAPHY

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Geography, geology and mineral resources of part of southeastern Idaho, by G. R. Mansfield: U. S. Geol. Survey Prof. Paper 152, 1927.‡


CASSIA COUNTY


BIG BERTHA MINING CO., INC.

GOOSE CREEK OIL & DEVELOPING CO.


SILVER HILLS MINING CO.


<table>
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<tr>
<td>Alice</td>
<td>Stokes</td>
<td>W. E. Langford</td>
<td>229 W. 2nd St. N., Salt Lake City</td>
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<td>Albion Gr.</td>
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<td>Stokes</td>
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Contact phenomena associated with the Cassia batholith, Idaho, by Alfred L. Anderson: Jour. of Geol., vol. XLII, No. 4, 1934.*
CLARK COUNTY

County Seat: Dubois. Area: 1778 sq. miles. Population: 1122. Principal Industries: Farming and stock raising. Transportation: Idaho-Montana state highway and Pocatello-Butte branch of Union Pacific. Mineral Resources: Lead, silver, copper, zinc, coal and bentonite. Possibilities of oil and gas. The Birch creek district in the northwest corner of the county, is an extension of the Nickolia district of Lemhi county. There were no activities reported from this district during 1934.

BIRCH CREEK MINING CO., LTD.


GOLD NUGGET MINES, INC.


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<td>Tip Top</td>
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<td>Wm. Garretson et al.</td>
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See pages 109-110 for publisher's address, meaning of reference marks, and abbreviations.


CLEARWATER COUNTY


History and Future

The Pierce City district was the scene of the first discovery of gold in Idaho in 1860. The placer diggings were rich and the overflow from the resulting stampede caused the settlement of the State. In common with all of the early gold mining districts, the more easily handled ore was mined and the district became dormant. The present search for gold has caused much new activity in the district.

Dense vegetation and heavy overburden has made prospecting extremely difficult and has prevented a thorough examination of the county in the past. This is one of the most favorable districts in the state for the prospector and small operator.

One of the finest lime deposits in the state is located just outside of Orofino on the railroad. This deposit has received some development and should be an important resource in the future.

Review of Year's Operations

Gold Dredging Inc. had a good year dredging the gravel on Rhodes Creek. The Washington-Idaho Lime Products Co., a new industry in the state, built a plant at Orofino which has a capacity of 700 barrels daily.

Preparations are under way for working the ground of the Crawford placers.

Reports to this office that commercial iron of good quality and quantity was discovered near Woodland, is claimed by Andy Strom.

ALDER CREEK MINING CO.


AMERICAN PLACER MINING CO., LTD.


COBRA MINING & MILLING CO.


CONSOLIDATED DREDGING & MINING COMPANY, INC.

CRAWFORD GOLD STRIKE (not incorporated)


GOLD DREDGING INCORPORATED


GOLDEDALE MINING CO.


INDEPENDENCE PLACER MINING CO., LTD.


LOLO GOLD MINES, INC.


M. & I. MINING CO.


OXFORD COPPER MINING CO., LTD.


PATTERSON MINES INC.

Office: '228 N. Howard St., Spokane, Wash. Officers: G. W. Patterson, Pres.; A. H. Gilbertson, Sec., both of Spokane, Wash. Inc.: May 24, 1935. Capital: 5,000,000 shares; par value 1c; 3,400,400 shares issued. Property: Expects to acquire property in Pierce dist.; Pierce; none at present.

SEWELL LIME CO.

WASHINGTON-IDaho LIME PRODUCTS CO.

WESTERN METALS PRODUCTS CO.

NAME OF MINE MINING DIST. OWNER P. O. ADDRESS
Aurora et al. Pierce City Franz Magnus Orofino
Chloe Pierce City A. B. Rhude Pierce
Collins Pierce City J. E. Collins Pierce
Cow Creek Pierce City J. R. Crawford Orofino
Deep Placer Moose Creek E. J. Hughes Pierce
Dream, The Pierce City Fred Forsman Pierce
Gold Dust Gr. Pierce City Chas. Rogers Pierce
Gold Island Pierce City Lewis Pratt Pierce
Granite et al. Ruby Creek P. A. Hughes Bovill
Jericho Burnt Creek F. A. Losekamp Elk River
K. H. C. et al. Ruby Creek K. Barkas Elk River
Little Joe Pierce City Joseph Frank Orofino
Little Mascot Pierce City Earl McHenry Orofino
Lone Pine et al. Pierce City J. R. Crawford Orofino
Ozark Pierce City Chas. Meyer Greer
Oyama et al. Pierce City Agnes M. Kelly Spokane
Rummel et al. Pierce City James Clark Pierce
Russell Gr. Pierce City J. E. Rudersdorf Pierce
Silver Creek Pl. Pierce City Gus Anderson Pierce
Snake Creek Pl. Pierce City G. V. Friedman Pierce
Trapper et al. Pierce City R. E. Willoughby Pierce
Venus Placer Burnt Creek John Pearson Dent
Vida Pl. et al. Pierce City J. H. Wells et al. Pierce
Wendell Placer Burnt Creek Walter Wendell Dent
Wonder Pierce City P. H. Sayles Lapwai
Yukon et al. Burnt Creek Peter Skjarve Deary

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Geology and mineral resources of the region about Orofino, Idaho, by A. L. Anderson: Idaho Bureau of Mines and Geology Pamphlet 34, 1930.**


**

CUSTER COUNTY

County Seat: Challis. Area: 4921 sq. miles. Population: 3162. Principal Industries: Mining, stock raising, particularly sheep and agriculture. Relief: High and mountainous, few level spots except at head waters of Salmon River. The county contains the headwaters of the Salmon River, Big and Little Lost Rivers. Transportation: A system of well kept state and federal highways serve all of the valleys. The only railroad transportation is the Mackay branch of the Union Pacific which terminates at Mackay. Mineral Resources: Silver, copper, gold, zinc, antimony, molybdenum, tungsten, graphite, bentonite and garnet.

History and Future

This county was the scene of much early day activity in both precious and base metal mining. At one time there were several smelters running in the county and the production of high-grade silver-lead and silver-copper ores made the county one of the principal mining districts of the State.

Some of the most famous early day producers of the State were in this county and there is no doubt but that it will again attain its former prominence with increased prices for gold and silver, particularly when the price for lead and copper once again becomes normal.

Numerous old properties, with large production records and known ore reserves, await the operator with the courage to reopen them.

Review of Year's Operations

A crew of men is employed in the Stanley Basin testing and erecting dredging equipment.

The Clayton Mining Company, operating in the Bayhorse district, enlarged their mill to 100-ton capacity. Under the general management of C. A. Fay this company is working 30 men. The concentrates are reported to show values of 73 oz. silver and 60 per cent lead to the ton.

The Yankee Fork district was the scene of considerable activity. The American Dollar Mining & Milling Company, Walter C. Green, Boise, Idaho, president and general manager, is rehabilitating its camp. The property consists of 10 unpatented claims. The mill is being modernized with a 75 h. p. Diesel engine replacing steam power. Flotation will be added to the old flow sheet.

Many of the larger mines were idle, however, development work was done on a few properties and it is reported that leasers shipped some high grade ore from the vicinity of Mackay.

AETNA MINING & INVESTMENT CO., LTD.

AMERICAN DOLLAR MINING & MILLING CO.

AZTEC MINING & MILLING CO.

CLAYTON SILVER MINES CO.

CRATER MINES, INC.
Office: Rigby. Officers: Harry S. Thayer, Pres.-Mgr., New York City; Geo. E. Hill, Sec., Rigby. Inc.: Aug. 30, 1927. Capital: 300 shares, no par value; increased Nov. 23, 1927, to 1,000,000 shares; par value $1; increased May 31, 1928, to 2,500,000 shares; par value $1; 983,000 shares issued. Property: Crater group; 39 unpatented claims at the head of Slate Creek, held under lease and option. Boulder dist.; Mackay. Development: Principally by 1 tunnel 700 ft. long, and an inclined shaft 150 ft. long. Plant: Small gas-driven compressor; complete mining equipment and camp. Ore: Lead-antimony-silver. Remarks: Report not filed for 1935.

EAST STAR MINING CO.

FORD MOTOR CO.
Office: Dearborn, Mich. Officers: Edsel B. Ford, Pres.; B. J. Craig, Sec., both of Dearborn, Mich. Inc.: Filed in Idaho, Jan. 6, 1925. Capital: 1,000,000 shares; par value $100. Property: Red Bird and Silver Rule groups; 30 patented claims, including 5 millsites, Bay Horse dist.; Clayton; R. R. Mackay, 70 miles. Development: Principal development on Red Bird group consists of 4 tunnels; No. 1, 500 ft. long; No. 2, 1300 ft. long; No. 4, 510 ft. long; No. 9, 1680 ft. long, giving a total depth of 900 ft. on the vein; total development approximately 23,817 ft. Plant: Hand tramming and storage battery motor; shops and mining camp consisting of 11 buildings. Ore: Lead-silver. Men Employed: 1 watchman. Remarks: Repair work only consisting of replacing rotted timbers or ladders.
GEM STATE MINING CO. (not incorporated)

GREYHOUND MINING & MILLING CO., LTD.

HERMIT MINES OF IDAHO, INC.

IDAHO POWER & MINES CO.

IVANHOE MINING CO. (see Blaine County)

LOON CREEK HYDRAULIC PLACER MINING CO., LTD.

MACKAY METALS
Office: Mackay. Officers: A. J. Anderson, Pres., Vancouver, B. C.; F. A. Stacey, Sec.; J. Ray Weber, Mgr., both of Mackay. Inc.: June 4, 1928. Capital: 1,500,000 shares; par value $1; increased April 13, 1929, to 2,000,000 shares, par value $1; 1,200,000 shares issued. Property: Empire Copper group; 19 patented, 23 unpatented claims, Alder Creek dist.; Mackay. Development: More than 21 miles of underground workings, the principal entries being the Cossack and Alberta tunnels; the Cossack is 1000 ft. below the Alberta tunnel; the principal shaft, which is in the Alberta tunnel, extends 350 ft. vertically to the 1000 ft. level. Plant: MINE: Air-driven hoist; 1500 cu. ft. Laidlaw-Dunn-Gordon and 1200 cu. ft. Nordberg compressor, both steam-driven; and an aerial tramway 16,300 ft. long connecting mine with railroad. MILL: 250-ton concentrator, consisting of fine grinding and flotation. Ore: Copper-silver-gold. Men Employed: 4. (2 watchmen and 2 leasers). Remarks: Several small leasing operations in upper levels only work being done.
MONTE CRISTO GOLD MINES CO.

PHEMSPACE MINES CO.

RAMSHORN MINES CO.

ROUGH CREEK PLACER MINING CO.

SALMON RIVER MINING CO.

STANLEY-FIVE BARS MINING CO.

TWIN APEX MINES CO.

WASHINGTON BASIN MINING & MILLING CO.
### WHITE KNOB MINING CO.

**Office:** Newhouse Bldg., Salt Lake City, Utah. **Officers:** D. D. Muir, Jr., Pres.; W. W. Rager, Sec., Salt Lake City, Utah. **Inc.:** Aug. 23, 1919. **Capital:** 500,000 shares; par value $1; 127,500 shares issued. **Property:** White Knob group; 3 unpatented claims, Alder Creek dist.; Mackay. **Development:** Principally by 2 tunnels and 1 vertical shaft 250 ft. deep. **Plant:** 40 h. p. gas-driven hoist. **Ore:** Lead-silver. **Remarks:** Idle.

### YANKEE FORK DREDGING SYNDICATE

**Officers:** Maxwell C. Milton, Mgr., Mill Bldg., San Francisco, Calif. **Inc.:** Syndicate. **Capital:** None. **Property:** 8 patented claims, 80 miles from Mackay. **Remarks:** Annual labor only.

### YANKEE FORK PLACER CO. LTD.

**Office:** 610 Eastman Bldg., Boise. **Officers:** James H. Hawley, Jr., Mgr., Boise. **Inc.:** April 7, 1906. **Capital:** 400,000 shares; par value $1; all shares issued. **Property:** Bonanza group, 5 patented placer claims, 320 acres on Yankee Fork Creek, Yankee Fork dist.; Clayton. **Remarks:** Report not filed for 1935.

### YANKEE GOLD CORPORATION

**Office:** Blackfoot. **Officers:** John H. Turner, Pres.-Mgr., Blackfoot; Geo. W. Ballantyne, Sec., Denver, Colo. **Inc.:** August 3, 1932. **Capital:** 10,000,000 shares; par value 10c; 150,030 shares issued. **Ore:** Gold-silver-copper. **Remarks:** Idle. Plan to build custom mill at old town of Custer.

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### CUSTER COUNTY

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### BIBLIOGRAPHY

See pages 109-110 for publisher's address, meaning of reference marks, and abbreviations.


The deepest mine in Idaho, the Ramshorn at Bay Horse, by R. N. Bell: Mines and Minerals, vol. 21, pp. 174-176, November, 1900.*


The genesis of the Mackay copper deposits, by J. B. Umpleby: Econ. Geology, vol. 9, pp. 307-355, June, 1914.§


Geology and ore deposits of the Mackay region, Idaho, by J. B. Umpleby: U. S. Geol. Survey Prof. Paper 97, 1917.§


Ground water in Pahsimeroi Valley, Idaho, by O. E. Meinzer: Idaho Bureau of Mines and Geology Pamphlet 9, 1924.**

The Livingston mine, Custer County, Idaho, by J. B. Stewart: Mining and Metallurgy, vol. 7, No. 233, pp. 223-224, May, 1926.§


Geology and ore deposits of the Seafoam, Alder Creek, Little Smoky and Willow Creek districts, Custer and Camas counties, Idaho, by C. P. Ross: Idaho Bureau of Mines and Geology Pamphlet 33, 1930.*

ELMORE COUNTY


History and Future

The county was a noted early day producer of gold and silver, both placer and lode. In common with most of the gold producing districts, interest in gold mining lagged with the extraction of the free gold and the district became dormant. The recent search for gold has given the mining districts new life and a profitable production.

Improved metallurgical methods and more efficient application of geology opens up an excellent future for this district. It is a favorable one for the prospector, operator and investor.

Review of Year’s Operations

The St. Joe Lead Company at Atlanta operated during the year with a crew of 150 men. This company is one of the largest gold producers in the state.

The new road up the middle fork of the Boise River is nearing completion and will provide a stimulus to the development of a large section of favorable country as it will greatly increase the length of the transportation season in that district.

Testing placer ground in the vicinity of Featherville was carried to completion during the year.

The Franklin property at Pine was rehabilitated and worked a crew of ten men. Joseph M. Howell of Pine is manager of the new company, known as the Gold King Mining and Milling Company. The mill will have a capacity of 30 to 50 tons daily.

The Canada Gold Mines Inc., near Rocky Bar, installed Diesel power and worked intermittently during the year.

Machinery, including a 50-ton ball mill and 80-horsepower Diesel engine, was installed at the Wide West Mine in the Bear Creek district, near Rocky Bar. A crew of 25 men is employed under the management of Robert Dutcher and Arthur W. Stevens.

Almost every creek had its quota of placer miners, and many scouts and engineers visited the district. New deals are pending and the general outlook for the future of gold mining in Elmore County is encouraging.
APEX GOLD MINING CO.

ATLANTA GOLD MINE CORPORATION

BLACKSTONE MINING CO., LTD.
Officers: Jess Hawley, Vice-Pres.; Chas. W. Mack, Sec., both of Boise. Inc: Dec. 26, 1899. Capital: 1,000,000 shares; par value 10c; shares issued unknown. Property: 5 patented claims, Blackstone dist.; Hill City. Remarks: Idle.

BLACK WARRIOR MINES, INC.

CONSOLIDATED MINES SYNDICATE

CORONADO GOLD MINES, INC.

DALEY CONSOLIDATED MINES CO.

FIRST SECURITY MINING CO. (commonlaw trust)

FRANKLIN CONSOLIDATED GOLD MINES CO.
GOOD LUCK GROUP
Dollie M. Money, owner. **Property:** 3 unpatented claims; Middle Boise dist.; Atlanta. **Development:** Approximate total development, 200 ft. **Remarks:** Built a mile and a quarter of road; opened up 200 ft. tunnel.

HYDRO MINING & EXPLORATION CORPORATION
Office: 209 Idaho Bldg., Boise. **Officers:** J. M. Roth, Pres., 1212 Victoria Ave., Los Angeles, Calif.; Wm. C. O'Connor, Sec., 4151 S. W. Ave., Los Angeles, Calif. **Inc.:** July 28, 1934. **Capital:** 1,000 shares; par value $100; all shares issued. **Property:** Black Warrior group, 4 unpatented claims, Black Warrior dist.; Atlanta. **Ore:** Gold. **Men Employed:** Average 5. **Remarks:** Expect to install large shovel or drag line later. Preparations are being made for active operations.

IDAHO GOLD CHIEF MINING CO.
Office: Mountain Home. **Officers:** Winston Caldwell, Pres., Mountain Home. Inc.: Not incorporated. **Property:** 7 unpatented claims, Bear Creek dist.; Rocky Bar. **Development:** Principally by 2 tunnels: No. 1, 2300 ft. long; No. 2, 800 ft. long. **Plant:** Lancaster 24 h. p. steam driven hoist. **Ore:** Gold. **Remarks:** Idle.

IDAHO MINES, INC.
Office: 111 S. 10th St., Tacoma, Wash. **Officers:** J. S. Davies, Pres.; F. W. Lane, Sec., both of Tacoma. Inc.: Unknown. **Capital:** 600,000 shares; no par value; 330,397 shares issued. **Property:** Quill Pig Group; 4 unpatented placer claims, Bear Creek dist.; Atlanta. **Ore:** Placer gold. **Remarks:** Report not filed for 1935.

MARSH CREEK MINING CO.
**Officers:** Roy Y. Bogard, Pres.-Mgr.; Curtis F. Pike, Sec., both of Boise. Inc.: July 9, 1921. **Capital:** 1,000,000 shares; par value $1; 39,625 shares issued. **Property:** 2 unpatented claims on Marsh Creek, Bear Creek dist.; Featherville. **Ore:** Placer gold. **Remarks:** Installation of equipment for the purpose of working the tailings is contemplated shortly.

MINERALS EXPLORATION COMPANY
Office: Boise. **Officers:** H. F. Coors, Pres., Atlanta; C. E. Shurtleff, Sec., Garland Bldg., Los Angeles, Calif. Inc.: May 8, 1935. **Capital:** 500 shares; par value $100; issued, not known. **Property:** Consists of leases on mill tailings dumps at Atlanta to be worked on royalty basis. **Ore:** Gold and silver. **Remarks:** Assessment work.

NORTHWESTERN DEVELOPMENT CO.
Office: Box 919, Ponca City, Okla. **Officers:** L. W. Prunty, Pres., Ponca City, Okla.; R. S. Cartwright, Sec., McPherson, Kansas; E. C. Gladieux, Mgr., Boise. Inc.: April 30, 1927. **Capital:** 1,500,000 shares; par value $1; 1,052,804 shares issued. **Property:** 12 unpatented placer claims on Boise River, 1683 acres, unorganized dist.; Boise. **Plant:** Water-driven hydraulicking equipment. **Ore:** Placer gold. **Remarks:** Report not filed for 1935.

OMO MINES CORPORATION
Office: 402 Empire State Bldg., Spokane, Wash. Inc.: Jan. 19, 1926. **Capital:** 2,000,000 shares; par value 5c; 1,066,802 shares issued. **Property:** Millsite at the Mountain View mine, near Pine. All other property located in British Columbia. Assessment levied April 29, 1934. Amount of levy not known. **Remarks:** Report not filed for 1935.

PHELPS BROS. MINING CO.
Office: Mountain Home. **Officers:** Timothy G. Phelps, Mgr., Mountain Home. Inc.: Partnership. **Property:** 4 unpatented claims, Bear Creek dist.; Rocky Bar. **Plant:** Gas-driven winch. **Ore:** Placer gold. **Remarks:** $400 worth of assessment work.
GEORGE F. ROTH CO.

ST. JOSEPH LEAD CO.
Office: 250 Park Ave., New York City. Officers: Clinton H. Crane, Pres.; H. B. McGown, Sec., both of New York City; Frank H. Skeels, Mgr., Atlanta. Inc.: Filed in Idaho, April 3, 1929. Capital: 2,000,000 shares, par value $10; June 8, 1931; increased to 2,500,000 shares; 1,955,707.85 shares issued. Property: Boise, Rochester and Atlanta groups; 10 patented, 19 unpatented claims, 3 of which are held partly under lease and option, Middle Boise dist.; Atlanta. Development: By 9 tunnels, the principal ones being No. 6 and No. 9; total development more than 19,750 ft. in these two tunnels. Plant: MINE: 987 cu. ft. electrically driven I-R compressor; 2 Mancha storage-battery locomotives; complete mining equipment. MILL: 200-ton amalgamation and flotation. POWER: 125 h. p. hydroelectric plant; 360 h. p. Diesel engine driving a 375 kva generator. Ore: Gold-silver. Men Employed: Average 140. Remarks: Report not filed for 1935.

STANLEY-FIVE BARS MINING CO.

TICESKA GOLD MINING CO.
WASATCH PETROLEUM CO.

WINNER GROUP

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<td>May Larson</td>
<td>Pine</td>
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<tr>
<td>Verdun Gr.</td>
<td>Pine Grove</td>
<td>W. R. Deckard</td>
<td>Pine</td>
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<td>Vibrator Gr.</td>
<td>Bear Creek</td>
<td>Mrs. McPhearson</td>
<td>Los Angeles, Calif.</td>
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<td>White Bird et al.</td>
<td>Bear Creek</td>
<td>Otis Howard</td>
<td>Rocky Bar</td>
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<tr>
<td>White Bean</td>
<td>Middle Boise</td>
<td>Carl Boppart</td>
<td>Atlanta</td>
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<td>Wide West Gr.</td>
<td>Bear Creek</td>
<td>John J. Allen</td>
<td>109 Montague St.,</td>
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<td></td>
<td></td>
<td></td>
<td>Brooklyn, N. Y.</td>
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</tbody>
</table>

BIBLIOGRAPHY

See pages 109-110 for publisher's address, meaning of reference marks, and abbreviations.


Atlanta gold district, by R. N. Bell: Eng. and Min. Jour., vol. 86, pp. 176-177, July 25, 1908.§


Mineralogy of some black sands from Idaho, with a description of the methods used for their study, by E. V. Shannon: U. S. Nat. Mus. Proc., vol. 60, art. 3, pp. 1-33, 1921.‡


FREMONT COUNTY

Coal, phosphate rock, oil shale and asbestos occur in different sections of this county. The occurrence of coal in commercial quantities in the northeastern corner of the county has been reported, but these deposits are too far removed from transportation to be available. The other deposits have never been sufficiently developed to prove their extent.
BIBLIOGRAPHY

See pages 109-110 for publisher's address, meaning of reference marks, and abbreviations.


GEM COUNTY


History and Future

The Pearl district was once a famous gold producer, this and a few outlying sections have seen considerable activity in the past. Much base ore amenable to modern methods of concentration is reported in the old properties. This section should be given more attention by the present day operators.

Review of Year's Operations

Considerable prospecting was done in the Pearl district during the year and several very likely showings were uncovered. Greater activity can be expected during the coming season in this district.

Pamphlet No. 41, by Dr. Alfred L. Anderson, on the Geology of the Pearl-Horseshoe Bend Gold Belt, was released by the Idaho Bureau of Mines and Geology. This pamphlet will prove interesting and helpful to those engaged in mining in this locality.

Two tunnels were driven at the Dewey. One was advanced 600 feet and another 175 feet. Ten men were employed.

Some work was done at the La Trinidad under the direction of Mr. Smith, who later moved to the Checkmate property.

A fair strike was reported on the Iron Dollar.

Two men were at the Lincoln, while prospecting and development were progressing on a few other properties.

ALEXANDER LODE, INC.

GEM COUNTY

FELIX MINING CO.

GOLD DIGGER GROUP

GRANITE STATE CONSOLIDATED MINES CO.

HECLA CHECKMATE MINING & MILLING CO., LTD.

THE INTERNATIONAL ENGINEERS & MFG., LTD.
Office: Boise. Officers: Robert T. Meyer, Pres.; H. B. Butler, Sec., both of Boise. Inc.: Aug. 10, 1933. Capital: 7,000 shares common; par value $25; 4828 shares issued; 750 shares preferred; par value $100; 208 shares issued. Property: Keystone group; 3 unpatented claims; West View dist.; held under lease and bond. Development: By two tunnels, the principal one being 1180 ft. Ore: Gold-silver-lead-zinc. Remarks: 100 ton International Dry Ore Concentration mill will be installed in the spring of 1936, adjacent to the property. This will be equipped as a custom for the Rock Creek section of the Pearl district.

THE INTERNATIONAL ORE MILLING & MINING CO.

LINCOLN MINE OPERATING CO.

NEW LIBERTY MINING CO.

OJUS MINING CO.
**OLD LIBERTY MINING CO.**

**Office:** Box 1368, Boise. **Officers:** Harry Sweet, Pres.; Montour. **Inc.:** Sept. 6, 1911. **Capital:** 250,000 shares common, par value $1; 300 shares preferred, par value $100; 167,948 shares common issued. **Property:** Old Liberty group; 4 patented claims, Squaw Creek dist.; Sweet. **Remarks:** Idle.

**YELLOW GOLD PLACER CO.**

**Office:** Mountain Home. **Officers:** Ernest Tacha, Pres.; Hetta M. Tacha, Sec., both of Mountain Home. **Inc.:** May 16, 1927. **Capital:** 500,000 shares; par value $1; 281,000 shares issued. **Property:** Owns 320 acres West View dist.; Pearl. **Remarks:** Idle.

**NAME OF MINE** | **MINING DIST.** | **OWNER** | **P. O. ADDRESS**
--- | --- | --- | ---
Apache | West View | Jas. H. Hawley | Boise
Black Jack | West Mountain | Edgar McFadden | Nampa
Black Pearl | West View | H. W. Dorman Est. | Meridian
Burton Bell | West View | John Ackley | Boise
Checkmate | West View | E. K. Hayes | Emmett
Dark Horse | West View | Ed H. Peasley | Boise
Dewey | West View | E. H. Dewey | Nampa
Gem | West View | H. W. Dorman Est. | Meridian
Golden Age | West View | Lot Feltham | Emmett
I X L | West View | H. W. Dorman Est. | Meridian
Kentuck | West View | H. W. Dorman Est. | Meridian
King Gr. | West View | J. G. H. Graveley | Boise
King Tut Gr. | West View | Warren L. Mace | Boise
McCarty | West View | Scott Anderson | Boise
Middleman | West View | J. C. Johnson | Boise
Morning Glory | West View | E. J. Thorpe | Pearl
Oxford | West View | J. C. Dunbar | Pearl
Silver Wreath | West View | Fremont Wood | Boise
Virginia Mines | West View | G. L. Loope | Seattle, Wash.
Wolverine | West View | H. B. Williams | Portland, Ore.

**BIBLIOGRAPHY**

See pages 109-110 for publisher’s address, meaning of reference marks, and abbreviations.


GOODING COUNTY

Placer gold, which is found in the gravel bars and sand along the Snake River, constitutes the only mineral resources of this county. These deposits are worked in a limited manner, and generally return the operator a fair profit on his labor.

<table>
<thead>
<tr>
<th>NAME OF MINE</th>
<th>MINING DIST.</th>
<th>OWNER</th>
<th>P. O. ADDRESS</th>
</tr>
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<tbody>
<tr>
<td>Big Body Placer</td>
<td>Snake River</td>
<td>John Criswell</td>
<td>Clear Lake</td>
</tr>
<tr>
<td>Black Butte Placer</td>
<td>Snake River</td>
<td>A. S. Madalena</td>
<td>Clear Lake</td>
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<td>Boulder Hill Placer</td>
<td>Snake River</td>
<td>Charles N. Ingersoll</td>
<td>Bliss</td>
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<td>Brown Placer</td>
<td>Snake River</td>
<td>C. E. Jenkins</td>
<td>Hagerman</td>
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<tr>
<td>Zeolyte Gr.</td>
<td>Unorganized</td>
<td>Geo. H. Chaffin</td>
<td>Gooding</td>
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</table>

BIBLIOGRAPHY
See Snake River Gold under General Bibliography.

IDAHO COUNTY

County Seat: Grangeville. Area: 8539 sq. miles. Population: 10,107. Principal Industries: Agriculture, stockraising and mining. Relief: With the exception of the high table land known as Camas Prairie, the county is of rugged mountains extending from the Snake River on the west to the Continental divide on the east. Rivers: South fork of the Clearwater, Salmon and Snake. Transportation: The western part of the county is served by a system of well maintained state and county roads. A highway up the south fork of the Clearwater River serves the Elk City district. That portion south of the Salmon River is served by the McCall-Edwardsburg forest highway. The balance of the county has very little transportation facilities but is being developed fast. The Stites and Grangeville branches owned jointly by the Northern Pacific and Union Pacific railroads are the only railroads. These serve the northern and Camas Prairie portion of the county. Mineral Resources: Gold, silver, copper, lead, zinc, antimony, tungsten, asbestos, talc, mica and molybdenum.

History and Future
During the early days of gold mining this county was one of the most productive in the state. Due to the inability of the early operators to handle base ore and the terrific handicap of lack of transportation facilities, mining became dormant throughout the county. Modern metallurgical process, new highways and truck transportation has given new life to these mining communities.

This county contains one of the largest and most favorable undeveloped mining districts in the United States. One of the greatest opportunities presented today to the prospector, operator and investor is in the tremendous development which is due to take place in this region.

More than 1000 men were actively engaged in mining within the confines of Idaho county during the past year.

Review of Year's Operations
Ten Mile District

The New York Mines and The Buffalo Mining Company enjoyed a good year with fair returns on gross output.

The Lone Pine, at Golden, owned and operated by F. O. Miller of Clarkston, was operated at the capacity of the 40-ton flotation mill until a shortage of the water to the 250 h. p. hydroelectric plant slowed down operations. An intelligent development program was carried out. A crew of 20 men was employed. Modern haulage equipment was installed.

The Clearwater Mining Company worked a crew of men on development and installing machinery for future operations.
The Idaho Corporation, near Golden, was examined and sampled by scouts and engineers. The property is opened up on several horizons and the samples taken show good values. It has the earmarks of becoming a potential producer. Frederick E. Snook, Golden, Idaho, is president and manager.

It was reported that the Gilt Edge Mines Corp. was the scene of some activity during the year.

The Key, Tippie and Moose Creek placers were operated as long as the water lasted.

Dixie District

The War Eagle operated a 25-ton mill and employed 25 men.

At the Dixie-Comstock a camp and new 50-ton mill was erected. Thirty men were employed. This property will be ready to start operations at an early date. W. H. Horobin is president of the company.

Ten men were employed at the Tiawaka Mines, Inc., where sinking and other development work was carried on. Flotation cells and a cyanide plant was added to the milling equipment.

At the North Star, ten men were employed on development.

The Mammoth Mines Corp. was acquired by the Bunker Hill & Sullivan Company at a reported price of $200,000. Twelve men form the crew that are sampling and developing the property, composed of ten claims.

A placer operation at Dixie enjoyed a very successful season. A power shovel and washing plant on skids is in use.

Elk River District

The American Eagle with a crew of 12 men rehabilitated the mine and had the mill running part time.

The Sultan Gold followed a sinking and development program with a crew of ten men.

The Mary K. (Black Pine), under the supervision of Mr. Kleesattel, had a small crew on development.

George Becker had six men at the Major.

The Mother Lode, Gold Point, Mountain Boy and Center Star followed development programs during the year and shipped some ore.

A 50-ton Hardinge ball mill, Gibson amalgamator, classifier and Wilfley table were installed at the Black Lady claim of the Pilot Knob Gold Corp. R. W. Bellows, Culmstock Arms, Spokane, Washington, is president and general manager. In development a good vein of gold ore was uncovered. Provisions have been made for the installation of Fahrenwald flotation, if sulphide ore is encountered at depth. Twelve men were employed.

The Deadwood dredge was operating with a crew of ten men.

Orogrande District

The Penman Mines Corp., with a crew of thirty men, had the mill running at capacity.

Sixty men were employed at the Orogrande-Frisco until the company was forced to shut down on account of water to operate their 500-ton mill.

The North Hill shipped their ore to the Gilt Edge mill in the Ten Mile district. Ten men employed.

The Una was developed by a crew of three men.

Salmon River District

Numerous outfits along the river were working the bars. Sluicing, power shovels and barges equipped with sand pumps were active. Several good cleanups were reported to have been made.

The B. R. & R. Co., and the McKinley Gold Mining Co. did considerable work.

Many new locations were made and signs of activity near Lucille and Pollock were very much in evidence.

Florence District

A new road was constructed into this district and from reports considerable activity was noted during the year.
**Burgdorf-Marshall Lake District**

The United Verde, an Arizona corporation, built a mill at the Golden Anchor Mine. Some development work was done at the property.

The Sherman-Howe was further developed during the year.

The Idaho-Klondike, on California Creek, Mark Evans, president and manager, erected winter quarters, rehabilitated and developed the property to some extent. This is an underground placer.

The Golden Age and several other placers were worked, while others were prospected and tested for values.

The War Eagle developed their property.

**Warren District**

The Idaho Gold Dredging Co. had two dredges working at capacity, making this company one of the largest gold producers in the state.

The Warren Creek Dredging Company acquired more ground and operated at capacity throughout the year.

C. W. Hackney and associates turned their hydraulic holdings over to another company.

The Unity Gold Production Company started development operations late in the summer of 1935.

Several small operations were working at lode and placer holdings in this district.

The dry season was a handicap to mining all over the state.

**Edwardsburg District**

The forest service was active in building roads which will be of value in the development of this district.

An airport is located at Big Creek Headquarters near Edwardsburg that facilitates quicker service for emergency calls and winter transportation.

Authorities claim this section has possibilities of becoming a potential and permanent gold producer as soon as the development stage is passed.

Activity was very much in evidence near Elk Summit and Profile Gap. Edwardsburg was the distributing center.

The Smith Creek Placers, with a crew of thirty men, are carrying out plans to work their property in a big way. During the past year equipment and machinery was installed, entailing considerable construction work.

It was rumored that some activity was noticed at the Golden Hand, Inc. This company did not file a report for 1935 with this office. Many prospectors were active in this vicinity and development was under way at numerous properties throughout the year.

**ALTA-IDaho Gold & Copper Mining Co.**

**Office:** Pardee. **Officers:** M. C. Hettler, Pres., Berwick, Pa.; R. E. Fine, Sec., Cassadaga, Fla.; Geo. M. Snyder, Mgr., Pardee. **Inc.:** Filed in Idaho, June 17, 1903. **Capital:** 700,000 shares common, par value $1; all shares issued; 300,000 shares preferred, 59,000 shares issued. **Property:** Empire group; 11 unpatented claims, on South Fork of Clearwater River, Lolo dist.; Pardee. **Development:** Approximately 450 ft. of underground workings, the principal of which is 1 tunnel 250 ft. long. **Ore:** Gold-silver-copper. **Men Employed:** 1 watchman. **Remarks:** Assessment work and maintenance.

**Associated Gold Mines Co.**

**Office:** 1715 Exchange Bldg., Seattle, Wash. **Officers:** John Pike, Pres.; W. H. Sandstrom, Sec., both of Seattle, Wash.; Harry H. Tanner, Agt., Golden **Inc.:** Filed in Idaho, Apr. 4, 1932. **Capital:** 3,000,000 shares; par value $1; 1,265,190% shares issued. **Property:** Coeur d'Alene group; 13 unpatented claims, Ten Mile dist.; Golden. **Development:** By 3 tunnels, the principal one being 1600 ft. long. **Ore:** Gold. **Remarks:** Idle.

**B. R. & R. Co., Inc.**

**Office:** 311 Hyde Bldg., Spokane, Wash. **Officers:** S. S. Durant, Pres.; S. S. Bassett, Sec., both of Spokane, Wash. **Inc.:** June 25, 1930. **Capital:** 100,000 shares; par value $1; 52,313 shares issued. **Property:** 2 unpatented claims, Simpson dist.; Lucile. **Ore:** Gold. **Remarks:** Assessment work.
BLACK DIAMOND
Owner, Richard Kleesattel, Elk City. Remarks: The owner has spent over $100,000 on this property. The property is now idle but it is planned to operate it next summer.

CAL-IDAHO MINING CO.
Office: c/o M. G. Jones, P. O. Box 367, Huntington Beach, Calif. Officers: Edward H. Cookingham, Pres., Lindsay, Calif.; M. G. Jones, Sec., Huntington Beach, Calif.; Thomas Berry, Mgr., Elk City. Inc.: Not filed in Idaho. Capital: 250,000 shares; par value $1; all shares issued. Property: Gold Hill placer; 8 patented claims, 1 unpatented claim, held under lease and option, Elk City dist.; Elk City. Plant: 8-mile ditch; complete hydraulic equipment and mine camp. Ore: Placer gold. Men Employed: Average, 6. Remarks: Between 100,000 and 150,000 cu. yds. of gravel moved. 110 ft. of 3 ft. sluice flume installed.

CENTRAL IDAHO MINING & MILLING CO.

CLEARWATER MINING CO.

COMMODORE GOLD MINING CO.

CONSOLIDATED MINES SYNDICATE
(See Boise, Camas and Elmore counties)
Property: Blue Jacket group; 7 patented claims, Crooks Corral dist.; Lucile. Development: By 3 tunnels, the principal one being 888 ft. long; approximate total development, 3234 ft. Remarks: Idle.

COPPER QUEEN MINING CO., INC.
CORNER STONE MINING & MILLING CO.

CROOKS CORRAL MINES, LTD.

DAVIS MINING CO.

DIATOM PRODUCTS CO.

DIXIE COMSTOCK GOLD MINING CO.

EMPIRE METALS CO.

ESPERANZA GOLD DIKES MINING CORPORATION

GIANT LEASING CO.

GILT EDGE MINES, INCORPORATED
GNOME GOLD MINING CO.

GOLD BUG MINING CO.

GOLD MASTERCONSOLIDATED MINING CO., INC.

GOLDEN ANCHOR MINING CO.

GOLDEN HAND, INC.

THE GOLDEN HAND EXTENSION MINING CO.

GOLDEN MINES, LTD.

GOODENOUGH UNITED MINING & MILLING CO., LTD.
IDAHO COUNTY

HOMESTAKE PLACER

HOPE GROUP

THE IDAHO CORPORATION

IDAHO EAGLE MINES, INC.

IDAHO GOLD DREDGING CO.
IDAHO GOLDFIELDS, INC.

IDAHO KLONDIKE MINING CO.

JUMBO MINING & MILLING CO., LTD.

KEY PLACERS CORPORATION

KOH-I-NOOR GOLD CORPORATION

LINNTON MINING CO.

LONE PINE GROUP

LONG TOM MINING CO.
250 H. P. HYDRO-ELECTRIC PLANT: LONE PINE MINE, GOLDEN

LUCKY DAY & BEMIS LOOKOUT GROUPS

LUCKY FIVE MINING CO.

MAJOR GOLD, INC.

MAMMOTH MINE CORPORATION

MAMMOTH MINING & DEVELOPMENT CO.

THE MARY K. MINES, INC.
MARVEL GOLD MINES, INC.

MCKINLEY GOLD MINING CO.

MONTE CRISTO MINING CO.

NORTH HILL MINING CO.

OROGRANDE-FRISCO GOLD MINES, INC.

OROGRANDE GOLD MINING CO.

PACIFIC CONSOLIDATED MINES, INC.

PENMAN MINES CORPORATION
PIERCE METALS DEVELOPMENT CO.

PILOT KNOB GOLD CORPORATION

RED FIR MINING CORPORATION

REEDS CREEK GOLD MINES CO.

REVENUE MINING & MILLING CO.

ROBINSON MINING & MILLING COMPANY

SALMON RIVER EXPLORATION CO.

SALMON RIVER MINERS, INC.
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<th>Shares Issued</th>
<th>Property Details</th>
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<td><strong>SALMON RIVER MINING &amp; MILLING CO.</strong></td>
<td></td>
<td>Officers: John Wm. Errington, Pres.; R. A. Daniels, Sec., both of Spokane, Wash.</td>
<td>June 8, 1931</td>
<td>Capital: 500,000 shares; par value 10c; increased Jan. 3, 1932, to 1,500,000 shares; 650,250 shares issued.</td>
<td>12 unpatented claims, unorganized dist.; Riggins</td>
<td>Gold</td>
<td>Annual assessment work.</td>
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<td><strong>SENTINEL MINES CORPORATION</strong></td>
<td></td>
<td>Officers: E. G. Braddock, Pres.; J. C. Tyler, Sec., both of Lewiston.</td>
<td>Mar. 14, 1930</td>
<td>Capital: 50,000 shares; par value $1; 37,000 shares issued.</td>
<td>5 unpatented claims, Ten Mile dist.;</td>
<td>Gold</td>
<td>Idle.</td>
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DREDGE OF WARREN CREEK DREDGING CO.

UNA MINE CO.

UNITY GOLD PRODUCTION CO.

WARREN CREEK DREDGING CO.

WAR EAGLE GOLD MINING & MILLING CO.

NAME OF MINE  MINING DIST.  OWNER  P. O. ADDRESS
<table>
<thead>
<tr>
<th>NAME OF MINE</th>
<th>MINING DIST.</th>
<th>OWNER</th>
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<tbody>
<tr>
<td>Alligator Gr.</td>
<td>Robbins</td>
<td>Buffalo Hump</td>
<td>A. B. Chapman, 1309 Summit Ave.,</td>
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<td></td>
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<td>L. L. M. Co.</td>
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<td>American Gr.</td>
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<td>Baby</td>
<td>Robbins</td>
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<td>Baner Gr.</td>
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<td>Frank Baner</td>
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<td>Banner Gr.</td>
<td>Florence</td>
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<td>Bengal</td>
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<td>Perry Bros.</td>
<td>Portland, Ore.</td>
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<td>Big Buffalo Gr.</td>
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<td>Sweeney Inv. Co.</td>
<td>Lewiston</td>
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<td>Black Bear</td>
<td>Robbins</td>
<td>H. J. High</td>
<td>Helena, Mont.</td>
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<td>Black Sam Gr.</td>
<td>Newsome</td>
<td>Thos. A. Marlow</td>
<td>Stites</td>
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<td>Harpster</td>
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<td>John P. Kee</td>
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<td>Broadwater Gr.</td>
<td>Robbins</td>
<td>Mrs. M. N. Parker</td>
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<td>Buck Diggings Pl.</td>
<td>Warren</td>
<td>John Becker</td>
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<td>Buffalo Chief</td>
<td>Robbins</td>
<td>Mrs. I. F. Devinney</td>
<td>2202 Champlin St., Wheeling, W. Va.</td>
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<td>Bullion Lode</td>
<td>Florence</td>
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<td>Buster Gr.</td>
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<td>F. W. Bradley</td>
<td>San Francisco, Cal.</td>
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<td>Capt. Clark Gr.</td>
<td>Robbins</td>
<td>Sylvia Koch</td>
<td>1228 0ak Ave.,             Evanston, Ill.</td>
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<td>Center Star</td>
<td>Elk City</td>
<td>Herman Brown</td>
<td>Elk City</td>
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<td>Chicago et al.</td>
<td>Elk City</td>
<td>R. Greckwell</td>
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<td>Bertha Chandler</td>
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<td>Crackerjack Gr.</td>
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**BIBLIOGRAPHY**

See pages 109-110 for publisher's address, meaning of reference marks and abbreviations.


Mineralogy of some black sands from Idaho, with a description of the methods used for their study, by E. V. Shannon: U. S. Nat. Mus. Proc., vol. 60, art. 3, pp. 1-33, 1921.


KOOTENAI COUNTY


Principal Industries: Lumbering, dairying, farming, mining. Transportation: Three state highways, a well maintained system of county roads, six railroads and by boat on Lakes Coeur d'Alene and Pend d'Oreille. Mineral Resources: Zinc, lead-silver, copper, gold, arsenic and high-grade clays.

History and Future

Very little development work has been done on these mineral resources but some very encouraging results have been obtained. They are worthy of further attention.

Review of Year's Operations

Very little activity was reported to the mine inspector's office for the year.

The Rainbow Mining and Milling Company moved its offices to W. 118 Second Avenue, Spokane, Washington. Development work was carried on during the year.

The Radio Mining Company are rehabilitating their property in the Wolf Lodge district.

BEAUTY BAY MINING CO.

BLUE BIRD MINING CO.

CARIBOU MINING CO., LTD.

COEUR D'ALENE-SPOKANE MINING CO.
Office: Helena, Mont. Officers: C. A. Spaulding, Pres.; Bessie Bryte, Sec., both of Helena, Mont. Inc.: Sept. 6, 1918. Capital: 1,000,000 shares; par value $1; 500,000 shares issued. Property: Strobel group; 3 patented claims, unorganized dist.; Lane. Development: By 1 tunnel 200 ft. long and a 100 ft. vertical shaft. Remarks: Idle.
COMMONWEALTH METALS CO.

CONNIE MINING & MILLING CO.

GRAY WOLF MINING CO.

GREAT WESTERN COPPER CO., INC.

HAMBURG AMERICAN COPPER MINING & MILLING CO.

HAYDEN LAKE MINING & MILLING CO.

HIGH CROPPING SILVER-LEAD MINING CO.

IDAHO DIAMOND SULPHIDE MINING COMPANY, INC.

KING SOLOMON MINING & MILLING COMPANY
LITTLE NORTH FORK COPPER MINING & MILLING CO., LTD.

PALISADE MINING & MILLING CO.

RADIO MINING CO.

RAINBOW MINING & MILLING CO., LTD. (See Shoshone & Benewah Counties)
(See Benewah County for capital structure.)

RAINBOW NO. 2

RAINBOW NO. 4

RIVERSIDE COPPER MINING CO., LTD.

THE ROYAL BASIN MINING CO.
Office: Coeur d'Alene. Officers: A. H. Moe, Pres.-Mgr.; Vina Moe, Sec., both of Coeur d'Alene. Inc.: Dec. 24, 1910, as Royal Mining Company; name changed June 8, 1934. Capital: 1,500,000 shares; par value $1; June 8, 1934, capital reduced to $150,000, divided into 1,500,000 non-assessable shares; par value 10c; 507,673 shares issued. Property: 9 unpatented claims, Wolf Lodge dist.; Coeur d'Alene. Development: By 3 tunnels, the principal one being 500 ft. long. Ore: Gold-silver. Remarks: Idle.

SHAMROCK SILVER MINING COMPANY, INCORPORATED

SILVERTIP MINING ASSOCIATION
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LATAH COUNTY

BIBLIOGRAPHY
See pages 109-110 for publisher’s address, meaning of reference marks and abbreviations.


Composition and origin of certain commercial clays of northern Idaho, by Edward L. Tullis and F. B. Laney, vol. 28, No. 5, Econ. Geol., 1933.

LATAH COUNTY


History and Future

Very little has been done to develop the metallic resources of the county, however, the non-metallic resources, particularly the fire clay deposits near Troy have been actively exploited.

Many opportunities for profitable development are available in this district.

ACE MINING CO.

CASSIDY GOLD MINING & MILLING CO., LTD.

COLUMBIA MINES CORPORATION
COPPER MOUNTAIN MINING CO.

ENGINEERS GOLD MINING COMPANY

GOLD HILL MINING & MILLING CO.

IDAHO CERAMIC MATERIALS CO.

IDAHO FIRE BRICK & CLAY CO.

SPOKANE-IDAHO COPPER CO.

TROY GOLD & COPPER MINING CO., LTD.

NAME OF MINE MINING DIST. OWNER P. O. ADDRESS
Anny Gr. Hoodoo P. Doffner Harvard
Avon Hoodoo J. H. Nesbit Deary
LEMHI COUNTY

NAME OF MINE   MINING DIST.   OWNER                P. O. ADDRESS
Bonanza Gold Pl. Gold Creek   Wm. J. Schmidt       Potlatch
Carrico Pl.      Gold Creek    Paul Blockmier    Paulsen Bldg.,
                   Carrico PI.             Spokane, Wash.
                   Gold Creek
Clara Lester Gr.  Gold Creek   James C. Throop    Palouse
Eureka Gr.       Gold Creek    Edwin N. Carrico  Potlatch
Excelsior        Gold Creek    Arthur P. Gilliam  Potlatch
Gold Bug         Gold Creek    Arthur P. Gilliam  Potlatch
Idaho            Hoodoo        G. E. Arrasmith    Harvard
Knapp Bros.      Hoodoo        Harry Knapp       Harvard
Midas            Hoodoo        H. N. Gray        Potlatch
Monday           Hoodoo        V. P. Wiesenthal  Palouse, Wash.

BIBLIOGRAPHY
See pages 109-110 for publisher’s address, meaning of reference marks and abbreviations.

Geology and water resources of Nez Perce County, Idaho, by I. C. Russell: U. S. Geol. Survey Water-Supply Papers 53 and 54, 1901.†
Ground water for municipal supply at Potlatch, Idaho, by V. R. D. Kirkham: Idaho Bureau of Mines and Geology Pamphlet 23, 1927.**
The development of Idaho’s non-metallic mineral resources, by E. L. Tullis: Pit and Quarry, vol. 23, pp. 22-27, Mar. 23, 1932.**
Composition and origin of certain commercial clays of northern Idaho, by Edward L. Tullis and F. B. Laney, vol. 28, No. 5, Econ. Geol., 1933.

LEMHI COUNTY

County Seat: Salmon City. Area: 4597 sq. miles. Population: 4643. Principal Industries: Agriculture, stock raising and mining. Relief: This county contains the broad valleys of the Salmon, Lemhi and Pahsimeroi rivers but otherwise is high and mountainous. Transportation: The main valleys are served by a well maintained system of state highways and the back country can be reached over a system of Forest Service roads. The only railroad into the county is the Pittsburgh and Gilmore from Armstead, Montana, into the Lemhi Valley. Mineral Resources: Lead, copper, silver, gold, zinc, tungsten, manganese, molybdenum, nickel, cobalt, gypsum, tin and lignite.

History and Future
This county has had a very productive and profitable mining career in the past, both of base and precious metals. In common with most gold producing districts, with diversified resources, the trend was toward base metal until the present activity in gold mining.
During the last few years, a tremendous activity in the gold fields has taken place and the district is rapidly assuming importance in this respect. The people are alive to their opportunities and have formed the “Lemhi
County Mining Ass’n" for the express purpose of presenting these opportunities to investors and operators.

This district has a prosperous future in prospect and is an ideal territory for the prospector, operator and investor.

Review of Year’s Operations

Gibbonsville was the scene of considerable activity, with four properties showing some production. A 50-ton concentration and flotation mill was erected to handle the output of the B. O. K. and Twin Brothers mines and ores from other operators.

In the Mineral Hill district, at Shoup, the Gold Hill Company, financed by Pocatello capital, placed a modern 100-ton flotation mill in operation.

The Grunter Mine, adjoining the Gold Hill property, operated with a crew of 30 men until a fire destroyed their plant. This company made regular shipments to the East Helena smelter.

The Monolith mine, above Shoup, was developed to some extent.

The Yellow Jacket mine was renovated and the power flume and mill repaired. This district was prospected during the year.

The Lang mine, in the Eureka district, was developed by Boise capital. A mill is planned for the near future.

Shipments of ore were made by Brough Brothers from the Ring Bone Cayuse.

Musgrove Creek produced several cars of ore, and development work was done by the Meadow Mines Co.

The Gold Stone property on Pratt Creek has been acquired by the Callahan Zinc Company. It is reported that active work will start as soon as some title matters are cleared up.

The Virginia Mining Company, known as the McKillop group, has been acquired by T. D. Picard of Vancouver, B. C. A 100-horsepower Caterpillar Diesel has been installed, driving an air compressor and development was in progress. Units for a mill are on the ground and operations will start as soon as weather permits.

New equipment has been installed at the Copper Queen. This property is bonded to Cleveland interests. J. E. Dye is in charge of operations.

Milo Zook made a shipment from the Latest Out at Gilmore, and Worthing brothers shipped some ore from their Skull Canyon claims.

In the Leesburg Basin at least 20 operations were in progress during the season.

Butschke Bros. made a nice cleanup from a high placer on Jureaneau Creek. This gold is 993 fine.

Goff Bros. had a successful year on Arnett Creek.

From a small pit on Wallace Creek, in the Eureka district, about 75 ounces of coarse gold were extracted. Operations in this area will continue next year.

The 100-ton mill of the Ima Gold Mines Corporation, on Patterson Creek, was completed and put into operation. The ore is gold-silver-tungsten.

W. P. Barton, May, Idaho, is manager.

AMERICAN CONSOLIDATED MINING & MILLING CO.


BUCKHORN GOLD CORPORATION

PLACER MINING IN LEMHI COUNTY

CONTINENTAL GROUP

DAHLONEGA MINING CO.

DELAWARE-IDAHO GOLD MINING CO.

ELDORADO GOLD MINING CO.

GIBBONSVILLE PREMIER GOLD MINE, LTD., INC.
GILMORE MERCANTILE COMPANY

GOLD FLOTATION DEVELOPMENT CO.

GOLD HILL MINES, INC.

HARMONY MINES CO.

IDAHO FALLS GOLD MINING COMPANY

IDAHO LEMHI PLACERS, INC.

IMA MINES CORPORATION

LANG MINES, INC.
LANG GOLD CO.

LATEST OUT MINING & SMELTING CO., LTD.

LEAD MOUNTAIN MINING CO.

LEESBURG BONANZA PLACER CO.

LEESBURG LODE & PLACER MINING CO.

MEADOW MINES, INC.

NAPIAS PLACERS, INC.

NORTHWESTERN DEVELOPMENT CO., LTD.

OWL MINING CO., INC.
POCATELLO-LEMHI MINING & EXPLORATION CO.

RESCUE GOLD MINES CO.

SOUTH GILMORE MINING CO.

TRI-STATE GOLD MINING COMPANY

TWIN PEAKS GOLD MINING CO.

UNITED IDAHO MINING CO.
Office: No. 1, State St., c/o U. S. Smelting, Refining & Mining Co., Boston, Mass. Officers: C. A. Hight, Pres.; F. W. Batchelder, Sec., both of Boston; D. D. Muir, Jr., Mgr., Newhouse Bldg., Salt Lake City. Inc.: Oct. 18, 1924. Capital: 10,000 shares common, no par value; 10,000 shares preferred, par value $10; June 20, 1930, preferred shares decreased to 7504; 7053 shares common, 7267 shares preferred issued. Property: Pittsburg-Idaho group; 5 patented claims, Texas dist.; Gilmore. Development: By 4 tunnels; No. 1, 600 ft. long; No. 2, 1000 ft. long; No. 3, 1600 ft. long; No. 4, 1300 ft. long, in which is an inclined shaft 1200 ft. long, which gives a vertical depth of 988 ft. on the vein. Ore: Lead-silver. Remarks: Idle.

UTANA MINING CORPORATION

VIRGINIA GOLD MINING & MILLING COMPANY
Officers: Orville M. Norton, Pres.; Chas. E. Norton, Sec., both of Salt Lake City, Utah. Inc.: Aug. 21, 1925. Capital: 2,500,000 shares; par value 1c; 1,700,000 shares issued. Property: 13 patented and 9 unpatented claims, Pratt dist.; Baker. Development: By 7 tunnels, the principal one being 400 ft. Men Employed: Average, 4. Remarks: Maintenance and repair work.
WINDER-STILLMAN CON

Office: Salmon. Officers: R. H. Winder, Pres., Salt Lake City; J. W. Jones, Sec.-Mgr., Salmon. Inc.: Form of organization unknown. Capital: 1,000,000 shares; par value 1c; 446,118 shares issued. Property: Pope-Shenon group; 12 patented claims, Eureka dist.; Salmon. Development: 6 tunnels: No. 1, 70 ft. long; No. 2, 80 ft. long; No. 3, 400 ft. long; No. 4, 450 ft. long; No. 5, 800 ft. long; No. 6, 1000 ft. long. Total development approximately 3000 ft. of underground workings. Plant: MINE: 2 12x10 I-R electrically driven compressors; Sullivan steel sharpener; complete mining equipment and camp. MILL: 60-ton electrically driven concentrator, including fine grinding and flotation. Ore: Copper. Remarks: Report not filed for 1935.

NAME OF MINE       MINING DIST.       OWNER                         P. O. ADDRESS
---                --------------           ----------------------------- --------------------------
Alex Stevens       Texas             Wm. H. Howard                 Gilmore
Anaconda Gr.       Eldorado         J. H. Adams Est.              Salmon
Anaconda et al.    Blackbird        A. C. Ludwig                  Salmon
Andy Lee           Gravel Range     F. M. Pollard                 Los Angeles, Cal.
Arnett Cr. Pl.     Mackinaw         Christ Stuckey               Leesburg
Baby Joe Gr.       Junction         W. F. Stone                   Leadore
Belcher            Gibbonville      J. D. Pritchett               North Fork
Big 8-Mile         Junction         F. A. Butschke                Leesburg
Big Juneau         Leesburg          Joe Jugovich                  Gilmore
Big Windy          Spring Mountain  E. G. Lynch                   Digby, N. S.
Blue Bird          McDevitt          John Brittain                 Salmon
Boulder Gulch      Mineral Hill     E. C. Ross                    North Fork
Brown Bull         Texas             C. B. Graves                 Patterson
Bryn Mawr et al.   Indian Creek     Davis Davies                 46 E. Broadway,
Buck-a-roo         Silverton        W. J. Shoup                   Butte, Mont.
Buckhorn           Junction         Sellers Bros.                Shoup
Burlington         Eureka           Paul Rossier                  Salmon
Cabin              Unorganized      Frank G. Worthing             Reno, Idaho
California Pl.     Mackinaw         A. C. Ludwig                 Salmon
Carrie Cody        Texas             H. S. Knight                 222 Kearns Bldg.,
                   Gibbonville      C. B. Graves                 Salt Lake City, U. P.
Castle Rock        Blue Wing        Largey Est.                  Patterson
Clara Morris Gr.   Gibbonville      Gilmore
                   Texas
Cliper Bullion     Mineral Hill     Mrs. Ethel Suydam             Shoup
Columbia           Yellow Jacket    A. C. Ludwig                  Salmon
Copper Glance      Yellow Jacket    Chas. Anderson                Leesburg
Copper King        Mackinaw         Earl R. Galbraith            Salmon
Daly Creek         Mackinaw         John M. Smith                Salmon
Democrat           Texas            W. W. Smith                  Ulysses
Diamond Gulch      Eureka           Thos. Grooms                  Gilmore
Dig More No. 1     Junction         Geo. Mathes                  Salmon
Donuton Placer     Gibbonville      Rouche & Pottle               Leadore
Eagle Mine         Gibbonville      Fred Dunton                   Gibbonville
Elmira             Junction         Alfred Anderson               Gibbonville
Enterprise         Nicholia         Jas. Corcoran                 Salmon
Florence           Eight Mile      Milo W. Zook                  Gilmore
Forney Gr.         Gravel Range     Fred Chase                    Leadore
Golden Rule        Eureka           R. E. Lee Ramey               Forney
Goldfield Gr.      Gibbonville      W. B. Horn                    Salmon
Gold Star          Mackinaw         A. W. Beason                  Great Falls, Mont.
Goldstone          Pratt Creek      J. A. Fry                     Leesburg
Governor           Gibbonville      Mrs. Isadore Gies             Salmon
Grace              Mackinaw         F. C. Noble                   Gibbonville
Greenhorn Mines    Eureka           Thos. Pope                    Salmon
Grizzly Hill       Junction         F. S. Wright                  Leadore
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<td>J. M. Burkhart, Jr.</td>
<td>Salmon</td>
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** LEWIS COUNTY **


CRAIG MOUNTAIN MINING & MILLING CO.

WINCHESTER COPPER MINING & SMELTING CO.
NEZ PERCE COUNTY

BIBLIOGRAPHY

See pages 109-110 for publisher’s address, meaning of reference marks and abbreviations.


NEZ PERCE COUNTY

County Seat: Lewiston. Area: 851 sq. miles. Population: 17,591. Principal Industries: The county is primarily an agricultural community and Lewiston is the commercial and civic center for this section of the state. Transportation: Lewiston is at the junction of the Clearwater and Snake rivers and will eventually be an important shipping point by water to the Pacific Coast. Good highways and two railroads serve the county. Mineral Resources: Copper, silver, gold, marble and limestone. Very little attention has been given these resources. The marble and limestone deposits particularly should be developed.

DEER CREEK MINE


INDEPENDENT MARBLE & LIME CO.


NAME OF MINE MINING DIST. OWNER P. O. ADDRESS
Gold Standard Cave Gulch G. C. Ettershank Lewiston
Homestead Entry Clearwater G. H. Gibbs R. F. D. No. 2, Jullietta
Iron Cap Peck W. H. Rugg Peck
Montana Unorganized Frank Cole Lewiston

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ONEIDA COUNTY

The only known mineral resources of this county are: Bentonite; various clays of excellent quality; and the reported occurrence of copper-lead ores carrying gold and silver.

BLUE JAY MINING CO.

OWYHEE COUNTY

County Seat: Silver City. Area: 7,596 sq. miles. Population: 4103. Principal Industries: Agriculture, stock raising and mining. Transportation: The roads of Owyhee county are very poorly maintained on account of its vast area and small taxation. One railroad, the Murphy branch of the O. S. L., serves the county. Mineral Resources: Silver, gold, copper, lead, zinc, antimony, diatomaceous earth, opals, manganese and nitrates.

History and Future
After the discovery of the rich silver veins of the Silver City district in 1863, the county was the chief producer in the state. The ores were some of the richest ever discovered and made the operators fabulous profits. The tremendous cost of the early day operations and poor milling methods caused a decline in the operations until the district became almost deserted. Greater geological knowledge, more efficient transportation and modern metallurgical methods will once again give this district the prominence it once had. It is extremely favorable as a field for operators and investors.

Review of Year's Operations
The dredge which was constructed by the Yuba Manufacturing Company of San Francisco for the Jordan Creek Placer Company, is in operation on a 24-hour basis. The company has built a complete camp for year-round habitation. Power is brought in from the Silver City sub-station, 15 miles away, the power line having been extended from Dewey to the new camp. Frank E. Thornburg, Boise, Idaho, is manager.

Development was in progress at De Lamar and also at properties on South Mountain.

The Goldsir carried on an extensive program of sampling and rehabilitating the Trade-Dollar-Banner properties on Florida Mountain. At times a crew of 70 men was employed. Mr. S. E. Chaney of Silver City, is president and manager.

The Potosi Mine is under lease to a company that expects to have the property on production at an early date.

War Eagle Mountain was the scene of activity at several properties. These mines are being financed with the idea of further development and rehabilitation to put them on the list of active producers.

It is reported that good ore was uncovered at the Mountain Chief.

The Ida Bell Gold Mines, Inc., on Reynolds Creek, has its mill machinery on the ground and is about ready to operate. Two men were employed on development work during the year.

The Hecla Mining Company carried on an extensive exploration program at the Elliott-Davies property on Castle Creek.

Shipments of diatomaceous earth and bentonite were loaded at Murphy. Placer operations were active in the vicinity of Grandview and along the Snake River to the Oregon line.
AFTERTHOUGHT MINES CORPORATION  

BANNER MINING & MILLING CO.  

CONSOLIDATED MINE & DREDGE CO.  

COSMOPOLITAN MINING CO., LTD.  

EMPIRE MINES CO.  

GOLCONDA GROUP MINING CO.  
GOLDEN CHARIOT-WAR EAGLE MINES CO.  
Office: 120 Broadway, New York City. Officers: W. R. Wade, Pres.; W. L. Pratt, Sec., both of New York City. Inc.: Jan. 19, 1931. Capital: 1,000,000 shares; par value $1; amended Jan. 31, 1933, reducing capital stock from 1,000,000 shares of $1 par value to 2,000,000 shares of 10c par; 1,491,600 shares issued. Property: 14 patented, 3 unpatented claims, held under lease and option, French dist.; Silver City. Development: Approximate total development, 40,000 ft. Plant: Electrically driven compressor; complete mining equipment and camp. Ore: Gold-silver. Men Employed: Average 40. Remarks: Mine closed in the fall of 1934; since then maintenance and repair work only.

GOLDSIL MINES, INC.  

IDA BELL GOLD MINES, INC.  

INTERSTATE GOLD MINING COMPANY  

IDAHO GOLD & PLATINUM MERGER MINES CO.  

WALTER J. LONG PLACERS INC.  

MOTHER LODGE GOLD MINING & MILLING CO.  

NEVER-SWEAT MINING CO.  
NEW ERA MINING & DEVELOPMENT CO.

OWYHEE DEVELOPMENT CO., INC.

OWYHEE GOLD BUG MINES, INC.
Office: Boise. Officers: A. M. Fenner, Pres.; James H. Hawley, Sec., both of Boise. Inc.: Sept. 9, 1935. Capital: 200,000 shares; par value $1; 50,000 shares issued. Property: 3 unpatented claims, Carson dist.; Silver City. Development: Approximate total development, 750 ft. Ore: Gold and silver. Men Employed: Average, 5. Plant: Single drum hoist; compressor, 8x9 single cylinder; blacksmith shop, small tools. MILL: 25-ton Forrester Rod Mill, Diesel power. Remarks: The above listed equipment was installed in the summer of '35. This company has been organized for the purpose of taking over the Gold Bug Mine which was held under lease and option by A. M. Fenner.

OWYHEE GOLD MINING CO.

OWYHEE SILVER MINES CO.

SILVER CITY GOLD MINES, INC.

VILLAGE BLACKSMITH, INC.

WAR EAGLE CONSOLIDATED MINING CO.
WAR EAGLE MINING & MILLING CO.


NAME OF MINE   MINING DIST.   OWNER                  P. O. ADDRESS

Addie Group     French      F. M. Orem             Salt Lake City, U. S.
Browney         Carson      Henry Hugg            Silver City
Chief           Unorganized Mrs. Lois Steen Jordan Valley, Ore.
Daly Group      Carson      J. W. Daly              Silver City
De Lamar        Carson      W. R. Helm            Idaho City, Ore.
Deluge et al.   Carson      John Grete            Silver City
Demming et al.  Steele      Demming Ex. Co. Trust Nampa
Gold Bug        French      Charles Cook           Silver City
Gold Hen et al. Carson      H. P. Cox              Murphy
Gold Mile et al. Carson      V. Richardson        Silver City
Golden Gate     Carson      Asher A. Getchell    Twin Falls
Happy Boy       Unorganized A. T. Evans Mountain Home
Henrietta       Carson      C. L. Norcross       168 Dartmouth St., Boston, Mass.
Home et al.     Carson      W. J. Stoddard       Silver City
Homestake       French      Mrs. George Schlack Silver City
La Plata Gr.    Flint       R. V. Thurston       Payette
Lindy et al.    Carson      H. H. Bonnell         Silver City
Little Chief    Carson      James Carrolan        De Lamar
Meadow Lark     Carson      Willenegger Bros.   De Lamar
Mountain Chief  Carson      F. Robinson           Nampa
Ontario         Carson      Mrs. J. Mattenson    Boise
Owyhee et al.   Carson      Emma Brumbaugh       Silver City
Pauper          Carson      R. H. Leonard         Silver City
Poorman         French      Fred Grete            Silver City
Potosi          Carson      Jack Stoddard         Silver City
Rich Gulch      Carson      Sam Williams          Tulsa, Okla
Roosevelt et al. Carson      R. Noble Est.         Boise
Rose et al.     Carson      James McNally         De Lamar
Ruth            French      Geo. Westlake         Hailey
San Juan et al. French      Mary Grete Est.       Silver City
Silver Leaf et al. French     N. C. Chapman Boise
Snow Storm et al. French      Lafe Boone           Boise
Star Gr.        Carson      Lewis Bros.           Silver City
Sugar Loaf      French      A. P. Nugent          Boise
Sunnyside       Carson      I. E. Barber, Trus. Boise
Tennessee et al. Carson      John Nemanic        Silver City
Village Blacksmith Carson      Duncan & Lackey Silver City
Wannensten Gr.  Carson      Andrew Wannensten Nampa
War Eagle Gr.   French      Wm. Healy             Boise

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Geology and water resources of the Bruneau River basin, Owyhee County, Idaho, by A. M. Piper: Idaho Bureau of Mines and Geology Pamphlet 11, 1924.*


Geology and metalliferous resources of the region about Silver City, Idaho, by A. M. Piper and F. B. Laney: Idaho Bureau of Mines and Geology Bull. 11, 1926.*


PAYETTE COUNTY

The only known mineral resources of this county are diatomaceous earth, various clays of excellent quality, and natural gas, which has been developed at Payette.

BLUE MOUNTAIN MINING & DEVELOPMENT CO.


BOISE PETROLEUM CORPORATION

IDAHO-OREGON OIL & GAS CO.

IDAHO-OREGON PETROLEUM CORPORATION

NORTHWEST DRILLING CO.

PAYETTE EXPLORATION COMPANY

BIBLIOGRAPHY
See pages 109-110 for publisher's address, meaning of reference marks and abbreviations.


POWER COUNTY
IDAHO RESEARCH AND DEVELOPMENT CO.

BIBLIOGRAPHY
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Geography, geology and mineral resources of the Fort Hall Indian Reservation, Idaho, by G. R. Mansfield: U. S. Geol. Survey Bull. 713, 1920.‡
Possibilities of petroleum in Power and Oneida counties, Idaho, by A. M. Piper: Idaho Bureau of Mines and Geology Pamphlet 12, 1924.**
SHOSHONE COUNTY

County Seat: Wallace. Area: 2597 sq. miles. Population: 19,060. Principal Industries: Mining and lumbering. Transportation: Oregon-Washington Railroad & Navigation Co., Northern Pacific Railway, and the Chicago, Milwaukee, St. Paul & Pacific Railroad serve the county. Yellowstone Trail, a paved highway, and a well maintained system of county roads reach into all mining districts. Rivers: St. Joe River, North and South Fork of the Coeur d'Alene River are the principal streams. Relief: The county lies on the west side of the Continental Divide and is mountainous with deep valleys and few level spots. Mineral Resources: The famous Coeur d'Alene Mining District is in the central part of the county. This district is a famous producer of lead-silver-zinc and copper. Other ores found are gold, antimony and tungsten.

History and Future

Mining in Shoshone County started with the discovery of gold on Prichard Creek in 1879. Although the chief excitement at this time centered in the gold placers near Murray, which proved very profitable, the major activity was transferred to the lead-silver mines on the South Fork after their discovery in 1885.

The gold district has continued to produce in a small way even to this day, but has been far overshadowed by the base metal mines which have developed until they produce approximately one-fourth of the lead and one-eighth of the silver of the United States.

The district contains the first, third and fifth largest lead producing mines in the United States, viz: The Bunker Hill & Sullivan, Morning and Hecla mines respectively. The largest silver producer in the United States is the Sunshine Mine, also located in this district.

The introduction of flotation, making possible the separation of the complex lead-zinc ores, opened up a vast new field of operations and today the district ranks as one of the important zinc producers of the country.

The continued development of new properties and the large ore reserves of some of the present operations assure a future comparable only to the past fifty years of large scale production, which in the five years prior to the depression averaged approximately 30 million dollars annually.

Review of Year's Operations

The Coeur d'Alene district is well on its way to recovery from the depression. Surplus stocks were on the move and more than 3000 men were employed in this mining community on a five-day week basis, at a wage scale that will average up or surpass that of any other mining section in the United States.

The Bunker Hill & Sullivan M. & M. Co.: This company employs 1200 men in its mines, mills, smelter and zinc plant. Over 2,500,000 tons of ore have been blocked out for future operations. The pig lead and zinc product of this company are known over the world, and have gained a reputation for purity and usefulness. The zinc will assay 99.99 plus. This is the largest mining operation in Idaho, and has holdings in other sections of the state in connection with their program of expansion.

Federal M. & S. Co.: The Morning and Page mines of this company are among the large producers of lead, zinc and silver and employ approximately 700 men. The company office is located at Wallace, Idaho.

Hecla: This company employs 380 men in their mining operations. The mine is located at Burke and is one of the best equipped properties in America. It is reported that more than 1,000,000 tons of ore are blocked out in addition to a new disclosure on the bottom level. The company concentrator is at Gem, Idaho, three miles from the mine. The Hecla ranks well up in the list of producers of silver, lead and zinc. Other holdings are in the Sullivan, Polaris and Elliott-Davies property on Castle Creek, in Owyhee County.

The Sunshine Mining Co.: This company has the distinction of being the largest silver producer in the United States. Three hundred fifty men are employed. During the year an entire new mill was completed and many other
improvements noted on surface construction and in underground workings. A new hoist was set in place and work is progressing on a 3100 foot vertical, four compartment shaft that will tap the property at a greater depth than its present lowest level and facilitate operations at the property. The main offices were transferred from Yakima, Washington, to the mine.

The Sullivan Mining Co.: This property is the westerly extension of the Morning vein system and is owned and operated through the Hecla mine by the Hecla and Bunker Hill & Sullivan. The ore is milled at the Hercules mill in Wallace and refined at the zinc plant near Kellogg. The Sidney Leasing Company, on Pine Creek, also resumed operations. The zinc plant is handling 60 tons of zinc concentrate daily.

American S. & R. Co.: This company’s operations were hampered by snowslides in January and a fire in May, which destroyed a considerable portion of the surface plant, including the dry room, blacksmith shop and snow sheds with a damage of $20,000. The plant was rebuilt and modernized and a development program was under way during the year with production on a curtailed basis.

Golconda Lead Mines: A development program was carried on. Some production was made from leases. At a stockholders meeting the management was changed and it is reported the mine was leased to other interests.

Gold Hunter: This property was operated by lessees during the year. In December an underground fire of unknown origin on the No. 6 level caused considerable damage to the hoist and station.

Four Square Gold Syndicate: This property was developed and additional ore reserves blocked out during the year. It is reported that milling operations will be resumed in the near future. The ore is gold and tungsten.

Golden Chest Leasing Co., Ltd.: Milling facilities were enlarged and a program of development in force.

The dry belt, in the vicinity of the Sunshine mine, was the scene of considerable activity. In this group we may list the Crescent, Polaris, Sunshine Consolidated, Metropolitan, Silver Syndicate, Globe, Mineral Mountain, Silver Dollar, Silver Summit, Nellie, Merger, Coeur d’Alene Mines, St. Elmo and others that carried on extensive construction and development campaigns during the year. Among these are properties that have potential possibilities of becoming large silver producers. Diamond drills were used to advantage in prospecting.

Silver Crescent: This property adjoins the Charles Dickens. A good showing of grey copper and tungsten ore was uncovered as development progressed.

The Liberal King Mining Co.: This Pine Creek property was developed by drifting on the ore.

Amy Matchless: Mill was revamped and a program of development and production pursued.

The gold district in the Murray section received much attention and was more active than for a great number of years. Many projects were operating on a small scale and new activity is starting on lode and placer claims in the search for gold.

AETNA MINES CORPORATION

AETNA MINING & MILLING CO., LTD.
AJAX MINING COMPANY

ALHAMBRA MINING CO., LTD.

ALICE MINING CO.

ALAMEDA MINING CO.

ALMA RAY MINING CO.

ALPENA COPPER MINING CO., LTD.

ALTURA MINING CO.

AMAZON MANHATTAN MINING CO.
AMBERGRIS CONSOLIDATED MINING CO.

AMERICAN LEAD MINES, LTD.

AMERICAN MINING CO., LTD.

AMERICAN SMELTING AND REFINING CO.
Office: 120 Broadway, New York. Officers: Simon Guggenheim, Pres.; G. A. Brockington, Sec., both of New York; H. G. Washburn, Mgr., 516 Bank St., Wallace. Inc.: New Jersey. Filed in Idaho May 15, 1934. Capital: 500,000 shares 7% preferred; par value $100; 200,000 shares 6% second preferred; par value $100; 4,000,000 shares common; no par value; all 7% preferred issued; 184,000 shares 6% second preferred issued; 1,829,940 shares common issued. Property: Property of Jack Waite Mining Co., 11 patented claims and 144 unpatented, Eagle dist.; Duthie, held under operating agreement. Development: Approximate total development, 25,046 ft. Ore: Lead, zinc and silver. Men Employed: Average, 39. Remarks: 3862 ft. of development work during the year. The fire on May 22, 1935, destroyed Timber Framing Shed, Blacksmith Shop, Change Room and approximately 800 ft. of Snow Shed.

ANACONDA COPPER MINING CO.

ANCHOR MINING CO.

ASSOCIATED MINES CORPORATION, LTD.
ATLANTIC MINING CO.

ATLAS MINING CO.

ATLAS X CO.

AURORA MINING CO.

BASIN MINING CO.

BEAN CREEK PLACER MINING CO., INC.

BEAR PLACER MINING CO.

BEAVER CREEK MINING CO.
BELL MINING CO.

BELL OF THE WEST MINING CO.

BELMONT MINING CO., LTD.

BELVEDERE GOLD MINING CO.
Officers: C. E. Biggs, Mgr., Wallace. Inc.: April 13, 1929, as Humbolt Mining & Milling Co.; name changed March 26, 1931. Capital: 3,000,000 shares; par value 50c; March 26, 1931, changed to 6,000,000 shares, par value 25c. Remarks: Report not filed for 1935.

BENTON MINING CO., LTD.

BIG DIVIDE MINING CO., LTD.

BIG ELK MINING & MILLING CO.

BIG THREE MINING CO.
BISMARCK MINING CO.

BITTER ROOT MOUNTAIN MINING CO.

BLACK BEAR MINES CO.

BLACK HAWK MINING & DEVELOPING CO., LTD.

BLAINE & EMMETT MINING CO., LTD.

BLUE EAGLE MINING CO.
Office: Kellogg. Officers: Ed McCarty, Pres.; Myron Ross, Sec., both of Kellogg. Inc.: Apr. 18, 1925. Capital: 1,500,000 shares; par value 1c; Dec. 8, 1928, increased to 3,000,000 shares; par value 10c; 1,302,915 shares issued. Property: Blue Eagle group; 15 unpatented claims, Yreka dist.; Kellogg. Development: Approximate total development, 1450 ft. Plant: Electrically driven 8x9 I-R compressor; complete mining equipment. Ore: Lead-zinc-silver. Remarks: Built 1¼ miles of road to property.

BLUE RIBBON MINING CO.

BLUE STAR MINING & MILLING CO., LTD.

BLUE WING MINING CO., LTD.
BOBBY ANDERSON GROUP MINING CO.
Office: Kellogg. Officers: T. R. Mason, Pres.; S. Cripe, Sec., both of Kellogg. Inc.: June 16, 1906. Capital: 1,500,000 shares; par value $1; March 25, 1929, increased to 2,000,000 shares; par value $1; 600,000 shares issued. Property: Bobby Anderson group; 16 unpatented claims, Yreka dist.; Kellogg. Development: Principally by 1 tunnel 1300 ft. long and an inclined shaft 100 ft. long. Plant: Electrically driven compressor and hoist; complete mining equipment and camp. Ore: Lead-zinc-silver. Remarks: Idle.

BULLFROG SILVER LEAD MINING CO.

BULLION MINING CO., LTD.

BUNKER CHANCE MINING CO.

BUNKER HILL & SULLIVAN MINING & CONCENTRATING CO.
Office: Kellogg. Officers: Stanly A. Easton, Pres.-Mgr., Kellogg; J. W. Crosby, Sec., 1022 Crocker Bldg., San Francisco, Calif. Inc.: Originally incorporated in Oregon and filed in Idaho, Aug. 20, 1903; changed to a Delaware corporation and filed in Idaho, Apr. 16, 1924. Capital: 327,000 shares common; par value $10; 20,000 shares preferred; par value $100; 7,013 shares preferred, and all common shares issued. Property: Bunker Hill; 373 patented, 31 unpatented claims, Yreka dist.; Kellogg. Development: The principal adit is the Kellogg tunnel, which is 31,300 ft. long, in which are the two principal inclined shafts, one of which is known as the White Raise, and the other the main shaft, which is approximately 2785 ft. long, giving a vertical depth of 2000 ft. below the Kellogg tunnel level, and a 560 ft. winze-shaft on the 1900 ft. level, which opens the ore bodies an additional depth of 400 ft. In the main shaft are 13 intermediate levels. Total development, approximately 64.5 miles. Plant: MINE: 2 electrically driven hoists; 2 electrically driven I-R compressors; 1 steam-driven Nordberg compressor. Trolley locomotive haulage in Kellogg tunnel; storage-battery locomotive haulage in intermediate levels. Complete and modern machine shop, blacksmith shop, and change house. MILL: 4 complete and modern concentrators, including flotation: Sweeny mill, capacity 300 tons, accommodates custom ores, particularly those from Pine Creek; West mill, capacity 1200 tons, treats output from the Bunker Hill mine; South mill, capacity 600 tons, treats output from Star mine of Sullivan Mining Co.; Crescent mill on Big Creek, capacity 100 tons, treats output from Crescent and Alhambra mines. Ore: Lead-silver. Men Employed: In mine, mill, and smelter, average, 800.
BUNKER HILL SMELTER

Officers: Frank M. Smith, Director, 1117 Paulsen Bldg., Spokane, Wash.; A. F. Beasley, Supt., Kellogg. Remarks: This smelter was erected during 1917, since which time it has been continually enlarged and improved and is now one of the most modern, complete and up-to-date plants in the United States. The smelting plant covers an area of about 30 acres and consists of complete buildings and equipment for sampling, roasting, sintering, smelting and refining lead, silver and gold ores. During 1929 its capacity was doubled, in anticipation of the termination on Feb. 1, 1930, of the company's smelting contract with the American Smelting & Refining Co., to whom the Bunker Hill was obliged to ship one-half of its production. In addition to refined lead, silver and gold, antimonial lead and copper sulphate are also produced. The principal supply of ore is from the company's own mine and the mines of the Coeur d'Alene district. The company is doing a general custom business and is drawing ore from all of the northwestern states as well as from British Columbia and Alaska, and is becoming a strong competitor in the smelting business. This smelter and its operations are fully described and illustrated in many of the articles listed under the bibliography of Shoshone County. The enlargements and modernization, commenced in 1929, were fully completed in 1931. The smelter output for 1934, as a result of lessened receipts of company and custom ore, was much below capacity.

BURKE MINING CO., LTD.


BUTTE & COEUR D'ALENE DEVELOPMENT CO.


CALABRIA MINING CO.


CALEDONIA MINING CO.


CALEDONIA SILVER-LEAD MINING CO.


CALLAHAN ZINC-LEAD CO.

CALLAHAN MINE

Property: Interstate-Callahan group; 81 patented, 2 unpatented claims, Beaver dist.; Interstate. Development: Principal development is main transportation tunnel, which is 5500 ft. long, and a three-compartment vertical shaft 2000 ft. deep; total development, approximately 10 miles. Plant: MINE: Two single-drum air-driven hoists and one 250 h. p. electrically driven double-drum hoist; three large I-R electrically driven compressors; trolley locomotive haulage in main tunnel; complete and modern blacksmith shop, machine shop, sawmill, mine equipment, camp and company buildings. MILL: 600-ton concentrator, including flotation. Ore: Zinc-lead-silver.

GALENA MINE


CARBONATE MINING & MILLING CO.


CENTRAL MINING CO.


CHESTER MINING CO., LTD.


CINCINNATI MINING CO.


CLEAR GRIT MINING CO., LTD.


THE CLEARWATER GOLD & COPPER MINING CO., LTD.


CLIMAX SILVER MINING CO.

COEUR D'ALENE BIG CREEK MINING CO.

COEUR D'ALENE CHAMPION MINING CO.

COEUR D'ALENE CRESCENT MINING CO.

COEUR D'ALENE LEAD CO.

COEUR D'ALENE METALS CO.

COEUR D'ALENE MINES CORPORATION

COEUR D'ALENE MINING CO.

COEUR D'ALENE MINING & SMELTING CO.

COEUR D'ALENE SYNDICATE MINING CO.
COLUMBIA COPPER CO., LTD.


CONSOLIDATED INDEPENDENT CALUMET MINING CO.


CONSOLIDATED MINING CORPORATION


COPPER CHIEF MINING CO.


COPPER KING MINING & SMELTING CO.


CORBY LODE MINING CO.


C. & R. MINING CO.


CRYSTAL LEAD MINES CO.


CUBA MINING CO.

DAY DEVELOPMENT CO.

DAYROCK MINING CO.
Office: Wallace. Officers: F. M. Rothrock, Pres., Spokane, Wash.; S. F. Heitfeld, Sec., Henry L. Day, Mgr., both of Wallace. Inc.: Nov. 30, 1923, as Strattons Mines Co.; name changed Nov. 19, 1928. Capital: 2,000,000 shares; par value 10c; 1,709,958 shares issued. Property: Dayrock, Panhandle, and Monarch-Bonanza groups; 38 patented, 12 unpatented claims, Placer Center dist.; Wallace. Development: Dayrock group; principally by 1 tunnel 1612 ft. long, in which is an inclined shaft 460 ft. long, with 4 intermediate levels, which opens the vein to a vertical depth of 400 ft. Panhandle group: Principally by 1 tunnel 1562 ft. long, and an inclined shaft 360 ft. long, with 3 intermediate levels, which opens the vein to a vertical depth of 253 ft. Total development in both groups, more than 36,000 ft. Plant: Electrically driven hoist and 2 electrically driven compressors; complete mining equipment; storage-battery locomotive and haulage. Ore: Lead-silver. Men Employed: 1 watchman. Remarks: Some work by lessees.

DECKER DEVELOPMENT CO.

DEEP WONDER MINE

DELAWARE MINES CORPORATION

DICKENS-EAST MINING CO.

DICKENS MINING COMPANY

DOBSON PASS LEAD AND SILVER MINES CORP.
DOUGLAS MINING CO., LTD.

DULUTH MINING CO.

EAST ALAMEDA MINING CO., LTD.

EAST CALEDONIA MINES CO.

EASTERN STAR MINING CO., LTD.

EAST HECLA MINING CO., LTD.

EAST STANDARD MINING CO.

ECHO MINING CO., LTD.

ELDORADO MINING & SMELTING CO., LTD.

ENTERPRISE MINING CO.
EQUITABLE MINING & MILLING CO.

EVOLUTION MINING CO.

FANNIE GRIMM MINING CO.

FEDERAL MINING & SMELTING CO.
Office: Wallace. Officers: F. H. Brownell, Pres.; J. L. Martin, Sec., both of New York City; H. G. Washburn, Mgr., Wallace. Inc.: Filed in Idaho, Sept. 24, 1903. Capital: 200,000 shares preferred, 100,000 shares common; par value of each $100; June 6, 1934, decreased preferred to 30,000 shares, and common to 50,000 shares, par value of each $100; 28,474 shares preferred and 49,328 shares common issued.

MORNING GROUP
Property: 41 patented claims, Hunter dist.; Mullan. Development: The two principal tunnels are No. 5, 1600 ft. long, and No. 6, the main transportation tunnel, 9500 ft. long. The principal shaft, which is located in No. 6 tunnel, is a vertical, 4-compartment shaft, 3200 ft. deep, with 14 intermediate levels below No. 6 tunnel, which opens the vein to a depth of approximately 5220 ft. Total development, approximately 37 1/2 miles. Plant: Mine: 1 double-reel hoist, arranged for electric drive by means of direct-current hoist motor 600 h. p. 450 r. p. m., through single reduction herringbone gear, driven by synchronous motor generator (motor 700 h. p.; generator 500 kw. direct current) 1200 r. p. m. 265 volts; one 600 h. p. electrically driven double-drum Nordberg hoist; one Nordberg single-drum geared hoist, driven by 300 h. p. electric motor; one water-driven 5200 cu. ft. Rix compressor; one Laidlaw-Dunn-Gordon 3200 cu. ft. compressor, two Ingersoll-Rand 2500 cu. ft. compressors, and one Prescott pump, 400 gal. capacity, on 2450 level, all electrically driven; complete mining equipment, machine shops, sawmill, company buildings and hotel. Haulage: 500-volt electric in main, or No. 6 tunnel; 250-volt electric and 10 storage-battery locomotives in intermediate levels. MILL: 1200-ton concentrator, fine grinding flotation; two ore-sorting plants; and complete modern change house. Ore: Lead-silver-zinc. Men Employed: Average, 500. Remarks: 1043 ft. of development during the year. New auxiliary hoist planned.

PAGE GROUP
Property: 86 patented claims, Yreka dist.; Kellogg. Development: By 10 tunnels, the principal one of which is the Curlew, 650 ft. long; and an inclined shaft 1571 ft. long, giving a vertical depth of 1208 ft., with 5 intermediate levels; total development, approximately 27,556 ft. Plant: Mine: A 100 h. p. hoist and a 75 h. p. double-drum hoist, both electrically driven; a 400 cu. ft., an 800 cu. ft. and a 2550 cu. ft. electrically driven compressor; 1 trolley locomotive and 3 storage-battery locomotives; complete and modern mine camp, equipment and buildings. MILL: 300-ton flotation concentrator. Ore: Lead-zinc-silver. Men Employed: Average, 76. Remarks: 1151 ft. of development.
MACE GROUP
Property: 35 patented claims, Lelande dist.; Mace. Development: Principal development consists of No. 6 tunnel, 3600 ft. long; No. 2, Campbell, 3000 ft. long; and a 3-compartment vertical shaft 2400 ft. deep, with 22 intermediate levels; total development, approximately 18,000 ft. Plant: MILL: Two 500-ton concentrators, including flotation. Ore: Silver-lead. Men Employed: 1 watchman. Remarks: Some work by lessees.

BURKE GROUP

FRISCO GROUP
Property: 15 patented claims, Lelande dist.; Gem. Development: Principally by 4 tunnels; No. 1, 1000 ft. long; No. 2, 1500 ft. long; No. 3, 550 ft. long; No. 4, 1000 ft. long; and a vertical 4-compartment shaft 1650 ft. deep; total development, approximately 31,680 ft. Ore: Lead-zinc-silver. Remarks: Some work by lessees.

GLAMORGAN GROUP

GOVERNMENT GULCH GROUP
Property: Five-sixteenths interest in 1 patented claim, Yreka dist.; Kellogg. Development: Principally by 1 tunnel, which is 500 ft. long; total development, approximately 1700 ft. Ore: Lead-silver.

CON. BIEDERMAN GROUP

FLORENCE MINING & MILLING CO., LTD.

FLYNN GROUP MINING CO.

FORMOSA LEAD MINING CO., LTD.

FOUR SQUARE GOLD SYNDICATE
GALENA MINING CO.  
Office: Wallace. Officers: A. H. Featherstone, Pres.; Herman Marquardt, Sec., both of Wallace. Inc.: Not filed in Idaho. Capital: 3,000,000 shares; par value $1; 2,000,000 shares issued. Property: Idaho Galena group; 5 patented, 5 unpatented claims; Placer Center dist.; Plymouth group. 2 unpatented claims; West Federal group, 10 unpatented claims, Hunter dist.; Wallace. Remarks: Idle.

GEM STATE MINING CO.  

GENERAL MINES CORPORATION  

GIANT MINING & DEVELOPMENT CO.  

GOLCONDA EXTENSION MINING CO.  

GLOBE SILVER MINES, INC.  
Office: Wallace. Officers: Therrett Towles, Pres.; Otto A. Olsson, Sec., both of Wallace. Inc.: Nov. 23, 1906. Name changed July 8, 1935. Capital: 1,000,000 shares; par value $1; July 8, 1935, increased capital stock to 3,000,000 shares and decreased par value to 5c; 15,000 shares issued. Remarks: Idle.

GOLCONDA LEAD MINES  
GOLDEN CHEST LEASING CO.

GOLD HUNTER MINES, INC.

GOODENOUGH MINING CO.

GOVERNMENT GULCH MINING CO.

GRANADA LEAD MINES, INC.

GREAT EASTERN MINING CO., LTD.

GREAT HELENA MINING & MILLING CO.

GREEN HILL CLEVELAND MINING CO.
HAPPY DAY MINING CO., LTD.

HAYDEN HILL CONSOLIDATED MINING CO.
Office: 417 Symons Bldg., Spokane, Wash. Officers: W. J. Stratton, Pres.; W. W. Smith, Sec., both of Spokane. Inc.: Mar. 27, 1931, as Strattons Mines Cons.; name changed, Apr. 6, 1934. Capital: 10,000,000 shares non-assessable common; par value 5c; 20,000,000 shares class “A” common stock; par value 5c; 6,055,957 shares non-assessable and 11,924,192 shares class “A” stock issued. Property: Purim group; 5 unpatented claims, Evolution dist. Remarks: Idle.

MAIN HOIST, HECLA MINING CO.

HECLA MINING CO.

HERCULES MINING CO.
HERCULES GROUP

**Property:** Hercules group, 41 claims, Lelande and Placer Center dists.; Burke.  
**Development:** Principally by 5 tunnels: No. 1, 280 ft. long; No. 2, 3350 ft. long;  
No. 3, 3900 ft. long; No. 4, 5900 ft. long; No. 5, 8550 ft. long; and a 4-compartment vertical shaft 1300 ft. deep, with 8 intermediate levels; total development, approximately 18 miles.  
**Plant:** MINE: Special first motion double-o-reel Nordberg electric hoist, direct connected to 700 h. p. motor; one 22x16 I-R and one 29x21 I-R compressor, both electrically driven; electric trolley locomotive in main transportation tunnel and storage-battery locomotives in intermediate levels; complete and modern mine equipment and shops.  
**MILL:** 900-ton concentrator, including flotation.  
**Ore:** Lead-silver.  
**Remarks:** Idle.

MAHER-HEARN GROUP

**Property:** 39 patented claims, Lelande dist.; Burke.  
**Development:** Through 4500 ft. tunnel of Gertie Mining Co., at the end of which are more than 4000 ft. of tunnel and a 400 ft. vertical shaft.  
**Plant:** Electrically driven 1000 cu. ft. I-R compressor; air driven hoist; trolley electric locomotive haulage; complete and modern equipment.  
**Ore:** Lead-silver.  
**Remarks:** Idle.

HIDDEN TREASURE MINING CO.

**Office:** Wallace.  
**Officers:** H. G. Washburn, Vice-Pres. & Mgr.; A. W. Hoover, Sec., both of Wallace.  
**Inc.:** May 18, 1908.  
**Capital:** 500,000 shares; par value 10c; all shares issued.  
**Property:** Hidden Treasure group; 4 patented claims, Lelande dist.; Burke.  
**Development:** Approximate total development, 2810 ft.  
**Ore:** Lead-silver.  
**Remarks:** Idle.

HIGHLAND-SURPRISE CONSOLIDATED MINING CO.

**Office:** Wallace.  
**Officers:** Dr. Charles R. Mowery, Pres., Spokane, Wash.; H. M. Huemann, Sec., Wallace.  
**Inc.:** Aug. 27, 1912.  
**Capital:** 1,200,000 shares; par value $1; 1,000,000 shares issued.  
**Property:** Hidden Treasure group; 4 patented claims, Pine Creek, Yreka dist.; Kellogg.  
**Development:** Approximately 2 miles of underground workings.  
**Plant:** MINE: A 7-drill I-R compressor, electrically driven; complete mining equipment and camp.  
**MILL:** 150-ton concentrator.  
**Ore:** Lead-zinc-silver.  
**Remarks:** Report not filed for 1935.

HILL MINING & MILLING CO.

**Office:** First State Bank Bldg., Kellogg.  
**Officers:** Elmer Brown, Pres.-Mgr.; N. B. Hardy, Sec., both of Kellogg.  
**Capital:** 1,000,000 shares; par value 2c; 515,928 shares issued.  
**Property:** Hill group; 7 unpatented claims, Yreka dist.; Kellogg.  
**Development:** Approximate total development, 1300 ft.  
**Ore:** Lead-silver-gold.  
**Remarks:** Idle.

HORNSILVER MINING & MILLING CO.

**Office:** Coeur d'Alene.  
**Inc.:** May 31, 1901.  
**Capital:** 1,000,000 shares; par value 10c; 719,845 shares issued.  
**Property:** 9 unpatented claims, Placer Center dist.; Coeur d'Alene.  
**Development:** By 4 tunnels, the principal one being 1200 ft. long.  
**Ore:** Lead-silver-gold.  
**Remarks:** Idle.

HORSESHOE MINING CO.

**Office:** Mullan.  
**Officers:** Jas. B. Scoles, Pres.-Mgr., Mullan.  
**Inc.:** July 16, 1908.  
**Capital:** 1,500,000 shares; par value $1; 900,000 shares issued.  
**Property:** Horseshoe group; 9 unpatented claims, Hunter dist.; Mullan.  
**Development:** 2 tunnels: No. 1, 400 ft. long; No. 2, 3000 ft. long.  
**Ore:** Lead-silver.  
**Remarks:** Idle.

HUMBOLDT GROUP

**Owner:** James Dunne, Burke.  
**Property:** 8 unpatented claims, Lelande dist.; Burke.  
**Development:** 3 short tunnels.  
**Ore:** Lead-silver.  
**Men Employed:** Average, 1.  
**Remarks:** Repaired road; did assessment work.
HUMMING BIRD MINING CO.

HYPOTHEEK MINING & MILLING CO.

IDAHO COPPER MINING CO., LTD.

IDAHO & EASTERN MINING & MILLING CO., LTD.

IDAHO-LEADVILLE MINES CO.

IDAHO & LOS ANGELES MINING & MILLING CO.

IDAHO-MONTANA AND ORLANDO CONSOLIDATED MINING CO.

IDAHO MONTANA MINING & OIL CO.
IDAHO MOTHER LODE GOLD MINES, INC.

IDAHO STAR MINING CO.

IDORA MINING CO., LTD.

IMPERIAL MINING CO.

INDEPENDENCE LEAD MINES CO.
Office: Wallace. Officers: H. B. Kingsbury, Pres., Spokane, Wash.; Herman Marquardt, Sec.; Henry B. Kingsbury, Mgr., both of Wallace.  Inc.: Filed in Idaho, Nov. 12, 1929. Capital: 4,000,000 shares; par value $1; 3,000-400 shares issued. Property: Independence group, 10 patented claims; American Commander group, 2 patented claims; Hunter dist.; Mullan. Development: American Commander group; by 4 tunnels: No. 1, 100 ft. long; No. 2, 300 ft. long; No. 3, 1200 ft. long; No. 4, 6000 ft. long. Independence group: Principally by 4 tunnels: No. 1, 100 ft. long; No. 2, 300 ft. long; No. 3, 1200 ft. long; No. 4, 6000 ft. long, a vertical raise 313 ft. long connecting No. 3 and No. 4 tunnels, and a 350 ft. vertical shaft in No. 4 tunnel. Plant: Two electrically driven compressors, complete mining equipment. Ore: Lead-silver. Men Employed: Average, 6. Remarks: 500 ft. of development during the year.

INDEPENDENCE MINING CO., LTD.

INDIAN CREEK GOLD MINING CO.

INLAND EMPIRE MINING & MILLING CO.
INSPIRATION LEAD CO., INC.

INTERNATIONAL MINES, LTD.

IONE MINING CO.

IVANHOE MINING CO., LTD.

JACK WAITE MINING CO.
Office: P. O. Box 1832, Seattle, Wash. Officers: J. F. Duthie, Pres.; G. W. Klinefelter, Jr., Sec., both of Seattle, Wash. Inc.: Jan. 30, 1928, as Jack Waite Consolidated Mining Co., reorganized, name changed, and filed in Idaho, Sept. 4, 1930. Capital: 3,500,000 shares; par value $1; 2,683,708 shares issued. Remarks: This company's properties leased to American Smelting and Refining Co.

JIM BLAINE SILVER SYNDICATE, LTD.

JUNO MINES CORP.

JUPITER MINING CO.

KELLOGG SILVER-LEAD MINES CO.

KENNAN MINING CO.
KEYSTONE MINING CO.

KING OF PINE CREEK MINING CO.

KING'S PASS GOLD COMPANY, INC.

LACLEDE MINING CO., LTD.

LANSING SILVER-LEAD MINING CO.

LEAD BLOSSOM MINING & MILLING CO.

LEREOY GOLD & COPPER CO., LTD.

LEWIS & CLARK MINING CO.

LEXINGTON MINING CO.
LIBERAL KING MINING CO.

LINCOLN MINING CO.
Office: Wallace. Officers: Theodore Wellman, Pres., Wallace; Earl Elstone, Sec., Cataldo. Inc.: July 9, 1923. Capital: 1,500,000 shares; par value 10c; May 7, 1928, increased to 2,000,000 shares common; par value 10c; 80,000 shares preferred; par value $10; 1,512,630 shares common, 1,263 shares preferred issued. Property: Silverado group; 38 unpatented claims, Evolution dist.; Osburn. Development: Principally by 1 tunnel, 7800 ft. long and an inclined shaft 570 ft. long, giving a vertical depth of 550 ft. with 4 intermediate levels. Plant: MINE: 500 cu. ft. electrically driven compressor; complete mining equipment. MILL: 50-ton concentrator, including flotation. Ore: Lead-silver. Remarks: 250 ft. of development during the year. Property under 99 year lease to Silver Dollar Mining Company.

LINFOR COPPER CO.

LITTLE BUTTE MINING CO.

LITTLE SUNSHINE MINING CO.
Office: 728 Sprague, Spokane, Wash. Officers: John R. Moore, Pres.; Lewiston; R. B. Palmer, Sec., Seattle, Wash. Inc.: Nov. 3, 1906, as Elk Mining Co.; name changed Oct. 5, 1927. Capital: 1,000,000 shares; par value $1; increased on Oct. 5, 1927, to 1,750,000 shares; increased on Oct. 31, 1928, to 2,750,000 shares; shares issued 1,218,705. Property: Owns Elk group; 3 patented claims, Hunter dist.; Mullan; lease and option on Palmer group; 14 unpatented claims, Big Creek, Yreka dist.; Kellogg. Development: On Palmer group: 4500 ft. crosscut, in which is a 300 ft. vertical shaft with two levels. Plant: On both groups, electrically driven compressors and complete mining equipment. Ore: Lead-silver. Remarks: Annual assessment work.

LOG CABIN MINING & MILLING CO., LTD.

LOMBARDY MINING & MILLING CO.

LON CHANEY MINING & MILLING CO.
LONG WAIT MINING CO.

LUCKY BOY MINES CORPORATION

LUCKY BOY MINING & CONCENTRATING CO., LTD.

MAINE-STANDARD MINING CO., LTD.

MAJESTIC MINING CO., LTD.

MARSH MINES CONSOLIDATED

McGREGOR MINING CO.

MERGER MINES CORPORATION
Office: Wallace. Officers: Walter H. Hanson, Pres.; R. C. Russell, Sec., both of Wallace. Inc.: Filed in Idaho, March 3, 1931. Capital: 3,000,000 shares; par value $1; 2,550,000 shares assessable common stock, 350,000 shares non-assessable common stock, 100,000 shares preferred, all par value $1; all non-assessable common shares issued; 1,590,724 assessable common, and 21,997 preferred shares issued. Property: Bear Top group; 11 patented
claims, Summit dist.; Murray; Aetna group; 2 patented, 22 unpatented claims, Evolution dist.; Osburn. The company reported: “This company holds possessory title to the Aetna group of lode claims and owns the controlling interest in the Bear Top group.” Development: Bear Top group: Principally by 3 tunnels: No. 1, 100 ft. long; No. 2, 625 ft. long; No. 3, 2600 ft. long. Aetna group: By 9 tunnels, the longest being No. 9, 750 ft. long. Plant: Bear Top group; MINE: Small gas-driven compressor; complete mine camp. MILL: 100-ton concentrator; jigs and tables. Constructed about 1900. Remarks: Report not filed for 1935.

MERRY WIDOW MINING CO.

METROPOLITAN MINES CORPORATION, LTD.
Office: Wallace. Officers: R. L. Brainard, Pres., Wardner; Roy H. Kingsbury, Sec., Wallace. Inc.: Nov. 21, 1929. Capital: 1,000,000 non-assessable common shares, par value 10c; Oct. 24, 1935, increased non-assessable stock to 1,250,000 shares; 2,000,000 assessable common shares, par value 10c; 1,000,000 non-assessable shares and 1,591,682 assessable issued. Property: Sterling Silver group; 1 patented, 37 unpatented claims, Big Creek, Evolution dist.; Kellogg. Development: Principally by 1 tunnel 4369 ft. long. Plant: 12x12 G-D electrically driven compressor; complete mining equipment and camp. Ore: Lead-silver. Remarks: Report not filed for 1935.

MILITARY MINING & MILLING CO., LTD.

MINERAL FARM MINING CO., LTD.

MINERAL MOUNTAIN MINING & MILLING CO.

MINERAL POINT MINING CO.

MISSOULA COPPER MINING CO.

MOE MINING CO., LTD.
MOHAWK MINING CO.

MONARCH METALS CO.

MOONLIGHT MINING CO.

MOUNTAIN CON MINING CO., INC.

MOUNTAIN QUEEN MINING CO.

MULLAN MINING CO.

MURRAY HILL MINING CO.

MUTUAL MINES DEVELOPMENT CO.
SHOSHONE COUNTY

NABOB SILVER LEAD CO.

NATIONAL COPPER MINING CO.

NEVADA STEWART MINING CO.

NEW HOPE MINING CO., LTD.

NEW JERSEY CONSOLIDATED MINES CO.

KING OF PINE CREEK GROUP
Property: King of Pine Creek group; 6 patented, 3 unpatented claims and 160 acres patented land, held under lease and option from King of Pine Creek Mining Co., Yreka dist.; Kellogg. Development: By 2 tunnels: No. 1, 380 ft. long; No. 2, 350 ft. long, and a vertical shaft 300 ft. deep. Plant: Hoist and 2 I-R compressors, all electrically driven; complete mining equipment. Ore: Lead-zinc-silver. Remarks: Annual labor on unpatented claims.

NEW JERSEY GROUP
Property: New Jersey group; 6 patented claims, held under lease and option from Dubois Mining Co., Big Creek, Yreka dist.; Kellogg. Development: Principally by 1 tunnel 1500 ft. long. Remarks: Idle.

NEW ROAD MINING CO.

NIAGARA PLACER MINING CO.

NINE MILE MINING CO.
NONPAREIL COPPER MINING CO.

NORTH AMERICAN MINING & MILLING CO., LTD.

NORTH BUNKER HILL MINING CO., LTD.

NORTH IDAHO MINING CO.

NORTH STAR MINING CO.

NORTH STAR MINING & DEVELOPMENT CO.

NORTHERN LIGHT MINING & MILLING CO.

NORTHWEST MINING & MILLING CO.

OASIS MINING CO.

OLD GOLD MINES CORPORATION
OOM PAUL CONSOLIDATED MINING CO.

PACIFIC MINING & MILLING CO.

PARADISE MINES ASSOCIATION

PARAMOUNT MINES CORPORATION

PARK COPPER & GOLD MINING CO., LTD.

PATUXENT MINING CO.

PEARSON MINING CO.

PINE CREEK LEAD-ZINC MINING CO.

PIONEER GOLD MINING & DEVELOPMENT CO.
PIioneer MINING CO., LTD.

Plainview MINING CO., INC.

Polaris DEVELOPMENT & MINING CO.
Office: Wallace. Officers: James F. McCarthy, Pres-Mgr.; Bert P. Woolridge, Sec., both of Wallace. Inc.: Dec. 10, 1915. Capital: 1,000,000 shares; par value 5c; increased Nov. 22, 1917, to 1,500,000 shares; par value 5c; increased May 4, 1925, to 1,500,000 shares; par value $1; increased July 28, 1930, to 2,000,000 shares; par value $1; decreased Aug. 30, '1930, to 2,000,000 shares; par value 25c; 1,666,500 shares issued. Property: Polaris group; 3 patented claims, Big Creek, Yreka dist.; Kellogg. Development: Approximate total development, 3893 ft. Plant: Electrically driven compressor and complete mining equipment. Ore: Lead-silver. Men Employed: Average 16. Remarks: 1363 ft. of development during the year.

Pontiac MINING CO.
PRITCHARD MINING & LEASING CO.

PROGRESS GOLD MINING CO.

PURITAN MINING CO., LTD.

RAINBOW MINING & MILLING CO., LTD.
(See Benewah and Kootenai counties.)

RAMONA MINING CO.

E DISTRICT FROM POLARIS PEAK
UNTAIN SILVER DOLLAR MERGER RAINBOW
CHESTER SILVER SUMMIT COEUR d'ALENE MINES ARGENTINE
D'ALENE RIVER NELLIE PLAIN VIEW IDAHO-MONTANA
CRESSBUD GULCH RAINBOW STANDARD CALLAHAN

COEUR D'ALENES, SHOSHONE COUNTY
Studies, Wallace, Idaho.)
RAVEN MINING CO., LTD.

RAY JEFFERSON MINING CO.

RED CLOUD MINING CO.

REINDEER-QUEEN MINING CO.

RHODE ISLAND MINING CO., LTD.

ROANOKE MINING CO., LTD.

ROB ROY MINING CO.

RUTH CONSOLIDATED MINING & MILLING CO.

ST. ELMO SILVER MINES CORPORATION
ST. JOE LEAD & SILVER MINES CO.

SAINT LOUIS & IDAHO MINING & MILLING CO.

SAMSON MINING & DEVELOPMENT CO., LTD.

SAN FRANCISCO MINING CO., LTD.

SAVAGE MINING CO.

SHADOW PEAK MINING CO.

SHERMAN LEAD CO.
Office: Wallace. Officers: Jerome J. Day, Pres.; S. F. Heitfeld, Sec., both of Wallace. Inc.: Nov. 4, 1918. Capital: 3,500,000 shares; par value 25c; Aug. 27, 1928, increased to 3,675,000 shares, par value 25c; all shares issued. Property: Sherman and Oreana groups; 9 patented claims, Lelande dist.; Burke. Development: Total development, more than 31,000 ft., consisting principally of Sherman No. 5 tunnel, 5943 ft. long; Sherman No. 6 tunnel, 2000 ft. long; Oreana No. 2 tunnel, 7400 ft. long; and two 1070 ft. inclined raises connecting Sherman No. 6 tunnel and Oreana No. 2 tunnel, in which are 8 intermediate levels. Plant: 2 electrically driven hoists, trolley locomotive haulage, and all mining equipment furnished by Hercules Mining Co. Ore: Lead-silver. Remarks: Idle.

SHRINE MINING CO.
SIDNEY LEASING CO.

SIDNEY MINING CO.

SIERRA NEVADA CONSOLIDATED MINING CO.
Office: Kellogg. Officers: Stanly A. Easton, Pres.-Mgr.; C. W. Simmons, Sec., both of Kellogg. Inc.: May 21, 1887. Capital: 1,000,000 shares; par value $1; all shares issued. Property: Sierra Nevada group; 5 patented claims, Yreka dist.; Kellogg. Development: Principally by 4 tunnels: No. 1, 4550 ft. long; No. 2, 275 ft. long; No. 3, 700 ft. long; No. 4, 625 ft. long; total development, approximately 10,000 ft. Ore: Lead-silver. Remarks: Idle.

SILVER CLIFF GOLD & COPPER MINING CO., LTD.

SILVER CRESCENT MINING CO.

SILVER DALE & BIG HILL MINING CO.

SILVER DOLLAR MINING CO.

SILVER LODE MINING & MILLING CO.
SILVER MOON MINING CO., LTD.

SILVER REEF MINES, INC.

SILVER STRIKE MINING COMPANY

Underground haulage, Silver Dollar Mine, Coeur d'Alene District, Shoshone County. (Courtesy Best & Bradshaw Studios, Wallace, Idaho.)
SILVER STAR-QUEENS MINES, INC.

SILVER SUMMIT MINING CO.

SILVER SYNDICATE, INC.

SISTER MINING & MILLING CO., LTD.

SMUGGLER CONSOLIDATED MINING CO.

SNOWSHOE MINING CO.
Office: Wallace. Officers: Walter H. Hanson, Pres.; Herman Marquardt, Sec., both of Wallace. Inc.: Sept. 30, 1903. Capital: 2,000,000 shares; par value $1; 260,000 shares issued. Property: Snowshoe; 8 patented claims, Hunter dist.; Mullan. Development: Approximately 4000 ft. of workings, the principal of which are No. 2 tunnel, 3000 ft. long, and No. 1 tunnel, 900 ft. long. Plant: Electrically driven 3-drill compressor. Ore: Copper-silver. Remarks: Idle.

SONORA MINING & MILLING CO.

SPOKANE TUNNEL MINING CO.
SQUARE DEAL MINING & MILLING CO., LTD.

STANDARD GROUP

STANLEY MINING CO.

STERLING MINING CO., LTD.

STRATTON SILVER SUMMIT, INC.
See Silver Dollar Mining Co.

STRATTONS' MINES CONSOLIDATED, INC.
See Hayden Hill Cons. Mining Co.

SUCCESS MINING CO., LTD.

SULLIVAN MINING CO.
SUNRISE MINES CO.  

SUNSHINE CONSOLIDATED, INC.  

SUNSHINE MINING CO.  
Office: Kellogg.  Officers: R. M. Hardy, Pres.; R. B. Kenyon, Sec., both of Yakima, Wash.; Frank Eichelberger, Mgr., Kellogg.  Inc.: Jan. 3, 1921.  Capital: 1,500,000 shares; par value 10c; 1,488,822 shares issued.  Property: Yankee group; 15 patented claims and 1 unpatented claim, Big Creek, Yreka dist.; Kellogg.  Development: By 5 tunnels, the principal of which is 2000 ft., and an inclined shaft 2356 ft. in depth; approximate total development, 27,200 ft.  Plant: MINE: 2 I-R compressors, 1 Worthington compressor, 2 hoists, all electrically driven; complete mining equipment, buildings and camp.  MILL: 500-ton concentrator, including fine grinding and flotation.  Ore: Silver.  Men Employed: Average, 375.  Remarks: The average daily wage for the year, including supervision, was $6.00 per day. Payroll average for the year 375 men. New construction during the year: Hoist House, Compressor House, Warehouse, Dry House, Oil House, Machine Shop and Blacksmith Shop. Several other buildings were enlarged and improved. A four-compartment vertical shaft was started late in the fall and by the end of the year a depth of 315 ft. had been attained. Over 2000 ft. of development during the year. A concrete and steel supply tunnel from the highway to the shaft was also driven. Dividends declared during the year: March, 20c; June, 30c; Sept., 40c and Dec., 50c, making a total of $1.40 per share. Total dividends paid to date, $4,518,-445.00. In 1936 the construction work will be carried on enlarging the mill, ore bins and building a powder magazine.

SUNSHINE MINING CO., LTD.  

SYNDICATE MINING & EXPLORATION CO., LTD.  
SURFACE PLANT: SUNSHINE MINING COMPANY
(Courtesy Rinker's Studio, Kellogg, Idaho.)
TAMARACK & CUSTER CONSOLIDATED MINING CO.
Office: Wallace. Officers: Jerome J. Day, Pres.; Henry Lawrence Day, Sec., both of Wallace. Inc.: Aug. 6, 1912. Capital: 5,000,000 shares; par value $1; all shares issued. Property: Tamarrack & Custer; 60 patented, 2 unpatented claims, Lelande and Placer Center dists.; Gem. Development: The three principal tunnels are: No. 5, 12,300 ft.; No. 6 (400 ft. level), 8900 ft. long; and No. 7 (1200 ft. level), 11,300 ft. long. The principal shaft is a 3-compartment, vertical shaft, 600 ft. deep; a 3-compartment raise 800 ft. long connecting No. 6 and No. 7 tunnels; and a 150 ft. vertical winze (1350 ft. level) from No. 7 tunnel. Total development, approximately 14 miles. Plant: MINE: 100 h. p. electrically driven hoist; three 1300 cu. ft. electrically driven compressors; storage-battery haulage on intermediate levels and trolley-locomotive haulage on main levels; complete mining equipment; modern and complete machine shop; modern hotel, change house, and camp. Ore: Lead-zinc-silver. Remarks: Maintenance only.

TEDDY MINING & MILLING CO., LTD.
Office: Kellogg. Officers: T. R. Mason, Pres.; M. E. Morgan, Sec., both of Kellogg. Inc.: Jan. 8, 1904, as Iron King Mining Co., Ltd.; name changed July 19, 1935. Capital: 1,000,000 shares; par value $1; increased on Apr. 26, 1930, to 1,500,000 shares; 767,393 shares issued. Property: Teddy group; 9 unpatented claims, Yreka dist.; Kellogg. Development: More than 2500 ft. of tunnels, the principal one of which is approximately 1500 ft. long. Ore: Lead-zinc-silver. Remarks: Expect to install a hoist and sink a shaft.

THOMAS MINES, INC.

TIBERIUS MINING CO.

TRADE DOLLAR MINING CO., LTD.

TREASURE VAULT MINING CO., LTD.

TUCKER MINING & MILLING CO.

TUSCUMBIA MINING CO., LTD.

UNITED AMERICAN MINES CO., LTD.
UNITED METALS CO.

UNITED MINES & METALS CORPORATION

UNITED STATES SILVER LEAD MINES CO.

VENDETTA CHIEF MINING CO.

VICTOR MINING CO.

VIENNA-INTERNATIONAL MINING & MILLING CO., LTD.

VINDICATOR MINING CO.

WALLACE IDAHO LEAD MINES, INC.

WALLACE MINING COMPANY
WALLACE SILVER-LEAD MINES COMPANY

WALL STREET MINING CO.

WASHINGTON-IDAHO MINING CO.

WASHINGTON MINING CO.

MODERN ELECTRIC HAULAGE WITH BATTERY MOTOR
(Courtesy Rinker's Studio, Kellogg, Idaho.)
WEST BELL MINING CO., LTD.

WEST GEM MINING CO.

WEST HECLA MINING CO.

WEST MAMMOTH MINING CO.

WESTERN PACIFIC MINING CO.

WESTERN UNION MINING CO.

WILLOW CREEK MINING CO.

WISCONSIN MINING CO.
WOLVERINE MINING CO., LTD.
Office: 304 Lindelle Bldg., Spokane, Wash. Officers: C. C. Harrington, Pres.; Harold M. Gleeson, both of Spokane, Wash. Inc.: Aug. 4, 1909. Capital: 1,250,000 shares; par value $1; increased on July 11, 1928, to 2,000,000 shares; 1,702,176 shares issued. Property: Wolverine group; 7 unpatented claims, Big Creek, Yreka dist.; Kellogg. Development: By 3 tunnels, the longest being 400 ft. long; and an inclined shaft 400 ft. long. Plant: Hoist, 1 Sullivan and 1 I-R compressor, all electrically driven; complete mining equipment. Ore: Lead-silver. Remarks: Annual assessment work only.

WONDERFUL MINING CO., LTD.

WYOMING MINING & MILLING CO., LTD.

YAKIMA-SHOSHONE MINING CO.
Office: Miller Bldg., Yakima, Wash. Officers: E. A. Bannister, Pres.; Sidney Livesey, Sec., both of Yakima, Wash. Inc.: Oct. 11, 1928. Capital: 1,500,000 shares; par value 10c; increased on Apr. 2, 1930, to 2,000,000 shares; 1,060,000 shares issued. Property: Owns % interest in the Nellie group of 2 patented claims; title to 10 unpatented claims, Evolution dist.; Osburn. Development: Principally by 1 tunnel 1000 ft. long; approximate total development, 3200 ft. Plant: 1 electric hoist; compressor; 3 dump cars, etc.; compressor house and bunk house. Ore: Lead-silver. Remarks: 520 ft. of development work during the year.

<table>
<thead>
<tr>
<th>NAME OF MINE</th>
<th>MINING DIST.</th>
<th>OWNER</th>
<th>P. O. ADDRESS</th>
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<td>American Placer</td>
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<td>Joseph Laveligne</td>
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<td>Anchor et al.</td>
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<td>Mike Melley</td>
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The Hecla flotation plant, by W. L. Zeigler: Mining and Metallurgy, vol. 8, August, 1927.§


TETON COUNTY

County Seat: Driggs. Area: 463 sq. miles. Population: 3,573. Principal Industries: Agriculture, livestock and mining. Transportation: Ashton-Victor branch of Oregon Short Line. Teton State highway and an excellent system of county roads. Mineral Resources: Coal, phosphate rock, natural gas, limestone and asbestos. There are excellent possibilities for the discovery of petroleum. This is one of the few counties in the State that has beds of commercial coal.

Review of Year's Operations

It is reported that an oil well is being put down on 80 acres of land adjoining the Horseshoe Dome Syndicate property by the Grand Teton Oil Co.
The Idaho Coal & Coke, Inc., have leased the Teton Mines to H. Anderson of Idaho Falls, Idaho, with the exception of 160 acres leased to R. E. Wilkie.

The Gem State Coal Mining Company, near Driggs, was operated by H. Anderson of Idaho Falls. With a crew of 10 men shipments were made by rail and the mine also catered to truck trade.

**GRAND TETON OIL CO.**
Office: Earl Bldg., Idaho Falls. Officers: Geo. W. Edgington, Pres., Idaho Falls; Leo F. Smith, Sec., Seattle, Wash. Inc.: Aug. 9, 1928. Capital: 250,000 shares; par value $1; April 12, 1930, increased to 1,000,000 shares; 786,000 shares issued. Property: Oil and gas lease on 13,000 acres patented and government land lying 11 miles west of Driggs. Development: Blevins No. 1 well, 3100 ft. deep; Bevan No. 1 well, 1815 ft. deep. Plant: 2 complete well-drilling rigs and equipment. Mineral Sought: Oil and gas. Remarks: Report not filed for 1935.

**HORSESHOE DOME SYNDICATE, INC.**

**IDAHO COAL & COKE, INC.**
Office: 205 Austin Bldg., Idaho Falls. Officers: A. H. Wilkie, Pres.; Fred W. Wilkie, Sec., both of Idaho Falls. Inc.: Sept. 22, 1934. Capital: 250,000 shares; par value 10c; 10,040 shares issued. Property: The company's properties are under lease to H. Anderson of Idaho Falls, with the exception of 160 acres under lease to R. E. Wilkie.

**SUPERIOR COAL MINING CO.**

**BIBLIOGRAPHY**
See pages 109-110 for publisher's address, meaning of reference marks and abbreviations.


The Horseshoe Creek district of the Teton Basin coal field, by E. G. Woodruff: U. S. Geol. Survey Bull. 541, 379-388, 1912.**


TWIN FALLS COUNTY


MINERAL RECOVERIES, INC.


VALLEY COUNTY

County Seat: Cascade. Area: 3,779 sq. miles. Population: 3,488. Principal Industries: Agriculture, stock raising, lumbering and mining. Transportation: State Highway up Payette River, the McCall-Warren-Edwardsburg-Yellow Pine-Landmark-Cascade Loop and Cascade-Bear Valley road, as well as numerous forest service roads and trails. The only railroad is the McCall branch of the Union Pacific. Relief: The county, as a rule, is high and rugged with few level spaces along the many rivers. The Payette Lakes, the largest in southern Idaho, occur at the head of the Payette River, occupying the upper end of the only large valley in the county. Mineral Resources: Gold, lead, silver, zinc, mercury, copper, tungsten, molybdenum and monazite. On account of the very difficult problem of transportation the mineral resources of this county have received scant development. Until recent years, only the placer and free lode gold could be successfully handled.

The building of roads by the forest service has been accompanied by a corresponding development in mining and this county is fast becoming one of the foremost mining districts of the state. It has great possibilities and presents many opportunities to the prospector, operator and investor.

Review of Year's Operations

The Yellow Pine Company at Stibnite operated throughout the year with a crew of more than 50 men. This is the largest operation in Valley county and among the largest gold producers in the state. The ore is antimony and gold. P. R. Bradley, 922 Crocker Bldg., San Francisco, California, is president, and Lloyd C. White, Stibnite, Idaho, is manager.

The Rapid Creek Mining Company, Ltd., did a small amount of development work in extending tunnel and prospecting.

The Profile Yellow Pine Company, Inc., under the management of F. C. Innes, Yellow Pine, Idaho, prospected with a diamond drill and developed the property to some extent.

The Mary Jane Mining Co., Ltd., was idle during the past year.

The Idaho Minerals Company, in the Yellow Pine district, J. J. Oberbillig, president and manager, extended a crosscut tunnel a distance of 910 feet. At the 1400 foot face a mineralized shear zone was cut at a vertical depth of 1030 feet. Samples of this area are said to have run $4.90 to $7.00 in gold and from 40 cents to $9.55 silver. These minerals are associated with antimony. A crew of seven men is employed. This property is in an ideal setting and has the possibility of becoming one of the largest mines south of the Salmon River.

The Hall Interstate, a promising property, was idle during 1935.

The Snowshoe Mine, of the Pierce Metals Development Co., had a 15-ton babbit mill in operation and drove 400 ft. of tunnel. H. T. Maib, Grandview, Washington, is president. Offices are at 814 Main Street, Lewiston, Idaho.

The Copper Cliffs Mining Company drove 76 feet of tunnel under the direction of J. F. Thompson, manager.
The Sunnyside property, in the Thunder Mountain district, was operated by Mr. McRea of Stibnite. It is reported a deal was made for this property late in the fall and development is in progress.

The Lucky Lad extended their tunnel development 250 ft. This property is a proven gold, silver and lead producer. Transportation facilities are poor and a road down Pistol Creek is needed for the development and exploitation of minerals in this region.

**AMALGAMATED RED METALS MINES CO.**

**ANTIMONY GOLD ORES CO.**

**BIG CREEK GOLD MINES, INC.**

**BIG FOUR DEVELOPMENT CO.**

**BIG LEDGE GOLDMINES COMPANY**

**CASCADE VALLEY CORPORATION**

**COPPER CAMP MINING CO.**

**COPPER CLIFFS MINING CO.**
DEADWOOD MINING CO., LTD.

GOLD FORK MINING CO.

HALL INTERSTATE MINING CO.

UNLOADING FUEL AT STIBNITE

HOLCOMB CO., LTD.

IDAHO MINERALS CO.

INDEPENDENCE MINES & POWER CO.
KEYSTONE GOLD MINES, INC.

LOST PILGRIM MINING CO.
Office: Boise. Officers: James H. Hawley, Jr., Pres.; Chas. W. Mack, Sec., both of Boise. Inc.: Nov. 22, 1921. Capital: 600,000 shares; par value $1; 365,144 shares issued. Property: Lost Pilgrim group; 8 patented claims, Deadwood dist.; Knox. Development: By 2 tunnels: No. 1, 400 ft. long; No. 2, 300 ft. long; and 1 vertical shaft 40 ft. deep, at the bottom of which is a 70 ft. drift; also by Independence tunnel; total development, approximately 2500 ft. Ore: Silver-lead-zinc. Remarks: Idle.

LUCKY LAD MINING COMPANY

MARY JANE MINING CO., LTD.

PADDY FLAT PLACER MINING CORP.

PROFILE-TAMARACK MINES CO.

PROFILE YELLOW PINE COMPANY, INC.

RAPID CREEK MINING CO., LTD.
SMITH CREEK HYDRAULIC MINING CO., INC.

SOUTH SALMON PLACER MINING CO.

UNITED MERCURY MINES CO.

VENABLE MINING COMPANY, INC.

WARM SPRINGS LODE MINING CORPORATION

YELLOW PINE CO.
Office: 922 Crocker Bldg., San Francisco, Calif. Officers: P. R. Bradley, Pres.; E. A. Griffen, Sec., both of San Francisco; Lloyd C. White, Mgr., Stibnite. Inc.: Filed in Idaho, May 25, 1928. Capital: 200,000 shares; par value $1; 62,605 shares issued. Property: Meadow Creek mine; 9 patented and 518 unpatented claims, Yellow Pine dist.; Stibnite. Development: By 6 tunnels, the principal one being 7364 ft.; approximate total development to date, 22,839 ft. Plant: MINE: Meadow Creek Camp: 12x10 I-R compressor and Ottumwa hoist, both electrically driven; steel sharpener; oil furnaces; sawmill; complete mining equipment and camp. Monday Camp: One 300 cu. ft. 12x10 I-R compressor; one 620 cu. ft. Imperial type 1-R compressor, Roots positive blower; all electrically driven; steel sharpeners; oil furnaces; storage battery locomotive haulage; complete mining equipment and machine shop; complete and modern mine and camp buildings. MILL: 175-ton fine grinding flotation followed by cyanidation. POWER: South Meadow Creek hydroelectric plant, 75 kw., driven by Pelton water wheel under a 520 ft. head, water delivered through an 11,000 ft. 28 in. redwood pipe and a 1620 ft. 24 in. steel penstock; 5 miles of transmission lines. Ore: Mercury, gold-silver-antimony. Men Employed: Average, 53. Remarks: 2165 ft. of development during the year.

NAME OF MINE MINING DIST. OWNER P. O. ADDRESS
Belzer Unorganized L. E. Belzer La Moine, Calif.
Bismark et al. Yellow Pine Bonzelli & Elliott Yellow Pine
Big Creek Gr. Big Creek R. H. Cowman Yellow Pine
Buckshot Yellow Pine Iona Chandler Yellow Pine
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### NAME OF MINE | MINING DIST. | OWNER | P. O. ADDRESS
---|---|---|---
Napier Ridge et al. | Big Creek | Napier Edwards | Yellow Pine
Ox Gr. | Yellow Pine | Tom Quillian | Yellow Pine
Phoebe Creek | Unorganized | Peter Drake | Cascade
Portland et al. | Big Creek | Andy Kavanaugh | Yellow Pine
Pearl et al. | Big Creek | Trojan Pl. Mng. Co. | Boise
Pathfinder Gr. | Big Creek | Abner & John Brewer | Yellow Pine
Pickaway Lode Gr. | Big Creek | Big Creek Gold Mines Inc. | Boise
Puget Sound et al. | Yellow Pine | Albert C. Behne | Yellow Pine
Rusty Shovel et al. | Unorganized | Geo. Willis | Cascade
Rainbow Gr. | Yellow Pine | Call & Chandler | Yellow Pine
Robin et al. | Deadwood | Deadwood Mng. Co. | Boise
Red Ledge | Deadwood | Wm. Darling | Cascade
Rapid Creek Gr. | Unorganized | Rapid Cr. Mng. Co. | Roseberry
South Side | Big Creek | W. B. Boydstun | McCall
Spring Gulch | Unorganized | T. M. Bartlett | Cabarton
Summit Gulch | Deadwood | Lee Bunch | Boise
Squaw Meadows | Unorganized | T. W. Moss | Payette
Shallum & Jacob | Big Creek | W. E. Cook | McCall
Smith Forks | Unorganized | W. J. Nixon | Boise
Sugar Creek et al. | Yellow Pine | Antimony Gold Ores Co. | Boise
Silver Queen Gr. | Unorganized | Albert & Ed. Davis | Gardena
Sunnyside Gr. | Big Creek | Davis & McRae | McCall
Silver King | Deadwood | H. R. Dewey | Cascade
Seattle Gr. | Unorganized | H. M. Hoyt | Bothell, Wash.
Smith Creek Gr. | Big Creek | Smith Hydraulic Mining Co. | Boise
Snow Shoe Gr. | Unorganized | Erik & Jac. Janson | Yellow Pine
Triplet Gr. | Unorganized | Pemberton & Parks | McCall
United Mercury Gr. | Yellow Pine | Yellow Pine Co. | Boise
Victor Gr. | Yellow Pine | Sam Willson Est. | Dorothy E. Fowler, Adm., Cascade
Valhalla et al. | Yellow Pine | C. J. Fisk | Stibnite
Wolverine et al. | Yellow Pine | Ed Hintz | Stibnite
Warm Springs Gr. | Yellow Pine | Idaho Mineral Co. | Boise

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"Thunder Mountain Mining Districts," by Clyde F. Ross, vol. 28, No. 6, Economic Geol., 1933.

WASHINGTON COUNTY

County Seat: Weiser. Area: 1,479 sq. miles. Population: 7,962. Principal Industries: Agriculture, stockraising and mining. Transportation: North and South Highway, Oregon Trail and well maintained county roads. The railroads serving the county are: The Oregon Short Line main line and Huntington-Robinette branch and the Pacific and Idaho Northern. Rivers: Snake River forms western boundary and Weiser River flows southwesterly through the center of the county. Mineral Resources: Silver, copper, gold, lead, zinc, manganese, diatomaceous earth, pyrites, gypsum, clay, garnets and natural gas. History and Future: Nearly all of the mineral resources occur in the mountain range that lie east of the Snake River. The principal district is known as the Mineral District and at one time had two blast furnaces in operation and was a large producer of silver. The district has been dormant for many years, however, and has almost reverted to its primitive condition. Nearly all of the ores are high-grade silver-copper ores, rather complex, but can be handled by modern flotation methods.
This district is one well worthy the attention of the operator and investor.

MIDVALE OIL & GAS CO.

WEISER GAS & PETROLEUM CO.

NAME OF MINE MINING DIST. OWNER P. O. ADDRESS
Alcorn Gr. Cuddy Mt. J. I. Burden Council
Copper Bell Gr. Washington J. R. Weaver Home, Ore.
Copper King Ext. Heath H. H. Mack Baker, Ore.
Cuddy Mt. Gr. Cuddy Mt. W. E. Freehafer Council
Edna May Heath Roy Howland Baker, Ore.
Enterprise Gr. Washington Shane & McCorkle
NAME OF MINE | MINING DIST. | OWNER | P. O. ADDRESS
--- | --- | --- | ---
Fernwood | Heath | Wm. Ulrich | Huntington, Ore.
Iron Mt. Gr. | Washington | John Seigwein | Weiser
Jonsail | Heath | E. C. Jones | Huntington, Ore.
Keystone | Cuddy Mt. | G. T. Hamill | Fruitvale
Last Chance Gr. | Cuddy Mt. | Frank Peck | Council
L. T. Claim | Cuddy Mt. | L. J. Thibault | Council
Magdalene Gr. | Washington | J. R. Weaver | Home, Ore.
No Business | Cuddy Mt. | Howland & Levander | Fruitvale
Canon | Mineral | F. J. Kennedy | Council
Pin Money Gr. | Cuddy Mt. | J. T. Morris | Council
Porcupine Gr. | Cuddy Mt. | Raul Raymond, Sr. | Heath
Raymond | Heath | Rinehart & Bloomfield | Council
Rinehart Gr. | Cuddy Mt. | Earl Kerr | Council
River Bank Gr. | Cuddy Mt. | Summencamp & Riley | Payette
S. & R. Gr. | Cuddy Mt. | H. A. Arnold | Council
Sunshine Idaho Gr. | Cuddy Mt. | J. H. Schlehuber | Cambridge
View of the Valley | Heath | | |

**BIBLIOGRAPHY**

See pages 109-110 for publisher's address, meaning of reference marks and abbreviations.


### IDAHO COMPANIES NOT OWNING PROPERTY IN IDAHO

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<tr>
<th>NAME</th>
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<td>Afterthough Mines Corp.</td>
<td>J. O. Elton, Pres.</td>
<td>818 Kearns Bldg., Salt Lake City, Utah</td>
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<td>Belmont Copper Corp.</td>
<td>Peter C. Warwick, Jr.</td>
<td>907 W. Grace St., Richmond, Va.</td>
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<td>H. J. Hull, Pres.</td>
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<td>C. K. Flack</td>
<td>108 W. 2nd St., Los Angeles, Calif.</td>
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<td>Ray D. Agee, Atty</td>
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<td>1130 First Nat'l Bank Bldg., Denver, Colo.</td>
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<td>Tri-State Development Co., Inc.</td>
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### COMPANIES INCORPORATED DURING 1934 REPORTS NOT YET FILED

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<td>Lee Herman</td>
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</tr>
<tr>
<td>Name</td>
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<td>811 W. Seventh St., Los Angeles, Calif.</td>
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<td>P. J. Starkman</td>
<td>70 Pine St., N. Y.</td>
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The output of gold, silver, copper, lead, and zinc from Idaho ores and gravels in 1934, in terms of recovered and estimated recoverable metals, was 83,600 fine ounces of gold, 7,410,000 fine ounces of silver, 1,530,000 pounds of copper, 142,000,000 pounds of lead, and 50,000,000 pounds of zinc. These figures compare with a production in 1933 of 64,592.23 ounces of gold, 6,987,960 ounces of silver, 1,562,234 pounds of copper, 148,726,701 pounds of lead, and 41,935,977 pounds of zinc.

The chief factors that affected production in 1934 were: The large increase in production of gold from lode and placer mines, particularly from the Boise-Rochester lode mine at Atlanta in Elmore County and from lode and placer mines in the Boise Basin district in Boise County; the large production of gold from the two dredges at Warren in Idaho County; the large increase in production of silver from the Sunshine mine (the largest producing silver mine in the United States) near Kellogg; the increased production of silver, lead, and zinc from nearly all the mines in the Coeur d'Alene region; the substantial decrease in output of lead ore from the Bunker Hill & Sullivan property; and the large production of silver-lead ore from the Clayton (Camp Bird) mine, an important producer in Custer County in 1934.

GOLD—The mine output of gold in Idaho in 1934 was about 83,600 ounces, an increase of 29 percent over 1933. The total value of the output was $2,921,820 in 1934, at $34.95 per fine ounce, compared with $1,650,977 in 1933, at $25.56 per ounce. Of the increase of more than 19,000 ounces in gold output, most came from lode mines; the output from placers (about 26,300 ounces) increased 13 percent, due chiefly to the large increase in output of gold from property operated by McFarland & Witham near Placerville, Boise County. More than half the placer yield was produced by the two dredges at Warren, Idaho County; the output of these dredges, however, was nearly 10 percent less than in 1933, as production by the Idaho Gold Dredging Co. decreased about 2,000 ounces, whereas that by the Warren Creek Dredging Co. increased slightly. The Boise-Rochester lode property of the St. Joseph Lead Co. in Elmore County, by far the largest gold producer in Idaho in 1934, increased its output more than 11,000 ounces over 1933. Substantial increases in lode-mine gold were also made at the Talache at Quartzburg, the Come Back at Pioneerville, the Four Square at Murray, the Golden Chariot at Silver City, and the Grunter group at Shoup; a decrease of about 1,700 ounces was reported at the Gnome property near Elk City. The Yellow Pine Co. at Stibnite, Valley County, produced about the same quantity of gold in 1934 as in 1933 and retained its position as the second largest gold producer in the state. The Idaho Gold Dredging Co. ranked third and the Warren Creek Dredging Co. fourth. Other large producers of gold were the McFarland & Witham placers in Boise County and the Gnome, Lone Pine, Come Back, and Talache lode mines.

SILVER—Idaho was again the largest producer of silver in the United States, followed again by Utah. The output of silver in Idaho in 1934 was about 7,410,000 ounces compared with 6,987,960 ounces in 1933; the total value increased from $2,445,786 in 1933 to $4,790,303 in 1934, due chiefly to the increase in average price from 35 to 64.6 plus cents an ounce. There was a decrease of about 450,000 ounces in silver from the Bunker Hill & Sullivan mine at Kellogg, but substantial increases were made at all other large producers of silver in the state. The Sunshine Mining Co. east of Kellogg increased its silver output more than 300,000 ounces, and was again the largest silver producer in the United States. In fact, nearly half the total silver produced in Idaho in 1934 came from the Sunshine property. Other large producers of silver were the Hecla, Bunker Hill & Sullivan, Morning, Crescent, Boise-Rochester (Elmore County), Page, Golconda, and Gold Hunter mines. Mines in the Coeur d'Alene region produced about 7,050,000 ounces of silver in 1934, 95 percent of the State total, compared with 6,762,587 ounces in 1933.
# Mine Production of Gold, Silver, Copper, Lead, and Zinc in Idaho, 1930-34, in Terms of Recovered Metals

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<th>Year</th>
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<th>Silver</th>
<th>Copper</th>
<th>Lead</th>
<th>Zinc</th>
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<tr>
<td></td>
<td>Short Tons</td>
<td>Fine Ounces</td>
<td>Fine Ounces</td>
<td>Pounds</td>
<td>Pounds</td>
<td>Pounds</td>
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<td>Value</td>
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<tr>
<td>1930</td>
<td>1,944,900</td>
<td>21,445.07</td>
<td>9,420,639</td>
<td>3,111,555</td>
<td>268,115,963</td>
<td>75,298,172</td>
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<td>1931</td>
<td>1,299,927</td>
<td>18,361.36</td>
<td>7,220,923</td>
<td>1,144,915</td>
<td>198,729,228</td>
<td>39,137,212</td>
<td>$11,418,013</td>
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<td>1932</td>
<td>1,032,853</td>
<td>46,885.39</td>
<td>6,716,968</td>
<td>1,143,381</td>
<td>144,235,067</td>
<td>20,504,234</td>
<td>$7,877,604</td>
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<tr>
<td>1933</td>
<td>1,190,851</td>
<td>64,592.23</td>
<td>6,987,960</td>
<td>1,562,234</td>
<td>148,726,701</td>
<td>41,935,977</td>
<td>$11,460,945*</td>
<td></td>
</tr>
<tr>
<td>1934**</td>
<td>1,300,000</td>
<td>83,600.00</td>
<td>7,410,000</td>
<td>1,530,000</td>
<td>142,000,000</td>
<td>50,000,000</td>
<td>$15,238,523</td>
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* Change in value from chapter on Idaho in the Statistical Appendix to Minerals Yearbook, 1934, due to valuation of gold for 1933 at average weighted price ($25.56 per ounce) instead of at legal coinage value ($20.67 plus per ounce).

** Subject to revision.
COPPER—The output of copper in Idaho decreased slightly, from 1,562,234 pounds valued at $99,983 in 1933 to about 1,530,000 pounds valued at $122,400 in 1934. Nearly all the copper produced in Idaho comes from copper-lead, lead, and lead-zinc ores, and most of it comes from mines in Shoshone County. The Sunshine mine was again the largest producer of copper in the State, followed again by the Bunker Hill & Sullivan, Hecla, Morning, and Crescent mines.

LEAD—Idaho maintained its position as the second largest producer of lead in the United States, although its output decreased from 148,726,701 pounds valued at $5,502,888 in 1933 to about 142,000,000 pounds valued at $5,254,000 in 1934. The decline in quantity was due almost entirely to a decrease of nearly 21,000,000 pounds in output from the property of the Bunker Hill & Sullivan Mining & Concentrating Co. at Kellogg; much smaller decreases were recorded at the Star, Frisco, Crescent, and Hope (Bonner County) mines, but these losses were offset in part by increases at the Hecla, Page, Golconda, Gold Hunter, Morning, Camp Bird (Custer County), and Blackhawk mines. The Bunker Hill & Sullivan mine was again the largest producer of lead in Idaho, followed by the Hecla, Morning, Page, Golconda, Gold Hunter, Blackhawk, and Frisco mines, all in the Coeur d'Alene region. The Comp Bird mine in Custer County, an important producer in 1934, ranked ninth in lead output.

ZINC—The output of zinc in Idaho was about 50,000,000 pounds valued at $2,150,000 in 1934 compared with 41,985,977 pounds valued at $1,761,311 in 1933. Substantial increases in zinc output were reported at the Bunker Hill & Sullivan, Morning, and Golconda mines and smaller gains at the Page, Hecla, Blackhawk, and Frisco mines. The Star mine of the Sullivan Mining Co., a large producer of zinc in past years, was idle in 1934. The Morning mine of the Federal Mining & Smelting Co. was again the largest producer of zinc in Idaho, followed by the Bunker Hill & Sullivan, Golconda, Frisco, Page, Hecla and Blackhawk mines, all in the Coeur d'Alene region.

ORE OUTPUT—About 1,300,000 tons of ore, old tailings, etc., were produced in Idaho in 1934 compared with 1,190,851 tons in 1933. Lead ore is by far the chief product of mines in Idaho, but the output decreased 3 percent in 1934 compared with 1933. The large increase in output of lead-zinc ore and siliceous gold ore more than offset the decrease in output of lead ore. Nearly half the total ore, old tailings, etc., produced in Idaho in 1934 was lead ore; 28 percent was lead-zinc ore; 15 percent was siliceous gold ore; and nearly all the remainder was copper-lead ore. About 84 percent of the total ore came from mines in the Coeur d'Alene region, Shoshone County, and nearly 10 percent was gold ore from the Boise-Rochester mine in Elmore County and the Yellow Pine mine in Valley County.

COEUR D'ALENE REGION—The Coeur d'Alene region in Shoshone County is the chief producing area in Idaho. In 1934 mines in this region yielded 95 percent of the State output of silver, 99 percent of the lead, all the zinc, and nearly all the copper. The region produces very little gold but in 1934 yielded more than usual, especially at lode and placer mines near Murray. The total output of the Coeur d'Alene region in 1934 was about 1,990,000 tons of ore yielding, in terms of recovered metals, about 2,800 ounces of gold, 7,050,000 ounces of silver, 1,475,000 pounds of copper, 140,300,000 pounds of lead, and 50,000,000 pounds of zinc compared with an output in 1933 of 1,052,889 tons of ore, etc., yielding 1,584.33 ounces of gold, 6,762,537 ounces of silver, 1,544,343 pounds of copper, 147,851,459 pounds of lead, and 41,916,167 pounds of zinc.

NOTE: This chapter taken from the Minerals Yearbook 1935, United States Department of the Interior, Bureau of Mines.
The value of the gold, silver, copper, lead, and zinc produced from mines in Idaho in 1935, according to estimates by C. N. Gerry and Paul Luff, of the United States Bureau of Mines, Department of the Interior, was $19,453,700 compared with $15,277,669 in 1934, an increase of $4,176,031. Substantial gains were recorded in the output of silver, copper, lead, and zinc, but there was a slight decrease in the gold output.

The chief factors that affected production of gold, silver, copper, lead, and zinc in Idaho in 1935 were the large decrease in the output of gold from the Middle Boise district, Elmore County, the unusual increase in the output of silver from the Yankee Boy mine of the Sunshine Mining Co., the decided increase in the output of lead-zinc ore from the Morning and Page mines of the Federal Mining & Smelting Co., and the large gain in the production of zinc from the property of the Bunker Hill & Sullivan Mining & Concentrating Co.

The output of gold decreased from 84,817.20 ounces in 1934 to about 83,800 ounces in 1935. Calculated at the rate of $35 per fine ounce, the value of the 1935 production was $2,933,000. All the decrease in the gold output came from lode mines, as the output from placers, especially from dredging operations, increased slightly. The largest decrease in the output of gold was reported by the St. Joseph Lead Co., operating the Boise-Rochester property at Atlanta, and the output of the Yellow Pine Co. at Stibnite also declined. The largest increase in the output of gold came from the Gold Hill (Talache) mine at Quartzburg, operated by the Harris Mining Corporation. There were 8 floating dredges working in Idaho in 1935 compared with 5 in 1934. New floating dredges were constructed at the Wharton property near Centerville, by the Grimes Co. near Idaho City, and by the Jordan Creek Placers near Silver City. The Idaho Gold Dredging Co. (2 dredges) and the Warren Creek Dredging Co. operated their plants near Warren nearly all year, and the dredges of the Gold Dredging, Inc., at Pierce and the Little Smoky Dredging Co. near Fairfield were operated part of the year. The total production of gold recovered by 8 bucket dredges in 1935 was about 23,850 ounces, a decided increase from 15,852 ounces from 5 dredges in 1934; the placer output recovered by other methods was only about 6,000 ounces, a decrease of 5,402 ounces. The production of gold from lode mines in 1935 was about 54,000 ounces compared with 57,560.83 ounces in 1934. A decrease of more than 8,000 ounces of gold from the St. Joseph Lead property was partly offset by increases at the Gold Hill, Golden Anchor, Orogrande-Frisco, and Grunter mines. The largest producers of gold in Idaho in 1935 were the St. Joseph Lead Co. (Boise-Rochester mine) at Atlanta, Yellow Pine Co. near Stibnite, Idaho Gold Dredging Co. and Warren Creek Dredging Co. at Warren, Harris Mining Corporation (Gold Hill mine) at Quartzburg, Wharton Estate property (dredge) near Centerville, Grimes Co. (dredge) near Idaho City, Lone Pine mine at Golden, Gold Dredging, Inc., near Pierce, Gnome Gold Mining Co. near Elk City, Golden Anchor mine at Burgdorf, Come-Back mine near Pioneerville, American Consolidated Mining & Milling Co. (Grunter mine) near Shoup, Jordan Creek Placers (dredge) near Silver City, and Little Smoky Dredging Co. near Fairfield.

Idaho was again the largest producer of silver in the United States, followed by Montana. The output of silver in Idaho in 1935 was about 10,150,000 ounces compared with 7,394,143 ounces in 1934. For the first time in recent years the silver output exceeded the average annual output of the last decade (8,276,122 ounces). The value increased from $4,780,052 in 1934 to $7,490,700 in 1935, due chiefly to the increase in the average sale price of silver from 64.64 cents an ounce in 1934 to 73.8 cents an ounce in 1935. All the large producers of silver in Idaho increased their output in 1935 over 1934, but the increase...
from the Yankee Boy mine of the Sunshine Mining Co. east of Kellogg was especially noteworthy; the company increased its silver output about 2,461,000 ounces and was again the largest silver producer in the United States. Other large producers of silver were the Hecla, Bunker Hill & Sullivan, Morning, Crescent, Page, and Gold Hunter mines, all in the Coeur d'Alene region, Shoshone County. Mines in the Coeur d'Alene region produced about 9,850,000 ounces of silver in 1935 (97 percent of the State total) compared with 7,062,640 ounces in 1934.

The output of copper increased from 1,531,625 pounds, valued at $122,530 in 1934 to about 2,100,000 pounds, valued at $176,400 in 1935. Nearly all the copper produced in Idaho comes from copper-lead, lead-zinc, and lead ores, and most of it comes from mines in Shoshone County. The Sunshine mine produced more than half of the State's output of copper in 1935; it was followed by the Bunker Hill & Sullivan, Morning, Hecla, and Crescent mines.

The output of lead increased from 142,648,216 pounds, valued at $5,277,984, in 1934, to 152,800,000 pounds, valued at $6,112,000, in 1935; the average annual output for the last decade was 221,830,920 pounds. With sufficient demand, the mines in Idaho has produced more than 300,000,000 pounds of lead annually. The largest increase (nearly 13,000,000 pounds) in the output of lead in 1935 was reported from the Morning mine of the Federal Mining & Smelting Co. Substantial increases in lead output were also reported from the Page (Federal Mining & Smelting Co.), Hecla, Star, Sidney, and Frisco mines. The largest decrease in lead (4,000,000 pounds) was recorded from the Golconda mine; the output of lead from the Bunker Hill & Sullivan, Gold Hunter, and Clayton Silver properties also decreased considerably. About 70 percent of the total lead produced in Idaho in 1935 was recovered from lead-zinc ore, and nearly all the remainder was recovered from lead ore. In 1935 the Bunker Hill & Sullivan Mining & Concentrating Co. lost its place as the largest lead producer in Idaho, a position it has held for many years, and the Morning mine of the Federal Mining & Smelting Co. became the largest producer; the Bunker Hill & Sullivan mine ranked second in lead and the Hecla mine was third. These 3 properties, each producing more than 40,000,000 pounds of lead, were followed by the Page, Gold Hunter, Frisco, Blackhawk, Golconda, Star, Sidney, Clayton Silver, and Hope mines. All the output of lead in Idaho in 1935, except about 900,000 pounds was produced from the Coeur d'Alene region.

The output of zinc was 59,600,000 pounds, valued at $2,741,600, in 1935 compared with 49,598,651 pounds, valued at $2,132,742, in 1934. The average annual output of zinc for the last decade was 54,612,274 pounds. Nearly 85 percent of the zinc produced in Idaho in 1935 was recovered from lead-zinc ore from the Morning and Bunker Hill & Sullivan mines; the output of zinc from each property increased more than 5,000,000 pounds. Substantial increases in zinc production were also recorded from the Star, Sidney, and Page mines, but there were decreases in zinc from the Golconda and Frisco mines. The Star and Sidney mines again became producers of lead-zinc ore in November after being inactive for several years. The Morning mine of the Federal Mining & Smelting Co. continued to be the largest producer of zinc in Idaho, followed by the Bunker Hill & Sullivan, Frisco, Page, Star, Golconda, Sidney, and Hecla mines, all in the Coeur d'Alene region.

About 1,420,000 tons of ore, old tailings, etc., were produced in 1935 compared with 1,287,182 tons in 1934. There were substantial increases in the output of copper-lead ore, lead-zinc ore, and gold ore, but a marked decrease in the output of lead ore. Nearly 83 percent of the ore came from mines in the Coeur d'Alene region, and about 14 percent was gold ore from the Boise-Rochester, Yellow Pine, Orogrande-Frisco, and Gold Hill mines. More than half (720,000 tons) of the material from mines in the Coeur d'Alene region was lead-zinc ore, and nearly all the remainder was lead ore and copper-lead ore. A decided decrease was indicated in the number of placer mines in 1935 and a slight increase in lode mine. In 1934 the total mines were 1,463 (1,172 placers and 291 lode mines).

Details of output by districts, grades of ore mined, and processes used in the recovery of metals in the State will appear in the Minerals Yearbook for 1936.
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Quotations cents per oz. troy, 999 fine. Quotations, cents per pound.
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