THIRTY-SECOND
ANNUAL REPORT
OF THE
Mining Industry
of IDAHO
FOR THE YEAR
1930

STEWART CAMPBELL
INSPECTOR OF MINES

ANGELINE F. MAHAN
SECRETARY
LETTER OF TRANSMITTAL

To His Excellency,

THE HONORABLE H. C. BALDRIDGE,
Governor of Idaho.

SIR:

In compliance with the provisions of section 5480, Idaho Compiled Statutes, I have the honor to transmit herewith the annual report of the inspector of mines for the year ended December 31, 1930.

Respectfully submitted,

STEWART CAMPBELL,
Inspector of Mines.
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Anaconda Copper Mining Co.: Inclined Top Slice Stopping Method: 31st, 1929, p. 28*
Artificial Sunshine for Mine Workers: 31st, 1929, p. 14*
Building Stone (Idaho): 26th, 1924, p. 17*
Bunker Hill Hoist: 26th, 1924, p. 32*
Burke Fire: 25th, 1923, p. 14*
Electricity in Coeur d'Alene District: 30th, 1928, p. 31*

Foreword

Annual Reports: 23d, 1921, p. 3
Bunker Hill Solarium: 31st, 1929, p. 13
Delinquent Mining Companies: 25th, 1923, p. 5
Fake Promotions and Dishonorable Promoters: 27th, 1925, p. 5
Idaho Copper Corporation v. Stewart Campbell, Libel: 28th, 1926, p. 5
30th, 1928, p. 7
Idaho Laws Relative to Reports to Inspector of Mines: 24th, 1922, p. 5
Mining Promotions—Investments: 26th, 1924, p. 5
29th, 1927, p. 7
Platinum: 31st, 1929, p. 13
Public Lands: 31st, 1929, p. 7
Forest Reserves, Ownership of Timber on Unpatented Mining Claims in: 30th, 1928, p. 28
Hecla Mining Co., New Hoist: 31st, 1929, p. 19*
Idaho Portland Cement Co.: 31st, 1929, p. 30*
Milling Practice in Idaho
Callahan Zinc-Lead Co., Galena Mill: 28th, 1926, p. 20*
Constitution M. & M. Co., Mill: 27th, 1925, p. 34*
Federal M. & S. Co. Morning Mill: 27th, 1925, p. 32*
Federal M. & S. Co., Page Mill: 28th, 1926, p. 16*
Gold Hunter Mines, Inc., Mill: 27th, 1925, p. 29*
Hecla Mining Co., Mill: 27th, 1925, p. 21*
Hercules Custom Mill: 31st, 1929, p. 23*
Idawa Gold Mining Co., Belshazzar Mill: 29th, 1927, p. 38*
Milling in the Coeur d'Alene: 27th, 1925, p. 16*
Tamarack & Custer Cons. Mining Co. Mill: 27th, 1925, p. 25*
Mine Rescue and First Aid in the Coeur d'Alene: 26th, 1928, p. 22*
30th, 1928, p. 35*
31st, 1929, p. 51
Patent Surveys, Applicable as Annual Labor: 31st, 1929, p. 16
Phosphate: 25th, 1923, p. 25
Platinum, Predatory Assayers: 27th, 1925, p. 6
28th, 1926, p. 7
State Mineral Exhibit: 26th, 1924, p. 11*
Sullivan Electrolytic Zinc Plant: 29th, 1927, p. 33*

*Illustrated.
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. Sc.................................................................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.
Idaho Bureau of Mines and Geology, Moscow, Idaho.
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. Geog. 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†
Pt. pp.................................................................page, pages
Pan-Am. Geologist..........................................................Pan-American Geologist, Des Moines, Iowa
pt................................................................. part
MINING INDUSTRY OF IDAHO

International Mining Congress, Washington, D. C.
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 I. C....U. S. Bureau of Mines Information Circular
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
Washington Acad. Sci. Jour........Washington Academy of Science Journal
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.
†.......Can be purchased from Superintendent of Documents, Government Printing Office, Washington, D. C.
‡.......Publication suspended.
¶.......Address: Washington, D. C.
INTRODUCTION

The report for the year ending December 31, 1930, presents detailed information concerning Idaho mining companies in the form of a directory. It is, in fact, a handbook rather than a formal report. Its plan is not new, but is the one adopted by the inspector when he first took office. His first report, that of 1921, was largely an experiment, but it received such favorable press comment, notably by the Engineering and Mining Journal, the foremost mining magazine of the United States, that the plan has been followed in all subsequent reports.

Idaho is the only state in the Union which is presenting the data relative to its mineral resources and mining industry in this form. The merit and popularity of the report are proved by the continually increasing demand for copies of it, as well as by the efforts which those interested in mining in other states have made toward having their state governments publish a similar report.

Unincorporated companies have been included on the same basis as incorporated companies whenever their officers have furnished data.

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

The list of prospects published in the Twenty-third Annual Report was the first of its kind ever compiled in Idaho. It became a guide to those looking for mines, thus proving that its compilation was worth while. Subsequent lists have been extensively used, and in a number of cases examinations and sales of properties have resulted. The list of prospects contained in this report was corrected and brought down to date in the Thirtieth Annual Report, and few changes have been made since.

Many of the prospects listed are worthy of more prominent mention, but it is impossible to give more than the owner's name and address, name of mine and its general location, unless the owner should file a report with the inspector. The furnishing of detailed information by owners of prospects would not only assist in displaying the mining possibilities of Idaho, but might often prove an attractive advertisement of the property. Blank forms of these reports are always gladly furnished to all individuals requesting them.

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, in 1921 the inspector indexed this material according to counties and subjects and published it in his 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 that county. Publications relating to specific minerals found in the State are listed also under the "General Bibliography" in the back of the report. 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. Practically all of the publications listed are found in the inspector's library, and arrangements have been made so that copies of those not on file can be procured when requested. However, these publications may be consulted in all large libraries.

NEWSPAPERS

As pointed out in previous years, the visits which the inspector makes to the numerous mining counties are necessarily so short that they are inadequate to enable him to keep directly in touch with all mining activities, so that it is always necessary that he supplement his personal information by that gleaned from the press. Most of the publishers located in mining communities have been very willing to furnish gratuitous subscriptions of their newspapers to the office of the inspector. This courtesy is greatly
appreciated, and has been 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 ................................................. Arco
- Idaho County Free Press .................................. Grangeville
- Kellogg-Wardner News .................................... Kellogg
- The Mackay Miner .......................................... Mackay
- Mining Truth ................................................... Spokane
- Mullan News .................................................... Mullan
- Pend d’Oreille Review ..................................... Sandpoint
- Priest River Times ......................................... Priest River
- Recorder Herald ............................................. Salmon
- The Salt Lake Mining Review ............................ Salt Lake City
- The Wallace Miner .......................................... Wallace
- Wallace Press-Times ....................................... Wallace
- The Weiser Signal ............................................ Weiser

MINERAL MARKET INFORMATION

As there has continued to be a demand for possible markets for uncommon minerals and metals, the lists prepared in 1921, which include the names and addresses of the purchasers or users, have been revised and brought up to date as nearly as it was possible to do so, through the courtesy and cooperation of Mr. Frank J. Katz, Chief Engineer, Division of Mineral Statistics, U. S. Bureau of Mines.

- Aluminium
- Antimony
- Arsenic
- Asbestos
- Barytes
- Bauxite
- Bismuth
- Cadmium
- Chromium
- Cobalt
- Diatomaceous Earth
- Feldspar
- Fluorspar
- Fuller’s Earth
- Graphite
- Gypsum
- Magnesium
- Magnesite
- Mica
- Molybdenum
- Monazite
- Nickel
- Platinum
- Pumice
- Radium
- Silica Sand
- Sodium
- Strontium
- Talc
- Tin
- Titanium
- Tripoli
- Tungsten
- Uranium
- Vanadium

The library, which was started by the present mine inspector during 1921, and which now consists of over 4,000 volumes, is believed to be the largest library of its kind in the State. It contains virtually 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.

Except a few articles published in old issues of the various journals, everything of importance dealing with the mining industry of Idaho, including geology, mineralogy and mineral resources, is contained in the library. Whenever requests are made for any of the missing articles, photographic copies are procured from the publishers or from some large research library.

The following magazines are regularly received: Engineering and Mining Journal; Mining Review; Mining Truth; The Mining Congress Journal; Mining and Metallurgy; The Mining Journal; Rock Products; Compressed Air Magazine; The Explosive Engineer; Economic Geology; and Asbestos. Complete files of these magazines are being preserved for reference use. Although most of them have been received only since 1921, the file of the Engineering and Mining Journal is virtually complete for the past 20 years, the present mine inspector having donated to the State his personal files of this journal for the years 1911 to 1920, inclusive.

The library is equipped with the U. S. Geological Survey Finding List of States, Areas and Subjects, which makes it possible to locate quickly and completely all publications of the U. S. Geological Survey concerning the
geology and mineral resources of any state of the United States or concerning any particular mineral.

Visitors are always welcome to consult the books of the library or to read the magazines. The office is open from 9 a.m. to noon and from 1 p.m. to 5 p.m. In the absence of the inspector, the secretary will be glad to assist visitors in finding desired information.

In order to accommodate readers who find it inconvenient to consult books in the library at the inspector's office, the practice of lending books for a period of not over two weeks has been established, and they are mailed out to all responsible persons within the State upon request. A few rare volumes, now out of print, and of which the library contains no duplicates, and books frequently called for at the office, cannot be mailed out. Individuals not personally acquainted with the inspector, when writing in for books, should accompany their requests by letters of introduction or recommendation from some reliable person in their community personally known to the office, or by a letter from the nearest public library.

MINING LAWS

In May, 1929, the inspector caused to be published a new edition of the Idaho mining laws, for which a special appropriation was passed by the 1929 Legislature. This pamphlet contains all amendments and new laws relative to mining passed by that session of the Legislature, thus making the edition entirely up to date. It also contains extracts from the United States mining laws, and from the Idaho corporation and reclamation laws. This pamphlet is for free distribution and will be mailed on request to anyone interested.

PLATINUM

The black, graphitic lime shale beds near Lucile, Idaho County, continued to be used as a basis for exploiting the public. According to the promoters this rock contains gold, platinum and other rare metals which can be recovered only by secret methods known to the promoters. Strange as it may seem, a large amount of stock and "units" were sold on this hypothesis, and the investors were gullible enough to invest without investigating either the stock salesmen, promoters, or their secret methods of recovering the rare metals.

These "mineral" deposits were visited by the inspector in 1929, and the samples taken by him were assayed by the United States Bureau of Mines, which was unsuccessful in detecting even the presence of any rare metals. The results were given to the press, together with a warning to the public. Apparently the warning was of no avail.

Another method for enticing the public into rare metal ventures which was in vogue during the year was the salting of so-called black sands with platinum filings and then having the material assayed by competent and reliable assayers. Invariably sufficient platinum had been added to give a high assay return, and these returns were then used as the lure.

No credence whatsoever should be placed in rare metal assays, in reported high values in these metals which any promoter or questionable assayer may proclaim, or in secret methods for the recovery of rare metals until a thorough investigation of the promoters, assayers, their methods of recovery, and the reliability of the samples has been made. State and Federal Bureaus will gladly assist in such an investigation.
GENERAL REVIEW AND 1930 ACTIVITIES

The year 1930 for lead, silver, and zinc mining was one of curtailment in production, plant construction, new enterprises, and mine development work. Most of the large companies reduced their production, and some of them suspended entirely. The totals of production, number of men employed, and expenditures for construction and mine plant installation were the smallest that the State has witnessed for many years. The Sherman Lead Co. was the only new dividend paying company; however, the dividend paid in 1930 was from 1929 profits, and production was suspended in March. Practically all of the large mines, whether they suspended production or not, maintained an active development campaign throughout the year. This work, with scarcely an exception, greatly increased the known ore reserves. A large number of companies improved their mine and mill plants. With increased ore reserves and surface plants in excellent condition the mining of these metals is in a position to return rapidly to normalcy as soon as prices reach a higher level.

Gold mining received more attention and experienced more activity than during the preceding year. Practically all of the operating companies were continuously active; a large number of new enterprises were started; the number of new discoveries and of disclosures in operating mines exceeded that in many years; and the interest shown by mining companies, promoters, brokers, and prospectors was greater than that of any year during the past 10 years. The inspector's office received more inquiries about gold mines, placer mines, and placer mining possibilities than the total of all years during this period. The major part of expenditures for mine plant installations and mine development was made for gold mining enterprises, particularly in Valley, Idaho, Lemhi, and Boise counties. The impetus gold mining received during the year, the substantiality of the discoveries and disclosures, and the many opportunities that the State offers for the development of gold mines of importance warrant the assertion that this phase of the mining industry is again returning to an important position.

The phosphate resources received more attention and more new enterprises were started to develop them than during any year since their first exploitation. The most important of these new enterprises was that of the Solar Development Co., a subsidiary of the Consolidated Mining & Smelting Co. of Trail, B. C., which started work in Bear Lake County. The Agricultural Potassium-Phosphate Co. of California, Ltd., was another organization which started operations.

That the mining industry of Idaho is on a firm foundation and is in a healthy condition at the close of the year, can best be realized through an outline of the principal events and activities during 1930.

1. Increased ore reserves of producing mines.
2. New ore disclosures of importance.
3. New dividend-paying mines.
4. New reduction plants.
5. Principal activities, new enterprises, and new mine plants.

1. Increased Ore Reserves of Producing Mines:

The principal producing mining companies which increased the ore reserves of their mines by new development work were: Bunker Hill & Sullivan M. & C. Co., Hecla Mining Co., Sherman Lead Co., Federal Mining & Smelting Co. at the Morning mine, Sunshine Mining Co., Jack Waite Mining Co., Sidney Leasing Co. at the Sidney mine, Golconda Lead Mines, Callahan Zinc-Lead Co. at the Galena mine, Constitution Mining & Milling Co., Dayrock Mining Co., all in Shoshone County; Talache Mines, Inc., at the Gold Hill & Iowa mine, in Boise County; F. O. Miller and son at the Lone Pine group, in Idaho County; Bunker Hill & Sullivan M. & C. Co. at the Hall Interstate and Lost Pilgrim mines, in Valley County.
2. New Ore Disclosures of Importance:
   The principal new ore disclosures and new discoveries of importance at non-producing mines and prospects were: Golconda Lead Mines, Mayflower group, and the Douglas Mining Co. on the 300-foot level, both in Shoshone County; Golden Anchor Mining Co., Marshall Lake district, John Larson in the Elk City district, both in Idaho County; Paris Mining & Milling Co. in Bear Lake County.

3. New Dividend-Paying Mines:
   The Sherman Lead Co., in Shoshone County, was the only new dividend-paying company; however, the dividend was from 1929 profits, and production was suspended in March.

4. New Reduction Plants:
   The most important new construction work and new plant installations in Shoshone County were: The completion of the enlargement of the Bunker Hill smelter to almost double its former capacity, and the remodeling of all mills by the Bunker Hill & Sullivan M. & C. Co., to conform with the most recent developments in flotation; the completion of the cadmium electrolytic plant of the Sullivan Mining Co.; completion of the new mill by the Pine Creek Lead-Zinc Co.; the new mill of the Jack Waite Mining Co.; the new mill at Wardner of John P. George, operator of the Roberts lease in the Last Chance mine; the enlargement of the mill of the Sunshine Mining Co.; and the starting of construction of a mill by the Mutual Mines Development Co.
   The principal new milling plant construction in other counties was: Liberty Gem Mines, Inc., in Blaine County, which completed construction of a 50-ton mill; Goldstone Mines Corporation in Lemhi County, which completed the construction of its 100-ton fine-grinding, amalgamation and flotation mill; Coeur d'Alene Beauty Bay Mining & Milling Co., in Kootenai County, which installed a 50-ton fine-grinding, flotation concentrator; and the starting of construction of new mills by the Ruby Creek Mining Co., in Clearwater County, and by the Hope Mining Co., in Bonner County.

5. Principal Activities, New Enterprises, and New Mine Plants:
   The outstanding new enterprises, new mine plant installations, and active companies, in addition to the foregoing, were as follows: In Valley County the expenditures made by the Yellow Pine Co. for power plant installation, new mining equipment, new buildings, and mine development work were the largest in southern Idaho. This company has inaugurated one of the largest mine development campaigns ever undertaken in the history of the State, and the expenditures indicate that a new mining district of magnitude is being established. The Bunker Hill & Sullivan M. & C. Co., at the Hall Interstate and Lost Pilgrim mines, maintained active production and mine development work throughout the year and added additional buildings and new equipment. In Idaho County, Elk City district, the principal new enterprises were those of the Cal-Idaho Mining Co., a hydraulic operation at the Gold Hill placer; the Day Development Co., of Wallace, which acquired the Center Star group; and the investigations of the “dike” deposits by a large mining organization. In the Ten Mile, or Golden, district, the Buffalo-Idaho Mining Co., the Sentinel Mines Corporation, and two concerns whose organization is unknown were active throughout the year. The Sherman Howe Mining Co., in the Marshall Lake district, constructed new mine buildings, enlarged its plant, maintained development work, and produced a substantial amount of bullion. In Bear Lake County the Sunset Mining Co. and the Utah-Idaho Mining & Milling Co. In Benewah County the Rainbow Mining & Milling Co. advanced its tunnel approximately 1,000 feet. In Blaine County the work of the Homestake Mines Corporation resulted encouragingly; the Silver Star-Queens Mines, Inc., reopened over 1,000 feet of the Lusk tunnel, and the Hailey Triumph Mines Co. maintained production and development until June. In Boise County the Talache Mines, Inc., at the Gold Hill and Iowa mine, erected new buildings, and improved the mine and mill plant; Idawa Gold Mining Co. maintained production without interruption; the Mineral Mining Co. completed the construc-
tion and installation of its mill and did a large amount of mine development work; the Missouri Mining Co. was active for eight months; the American Mines Development Co., at its calcite mine near Banks, installed new bins, grinding plant, and an aerial tramway; the Idaho Gold Dredging Corporation operated its dredge throughout the summer months; the dredge of the Crooked River Mining Co. at the Kempner ranch was further altered and was operated for a short period. In Bonner County the Whiteelf Mining & Development Co. maintained production and development without interruption; the Idaho Lakeview Mines Co. extended the principal shaft 200 feet and performed a large amount of development work; Explorers, Inc., a new company, at the Boyer group, diamond-drilled the property. In Boundary County the Silver Spoon Mining Co., and J. I. Zigler, two new enterprises, commenced work. In Butte County the Wilbert Mining Co. maintained production and development work, and the Horn Silver Consolidated Mines Co. was active throughout the year. In Camas County the Consolidated Mines Syndicate was active for 10 months, and the Silver Star-Queens Mines, Inc., in cooperation with the U. S. Forest Service, constructed the remaining 6 miles of highway between Fairfield and the Silver Star mine; the Perseverance Mines Co., Inc., was active during a short period. In Cassia County the Silver Hills Mining Co. constructed new camp buildings and installed a gas-driven compressor and complete mining equipment. In Clearwater County the Clearwater Lime Co. enlarged its mine plant and produced a large tonnage; the Sewell Lime Co., a new organization, commenced work; the Ruby Creek Mining Co. installed additional equipment; and the Independence Placer Mining Co. was active during the summer months. In Custer County Mackay Metals maintained active work and production until August; the Seafoam Mines Corporation worked during the summer months and operated its mill intermittently; the Aztec Mining & Milling Co. constructed a new boarding house and completed installation of a small Gibson mill; the Mackay Leasing Co. extended a crosscut in the Cossack tunnel of the Mackay Metals; and the Pigtail Placer, Inc., installed a small amount of hydraulic equipment. In Elmore County the St. Joseph Lead Co., at the Boise-Rochester and Monarch groups, maintained development work until July; the Consolidated Mines Syndicate, in the Volcano district, installed a small gas-driven compressor and commenced driving a long tunnel. In Gem County the American Mines Development Co. extended its tunnel approximately 1,000 feet. In Kootenai County the Caribou Mining Co., Royal Mining Co., Silver Tip Mining Association, Blue Bird Mining Co., Burnt Cabin Mining Co., and the Great Western Copper Co. were active during a large part of the year. In Lemhi County lessees at the Pittsburgh-Idaho, Allie, and Latest Out mines, in the Gilmore district, produced and marketed a substantial tonnage of high-grade lead-silver ore; the Lead Mountain Mining Co., in the Nicholia district, completed its vertical shaft to a depth of 400 feet; the Goldstone Mines Corporation installed a hydroelectric plant and new mining equipment; the Winder-Stillman Con produced a substantial tonnage during the early part of the year; the property of the Harmony Mines Co. was operated by lessees; and the Hecla Mining Co. was active in developing a new discovery on Allison Creek. In Owyhee County the Exploration Co. of California, at the Golconda group in the South Mountain district, maintained active exploration work throughout the year; and the American Gold Dredging Corporation operated its dredge during the early spring months. In Teton County the Grand Teton Oil Co. extended its Blevins No. 1 well a distance of 1,500 feet to a total depth of 3,300 feet. In Washington County the Idaho Mineral Mining Co., a subsidiary of the Goldfield Deep Mines Co. of Nevada, was active in the Mineral district throughout the year; and the Crystal Dome Oil & Gas Co., near Weiser, drilled a new well to a depth of 1,865 feet.

The principal new mine plant construction and installations in Shoshone County during 1930 were as follows: Bunker Hill & Sullivan M. & C. Co. mills and smelter; Federal Mining & Smelting Co. enlarged the mining and milling plant at the Page mine, and further remodeled the Morning mine; Sullivan Mining Co. completed construction of the cadmium electrolytic plant; Jack
Waite Mining Co. constructed 3 miles of railroad grade and installed new mine equipment; Golconda Lead Mines installed a new electrically driven hoist and compressor and enlarged its mining plant; Tamarack & Custer Mining Co. sank a 200-foot winze in No. 7 tunnel; Pine Creek Lead-Zinc Mining Co. rehabilitated the principal tunnel and enlarged the mine plant; the Atlas Mining Co. constructed ore bins and a 2,000-foot aerial tramway; the Granada Lead Mines, Inc., and the Metropolitan Mines Corporation, Ltd., each installed a power line, an electrically driven compressor, and complete mining equipment; the Bunker Chance Mining Co. installed a power line, an electrically driven compressor and complete mining equipment; the New Jersey Consolidated Mines Co., at the King of Pine Creek mine, installed large electrically driven pumps and extended the vertical shaft to the 300-foot level; the Coeur d'Alene Mines Corporation, Stratton Silver Summit, Inc., Mutual Mines Development Co., General Mines Corporation, Ajax Mining Co., Independence Lead Mines Co., Little Sunshine Mining Co., Coeur d'Alene Mining & Smelting Co., United Metals Co., and the Pearson Mining Co. were active throughout the year.

These and many others are extensively reviewed by counties throughout the outline which follows:

Adams County

This county experienced but little mining activity during the year, and no new enterprises were started. The Idaho Copper Co., whose properties were placed under receivership in November, 1927, continued in receivership until October, 1929, and no development work of any kind has been performed since then. A few prospectors in the Council Mountain, Heath and Indian Creek districts increased their work over that of the previous year, and one marketed a small shipment of ore. The Kleinschmidt Bros. were active in developing the Blue Jacket in the Seven Devils district. The mica deposits in the Council Mountain district received more attention than in previous years, and the work done during the year greatly enhanced the possibility of these deposits being of commercial importance.

Bannock County

An important enterprise started in 1928 was that of the Idaho Portland Cement Co., near Inkom, about 12 miles south of Pocatello. This company acquired a large deposit of limestone, constructed a new railroad siding, and commenced installation of a 1500-barrel Portland cement plant. Construction was completed and the manufacture of cement started during 1929. The company's product is marketed under the trade name of “Eagle Brand.” Operations were conducted throughout 1930, and a large tonnage of cement was manufactured and marketed.

Two manganese mines near Cleveland and one at Lava Hot Springs were active throughout the greater part of the year, and two of them produced and marketed a substantial tonnage of high-grade manganese ore.

Bear Lake County

One of the principal new activities, and one of great importance to the State, is that of the Solar Development Co. in acquiring and starting work on a phosphate mine near Paris. This company is a subsidiary of the Consolidated Mining & Smelting Co. of Trail, B. C. During 1929 and 1930 the latter company expended over $7,000,000 in the construction of an acid phosphate plant at Trail, and the phosphate rock which is being mined by the Solar Development Co. is being shipped to this plant for treatment. The property was acquired during the latter part of the year. Buildings were constructed, mining equipment was installed, and work was started on sinking an inclined shaft.

Another enterprise which appears to be of importance is that of the Agricultural Potassium-Phosphate Co. of California, Ltd. This company acquired 320 acres of phosphate land near Paris under lease and option,
rehabilitated the old mine workings, commenced active mining operations, and produced a small tonnage of phosphate rock, which was shipped to the company's manufacturing fertilizer plant at San Pedro, California.

The Paris Mining & Milling Co., Inc., whose activities are based on the development of a copper property near Paris, was incorporated and commenced active development during the year. Reports were to the effect that the work resulted in encountering an excellent showing of copper ore, and that a substantial tonnage was placed in storage.

The Sunset Mining Co. was active at its lead property near St. Charles. A substantial amount of mine development was done, and a small tonnage of high-grade ore was mined and placed in storage.

Utah-Idaho Mining & Milling Co., which is developing a copper property near Paris, rehabilitated its mine buildings and machinery and commenced sinking its vertical shaft an additional 100 feet.

**Benewah County**

The principal operation in this county was that of the Rainbow Mining & Milling Co., whose property is located in the St. Joe district, near Medimont. This company is driving a long crosscut tunnel, which was advanced approximately 1,000 feet during the year.

Two companies, whose properties are located near Round Top Mountain, did a small amount of development during the summer months. Their work and a slight increase in the number of prospectors gave this county a little more than its usual amount of mining activity.

**Blaine County**

The principal operation was that of the Hailey Triumph Mines Co., at the Triumph mine, which adjoins the North Star of the Federal Mining & Smelting Co. Both production and development were maintained until June, when production was suspended; but development, with a crew of 20 men, was continued until September, at which time all operations were suspended. The ore produced was shipped, crude, to a milling plant in Utah for reduction.

The Homestake Mines Corporation, whose property is located on Lake Creek, near Ketchum, was active for eight months in developing its property, the principal work being confined to the extension of its No. 6, or lowest, tunnel. The results of this work were very encouraging.

The Liberty Gem Mines, Inc., whose property is located 7 miles west of Hailey, devoted the entire year to the installation of electric power, construction of a mill building, and installation of milling machinery. These improvements were completed in December, after which mine development was resumed. This work consisted of sinking the principal vertical shaft, which is 100 feet deep, an additional 100 feet. This company's activities constituted the principal new mine plant installation of the year.

Silver-Star-Queens Mines, Inc., at the Queen of the Hills group, near Bellevue, was active in reopening the lower or Lusk tunnel. Over 1,000 feet of this tunnel was rehabilitated.

The Crooked River Mining Co., operating in the Muldoon district, actively developed its property under contract during the summer months.

The United Mines Co. of Idaho, Inc., which is also operating in this district, did a small amount of development and constructed a new camp building.

The Treasure Vault Mining Co., whose property is located west of Hailey, performed a small amount of development work.

The Utah Bellevue Mines Co., on its property near Bellevue, commenced driving a new tunnel during the early part of the year and continued without interruption.

Peter L. Kent, at the Lone Pine Tree group, near the Red Cloud mine on Deer Creek, maintained development without interruption throughout the summer months. Charles Sonneleitner, lessee at the Star mine, produced and marketed a small tonnage of high-grade lead ore. Lessees at the Baltimore and Parker groups, near Ketchum, maintained development without inter-
ruption. A. F. Peery, who is operating the Vienna mine, in the Sawtooth district, conducted active development during the early and latter parts of the year. The Day Development Co. of Wallace, which controls the Badger group, adjoining the property of the Liberty Gem Mines, Inc., performed a small amount of work during the summer months. Lessees produced and marketed a small tonnage of ore from the Independence and North Star mines owned by the Federal Mining & Smelting Co.

One of the principal geological publications issued during the year by the U. S. Geological Survey, in cooperation with the Idaho Bureau of Mines and Geology, was Bulletin 814, "Geology and Ore Deposits of the Wood River Region, Idaho," by J. B. Umpleby, L. G. Westgate, C. P. Ross, and D. F. Hewett. This bulletin completely describes the Wood River district. It is profusely illustrated with pictures and geologic maps. The findings and conclusions expressed in this publication are favorable for the return of this district as a substantial producer of lead-silver ore.

Boise County

The Gold Hill mine of the Talache Mines, Inc., continued to be the largest gold-producing mine in the State. The shaft was extended to the 850-foot level. The new ore opened on that level was of particular importance, not only because it increased the ore reserves, but because it proved the continuation of the ore with an increase in values as greater depth is obtained. The mine and mill were operated without interruption, new camp buildings were erected, and the mine and mill plants were improved.

The Idawa Gold Mining Co. continued to be an important producer of gold. Production, milling, and development work were conducted without interruption. The mine camp and mill were enlarged and improved, and a large amount of mine development work was performed. The Mineral Mining Co. completed the construction and alteration of its mill, did a large amount of mine development, and operated the mill intermittently. This company also started an extensive mine development campaign in December.

The Missouri Mining Co., Ltd., conducted an active mine development campaign and operated its mill intermittently until August, when operations were suspended on account of legal difficulties. The American Mines Development Co. at its calcite mine, near Banks, completed construction on ore bins and grinding plants and installed an aerial tramway connecting the mine and plant, which is located on the railroad siding. A small tonnage, which was sold to the agricultural and poultry industries, was produced and marketed. The Idaho Gold Dredging Corporation, which is operating a dredge on Grimes Creek, was active throughout the summer months and increased its production over that of the previous year. The Crooked River Mining Co., at the Kempner Ranch placer, changed its dredge from the flume type and conducted operations for a short period during the early part of the year, after which the dredge was again reconstructed and was operated at intervals during the summer months by a lessee. Late in the year the Continental Mining Co. and Inc. commenced the construction of a small gas-driven table concentrating mill at its property near Shafer Butte. Active mine development and construction work throughout the greater part of the year were conducted by the following: Boulder mine; Come Back Mining Co.; Franklin Placer Co.; Fryett Mining Co., Inc.; Penn Mining Co.; V. A. Thorn at the Banner mine; Jarvis Bros. at the Hayfork mine.

Bonner County

The Whitedelf Mining & Development Co. maintained production and development without interruption, and during the latter part of the year commenced work on extending its shaft an additional 200 feet. The development work done by the Hope Mining Co. increased its ore reserves. Late in the year this company commenced work on installing electric power and an 85-ton flotation concentrator. The Idaho Lakeview Mines Co. at the Hewer mine, in the Bayview district, extended the inclined shaft an addi-
tional 200 feet and performed a large amount of lateral development work during the early part of the year. The results were very encouraging. Explorers, Inc., a new company, which holds the Boyer group under lease and option, did a small amount of diamond drilling, the results of which were sufficiently favorable to warrant further development; and work was started in December in sinking a shaft.

Press reports were to the effect that active operations were conducted throughout the year and that a compressor and mining equipment were installed at the Silver Star group, near Cocolalla, by T. W. Roberts, who is holding the property under a lease and option, and financing the operations through the sale of "options." Prospecting and small development companies which were active during a large part of the year were: Amazon Mines, Inc.; Gene Lee Mines, Inc.; Minerva Silver, Inc.; North Idaho Mining & Development Co.; Syringa Mining Co.

The success with which the Whitedelf and Hope mines, in the Clark Fork section, are meeting greatly stimulated prospecting and development work. Activities were further stimulated by the publication of Bulletin 12 of the Idaho Bureau of Mines and Geology, "Geology and Ore Deposits of the Clark Fork District, Idaho," by A. L. Anderson, which was issued in March.

Boundary County

The year 1930 witnessed but little new activity and but a small improvement in development work by the old companies. Two new enterprises, the Silver Spoon Mining Co., Inc., whose property is in the Moyie Yaak district, near Meadow Creek, and J. I. Zigler, at the Donahoe property, in the Moyie Yaak district, near Copeland, installed small gas-driven compressors and commenced work on sinking shafts. The Metals Mining Co. and the Moyie Gold Copper Mining & Milling Co., Ltd., both expanded their operations over those of the previous year. The Idamont Lead-Zinc Mines Co. was active for a few months. An attempt was made to reorganize the companies controlling two lead-silver properties in the Katka district. Newspaper reports were to the effect that a new discovery of lead-silver was made on the Moyie River.

Butte County

The Wilbert Mining Co., operating in the Dome district, maintained active production and mine development. This company is one of the largest producers of lead-silver ore in southern Idaho, and the success with which it is meeting has been instrumental in attracting much attention to the mineral resources of this county. The Dahle Bros., at the Horn Silver mine, in the Lava Creek district, whose company is known as the Horn Silver Consolidated Mines Co., maintained active development throughout the year. This work increased the known resources of the mine. One small shipment of crude ore was marketed. The other companies in this district performed only the necessary annual labor; however, there was a substantial increase, over that of the previous year, in the number of prospectors who were active throughout the summer months.

Camas County

One of the largest expenditures and the one of most importance to the county was that of the Silver Star-Queens Mines, Inc., in constructing the remaining 6 miles of highway between Fairfield and the Silver Star mine at Carrietown. This work was done in cooperation with the U. S. Forest Service. Its completion makes the Carrietown section now accessible to a railroad by a standard forest highway.

The Consolidated Mines Syndicate, which is developing a prospect in the Willow Creek section, maintained exploration work with a small crew during 10 months of the year. The Perseverance Mines Co., Inc., was reorganized after an action brought by the stockholders in the U. S. Federal Court had removed the former president and general manager. Stock assessments were then levied, and the funds used to drive a new tunnel.
The gold resources of this county, both placer and lode, on the South Fork of the Boise River and in the Big Smoky section received more attention than during the previous year. Much prospecting and development work was done during the summer months. The Idaho Placer Mines Co., a new organization, constructed a 3-mile ditch and did a little trenching.

Caribou County

The Anaconda Copper Mining Co., which is operating one of the largest phosphate mines in the United States, enlarged its mining equipment, constructed three new homes for its employees, maintained a large production throughout the greater part of the year, and extended its principal (No. 3) tunnel about 7,000 feet. The phosphate rock which this company is producing is shipped to Anaconda, Montana, where it is manufactured into high-grade fertilizer and sold under the trade name of "Anaconda triple superphosphate."

Cassia County

The Silver Hills Mining Co. was the only active company in the county during the year. New camp buildings were erected, a gas-driven compressor and complete mining equipment were installed, and a large amount of development was done. This company's property is located in the Black Pine district, which is in the southeast corner of the county near the Utah line.

Clearwater County

The principal mining activities were those of the Clearwater Lime Co. and the Sewell Lime Co., whose properties are located near Orofino, and whose product, a high-grade white lime rock, is sold to the agricultural, powder, and paper manufacturing industries. The former company completed construction and installation of an aerial tramway, ore bins, and grinding plants. It produced and marketed a substantial tonnage of rock. The Sewell Lime Co. commenced the construction of a railroad siding and installed quarrying equipment.

The gold resources of the Pierce City district received more attention than at any time during the past 10 years. Two new enterprises based on the recovery of placer gold and three new enterprises based on the development of quartz mines entered the district and did a small amount of work. The lead-silver deposits, in the Neva Hill section, near Elk River, received a little attention, the principal operations being those of the Ruby Creek Mining Co., which did a little development work and commenced construction and installation of a small flotation concentrator. The Independence Placer Mining Co., Ltd., in the Moose City district performed a small amount of construction work during a period of four months. A publication of importance, which was issued in 1930, and which displays the geology and mineral resources of this county, is Pamphlet 34 of the Idaho Bureau of Mines and Geology, "Geology and Mineral Resources of the Region About Orofino, Idaho," by A. L. Anderson.

Custer County

The principal operation in this county was that of the Mackay Metals at the Empire Copper mine. Production, mine development, and the shipping of crude ore and concentrate, on behalf of both the company and the lessees, were maintained without interruption until August. The company then suspended its operations, but the lessees continued without interruption, although they stored all ore. The Seafoam Mines Corporation, in the Seafoam district, did a substantial amount of development during the summer months and operated its mill intermittently. A small amount of bullion and concentrate was produced and marketed. The Aztec Mining & Milling Co., in the Stanley district, constructed a new boarding house, completed the installation of a small Gibson mill, and did a small amount of mine development work during the summer months. The Mackay Leasing Co., a new organization, which obtained a lease in the Cossack tunnel of the Empire mine, extended a crosscut in the tunnel 300 feet during the year. Lessees at the Ramshorn
mine, in the Bayhorse district, produced and marketed a small tonnage of high-grade crude ore. The Pigtail Placer, Inc., whose property is located in the Stanley district, installed a small amount of hydraulic equipment and did a little prospecting during the summer months.

One of the principal geological publications issued during the year by the U. S. Geological Survey, in cooperation with the Idaho Bureau of Mines and Geology, was Bulletin 814, "Geology and Ore Deposits of the Wood River Region, Idaho," by J. B. Umpleby, L. G. Westgate, C. P. Ross, and D. F. Hewett. This bulletin completely describes the Wood River district in Blaine County and the Alto district in Custer County. It is profusely illustrated with pictures and geologic maps. The findings and conclusions expressed in this publication are favorable for the return of these districts as substantial producers of lead-silver ore.

Elmore County

The Rocky Bar district witnessed no improvement over that of the previous year in the starting of new enterprises, and no work of any importance was performed.

One of the most important enterprises which started in 1929 was the commencement of operations at the Boise-Rochester mine near Atlanta by the St. Joseph Lead Co. This company acquired the Boise-Rochester in 1917, but, other than necessary repairs to the buildings and principal tunnels, nothing was done with it. In the latter part of 1929 the Monarch group, which is adjacent to the Boise-Rochester, was acquired, and the development of both properties was commenced. This work, which consisted of extending No. 6 tunnel of the Boise-Rochester group to the intersection of the vertical shaft of the Monarch group, was conducted without interruption until July, 1930, at which time all operations were temporarily suspended. The Consolidated Mines Syndicate, at the Revenue group, in the Volcano district, near Hill City, installed a small gas-driven compressor and commenced driving a long tunnel. This work was continued until October, when all operations were suspended. Preliminary plans for the development of the placer deposits on Feather River were completed during the latter part of the year. A small amount of development work was done on the Deckard property at Pine during the summer months.

Gem County

The only active operation during 1930 was that of the American Mines Development Co. at the old Liberty mine, near Sweet. The tunnel was extended approximately 1,000 feet under contract.

Idaho County

One of the most important events was the continuation of the construction of the Elk City highway from Huston toward Elk City for a distance of 6 miles. The inception of the new work gave assurance that this highway would be completed to Elk City at an early date, and it greatly stimulated interest in the Elk City, Dixie, Orogrande, and Buffalo Hump districts. These districts, particularly Elk City, witnessed the incoming of the largest number of prospectors, mining engineers and geologists representing responsible companies and the starting of more new enterprises than at any time during the past 15 years. These activities stimulated the rebuilding of Elk City, a large part of which was destroyed by a disastrous fire in March. A new hotel and community hall were constructed and plans were completed for the erection of new business buildings.

The principal activities in the Elk City district were those of the Cal-Idaho Mining Co. and the Day Development Co. The former company, which acquired the Gold Hill placer, rehabilitated the eight-mile ditch, installed complete hydraulic equipment, and constructed new camp buildings. This operation was one of the largest new hydraulic placer mine enterprises in the State. The Day Development Co., of Shoshone County, which acquired the Center Star group in October, constructed four miles of trail, installed
a gas-driven compressor and complete mining equipment, and started sinking a 100-foot inclined shaft. This property has an excellent showing of ore and its development is of particular importance to this part of the State. The Moose Creek Placers Co. continued work on its ditch and flume line, repaired its hydraulic equipment, and constructed new camp buildings to replace those which were destroyed by fire early in the year. A discovery of high-grade gold ore, which appears to be of importance, was made by John Larson, a prospector, on Elk Mountain. A large number of prospects and old properties were investigated by prominent mining companies. Many of these investigations were satisfactory, and late in the year arrangements were being completed for the acquisition and development of the properties. Press stories were to the effect that the Elco Gold Mining Co. was actively engaged in the reopening of the tunnels of the French Creek Gold Mining & Milling Co.

The Orogrande district witnessed more activity in 1930 than in 1929, particularly at the Homestake group of the Homestake Gold Mining Co., which was operated throughout the year by lessees. A large mining organization was active during the closing months of the year in reopening the old mine workings and sampling one of the “dike” deposits.

The Golden or Ten Mile district was one of the most active sections throughout 1930. F. O. Miller and son, at the Lone Pine group, maintained development work without interruption, operated their mill for a short period during the early part of the year, and installed a 30-horsepower semi-Diesel engine, belted to an electric generator, as supplemental power for the mill. The development work greatly increased the known ore resources. This mine was one of the largest gold-producers in the county. The Buffalo-Idaho Mining Co. maintained development work throughout a large part of the year and operated its mill for a short period. The Sentinel Mines Corporation and E. J. Dailey, new entries into this district, were active in the development of their properties. Two concerns, whose form of organization is unknown, gave themselves considerable publicity in the press.

The Unity Gold Mines Co., in the Warren district, maintained active operations and produced a substantial amount of bullion during the early part of the year. The Warren Meadows placer deposits were acquired under lease and option by eastern operators and were actively prospected throughout the summer months. This district also witnessed a large amount of investigation by those seeking new gold mining enterprises.

From the standpoints of men employed, production, new construction, development work, and investigations by prospectors and companies seeking new gold mines, the Marshall Lake district was the most active section of the county throughout the year. The Sherman Howe Mining Co. constructed additional new camp buildings, greatly enlarged its mine plant, expended a substantial sum on road building, and maintained development work without interruption. This company’s production was one of the largest in the county. One of the most important disclosures of new ore made in the State during the year was that of the Golden Anchor Mining Co. at the Holte mine. In February this company’s 1,600-foot lower tunnel intersected the ore at a distance of approximately 300 feet below the bottom of the upper workings; drifts and a raise which were run on the ore proved the importance of this disclosure. The Long Tom Mining Co., at the Cuban and West Goodenough groups, commenced active development work at both groups during the latter part of the year. The new highway, which the Forest Service is constructing between Burgdorf and this district, was extended over five miles. This road is of great assistance to the companies now operating and is an encouragement to the development of the district.

Press reports were to the effect that the War Eagle group in the Dixie district was operated throughout the year under lease and option by the Central Idaho Mining & Milling Co., and that this company constructed a considerable distance of trail and installed a small power plant and sawmill. The placer deposits in this district received some attention. There was a small increase in the amount of the annual labor and development over that of the previous year.
The Bunker Hill & Sullivan Mining & Concentrating Co. and allied interests, which entered the Green Mountain section in 1929, maintained active development work until November. The property held by this company is a copper-silver deposit. Its development has been a material factor in stimulating interest in this district and its environs, particularly Elk City.

Other than annual labor, the principal activity in the Harpster district was that of F. W. Watson at the Dewey group. A substantial amount of development work was performed, and a small tonnage was produced and shipped for experimental purposes.

The alleged presence of rare metals in the black graphitic lime shales in the Salmon River or Simpson district, in the vicinity of Lucile continued to be used as a lure for the sale of stock and "units." No work of any consequence was done by those promoting these rare metal enterprises.

Kootenai County

This county witnessed more development work, prospecting, and new construction than during the previous year. Much of this was confined to the Beauty Bay section, where Coeur d'Alene Beauty Bay Mining & Milling Co., a custom milling enterprise based on milling the ore from all of the mines in this section, purchased the milling plant of the Caribou Mining Co., Ltd., enlarged the building, and installed new power and milling equipment, consisting of gas-driven engines and a fine-grinding flotation concentrator of 50 tons capacity. All work was completed, and the mill was adjusted to commence operations in December. The Royal Mining Co., Silver Tip Mining Association, Caribou Mining Co., Ltd., Coeur d'Alene Mountain Mining Co., and the Blue Bird Mining Co., whose properties are located in this section of the county, were active throughout the greater part of the year.

The Burnt Cabin Mining Co. and the Great Western Copper Co., in the Hayden Lake district, were active during the summer months.

Two new organizations in the Harrison Lake section did a small amount of work during the summer months, and press reports were to the effect that one of them encountered an excellent showing of high-grade lead-silver ore.

Lemhi County

In point of production and number of men employed Gilmore for many years has been one of the largest lead-producing sections in the State outside of the Coeur d'Alene district. The Pittsburgh-Idaho mine, of the United Idaho Mining Co., a subsidiary of the U. S. Smelting, Refining & Mining Co., the Latest Out, and the Allie are the largest mines in this district. In 1929 one of the large Diesel engines in the power plant of the United Idaho Mining Co. exploded and was completely wrecked, and operations were suspended until additional power could be obtained. As the principal owners were unable to arrive at an agreement on the installation of a new power plant, the mine has been idle since then. A large number of lessees at the Allie and Latest Out mines produced and marketed a substantial tonnage of high-grade lead-silver ore. Funds to cover the cost of the development work done by some of these lessees were advanced by one of the large smelting companies. These operations increased the activities and the number of men employed in this camp over those of 1929.

The Nicholia district was more active than during any year since production was suspended. Lessees at the Old Viola mine did a large amount of development and produced and marketed a substantial tonnage of lead-silver ore. The Lead Mountain Mining Co., which entered this district in 1929, maintained one of the largest development campaigns in the county at the Nicholia group. This company completed a vertical shaft to a depth of 400 feet and opened 1,200 feet of crosscuts and drifts at the bottom of the shaft.

In the Spring Mountain district the property of the Idaho Minerals Co. was optioned to the South Gilmore Mining Co. The latter and the Spring Mountain Mining Co., Inc. were both active during the summer months.
The only work in the Leadore district was the necessary annual labor and the completion of the topographic survey by the U. S. Geological Survey preparatory to a thorough geological study of the district in cooperation with the Idaho Bureau of Mines and Geology.

In the Pratt Creek district the Goldstone Mines Corporation, one of the largest and most active companies in the county, completed the construction of its hydroelectric power plant and a 100-ton fine-grinding amalgamation and flotation mill, which was started in 1929. The mill was operated for a short period, and a large amount of mine development work was done.

Two discoveries, one of high-grade copper-gold ore on Agency Creek in the McDevitt district, the other of high-grade gold ore in the Parker Mountain district, were reported.

The copper mines in the vicinity of Salmon were less active than in 1929. A small amount of work was done by four lessees at the property of the Harmony Mines Co. and the Winder-Stillman Co. was active during the early part of the year. The Hecla Mining Co. and an organization of prospectors were active throughout the summer months in developing a discovery of high-grade copper-gold ore on Allinson Creek, 10 miles south of Salmon on the divide between the Lemhi and Salmon Rivers.

Mrs. H. T. Steen, at the Continental group in the Yellow Jacket district, and the United Mace Smelters, Inc., which was holding the old Yellow Jacket mine under lease and option, each performed a small amount of work.

The Shoup district received more attention than at any time during the past 10 years. Two new organizations commenced work; and press stories were to the effect that one of them installed a small hydroelectric power plant and excavating machinery preparatory to operating a placer deposit. There was a substantial increase in prospecting.

The principal activities in the Leesburg district were based on hydraulic mining. Three companies constructed ditches and dams and installed a small amount of hydroelectric mining equipment during the summer months.

There was a slight increase in prospecting and development work in the Gibbonsville district, and the Rescue Gold Mines Co. was active throughout the summer months in reopening the principal entry at the A. D. & M. mine.

Gold mining has received more than its usual amount of attention in most of the districts of the county, and there has been a substantial increase in the number of prospectors and investigators seeking gold enterprises.

An important means of advertising the mineral resources of the county has been the mineral exhibit of the Salmon Commercial Club. The exhibit is housed in a large room, and it contains excellent specimens of ore from almost every district in the county.

Owyhee County

One of the largest and most important new enterprises which was started in the State during 1929 was that of the Exploration Company of California, at the Golconda group in the South Mountain district. Late in 1929 new buildings were constructed, complete mining equipment was installed, and development work was started. Except for a period of 30 days, this company was active throughout the year. A large amount of crosscutting, drifting and sinking was done, and reports were to the effect that this work greatly increased the known resources of the property. This company's operation is the largest in the county. On account of the shortage of water, the American Gold Dredging Corporation was able to operate only during the early spring months. Three new development enterprises were started in the Reynolds Creek section of the Carson district, one of which installed a small gas-driven mill. There was a substantial increase of investigations in the Silver City district, and press stories were to the effect that a new organization had been perfected to consolidate the principal old mines on War Eagle Mountain. Two enterprises based on the presence of platinum in the volcanic glass sands lying at a depth of about 250 feet in the artesian basin of Little Valley near Bruneau were active throughout the year and one gave its project a large amount of publicity through circulars designed to further the sale of stock.
The year 1930 was one of curtailment in production, plant construction, new enterprises, and mine development work. Most of the large companies reduced their production, and some of them suspended entirely. The totals of production, number of men employed, and expenditures for construction and mine plant installation were the smallest that the county has witnessed for many years. The Sherman Lead Co. was the only new dividend paying company; however, the dividend paid in 1930 was from the 1929 profits, and production was suspended in March. Practically all of the large mines, whether they suspended production or not, maintained an active development campaign throughout the year. This work, with scarcely an exception, greatly increased the known ore reserves. A large number of companies improved their mine and mill plants. With increased ore reserves and surface plants in excellent condition, the mining industry of this county is in a position to return rapidly to normalcy as soon as metal prices reach a higher level.

The attention which all of the large operators are giving to safety conditions and supervision was reflected in the very small number of fatal accidents. Working conditions throughout the Coeur d'Alene district are exceptionally favorable. All of the mines are well ventilated, and the operators devote much time, thought, and money to making the mines safe and to keeping them in such a condition that the men can do a full day's work without expending the energy which is required in poorly ventilated mines. It can safely be said that the mines of this district are the best ventilated ones in the United States. The subject of ventilation in the Coeur d'Alene mines was studied in 1930 by G. E. McElroy of the U. S. Bureau of Mines in cooperation with the Idaho Bureau of Mines and Geology. The publication of Mr. McElroy's report on "Mine Ventilation in the Coeur d'Alene Mining District," is expected early in 1931. The solarium, installed by the Bunker Hill & Sullivan M. & C. Co., in 1929, was a distinct contribution to welfare work. It continued to be used throughout the year by a large number of the company's employees and their families, and the results have been beneficial.

The principal producing mines in which the ore reserves were increased by new development work, the most important new construction, new mine plant installations, new enterprises, and outstanding development work can best be reviewed by companies.

The extensive development work in the Bunker Hill mine has greatly increased its resources. The completion of a winze from the 1,900 to the 2,000-foot level and the opening of the ore bodies at that depth, where the ore and geological conditions were found to be normal, together with the opening on Nos. 9 and 10 levels of the new ore first disclosed in 1929 on No. 6 level, have added many years to the life of the mine. The company increased its production but decreased its dividends during the year. The many plant betterments which were added greatly increased the efficiency of the enterprise. The principal ones were the remodeling of all mills to conform with the most recent developments in flotation, many of which have been evolved under this company's direction, and the doubling of the capacity of the lead smelter. The expenditure for these and other plant improvements constituted the largest expenditure for new plant betterments made in the State during the year. The Crescent or Hooper tunnel, which was started late in 1928, was completed in 1930, and a 500-foot vertical raise was driven to the upper levels. Production from this property was maintained throughout the year.

The enlargements and modernization of the smelter, commenced in 1929, were completed early in 1930. The production for the year, as a result of treating the entire output of the Bunker Hill mines, was the largest of any year since the smelter started operating.

The Bunker Hill & Sullivan M. & C. Co., because of the magnitude of the Bunker Hill mine, has become more of a manufacturing than a mining operation, and with its smelter, mills, experimental plants, and organization, is one of the largest organizations of its kind in the world.
The Hecla Mining Co., which is recognized as one of the principal lead-silver mining companies in the United States, increased its ore reserves in the Hecla mine. Development work, which consisted principally of putting the lower levels in condition for production, was conducted throughout the year. Normal production was maintained until September, when the continued low price of metals caused a reduction to a five-day-week basis. The mine and mill plants were further improved. The usual dividend rate was maintained. The company was actively engaged in developing two other properties in the Coeur d'Alene district and one in Lemhi County, and it maintained throughout the year an active scouting and investigating campaign in a search for additional properties. The management is progressive, and the life of the Hecla mine is assured for many years.

The Morning mine of the Federal Mining & Smelting Co., which is one of the oldest mines in the Coeur d'Alene district in point of continuous production, as well as one of the largest lead-silver-zinc mines in the United States, was maintained at capacity production throughout a large part of the year. The number of years that this record will continue is unknown, as development work on the 3,250, 3,450, and 3,650-foot levels has proved the ore bodies to be larger and more extensive than those on any of the upper levels, and the ore on the 3,450-foot level has been found to be richer in metal content than that on any of the levels above it.

During the year the shaft was extended to a depth of 153 feet below the 3,650-foot level, and the vein was crosscut on the 3,650-foot level. The 3,250-foot level was opened for the full length of the ore, and the 3,450-foot level was opened for a length of 590 feet. The mine and mill plants were greatly enlarged, and the mill was further improved to conform with recent developments in flotation practice. In addition to the ore mined under company operation, a large tonnage was extracted from the upper levels by lessees.

The Page mine of the Federal Mining & Smelting Co., in Government Gulch near Kellogg, was operated throughout the year at capacity production. The mill was enlarged and improved, principally by the addition of new crushing equipment. Additional mine and camp buildings were erected, a large amount of new mining equipment was installed, and approximately 1,000 feet of development work in the Black Hawk ground on the 1,200-foot level of the Page shaft was done. The success of this operation can be accredited entirely to flotation, because with the old milling methods it was impossible to mine and mill the ore at a profit.

The Sullivan Mining Co., which suspended production at the Star mine in 1928, pending completion of the zinc plant, and which resumed in February, 1929, maintained production at the rate of approximately 450 tons per day until April, 1930, when the low price of metals caused a suspension. The 4,000-foot level of the Star mine is connected with the 2,000-foot level of the Hecla mine by the Star crosscut, which is 8,900 feet long. This crosscut made a blind connection with the Star vein at a point 2,800 feet below the Star tunnel. After production was suspended in April, work was continued in driving the vertical operating raise and the vertical shaft which are to connect the Star crosscut and the upper tunnels of the Star mine. Construction of the cadmium recovery plant, which was started in 1929, was completed, and the plant was put into operation in May. In April the zinc plant was put on a greatly curtailed basis. The zinc and cadmium produced by the electrolytic plants of this company are of an especially high grade and are finding a ready market, the zinc selling at an increase in price over that of any other zinc metal. The electrolytic plants of this company now constitute one of the largest and most important enterprises in the Pacific Northwest, and one which insures the permanence of the mining industry in Shoshone County.

One of the largest expenditures made by any company in the Coeur d'Alene district during the year for mine development, new mine plant installation, and new mill was made by the Jack Waite Mining Co. An extension of the railroad was graded for a distance of three miles, the principal haulage tunnel was entirely rehabilitated and relaid with heavier rails, a new I-R compressor was added to the mine plant, a new mill building was con-
structed, and the installation of entirely new milling equipment was started. It was expected to have the mill fully completed and ready for operation early in 1931. The new mine development work greatly increased the known ore reserves, and a large tonnage of crude ore and concentrate was marketed.

The extensive improvement campaign started in 1929 by the Sunshine Mining Co., which consisted of rebuilding the principal haulage tunnel, No. 5, of constructing a new hoist station and skip pockets, new inclined shaft, and new buildings, of installing a new hoist and compressor, and of enlarging the mill to 500-ton capacity, was completed early in 1930, and capacity production was maintained throughout the year. The inclined shaft was sunk from the 1,300 to the 1,700-foot level, and a large amount of drifting on the 1,300-foot level and the levels above it was done. This work greatly increased the ore reserves of the mine. The ore on the 1,300-foot level was found to be of higher grade and greater extent than on any of the upper levels. This company is one of the largest producers and dividend payers in the Coeur d'Alene district, although the low price of silver caused a reduction in the dividend rate.

One of the principal mines in the Coeur d'Alene district to be placed on a profitably operating basis in 1929 and the only addition to the list of dividend paying mines in the State during 1930 was the Sherman Lead Co. This company's mine is connected with No. 5 tunnel of the Hercules Mining Co., through which it is operated, and the ore is sold to the Hercules custom mill at Wallace. Production was maintained until March, when the low price of metals caused a suspension. However, development work was continued, and over 2,500 feet of raises and drifts were run. This work exposed a large amount of new ore, which greatly increased the known resources of the mine. Control of this company is held by the Tamarack & Custer Consolidated Mining Co.

One of the few companies which maintained production throughout the year was the Dayrock Mining Co.; however, it reduced to a one-shift basis in March and later to six days a week. Over 3,000 feet of crosscuts, drifts, and raises were run on the four principal levels of the Dayrock mine. This work greatly increased the known ore reserves, and the mine is fast developing into one of the most important producers in the Coeur d'Alene district. During the year three additional properties, the Option, Black Cloud, and California groups, were acquired. This company now has a large, compact holding as compared with three claims held under lease and option when it was formed in 1924.

The Golconda Lead Mines enlarged and improved its mine plant, installed a large electrically driven hoist and compressor, extended its new shaft from the 1,400 to the 1,800-foot level, and performed a large amount of development work on the 1,600 and 1,800-foot levels. The ore opened on these levels greatly increased the known resources of the mine. Capacity production was maintained until March 15, when the low price of metals forced a suspension; however, milling operations on a one-shift basis were resumed on August 1. The company obtained the property owned by the Square Deal Mining & Milling Co. under lease and option and started a crosscut on the 1,400-foot level to develop it. An important discovery of high-grade lead-silver ore was made late in the year on the surface of the Mayflower group about 2,000 feet east of the known ore bodies. Logging operations exposed the ore, and work was started in driving a tunnel to explore it. This company is fast becoming recognized as one of the principal operations in Shoshone County.

At the Galena mine of the Callahan Zinc-Lead Co., the principal work consisted of crosscutting to and drifting on the 800 and 1,000-foot levels on the new south vein, which was discovered by diamond drilling in 1928 and opened on the 600-foot level in 1929. This work resulted in exposing such a substantial amount of new ore that the company is fast becoming reestablished as one of the principal operators in the Coeur d'Alene district. As the Galena mine is located in the so-called "dry belt", in the south side of the district, the success it is attaining, particularly as ore and geologic conditions are improving at depth, has been an important factor in stimulating development throughout this section.
At the Sidney mine, operated by the Sidney Leasing Co., the principal shaft was extended 200 feet. A large amount of development work was performed, and production was maintained until July. The new development work, particularly on the lower levels, was successful in greatly increasing the known ore reserves of this mine. The fact that this mine is located on Pine Creek and that the ore is improving in grade and extent as depth is gained has been significant in proving that this section of the Coeur d'Alene district is not without merit; and the success of this enterprise has greatly stimulated mine development in this part of the district.

The Tamarack & Custer Consolidated Mining Co., which operates one of the substantial producing mines of the Coeur d'Alene district, maintained a steady output and an extensive development campaign until late in March, when production was entirely suspended. A crew of 12 men was retained on development work, which consisted of sinking a 200-foot winze on the vein in No. 7 tunnel. It was reported that this work indicated the existence of a new ore body. The development and exploratory work performed during the year amounted to over 2,400 feet. The company's ore is transported in railroad cars to the Hercules mill, which buys the entire output.

The Gold Hunter Mines, Inc., at Mullan, one of the oldest mines in Shoshone County in point of continuous production, maintained capacity output and an extensive development campaign during the first three months of the year. All operations were then suspended because of the low price of metals.

The Constitution Mining & Milling Co. maintained mine development and production until July, when the low price of metals compelled suspension. The principal development work consisted of sinking the vertical shaft from the 600-foot level to the 800-foot level and drifting on the latter level. The new ore exposed by this work greatly increased the known reserves of the mine. The company's expenditure for mine development and mine plant improvement was among the largest expenditures in the Pine Creek section.

Construction of the new mill, which was started late in 1929, by the Pine Creek Lead-Zinc Mining Co. was completed; No. 3 tunnel was rehabilitated; and the mine and mill were placed in condition for production. This company's expenditure was one of the largest made in the Pine Creek section during the year.

The Douglas Mining Co., Ltd., whose property is located on Pine Creek near the Constitution, during the first four months of the year maintained an active development campaign, consisting principally of drifting on the vein at the 300-foot level of the inclined shaft. The new ore developed by this work was one of the important disclosures of the year in the Pine Creek district.

The Atlas Mining Co. conducted active mine development work during the early part of the year, after which this work was suspended. Ore bins and a 2,000-foot aerial tramway, connecting the mine and the mill of the Gold Hunter Mines, Inc., were constructed. Upon the completion of the tramway, mine work was resumed. The mine development consisted of 1,490 feet of crosscuts and drifts, 920 feet of diamond drilling, and the extraction of sufficient ore to make a one-car shipment of concentrate.

The Granada Lead Mines, Inc., a new organization, whose property adjoins that of the Golconda Lead Mines, installed a power line, an electrically driven compressor, and complete mining equipment; erected mine buildings; and commenced driving a long crosscut tunnel. Work on the tunnel was continued without interruption, and it was extended over 500 feet. Two veins containing a good showing of lead-silver ore were encountered. These disclosures greatly increased the attractiveness of the enterprise.

The Metropolitan Mines Corporation, Ltd., whose property is located on Big Creek, extended the power line to its mine and installed an electrically driven compressor during the early part of the year, after which the principal tunnel was extended without interruption.

The Bunker Chance Mining Co., whose property is in Milo Gulch near Wardner, installed an electrically driven compressor and complete mining equipment, and continued its principal tunnel throughout the year.
The New Jersey Consolidated Mines Co., at the King of Pine Creek mine, during the early part of the year extended its vertical shaft to the 300-foot level and did a large amount of drifting on the vein on this level. This work greatly enhanced the possibilities of this enterprise. The work was hampered by an exceedingly large flow of water, which made it necessary to install powerful electrically driven pumps. This company's expenditures were among the largest in the Pine Creek section during 1930.

The Coeur d'Alene Mines Corporation, which is operating the Mineral Point and St. Elmo groups near Osburn, conducted an active development campaign, which consisted of extending the principal tunnel approximately 2,000 feet.

The Stratton Silver Summit, Inc. was one of the principal development enterprises in the Coeur d'Alene district which maintained work throughout the year. The crosscut was extended 1,876 feet to a total distance of 4,716 feet, and 540 feet of a drift was driven west from the crosscut at a point 4,300 feet in from the portal. The drift encountered ore minerals containing good values in silver. This encouragement greatly enhanced the possibilities for a successful outcome.

The Mutual Mines Development Co. was active throughout the year and commenced building a flotation concentrator. Definite information as to its activities and mill construction is lacking.

The General Mines Corporation received a larger amount of publicity from the press than any other mining company in the State. Press reports were to the effect that the principal tunnel was extended, and that this work revealed a mineralization dissimilar to any other in the district.

The Ajax Mining Co. drove over 2,000 feet of tunnels and drifts on the Bixby tunnel level during the year. This company is one of the oldest development enterprises in the Coeur d'Alene district and one which has conducted work without interruption for many years. The development work was encouraging. The company's persistence is deserving of success.

The Independence Lead Mines Co. conducted work throughout the year. A 100-foot vertical shaft was sunk on the vein, and a large amount of drifting at the bottom of the shaft was done. This work encountered a good showing of lead-silver ore.

Little Sunshine Mining Co. added a compressor and an air-driven hoist and started sinking a vertical shaft in April. The shaft is located in the principal tunnel at a distance of 4,200 feet from the portal. It was completed to a distance of 300 feet, and a large amount of exploratory work was done on two levels.

The Coeur d'Alene Mining & Smelting Co., whose property is located on Nine Mile Creek and whose stock is controlled by residents of Wallace, extended its principal tunnel without interruption.

The mill owned by John P. George, operator of the Roberts lease at Wardner, in the old Last Chance mine of the Bunker Hill & Sullivan M. & C. Co., was destroyed by fire in June. A new mill was constructed and placed in operation during the closing months of the year.

The United Metals Co., at the Black Bear group, was active for six months and extended the principal tunnel 900 feet.

The Pearson Mining Co., in the St. Joe district near Falcon, was active throughout the year in extending its long crosscut.

Companies whose work amounted to more than the legal requirement and which were active during a large part of the year were as follows:

- Blue Eagle Mining Co.; Blue Ribbon Mining Co.; Commercial Traveler Mining Co.; Keystone Mining Co.; North Star Mining & Development Co.; Sonora Mining & Milling Co.; and Vendetta Chief Mining Co.

**Teton County**

The most active enterprise in this county during 1930 was the Grand Teton Oil Co., which, in 1929, acquired the holdings and equipment of the Tieton Land & Leasing Co. and a large additional acreage, installed additional well-drilling equipment, and started sinking two wells known as
Blevins No. 1 and Bevan No. 1. During 1930 Blevins No. 1 was extended 1,500 feet, to a total depth of 3,300 feet; and Bevan No. 1 was extended 100 feet, to a total depth of 1,465 feet.

Valley County

The expenditure made by the Yellow Pine Co. for power plant construction and installation, for new mining equipment, erection of new buildings, road construction, and mine development work was the largest in southern Idaho during 1930. This company has inaugurated one of the largest mine development campaigns ever undertaken in the history of the State, and the expenditures it has made indicate that a new mining district of magnitude is being established. During the year the Monday tunnel camp was selected as the principal base of operations and was established as a post office with the name of Stibnite, having a mail service three times a week.

The Monday and Cinnabar tunnels, on each side of Meadow Creek, are at the same elevation and the portals are connected with a long trestle, thus making all equipment and camp facilities accessible to both tunnels. The Cinnabar tunnel is projected to develop the gold and mercury deposits of the Cinnabar group. Its total length when completed will be about 10,000 feet, and it will intersect the ore zones approximately 1,600 feet below the upper levels. The Monday tunnel, which is practically a drift on the Meadow Creek vein, has projected length of 8,000 feet and a depth of 410 feet below the Meadow Creek tunnel. In the Meadow Creek tunnel there is approximately 4,500 feet of crosscuts, drifts, and raises that open the ore bodies 400 feet below the surface. New buildings erected in Stibnite were: assay office, post office, machine shop and compressor house, change house, large barn, warehouse, woodsheds, oil house, metal house, large cellar, large bunkhouse. New equipment installed: Two large electrically driven compressors, electrically driven ventilator blower, steel sharpener, oil furnaces, lathes and machine tools, storage battery locomotive haulage, and complete mining equipment. At the Meadow Creek camp a new slaughter house, corrals, an additional residence and a warehouse were erected. The compressor was converted to electrically driven. An electrically driven hoist, complete equipment for shaft sinking and for fire protection were added. A new 525-kw. hydroelectric power plant was installed on Meadow Creek. The generator is driven by a Pelton water wheel operating under a 520-foot head. The water is delivered through an 11,000-foot, 28-inch, redwood-stave pipe and a 1,620-foot, 24-inch steel penstock. Construction work was started on the 1st of June, and the plant was completed and in operation on the 1st of November. This work involved also the clearing of a right-of-way for the pipe line and transmission lines through heavy forest for a width of 200 feet. Mine development work was maintained throughout the year in the Meadow Creek tunnel and in extending Monday and Cinnabar tunnels. A station and skip pockets were cut in Meadow Creek tunnel, hoist and sinking equipment were installed therein, and all arrangements were completed for sinking a 410-foot vertical shaft on the ore. When completed, Monday tunnel will connect with this shaft. This company is the one mining enterprise in the State to use an airplane for the delivery of mail during the winter. Prior to 1930, mail was delivered by dog team from Cascade. The airplane mail service started in November and continued during the remainder of the year, requiring about an hour from Cascade, as compared with three days by dog team. Plane service included also the transportation of men and light supplies.

Throughout the year the Bunker Hill & Sullivan M. & C. Co., at the Hall Interstate and Lost Pilgrim mines, continued to be one of the most outstanding enterprises in south-central Idaho. Mining and milling were conducted throughout the year, and a substantial tonnage of lead-silver and zinc concentrates was produced and shipped to the company's plant at Kellogg. New camp buildings and concentrate bins were erected, additional mining equipment was installed, and a large amount of mine development work was performed.
The Amalgamated Red Metals Mines Co. and the Profile-Tamarack Mines Co., operating in the Profile section, and the Keystone Gold Mines, Inc., at the Werdenhoff group in the Edwardsburg district, all conducted active exploratory work throughout the summer months.

In the Thunder Mountain district, McRae and Davis maintained work at the Sunnyside mine throughout the summer months and operated their mill intermittently. This district received a large amount of investigation from those seeking new gold-mining enterprises. A project of importance to the Yellow Pine, Profile, Big Creek, and Edwardsburg sections is the construction of the highway from the junction of the present Yellow Pine Meadow Creek highway to the mouth of Profile Creek. Construction of this road was started during the year.

Washington County

An event of importance to this county and to southern Idaho was the entry of the Idaho Mineral Mining Co., a subsidiary of the Goldfield Deep Mines Co. of Nevada, into the Mineral district late in 1929. This company acquired practically all of the principal properties adjacent to the old town of Mineral and consisting of three groups on each side of Dennett Creek; a small gas-driven compressor and complete mining equipment were installed; active development work was commenced and was continued throughout 1930.

The Crystal Dome Oil & Gas Co., whose property lies between the towns of Payette and Weiser, erected an 84-foot derrick, installed a standard steam-driven drilling rig, and commenced operations in sinking a 12½-inch well in November, 1929, and completed the well to a depth of 1,470 feet in 1930. On Sept. 28, 1930, at a depth of 1,865 feet, a showing of natural gas was encountered. In November this company entered into an operating agreement with the Mountain States Oil & Gas Co., which has conducted all subsequent operations.

The Cuddy Mountain district received a small amount of attention during the summer months, and G. T. Hamill produced and shipped a carload of high-grade lead-silver ore.
BUNKER HILL & SULLIVAN M. & C. CO.

The Hall-Interstate, Lost Pilgrim mines were first visited by the present inspector in October, 1922. At that time the best approach from Boise was by way of Lowman and Bear Valley. On this trip the inspector left Boise by automobile at half past five in the morning and arrived at the mine at half past eleven that night, being compelled to walk the last eight miles from the end of the wagon road. His impressions of this visit were published in The Idaho Daily Statesman on November 2, 1922, in part as follows:

Situated in the southeast corner of Valley County and comprising the drainage area of the Deadwood River, which is a tributary to the South Fork of the Payette River, is the Deadwood mining district, a district once famous for its placer gold, and one in which there are many opportunities for the prospector and development companies. Until 1921 this district could be reached by trails only, but with the completion of the forest road from Cascade to Knox and the road from Bear Valley to the Merry Blue mine this section of the State is becoming more accessible and should witness considerable activity in the near future.

The upper end of the district is more accessible from Knox, which is 28 miles from Cascade over an excellent automobile road, thence from Knox to Stolle Meadows by trail. The lower end of the district can be reached by automobile from Lowman to Bear Valley, thence over the Merry Blue road to the mine of the same name, which is on Wilson Creek at about the center of the district. Good trails exist throughout the basin and from different outside points into it, but after leaving the Merry Blue mine or Stolle Meadows the only means of communication is by these trails.

History.

Gold was first discovered in the lower end of the Deadwood Basin in the early sixties, and active placer mining continued for about 30 years until all of the benches and creek bottoms leading into the main valley had been exhausted. These early operations exposed the veins of the principal mines of the district, and as this territory was inaccessible during the placer mining days only the more prominent veins were located. No production statistics are available but, from the extensive placer workings evidenced by the old tailings, the district must have produced a considerable amount of placer gold.

Mountains.

The mountains of this district are part of the great mountain region of central Idaho. The combined crest line forms an undulating plain which is occasionally dissected by sharp peaks that attain an elevation of about 8,000 feet. This crest line has an average elevation of about 7,000 feet and when viewed from a distance the plateau appearance is prominent with the slopes varying little in any given direction, but with a general northerly and southerly trend.

From their east margin the mountains slope gradually to the flat bottom lands of the Deadwood River, while from the west the slope is very sharp. On approaching the lower levels small benches or flats of uniform elevation are numerous, and the slopes from these on either side approach the bottom at the same angle, thus giving the valley a uniform U-shaped trench appearance that clearly marks the path of an ancient glacier.

The principal mountain peaks in the district are Deadwood (elevation 7,500 feet), White Hawk (8,500 feet), Rock Point (8,200 feet), Blue Point (9,000 feet), Pilgrim (8,200 feet), Bernard (8,500 feet) and Monumental (8,300 feet).
BUNKER HILL & SULLIVAN

FLOW SHEET
DEADWOOD MILL

Crude Ore Bin 250 Tons
24" Belt Conveyor
1½" x 18" x 36" Grizzly
9" x 15" Blake Crusher
16" Belt Conveyor
Colorado Impact Screen
Symons Cone Crusher
Fine Ore Bin, 350 Tons
Belt Feeder
20" Belt Conveyor
Automatic Sampler
Hardinge Ball Mill
to 65 Mesh, in closed circuit with
Dorr Classifier
Overflow to Lead Rougher
2" Wilfley Pump
LEAD ROUGHER
1-10 Cell Fahrenwald
LEAD CIRCUIT
2" Wilfley Pump
Tails to Zinc Circuit

LEAD CLEANER
1-4 Cell Fahrenwald Lead Concentrate
5'4" x 6' Oliver Filter
1400 Ton Bin 2" Wilfley Pump
To Dorr Classifier
ZINC CIRCUIT
3" Wilfley Pump
1-6' x 6' Conditioner
ZINC ROUGHER
1-10 Cell Fahrenwald
Tails to Waste
ZINC CLEANER
1-6 Cell Fahrenwald
Tails to Conditioner
Zinc Concentrate
5'4" x 8' Oliver Filter
2800 Ton Zinc Bin

October 1930.
Vegetation and Power.

The mountain and bottom lands are so densely covered with white and yellow pine, fir, and lodgepole pine that the whole presents a dense forest picture with here and there throughout the valley of the Deadwood River open spaces of meadow, some small but others consisting of from 200 to 500 acres, all covered with a luxuriant growth of grass. Winding its way through the meadows and dense forest growth is the sluggish river that for a mountain stream has a very small fall, so much so that no feasible power sites are available until after it enters the box canyon at its lower end. However, many of the small streams that enter the river have a fall of from 1,000 to 1,500 feet in about two miles, and these can be utilized for mining operations.

Geology.

A great amount of quarternary deposits fill the deep trough of the Deadwood River, and there is much evidence that it once lay at a higher level. The greater amount of this material was doubtless derived from the glacial streams which came through the valley, and much of it has been brought down by the streams that enter the main canyon.

The Deadwood mining district is a part of the great granite area of central Idaho, and this rock exists exclusively throughout the entire district. It is a normal granite, sometimes roughly porphyritic by the development of large pink and white orthoclase crystals, which occasionally exceed one-half inch in diameter. The grain is coarse, and reddish orthoclase crystals are prominent. The color is light gray, and the outcrops have a brilliant white tone. Included in the granite, islands of metamorphosed schist are occasionally found.

The schists vary in color from white to dark green and often inclose bands of white metamorphosed quartzite. The entire district is intruded by many dikes, which in places become very numerous. These dikes vary from white rhyolite to black diabase, and almost every variation in color and character between the two phases is present. The dark-colored diabase and dolomite-porphyry dikes are more numerous and are always present in and near all the veins so far found. Adjacent to the dikes pegmatitic granite often occurs, but in no place does the pegmatite appear in the forms of dikes, but rather as a segregation in the granite.
Veins.

The veins of the district appear to owe their origin to these intrusive dikes, and after they were formed considerable faulting has taken place. In many places faulting has occurred within the vein fissures and in others along the dikes. The faulting along the dikes seems to have been the more consistent, and in many places the black dike rocks have been transformed into a heavy black clay gouge.

Practically all of the veins are fissures striking northeast and southwest and dipping to the south at a small angle. They vary in width from a few inches to over 40 feet. In the north end of the district all of the ore is silver or lead-silver. These veins vary from about three feet to over 40 feet in width, while in the southern part of the district gold is the only mineral so far discovered, and here the veins are narrow, varying from a few inches to not over two feet in width, although exceedingly rich. On account of the dense forest growth and heavy overburden but few veins have been discovered, these as the result of placer operations.

All available evidence indicates that conditions surrounding the discovered veins exist throughout the entire district, and there is no reason why other veins equally as good or better are not present and could not be found through intelligently directed prospecting. From the large amount of placer mining that has been done in the lower end of the district, one is safe in assuming that such veins do exist. With the district now becoming accessible, a large territory of unexplored country that is worthy of investigation is opening up to the prospector.

TRANSPORTATION DURING WINTER MONTHS
BUNKER HILL & SULLIVAN M. & C. CO.

Mines.

Lost Pilgrim mine. This property is owned by the Lost Pilgrim Mining Company and is situated near the head of Deadwood River on Pilgrim Mountain. The holdings consist of six unpatented claims. Two veins that cut the granite, one carrying high-grade silver and the other carrying lead-silver, have been proved. Practically all of the work has been done on the silver vein. This work consists of a 40-foot shaft with a 60-foot drift at the bottom and two tunnels, totaling about 500 feet, which are drifts on the vein. The vein averages about four feet in width, the principal content of which is blue-white quartz impregnated
with silver sulphide and some of the oxidized silver minerals. This mine was one of the first discovered in the district, and considerable rich surface ore was mined. This ore was transported to the smelter at Ketchum by pack train, but no records are available as to the amount produced. The work done has proved a substantial body of good grade mill ore that is amenable to modern metallurgical treatment.

Hall-Interstate Mining Company. This property is located on Pilgrim Mountain, and adjoins the property of the Lost Pilgrim Mining Company. The vein is covered with a heavy overburden, and at no place was it exposed on the surface. Float ore found along the creek bottom was the only indication of mineral, so the present owners constructed a high-line ditch and "hydraulicked" the mountain. This work uncovered the vein for about 400 feet in length and proved it to be about 40 feet in width. In the vein is one seam with an average width of about five feet of a high-grade lead-silver ore. In addition to the large cut washed on the surface, approximately 1,000 feet of tunnels and drifts have been run, which further prove the depth and continuation of the ore body, which is one of the largest exposures of high-grade ore lying dormant in Idaho, awaiting a time when transportation facilities are available.

Deadwood Mining Company. This company owns six claims adjoining the property of the Hall-Interstate Mining Company, and at present is engaged in driving a crosscut tunnel, which is now in about 400 feet. This tunnel is being driven to pick up the continuation of the Hall ore shoot.

MILL AND OFFICE
BUNKER HILL & SULLIVAN M. & C. CO.

Roads.

Since the foregoing was written Deadwood Basin has been traversed by excellent Forest Service highways leading to Bear Valley, thence north or south and to Landmark, thence north to Yellow Pine and west to Cascade. Construction of these highways was started in 1922. By 1925 they were sufficiently completed to make Deadwood Basin accessible from Cascade. Before this, Hailey, a distance of 125 miles, was the nearest railroad point, and all supplies were hauled from there by motor truck. Since then, Cascade, a distance of 54 miles, has been the operating base.
Mine History.

The Hall-Interstate, Lost Pilgrim mines were first called to the attention of the Bunker Hill & Sullivan M. & C. Co. in 1923. The company was favorably impressed, and after many months of negotiations the options were completed in May, 1924. Immediately the transportation of supplies and the construction of necessary buildings were started under the direction of Mr. James W. Gwinn, local manager.

A large, two-story boarding house, a power house, shops, barn, and outbuildings were constructed, a hydroelectric power plant and a compressor were installed, mining equipment was put in place, and operations were started on October 24, 1924.

The first work consisted of extending the Independence tunnel of the Hall-Interstate group as a crosscut to the vein and then drifting on, and parallel to, it into the Lost Pilgrim group. This tunnel intersected the ore 690 feet below the outcrop. By the summer of 1929 the work totaled approximately 7,000 feet. An inclined raise, 715 feet at 52 degrees, was driven from the Independence tunnel to the upper, or Anderson tunnel, and an inclined raise, 150 feet long at 65 degrees, was driven from the Anderson tunnel to the surface.

There are four levels in the main raise and many drifts and crosscuts were driven on No. 1 (Anderson tunnel) and No. 2 levels. By 1930 the main tunnel, crosscuts, drifts, and raises totaled over 10,000 feet.

Mine development work continued without interruption from October, 1924, and by the summer of 1927 sufficient ore had been opened to warrant the construction of a mill. A sawmill was installed, additional camp buildings were erected, and work was started on the mill. This work continued without interruption, and the mill was completed in October, 1928. Milling operations were started in April, 1929, but insufficient power caused a suspension, and the mill remained idle while an additional hydroelectric power plant was being built. The new power plant was completed in November, 1929, and since then milling has been continuous.

Mr. Gwinn was in charge of all operations until the spring of 1930, when he became incapacitated and was temporarily succeeded by Mr. C. Y. Garber.

Ore.

The ore is a coarse mixture of galena, sphalerite, and tetrahedrite, which occur as segregations, with sphalerite predominating. The lead and zinc minerals are coarse-grained, distinctly recognizable, and easily distinguished from each other. The gangue minerals are siderite, quartz, and decomposed wall rock. The ore is exceedingly friable, and mining operations reduce it to a fine mass in which no particle seldom exceeds one inch in diameter. Down to 20-mesh in size it is easily crushed, but grinding to lower sizes is difficult. When it is ground to 65-mesh, the ore minerals are liberated from the gangue.

Mining Methods.

The vein has a general east and west strike and stands vertical. Two large faults are parallel to the vein, and it is occasionally offset by transverse faults. The faulting has crushed the wall rock and ore to such an extent that the ground is extremely heavy and very difficult to hold open. On account of this condition the square-set and back-fill method is necessary, and all stopes are kept filled to within one floor of the working face. Bunker Hill type crib manways and slides are used in the main raises and in all stope raises. The transverse faulting, which offsets the vein, makes it difficult to keep the stope raises in alignment. Waste raises are driven into the walls at steep angles for back filling. All timbers are framed on the surface.

Equipment.

The principal buildings in addition to the mill are: A commodious boarding house; office and manager's residence; assay office; sawmill; foreman's residence; barn; compressor and change house; blacksmith shop; warehouse; two power houses; and numerous cabins.
MINING INDUSTRY OF IDAHO

Stratton Creek power plant: 160-kw. generator driven by Pelton water wheel operating under a head of 520 feet, water delivered through 14 and 10-inch pipe line; Woodward governor, volt regulators, and overload protection; 3-phase, 2,200 volts reduced to 220 volts for power purposes. Constructed in 1924.

Deadwood power plant: 375-kw. generator driven by a double-wheel Pelton water wheel operating under a head of 180 feet, water delivered through a 30-inch, electrically welded steel pipe line 4,050 feet long; Pelton governor, volt regulators, and semi-automatic equipment; 3-phase, 2,300 volts reduced to 220 volts for power purposes. Constructed in 1929.

Mining equipment: One-ton Manch storage battery locomotive capable of pulling 10 cars; 385-cubic-foot, compound Ingersoll-Rand compressor, driven by a 60-horsepower motor; Waugh Model 8 drill sharpener; Garden-Denver rock drills with water attachments; Anaconda type air-driven hoist in main raise, tugger hoists in stope raises; 3-inch air line and 16-pound rails in Independence tunnel; complete assaying equipment; sawmill, 56-inch rip, raw, 30-inch cut-off saw, combination mine-timber-framer, 14-inch wedge saw; each saw is driven by an individual motor.

Transportation.

From about the 10th of November to the 20th of June of each year the roads are closed to wheeled vehicles, and the only means of communication, other than Forest Service telephone, is by dog sled. The teams are employed under contract, and two are necessary to meet the schedule of three mail deliveries to the mine per week. The trip between the mine and Cascade requires two days. The contract calls for a 100-pound load and the transportation of one company official or injured employee when necessary, but the contractor is obliged to carry only the mail. Two cents per pound is paid for freight and five cents per pound for personal baggage.

During the summer months three 5-ton dump-body trucks are used for hauling the concentrates and supplies. The trucks operate on a 24-hour schedule and make two round trips per day. All hauling is done under contract at a price of $10.00 per ton in each direction. As supplies of all kinds in sufficient quantities to maintain operations throughout the winter months must be hauled during the open season, the trucks moving in both directions are usually fully loaded.

MILL

The test work and the designing of the mill were done by Mr. C. Y. Garber, to whom the inspector is indebted for assistance in the preparation of the following description of the mill.

At the present time the mill has a capacity of 100 tons per 24 hours; however, the building is sufficiently large to house milling equipment for a capacity of 300 tons, and it is necessary to add but little more machinery to bring the mill up to the latter capacity.

Grinding.

The ore is transported from the mine by a one-ton, storage-battery locomotive pulling 10 cars and is delivered directly into the 250-ton crude-ore bin from which it is drawn through a chute on to a 24-inch belt conveyor. The conveyor dumps on to a tapered bar grizzly, 36 inches long by 18 inches wide with 1½-inch slots. After passing over the grizzly, the ore is crushed to a maximum size of 1½ inches in a 9 by 15 Blake crusher. The undersize from the grizzly and discharge from the crusher go to a 16-inch belt conveyor, which delivers it (dry) to a Colorado impact-screen with a ½-inch screen opening. The undersize from the screen goes to the fine-ore bin and the oversize to a 3-foot Symons cone crusher that discharges directly into the fine-ore bin, which has a capacity of 300 tons.

The ore is fed from the fine-ore bin by a belt-feeder on to a 20-inch belt conveyor equipped with an automatic sampler, and then goes to a 6-foot by 22-inch Hardinge ball mill where it is ground to 65-mesh. The ball mill operates in closed circuit with a 4½-foot, duplex-type Dorr classifier without the use of pump or elevator.
Rougher Circuit.
The overflow from the classifier goes direct to a 10-cell Fahrenwald flotation machine, termed the lead rougher cells. The first five cells of this machine make a rough lead concentrate, which goes to the lead circuit; the last five cells make a low-grade concentrate, which is returned to the Dorr classifier by a 2-inch Wilfley pump, and the tails go to the zinc circuit.

Lead Circuit.
The product from the first five cells of the rougher circuit goes to a 4-cell Fahrenwald flotation machine, which makes a high-grade lead concentrate and a tailing. The tailing is returned to the Dorr classifier by a 2-inch Wilfley pump, and the lead concentrate passes through a 5-foot 4-inch by 6-foot Oliver filter, which discharges into a 1,400-ton storage bin.

Zinc Circuit.
The tailings from the rougher circuit are delivered into a 6 by 6-foot conditioner tank by a 2-inch Wilfley pump. The product from the conditioner is fed directly into a 10-cell Fahrenwald flotation machine, termed the zinc rougher cells. The first five cells of this machine make a rough zinc concentrate, which goes to the zinc cleaner; the last five cells make a low-grade zinc concentrate, which is returned to the conditioner tank; and the tailings go to waste where they are settled in a pond and clear water only overflows. The product from the first five cells of the zinc rougher goes to a 6-cell Fahrenwald flotation machine, which makes a high-grade zinc concentrate and a tailing. The tailing is returned to the conditioner, and the concentrate passes through a 5-foot 4-inch by 8-foot Oliver filter, which discharges into a 2,800-ton storage bin.

Reagents and Where Used.
Grinding circuit.
1.4 pounds of zinc sulphate and 0.17 pounds of aerofloat per ton of ore are fed into the Hardinge ball mill.
Rougher circuit.
.01 pound of cresylic acid per ton of ore is added at the sixth cell.
Lead circuit.
None.
Zinc circuit.
To each ton of ore 1 pound of copper sulphate, 2 pounds of aerofloat, and .025 pounds of zanthate are added in the conditioner—cresylic acid and zanthate are added to the product from the last five cells of the zinc rougher before being returned to the conditioner.

Drives.
Grinding circuit.
Line shaft, belt-connected to 30-horsepower motor drives:
Blake crusher.
Belt conveyors.
Feeders.
Automatic sampler.
Impact screen.
Symons cone crusher, by 50-horsepower motor, Tex rope connected.
Hardinge ball mill, by 50-horsepower motor, Tex rope connected.
Classifier, by 3-horsepower motor, belt-connected.

Flotation Circuit.
Each individual cell in all flotation machines is driven by a 3-horsepower motor, Tex rope connected.
The two filters are driven from a line shaft belted to a 15-horsepower motor.

Pumps.
Six 2-inch Wilfley pumps direct-connected to a 5-horsepower motor.
One 3-inch Wilfley pump direct-connected to a 10-horsepower motor.

Blower.
Ten-horsepower motor, belt-connected.
**Average Assays of Ore and Mill Products.**

The average assays of the mill feed and products are as follows:

<table>
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<th></th>
<th>Au. $</th>
<th>Ag. Oz.</th>
<th>Pb. %</th>
<th>Zu. %</th>
<th>Cu. %</th>
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<tr>
<td>Mill feed</td>
<td>1.00</td>
<td>10.00</td>
<td>3.50</td>
<td>10.00</td>
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<td>Lead cons.</td>
<td>15.00</td>
<td>160.00</td>
<td>55.00</td>
<td>9.00</td>
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<tr>
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<td>58.00</td>
<td>0.40</td>
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<td>Tails</td>
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<td>0.33</td>
<td>0.07</td>
<td>0.71</td>
<td>0.07</td>
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<tr>
<td>Average total recoveries</td>
<td>76.50%</td>
<td>95.00%</td>
<td>97.00%</td>
<td>85.00%</td>
<td>60.00%</td>
</tr>
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</table>

**REMARKS**

This enterprise, in point of past expenditures, production, and men employed, is one of the largest in south-central Idaho. It is of particular interest because the ore bodies occur in old gneissic and granitic rocks, and because it is a good example of mine development following the construction of modern highways. The management of the company has displayed a large amount of courage and civic pride, for which it deserves the hearty approval of everybody interested in the future growth of the State.

**CADMIUM**

Cadmium, during 1930, was added to the list of metals produced in Idaho. In the early part of the year the Sullivan Mining Co. began production at its cadmium recovery plant, which was added to its electrolytic zinc plant in 1929; since then operations have been continuous and a substantial tonnage of cadmium has been produced and marketed. The high purity of this cadmium makes it a worthy companion to high-grade zinc—"Bunker Hill 99.99+% zinc"—which is produced in this company's zinc plant, and both metals are being well received by the trade, which is recognizing their superior quality.

Cadmium minerals are almost unknown and none occur in sufficient quantity to become ore. The metal occurs associated with zinc ores and is recovered as a by-product in zinc smelters and electrolytic zinc plants. Some zinc ores contain more cadmium than others, but in all cases the amount is exceedingly small, the average ratio in zinc ores from various parts of the world being about 1 part cadmium to 400 parts zinc.

Metallurgically cadmium resembles zinc; physically it closely resembles tin. The pure metal when bent even emits the "cry" or crackling sound peculiar to tin. The color is white with a slightly bluish tinge.

Paul M. Tyler in Mineral Resources of the United States, 1927—Part I, page 323, published March 12, 1929 (the latest Government publication on this metal), says in part:

Cadmium is a soft heavy metal, ductile enough to be beaten out into thin foil or drawn into wire. The specific gravity is 8.6. Although it is a trifle harder than tin, it will mark paper and hence is much softer than zinc. In hardness and tenacity it is intermediate between tin and gold. The boiling point is lower than that of zinc. The vapor is deep yellow, and the metal burns readily when heated in the air, evolving fumes of brown oxide.

Among the properties that make cadmium valuable commercially are its resistance to oxidation and its unusually low melting point. Cadmium melts at a relatively low temperature and has a further property of greatly increasing the fusibility of other metals with which it may be alloyed without making them brittle. Added to copper or silver, it acts as a hardening and toughening agent. In dry air the metal will stay bright almost indefinitely, and although it takes on a superficial film of oxide in moist air it is suitable, nevertheless, for rustproofing iron and steel.

Cadmium salts are all poisonous, a fact that has retarded the use of cadmium in solders and has restricted somewhat the field for cadmium plating, as the metal can not be employed in any way for food containers without endangering the health of consumers.
Cadmium is a constituent of nearly all of the well-known low-melting alloys employed in fusible plugs for automatic sprinklers, steam boilers, and fire alarms, and for safety fuses in electric circuits. In addition to cadmium, these mixtures usually contain lead, tin, and bismuth. By varying the relative proportions of the different constituents, alloys with a wide range of melting points can be produced. Lipowitz's metal, a white metal with a luster like that of polished silver, which melts at 60°C, is used for making casts of small animals and insects and forms an especially good solder for Britannia metal. A similar alloy is used for making casts of parts of the human body. Wood's metal, which is even better known, melts at a slightly higher temperature (71°C). There are quite a number of these multiple alloys that melt at temperatures below the boiling point of water; several of them are moderately strong and can be bent or worked in a lathe. An antimony-lead alloy containing bismuth and cadmium has been invented for bonding glass.

Cliche metal for stereotype plates may be made with about 22.5 per cent of cadmium, 50 per cent of lead, and 2.75 per cent of tin, a mixture superior to the corresponding cliche metal containing bismuth, as it gives a greater number of impressions.

An important use of the metal is in copper telephone and trolley wires. In proportions of 0.5 to 1.2 per cent cadmium raises the annealing temperature and adds materially to the strength and wearing qualities of copper without greatly reducing the conductivity, as practically all other hardening agents do. Some quantities of cadmium are used to improve the properties of both plated and sterling silverware. In the jewelry trade cadmium is employed for producing green gold.

A new use, which because of its connection with the automobile industry has become of great importance, is in rustproofing steel, particularly nuts, bolts, sundry small parts for automobiles, and various light hardware, including locks, refrigerator trimmings, and certain wire products. The cadmium coat forms an alloy with the steel, and it is remarkably adherent even when applied to aluminum and light alloys. Because of its thinness, its extraordinary adhesiveness, and its softness, cadmium does not peel or crack off like nickel or zinc when damaged by the jaws of a pipe wrench or pliers. Cadmium-plated articles can be given various finishes, ranging from bright to soft satin and French gray. Cadmium plating alone does not produce a satisfactory silverlike finish, because its brilliancy is soon lost, principally because it is too soft to withstand abrasion, but it may be used as a base coat for subsequent plating with nickel, copper, or brass. (Ed. note—Since the foregoing was written the principal use for cadmium has been as a base coat in chromium plating for bright parts.)

Cadmium has been employed in the form of wire for coating or "metal spraying" plaster casts, statuary, and other objects. Alloys containing cadmium are used in nonrusting hairsprings for watches and clocks. For the manufacture of electric-light filaments one of the earlier successful processes employed cadmium. An amalgam consisting of 42 per cent of cadmium, 53 per cent of mercury, and 5 per cent of bismuth can be impregnated with tungsten metal powder and then extruded through dies to produce a raw filament which is later heated to a high temperature to drive off the volatile metals. Five per cent of cadmium is sometimes added to aluminum powder to improve the color and luster and to make it more resistant to atmospheric influences.

Cadmium has been recommended for use in electric storage batteries. A battery having cadmium plates can be discharged completely and allowed to remain discharged indefinitely, whereas such abuse causes serious damage to ordinary lead batteries. As they cost fully twice as much as lead batteries, cadmium batteries have not been widely used, although there are several makes of miners' safety lamps employing an alkaline electrolyte, one nickel electrode, and, instead of the usual iron electrode of the Edison battery, a mixture of iron and cadmium in a
thin perforated metal case. Monochromatic red light for scientific investigation in physical laboratories is produced by means of cadmium. In the quartz-cadmium vapor lamp developed by the United States Bureau of Standards the cadmium is alloyed with a very small fraction of 1 per cent of gallium, giving a long-lived lamp that does not become clouded by adhesion of cadmium vapor to the walls.

During the World War cadmium was declared contraband by most of the belligerents. This may have been due in part to its use as a substitute for tin, but, in addition to the ordinary industrial uses, cadmium was employed in smoke bombs and a cadmium band was placed on hard-jacketed cartridge bullets to take the rifling without undue wear on the barrel.

**Cadmium Compounds.**

Most of the salts are soluble in water and dilute acids, and they are used principally as a source of the metal in cadmium plating and as pigments. Since cadmium is poisonous, almost its only use in medicine is as salicylate, which may be employed as an external antiseptic. The acetate finds a little use in dentistry. Several of the salts, particularly the alcohol-soluble halogen compounds, are employed in photography, and certain of them enter into the manufacture of fireworks and ceramics. Cadmium tungstate (CdWO₄) in the form of yellow crystals is used in the manufacture of fluorescent paint, and a borotungstate known as Klein's reagent is used in the preparation of a heavy solution having a maximum specific gravity of 3.28 and used for float-and-sink tests in ore dressing and mineralogy.
Cadmium lithopone, also known as “cadmopone,” is prepared like zinc lithopone by adding a solution of barium sulphide to the carefully purified sulphate. Since it contains only 30 per cent or less of cadmium, this pigment is much cheaper than cadmium sulphide, which contains approximately 75 per cent of the element, and for many purposes it is quite as satisfactory.

ELECTROLYTIC CADMIUM PLANT
OF THE SULLIVAN MINING COMPANY

Cadmium occurs as an impurity in practically all zinc ores. The quantity present is very small and rarely exceeds a few tenths of 1 per cent. This metal is an objectionable contamination in electrolytic zinc, and its removal from the zinc solution in the zinc plant is an expensive but essential part of the process. The removal of cadmium is accomplished by agitating the zinc-bearing solutions with finely divided zinc dust.* This action precipitates the cadmium, together with other impurities, chiefly copper, nickel, and cobalt, as a finely divided metallic material known as “purification residue.” This residue, in which the cadmium has been concentrated about one hundred fold, constitutes the feed to the cadmium plant. The residue also contains about 40 per cent zinc, which is recovered and returned to the zinc plant after the cadmium and other impurities have been removed. Thus the cadmium unit performs an additional function, namely, that of salvaging zinc which would have been a loss in the zinc plant, thereby increasing the efficiency of that plant.

The purification residue is stored in a stock pile from which it is carried to the cadmium plant by a conveyor and fed into a ball mill. The sludge from the mill goes into a lead-lined leach tank, where it is agitated with 27 per cent sulphuric acid, spent electrolyte from the zinc plant. The cadmium is dissolved and the copper remains as a residue in the form of cement copper. The residue, which contains a high copper content, is then filtered from the solution and shipped to a copper smelter.

The solution carrying the cadmium is then passed over zinc plates by which the cadmium is precipitated as a metal sponge. The cadmium sponge floats to the surface of the solution and is scraped into a launder, which carries it to a Burt filter in which it is filtered and washed. This sponge is contaminated with zinc, nickel, cobalt, lead, and iron and must be redissolved and electrolyzed to produce high-grade cadmium metal. The solution after passing through the boxes is barren of cadmium but is rich in zinc; the purification of this solution is discussed later. The zinc plates used to precipitate the cadmium are rapidly consumed and a relatively large number are required; handling is expedited by an overhead crane which travels above the precipitation boxes and over the railroad siding.

The cadmium sponge dissolves slowly in dilute sulphuric acid; if it is partly oxidized, the solubility is greatly increased. The sponge, therefore, after leaving the Burt filter, is dried on a steam-plate drier to permit oxidation. It is then leached with the electrolyte from the electrolytic cadmium cells. All of the cadmium is not oxidized, and the remaining undissolved metallic portion serves to remove small quantities of copper which may not have been precipitated in the leach, and also tends to keep other impurities from building up to their full extent in the solution. After being dissolved, the cadmium, in the form of neutral solution, is sent to the storage tank and is ready for electrolysis. The electric cells are of the stationary cathode type and are in most respects similar to the standard cells used in the zinc plant. The chief points of difference are in the cell reagents and in the use of a lower voltage and much lower current density. After the electrolysis of

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* A complete description of the Sullivan Electrolytic Zinc Plant was published in the Twenty-ninth Annual Report of the Mining Industry of Idaho for the year 1927, to which the reader is referred for further details.
the cadmium, the spent electrolyte is returned to the re-solution tank, where the acid generated during electrolysis is used to dissolve the cadmium sponge, which is again returned to the cells as neutral solution. The electrolysis is not very sensitive to impurities in the electrolyte, so they gradually build up, and it becomes necessary eventually to discard part of the solution; but before this is done the solution is passed through a stripping cell, which removes practically all of the cadmium.

The purification of the solution from the cadmium precipitation boxes constitutes one of the innovations in the cadmium plant. This solution is rich in zinc and contains cobalt, a very objectionable impurity in electrolyzing zinc, the greater part of which must be removed before the solution is returned to the zinc circuit in the main zinc plant. This is done by means of an additional purification process by which the cobalt and nickel are precipitated from the solution.

Because cadmium oxidizes at low temperatures, in order to prevent excessive drossing of the metal, the cadmium cathodes are melted under a thin layer of fused caustic soda or heavy gravity oil. After the cadmium is melted it is cast into pencils, slabs, balls and anodes of various shapes to meet the requirements of the trade.

The tanks throughout the plant are lead-lined and equipped with steam coils to permit temperature control of the solutions at any stage of the process. A motor-generator set supplies the cadmium plant with its own source of direct current independent of the zinc plant generators. The entire cadmium plant is so arranged that any unit can be temporarily shut down without affecting the operation of the rest of the process. In general, the plant resembles the zinc unit, but on a smaller scale, and embodies those features of design which experience with the zinc plant has proved to be desirable.
NEW HOIST OF SUNSHINE MINING CO.

By H. Glen Coulson, Chief Designing Engineer
Coeur d'Alene Hardware & Foundry Co., Wallace, Idaho

The progressive steps by which the Sunshine mine was developed resulted in the mine workings not being properly arranged for economical operation and, as greater depth was attained, a different arrangement became necessary.

The mine had been opened by a 500-foot, single-compartment, vertical shaft, 1,500 feet in from the portal of the tunnel, and by a 60-degree inclined shaft, from the 500-foot level of the vertical shaft, to the 1,300-foot level. This arrangement necessitated double handling of all materials to and from the levels below the 500-foot level, and as the milling capacity had been increased it had become impossible to supply the additional tonnage to the mill through the one-compartment vertical shaft with the hoisting equipment in use. In 1929 work was started on raising the inclined shaft from the No. 5 level to the tunnel, rebuilding the tunnel, and cutting a hoisting station and pockets in order that all hoisting could be done in one operation. This arrangement required a new hoist which would meet the present requirements as well as those of the future when greater depth had been attained. The order to design and build the hoist was given to the Coeur d'Alene Hardware & Foundry Co. The mine improvements and construction and installation of the new hoist were completed and the hoist was put into operation in June, 1930. Although the hoist was designed to operate to an ultimate depth of 3,000 feet, it will be necessary to install a larger motor in order to do so.

Specifications

The hoist is electrically driven and is known as Coeur d'Alene type, heavy-duty, with double-clutched drums. The specifications are briefly as follows:

Size:
Ultimate capacity............................................................400 horsepower

Drums:
Cylindrical double drum. Both drums double-clutched, 62 inches in diameter, 60-inch face. Shell-spooled to hold 3,300 feet of 1 5/8-inch round rope.

Drive:
Single-speed reduction from motor through cut-steel Herringbone gears.

Brakes:
Gravity-operated, released by oil pressure.

Duty:
Net ore load, including skips, minimum.........................8,000 lbs.
Rope pull, maximum..................................................17,000 lbs.

Speed:
Hoisting speed.........................................................700 ft. per min.

Pinion Shaft Bearings:
Hoffman roller type.

Clutches

The driving connection of the drums to the main shaft is effected through Coeur d'Alene multiple-disc-type clutches, which have amply demonstrated their superiority through use on many hoists during the past several years. These clutches are compact and powerful; they have a low moment of inertia compared with their strength, and they require adjustment at long intervals only. The clutches are operated directly by hand levers.

Brakes

The brakes are parallel-motion post type made of structural steel and are lined with woven asbestos. They are gravity-applied by means of weighted cylinders and are released by oil under pressure. Brake control is effected through Coeur d'Alene sensitive and accurate floating lever and cam mechanism, by which the brake cylinders follow with minute exactness the movements of the operator's control levers.
Oil Pressure System

This equipment includes a self-contained oil system having supply and pressure tanks. The pressure is provided by duplicate motor-driven gear pump units, which in turn are controlled by a pressure regulator.

Electrical Equipment

The power to operate the hoist is supplied by a Westinghouse slip-ring induction motor of 250-horsepower, 40-degree, continuous rating (375-horsepower hoist rating), operating on a 2,200-volt, 3-phase 60-cycle current. Motor control is of the Westinghouse full magnetic type, in which acceleration of hoist motion is automatic. The rate of acceleration can be retarded at will but can not be increased by the operator. A traveling-nut-type limit switch is connected to each drum to provide automatic retardation when the mine shaft shall have reached a much greater depth than at present. Provision also has been made for substitution of a 400-horsepower continuous-rated motor for operation of the mine at the ultimate shaft depth.

Safety Provisions

Each drum is connected by suitable gearing to a Lilly safety controller, which, in case of overspeed or overwind, opens the control circuit and cuts off from the hoist all supply of current. This safety action, or any other cause which brings about failure of the current, immediately operates through release of a solenoid valve to set the brakes and bring the hoist to a stop. This emergency provision may also be called into action by depressing a push button, which is located within easy reach of the operator. An interlocking arrangement by which no current can be supplied to the hoist unless the motor control lever be placed in the neutral position and both brake control levers be set in the applied position is another safety feature. Upper final limits to which the skip can be hoisted are provided by track limit electrical switches located above the skip dumps and lower final limits are included in the traveling-nut switches.

A backing-out switch is mounted upon a panel at the operator's elbow. By means of this switch, when the hoist is operated so far as to engage a limit switch, the hoist may then be operated in the reverse direction, but it can not move any farther in the direction of the overrun.

Still another safety feature is provided by a "collar-stop" arrangement for use when hoisting men. A limit switch is placed in each shaft compart-
ment a short distance above the collar, and this is controlled by a push button on the hoist operator's panel. When thrown into circuit these switches act as final limits, automatically stopping the hoist if cages should pass the collar only a few feet. Green lamps at the collar and in the hoist room indicate when the "man-safety" limits are set for action. Nothing serious could occur even if the collar-stop arrangement should temporarily become defective, because the man cages are provided with extra wheel treads, which make it impossible for the skips to turn into the dumps.

Size

The Sunshine hoist is approximately one-half the size and capacity of the Coeur d'Alene 800-horsepower, double-drum, electric hoist placed in commission at the main shaft of the Bunker Hill mine in 1924.*

*This hoist is fully described, with illustrations, in the Twenty-sixth Annual Report of the Mining Industry for the Year 1924.

SHERMAN HOWE MINING COMPANY

One of the principal new mills in the State to commence operations in 1930 for the recovery of gold was that of the Sherman Howe Mining Co. This company's mine is located in the Marshall Lake district, Idaho County, 17 miles northwest of Burgdorf, which is 35 miles north of McCall. Its property adjoins that of the Golden Anchor Mining Co. and covers the western extension of the Holte vein system. The mine is situated at the head of Bear Creek on the Salmon River slope, at an elevation of approximately 8,000 feet.

The company was incorporated and commenced operations in 1929. During that year a 250-horsepower Diesel engine direct-connected to an electric generator, a compressor, and mining equipment were installed; a 3-mile electric-transmission line between the power plant and the mine, camp buildings, and a mill building were erected; and a substantial sum was expended in road construction and mine development. During 1930 four additional camp buildings were erected, and a large sum was expended in road construction and mine development.

Mill construction was completed, and the plant was put into operation in January, 1930. Each machine is driven by an individual motor, and each unit is self-contained. The mill has a capacity of 150 tons per 24 hours, and it employs the most recent methods of milling ore containing free gold and sulphide minerals.

The ore is trammed from the mine by hand and is delivered directly to the mill, where it is dumped on to a grizzly with 1-inch openings. The undersize goes to a 300-ton fine-ore bin, and the oversize passes through an 8-inch Traylor gyratory crusher, thence into the fine-ore bin. There is no crude-ore bin, and the trammer starts and stops the crusher as each car of ore is delivered to the mill.

The ore is drawn from the bin by a 7-foot by 12-inch plate feeder and is fed into a 4-foot by 8-foot Marcy rod mill, operating in closed circuit with a 3-foot simplex-type Dorr classifier, where it is ground to pass 30 mesh. The overflow from the classifier goes to a distributor and thence over four 4-foot by 12-foot amalgamation plates. On leaving the plates, it passes to a No. 54 Marcy ball mill, operating in closed circuit with a 4-foot 6-inch duplex-type Dorr classifier, where it is ground to 50 per cent minus 200 mesh. The overflow from the duplex classifier goes to an 8-foot Hoyt riffle, where the remaining free gold liberated by the fine grinding is amalgamated, and thence into an 8-foot Denver conditioner. From the conditioner it goes to an 8-cell, Denver Sub-A Fahrenwald flotation machine. The first five cells of this machine make a finished product, which goes to a 14-foot Dorr thickener, thence through a 3-foot by 4-foot Oliver filter, which discharges into the concentrate bin. The product from the last five cells is returned to the head cell, and the tailings go to waste. The amalgam from the plates and Hoyt riffles is retorted and melted at the mill; the concentrate is sacked and shipped to a smelter.
MILL FLOW SHEET

Sherman Howe Mining Co.

Grizzly
8" Taylor Gyratory Crusher

300 Ton Ore Bin
7'x12" Plate Feeder

4'x8 Marcy Rod Mill

3' Simplex Type Dorr Classifier

Distributor

4 - 4'x12' Amalgamation Plates

No. 54 Marcy Ball Mill

4'6" Duplex Type Dorr Classifier

8' Hoyt Riffle

8' Denver Conditioner

8 Cell Denver Sub-A Flotation Machine

Tails to Waste

14' Dorr Thickener

3'x4' Oliver Filter

Concentrate Bin
TALACHE MINES, INC., OPERATIONS AT GOLD HILL MINE, QUARTZBURG, IDAHO

By A. H. Burroughs, Jr., President and Manager

The Gold Hill Mine is one of the oldest mines in the State of Idaho, having been in operation with short interruptions since 1864. Early operations were confined to the Gold Hill vein and, according to Lindgren,* production prior to 1896 amounted to $2,225,000. This production all came from above the 400-foot level, and available information indicates that the Gold Hill vein was not worked at a profit below the 250-foot level. Subsequent production, amounting to some $4,000,000, has come from so-called “porphyry ore bodies”. These are irregular ore shoots, which are largely confined to a rhyolite porphyry (quartz porphyry) dike in the vicinity of the Gold Hill vein and to a parallel rhyolite porphyry dike about 300 feet to the south and traversing the Pioneer claim. The Gold Hill “porphyry ore bodies” produced commercial ore down to the 600-foot level, and at the time the mine was allowed to fill with water in 1925 the Pioneer “porphyry ore bodies” appeared to be bottomed on or above the 600-foot level.

The “porphyry ore shoots” occur along zones of shearing, which have an approximately vertical dip and strike from N. 40 degrees E. to N. 60 degrees E., and are located in the Gold Hill rhyolite porphyry dike in the vicinity of its intersection with the Gold Hill vein and also in the Pioneer rhyolite porphyry dike in the vicinity of its intersection with a younger rhyolite dike. The oldest formation is granite, which has been intruded by diorite and later by the rhyolite dikes which are of at least two ages. The rhyolite dikes strike slightly north of east and dip about 75 degrees to the north.

Where ore occurs along the zones of shearing, the first mineralization appears to have been quartz followed by pyrite, sphalerite, lead-bismuth sulphides, and gold. The gold is very closely associated with the lead-bismuth sulphides but is entirely free. The ore is of primary character, and there does not appear to be any appreciable zone of oxidation or enrichment in the “porphyry ore shoots.”

Mine Unwatered:

In March, 1927 the Talache Mines Inc. acquired the Gold Hill & Iowa property under a lease and option, and the mine was subsequently unwatered. When sinking had reached the 700-foot level, ore averaging about $9.00 per ton was developed, and the property was equipped for production. The old equipment, being largely worn out, was scrapped. Among replaced equipment may be mentioned a 250-horsepower electric hoist and 150-ton amalgamating mill.

Subsequent mining operations showed that the grade of ore declined from $9.00 on the 700 level to $6.00 as the 600 level was approached. Information gained from this and subsequent work has confirmed the opinion that the lower grade ore on and near the 600 level is due to a lean zone. Such zones are not uncommon in gold mines; many mines on the mother-lode in California show similar conditions, with equally good ore below as above. Development of the 850 level has proved ore of about the same grade as on the 700 level, or slightly better.

Operations above the 600 level, other than on the Gold Hill vein, were confined to the so-called “porphyry ore bodies” which were irregular ore shoots without any connection from one to another, except that all occurred in a broad zone of shearing. Many of these ore shoots do not appear to extend to the surface or down to the 600-foot and lower levels. Most of these ore shoots were confined to the rhyolite porphyry, although some ore bodies were productive for limited distances extending into the granite and diorite formations.

The 850-foot level has not been fully developed, but work to date indicates a somewhat different ore occurrence. Ore on the 850 level was first developed

in the rhyolite porphyry, but the rhyolite dike at this point is quite small, and the ore is confined to a narrow zone of pronounced shearing. This zone has been followed through the rhyolite porphyry and into the granite on both sides for distances of 100 feet or more, with equally as good ore in the granite formation as in the rhyolite. The extensive occurrence of ore in the granite formation on the 850 level led to further work on the 700 level, with development work proving the occurrence of ore along a narrow zone of shearing, extending from a previously mined ore shoot, some 200 feet, mostly through granite and diorite.

It is too soon to draw definite conclusions, but it does not appear unlikely that when the 700 and 850 foot levels are fully developed the ore will be found continuous, except for short breaks due to minor faulting, for more than 400 feet and passing through granite on the south, into the Pioneer rhyolite porphyry dike, through granite and diorite on the north and possibly into the Gold Hill rhyolite porphyry dike. This ore occurrence is dissimilar to the "porphyry ore bodies" and has more the characteristics of a narrow shear zone, or vein without definite walls. Further development work may possibly connect this ore occurrence with the Gold Hill vein. The work done on these levels is of interest primarily as proving the extensive occurrence of ore in the granite and diorite formations. This heretofore unknown occurrence of ore makes a large unexplored territory available for prospecting and gives excellent opportunities for opening additional reserves, particularly in the unexplored area on the 600 and 500 levels above the area developed on the 700 and 850 levels.

**MILL**

The accompanying picture shows the old Gold Hill mill building and part of the remaining surface plant. Because of the lack of a suitable site for a new mill building, the old building was utilized. All equipment and foundations were removed, and a new flow sheet was fitted to the old building. The ultimate cost was as much as for a new building on a new site.

The flow sheet of the old mill consisted of amalgamation in a Hardinge pebble mill, followed by plate amalgamation and table concentration of plate tails. The table concentrates were shipped for a number of years, but they were relatively low grade, and in 1918 a cyanide plant was constructed for treating these concentrates. The cyanide plant was never successful because of fouling of the solutions.
Numerous metallurgical tests were made before construction of the new mill, and the results indicated equally as good, or better, gold recovery could be obtained by amalgamation alone. The flow sheet shown in Figure 2 was decided upon. It offers the advantage of producing a finished product, gold bullion.

Crushing:
Ore from the mine is hoisted in 1-ton cars on cages and dumped into an ore bin alongside of the shaft. Ore is fed from the bin by a Stevens-Adamson 30-inch armored-belt apron feeder on to a grizzly with 1/4-inch openings. The oversize passes through a 10 by 20 inch Traylor-Blake type jaw crushe, set to minus 2 inches. The crushed oversize then joins the undersize from the grizzly and after being elevated by a 12-inch bucket elevator passes through a set of 42 by 16 inch Traylor heavy-duty rolls, set to minus 1 inch. The discharge from the rolls is on to a 14-inch belt conveyor, which transports the ore to the mill bins. There are two of these bins, each holding 150 tons.

Sampling:
The crushed ore is fed from either of the two mill bins by Stevens-Adamson armored-belt feeders on to a centrally located conveyor belt, which discharges into the feed box of a Hardinge mill. Weight and head samples are taken by a hand-operated splitter which cuts the entire feed stream. This does not give as accurate a sample as desired but, because of the circulating load in the Hardinge mill, a wet sample cannot be obtained. Individual shift-head samples are erratic, which is to be expected with a free gold ore, but the monthly average closely checks with production and tails.

Primary Grinding and Amalgamation:
Grinding is done in an 8 by 22 inch Hardinge mill operated by a 125-horsepower slip ring, 900 r. p. m., motor driving through a link-belt silent chain drive to spur pinion and gear. The mill operates at 17 r. p. m.
The discharge from the Hardinge mill is elevated by a 14-inch bucket elevator to a 4-foot hummer vibrating screen with 24-mesh openings. The oversize is returned to the ball mill, and the undersize passes to a paddle-type distributor and thence to six amalgamating plates with a total area of 420 square feet.
The plate tails, after passing through traps, are pumped by a 2-inch Wilfley sand pump to an 8-foot Callow cone for dewatering before going to a 6-foot by 18-foot 4-inch Dorr duplex classifier, operating in closed circuit with the Hardinge mill.
The classifier overflow approximates 20 per cent solids, with approximately 80 per cent minus 80 mesh.
The object of the closed circuit just described is to give the coarse gold, minus 24 mesh, an opportunity to amalgamate, but at the same time not to permit any gold-bearing particles to pass out of the circuit until ground sufficiently fine to free their gold content. For this purpose grinding at least to minus 65 mesh is necessary.
At the head of each amalgamating plate is a feed box with paddles set at different quadrants on a revolving shaft, extending across the width of plates. These paddles evenly distribute the feed, and also impart a wave motion to the feed, similar to the splash from a stamp battery.

Secondary Grinding and Amalgamation:
The classifier overflow might be discarded as a final tail, as it usually assays from 80 cents to $1.00 per ton, which compares favorably with the tails from the old mill. However, at times the gold appears to be bright but will not readily amalgamate, and at such times the classifier overflow assays higher.
The overflow from the classifier passes to a 2-inch Wilfley sand pump, discharging into a paddle-type distributor feeding four No. 6 Wilfley rougher tables. These tables make two products, a final tail and a middling. The middling product from the four rougher tables is combined and pumped by a 1-inch Wilfley sand pump to a 3-foot Callow cone for dewatering before
being reground in a 3-foot by 18-inch Stearns-Roger overhung ball mill. The overflow from this ball mill is pumped by another 1-foot Wilfley sand pump to an amalgamating plate with an area of 40 square feet. The plate tails pass through a trap and then to a No. 6 Wilfley cleaner table. This table makes a final tail and a middling product which is treated in closed circuit with the regrind mill and amalgamating plate.

Although the overflow from the Dorr classifier contains some material which requires further grinding to free its gold content, the main object accomplished by regrinding is the polishing of gold which otherwise will not amalgamate and the retaining of this gold in the circuit until it either amalgamates or flours and is lost in the tails. That very little gold flours is witnessed by low tails.

Mill Results:
The tails uniformly assay 40 cents per ton, irrespective of the grade of ore being milled. With $9.00 heads, the recovery, therefore, is somewhat better than 95 per cent. This is an unusually high recovery by amalgamation. Although the gold content of the ore is entirely free, it does not readily amalgamate. Only about 50 per cent of the recovery comes from the amalgamating plates and the remainder from traps, boot of elevator, and feed boxes.

Cleanups:
Because of the sulphide content of the ore, the plates quickly become blackened and are usually dressed three times each shift. At each dressing the loose crumbs are removed along with the sulphides adhering to the plates. The amalgam obtained in this way is cleaned up daily.

The traps, boot of elevator, and feed boxes are usually cleaned up once a month. Amalgam from traps is cleaned separately, and the remainder of the material screened over a home-made impact screen which produces three products: namely, minus 28 mesh, minus 10 mesh, and plus 10 mesh. The minus 28 and minus 10 mesh products are each tabled on one of the No. 6 Wilfley tables. Special splitters are used to produce four products: clean gold, a high-grade concentrate, a middling and a tail. The tail goes to waste and the middling enters the regular mill circuit, joining the middlings from other tables. The high-grade concentrate is retabled, and what remains is ground in an amalgamating pan with quicksilver. The clean gold is added to the retort gold in producing bullion.

The amalgam retorts about 50 per cent gold, and the bullion contains on an average of 87 per cent gold and 10 per cent silver. The average bullion value is better than $18.00 per ounce. Bullion is shipped by registered mail and sold to the U. S. Assay Office, Boise, Idaho.

Criticism of Flow Sheet:
At the time the flow sheet was designed, the ore was expected to be relatively soft, similar to the ore produced in past operations. This was the case at the start of operations, when part of the ore production came from the 250 level. However, 700 and 850 level ore is much harder, and on this ore the mill does not have the capacity for which it was designed, namely, 150 tons per day.

The occurrence of ore in the mine is such that the gold values are confined to about 40 per cent of the material which it is necessary to mine and mill. In other words, about 60 per cent of the mill feed is waste, which it is not possible or practicable to eliminate in mining or by sorting. In the flow sheet as described, it is necessary to grind 80 per cent of this waste to minus 80 mesh before there is any opportunity for elimination, and the waste rock is usually the hardest.

Also, ore from the 700 and 850 levels contains more sulphides than ore from upper levels, and with hard ore, or a heavy feed, these sulphides build up in the circuit and bank on the plates.

Changes in the flow sheet are being contemplated to correct these difficulties by tabling the plate tails before they are returned to the Dorr classifier, operating in closed circuit with the Hardinge mill and amalgamating plates.
ACCIDENTS

The minor accidents listed in the accompanying table, pages 56 and 57, "Classification of Accidents," are taken from the records of the Industrial Accident Board and have been arranged to comply as nearly as possible with the classification made by the U. S. Bureau of Mines. Accidents that did not cause a loss of time of more than seven days are not included, because no compensation is paid. Many of the large companies do not report them, so a complete record is impossible to obtain. Although the U. S. Bureau of Mines and many State officials are listing these minor injuries of less than seven days in their reports, they have all been omitted from the accompanying table.

A comparison of the total accidents in 1930 with those in 1929 shows a decrease of two in the number of fatal accidents and a decrease of 27 in the number of minor accidents, which involved a loss of time of over 14 days. A comparison of the total number of men employed with the total number of accidents shows the very low accident rate of 0.36 accidents per 1,000 man-shifts. This low rate can be attributed to a great extent to the safety organizations, to the first-aid training given the men by all the larger mining companies, and to the sustained effort and interest maintained in safety work by those in charge, further augmented by close supervision. The results of this work are particularly apparent in the small number of accidents in the large mines of Shoshone County, which employ over 80 per cent of the total number of men working in the mines of the State. A comparison of the number of accidents with the number of men employed shows that the accident rate is in direct proportion to the efforts given to maintaining safety provisions. That this effort is successful in establishing a low accident rate is shown by a continued decrease in accidents over that of previous years. The accident rate per 1,000 days per man during 1930 of three of the largest companies was as follows:

- Bunker Hill & Sullivan Mining & Concentrating Co. .................................................. 0.24
- Hecla Mining Co. ........................................................................................................ 0.39
- Federal Mining & Smelting Co. .................................................................................... 0.71

Out of a total of 634 accidents during the year, 18 were fatal. Of these fatalities, 14 could have been prevented had the victims been more careful; company responsibility can not be placed for any of them; and the others were unavoidable. Out of the 583 minor accidents listed, 198 did not compel a loss of time to exceed 14 days, and 385 incapacitated the injured person for more than 14 days. The 33 additional accidents resulted in permanent injuries.

The loss of both legs or arms, one leg and one arm, total loss of eyesight, paralysis or other condition permanently incapacitating a workman from doing any work in a gainful occupation, is classified as "Permanent Total Disability." The loss of one foot, leg, hand, eye, one or more fingers, one or more toes, any dislocation where ligaments are severed, or other injury known in surgery to be a permanent partial disability, is classified as "Permanent Partial Disability."

Notes on Fatal Accidents

Jan. 30, Bunker Hill & Sullivan Mining & Concentrating Co.; Shoshone County. Joe Krohn, age 38, single, miner. Muck was hung up in a branch chute. Krohn went down the main chute on a rope. The shift boss was at the top and was talking to him; he heard him call and heard the ore run. Probably there was an arch of ore in the main chute, and Krohn let go of the rope and was standing on the ore when it let go. Death was probably due to suffocation.

Jan. 31, North Idaho Metal & Mining Co.; Boundary County. John Skands, age 55, single, miner. Skands, with Herman Herberg and another mucker, was working on night shift. When Skands was lighting the fuse, he said it was time to go, but Herberg suggested lighting the three lifters. While they were doing this, the other mucker walked to the crosscut. He looked back and saw both men at the face of the drift, just as the first hole went off. Both were instantly killed.
### Classification of Accidents

<table>
<thead>
<tr>
<th>MINE</th>
<th>Seriously Injured</th>
<th>Slightly Injured</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Killed</td>
<td>Permanently Injured Time Lost More Than 14 Days</td>
</tr>
<tr>
<td></td>
<td>Time Lost 1 to 14 Days</td>
<td>Time Lost 1 to 14 Days</td>
</tr>
<tr>
<td>UNDERGROUND</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Fall of rock or ore from roof or wall</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>2. Rock or ore while loading at working face or chute</td>
<td>2</td>
<td>27</td>
</tr>
<tr>
<td>3. Timber</td>
<td>1</td>
<td>19</td>
</tr>
<tr>
<td>4. Explosives</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>5. Haulage, Cars or Motors</td>
<td>4</td>
<td>42</td>
</tr>
<tr>
<td>6. Persons falling down chute, winze, raise or stop</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>7. Drilling (by machine or hand drills)</td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td>8. Hand tools</td>
<td>17</td>
<td>15</td>
</tr>
<tr>
<td>9. Machinery (other than motors or drills)</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>10. Flying or falling objects</td>
<td>3</td>
<td>24</td>
</tr>
<tr>
<td>11. Fall of persons</td>
<td>18</td>
<td>7</td>
</tr>
<tr>
<td>12. Lifting</td>
<td>13</td>
<td>6</td>
</tr>
<tr>
<td>13. Nails and splinters</td>
<td>1</td>
<td>19</td>
</tr>
<tr>
<td>14. Electricity</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>15. Other causes</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>13</td>
<td>20</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>MILL</th>
<th>Seriously Injured</th>
<th>Slightly Injured</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Killed</td>
<td>Permanently Injured Time Lost More Than 14 Days</td>
</tr>
<tr>
<td></td>
<td>Time Lost 1 to 14 Days</td>
<td>Time Lost 1 to 14 Days</td>
</tr>
<tr>
<td>MILLING ACCIDENTS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Haulage (cars and locomotives)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Railway cars or motors</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>3. Crushers, rolls or stamps</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>4. Tables, jigs, etc</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>5. Other machinery</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>6. Falls of persons</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>7. Falls in ore bins</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>8. Falling objects (rocks, timbers)</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>9. Scalding (steam, water or acid)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>10. Lifting</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>11. Hand tools, axes, bars, etc</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>12. Nails, splinters, etc</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>13. Electricity</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>14. Other causes</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2</td>
<td>16</td>
</tr>
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</table>
### SHAFT ACCIDENTS

<table>
<thead>
<tr>
<th>Accident Description</th>
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<tbody>
<tr>
<td>Falling down shaft</td>
<td>1</td>
</tr>
<tr>
<td>Objects falling down shaft</td>
<td>6</td>
</tr>
<tr>
<td>Breaking of cables</td>
<td>2</td>
</tr>
<tr>
<td>Overwinding</td>
<td></td>
</tr>
<tr>
<td>Cage, skip, or bucket</td>
<td>1</td>
</tr>
<tr>
<td>Other causes</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3</strong></td>
</tr>
</tbody>
</table>

### SURFACE ACCIDENTS

Yards, Shops, and Construction

<table>
<thead>
<tr>
<th>Accident Description</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mine cars or mine locomotives, gravity or aerial trams</td>
<td>1</td>
</tr>
<tr>
<td>Flying and falling objects</td>
<td>2</td>
</tr>
<tr>
<td>Lifting</td>
<td>5</td>
</tr>
<tr>
<td>Falls of persons</td>
<td>11</td>
</tr>
<tr>
<td>Nails and splinters</td>
<td>1</td>
</tr>
<tr>
<td>Hand tools, axes, bars, etc.</td>
<td>1</td>
</tr>
<tr>
<td>Falls or run of ore in or from bin</td>
<td>5</td>
</tr>
<tr>
<td>Machinery</td>
<td>5</td>
</tr>
<tr>
<td>Other causes</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>10</strong></td>
</tr>
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### SMELTER ACCIDENTS

<table>
<thead>
<tr>
<th>Accident Description</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haulage (cars, motors, etc.)</td>
<td>1</td>
</tr>
<tr>
<td>Machinery</td>
<td>1</td>
</tr>
<tr>
<td>Cranes</td>
<td>1</td>
</tr>
<tr>
<td>Lead fumes</td>
<td>1</td>
</tr>
<tr>
<td>Falls of persons</td>
<td>1</td>
</tr>
<tr>
<td>Flying or falling objects</td>
<td>4</td>
</tr>
<tr>
<td>Rocks, timbers, etc.</td>
<td>3</td>
</tr>
<tr>
<td>Hand tools, axes, bars, etc.</td>
<td>2</td>
</tr>
<tr>
<td>Burns from matte, slag, or molten metal</td>
<td>2</td>
</tr>
<tr>
<td>Other causes</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>11</strong></td>
</tr>
</tbody>
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### AUXILIARY WORKS ACCIDENTS

Placers, Tramways and Dredges

<table>
<thead>
<tr>
<th>Accident Description</th>
<th>Total</th>
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<tbody>
<tr>
<td>Falls of persons</td>
<td>2</td>
</tr>
<tr>
<td>Flying and falling objects</td>
<td>1</td>
</tr>
<tr>
<td>Nails and splinters</td>
<td>1</td>
</tr>
<tr>
<td>Hand tools, axes, bars, etc.</td>
<td>2</td>
</tr>
<tr>
<td>Lifting</td>
<td></td>
</tr>
<tr>
<td>Machinery</td>
<td>3</td>
</tr>
<tr>
<td>Handling hot materials</td>
<td>1</td>
</tr>
<tr>
<td>Other causes</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>9</strong></td>
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</table>

### Other causes

<table>
<thead>
<tr>
<th>Category</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Grand Total</strong></td>
<td><strong>16</strong></td>
</tr>
</tbody>
</table>

**Grand Total**

<table>
<thead>
<tr>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>180</strong></td>
</tr>
</tbody>
</table>
Jan. 31, North Idaho Metal & Mining Co.; Boundary County. Herman Herberg, age 37, married, mucker. Herberg, with John Skands, miner, and another mucker, was working on night shift. When Skands was lighting the fuse, he said it was time to go, but Herberg suggested lighting the three lifters. While they were doing this, the other mucker walked to the crosscut. He looked back and saw both men at the face of the drift, just as the first hole went off. Both were instantly killed.

Feb. 19, Tamarack & Custer Consolidated Mining Co.; Shoshone County. Peter Johnson, age 36, single, timberman. Deceased and John Lundberg were completing lagging over the seventeenth floor of the west chute in Murphy raise, 800 stope, after boxing the chute from the sixteenth to the seventeenth floors. They removed underpinning from lagging covering the chute on the tunnel level. On going off shift they forgot about it and stepped on the lagging. Both lagging and men fell down the chute.

Feb. 19, Tamarack & Custer Consolidated Mining Co.; Shoshone County. John Lundberg, age 52, married, timberman. Deceased and Peter Johnson were completing lagging over the seventeenth floor of the west chute in the Murphy raise, 800 stope, after boxing the chute from the sixteenth to the seventeenth floors. They removed underpinning from lagging covering the chute on the tunnel level. On going off shift they forgot about it and stepped on the lagging. Both lagging and men fell down the chute.

Feb. 23, Sunshine Mining Co.; Shoshone County. Alvah Burns, age 22, single, miner. Deceased with his partner, Charles Bush, was sent to the 400-foot level to build a bulkhead under the skip. They did not construct the bulkhead under the skip, but put one 2-inch lagging under the crosshead. This held the weight of the skip until there was about 20 feet of slack cable, when it gave way, letting the skip fall and causing the cable to break. The men and the skip dropped 135 feet to the 500-foot level.

Feb. 23, Sunshine Mining Co.; Shoshone County. Charles Bush, age 33, married, miner. Deceased with his partner, Alvah Burns, was sent to the 400-foot level to build a bulkhead under the skip. They did not construct the bulkhead under the skip, but put one 2-inch lagging under the crosshead. This held the weight of the skip until there was about 20 feet of slack cable, when it gave away, letting the skip fall and causing the cable to break. The men and the skip dropped 135 feet to the 500-foot level.

Feb. 24, Constitution Mining and Milling Co.; Shoshone County. John C. Shubert, age 29, married, mucker. Deceased and another mucker filled their carbide lamps prior to leaving for lunch. Deceased, without lighting his lamp, walked toward a miner, who was running a machine on the north side of the chute. When his companion reached this same miner and inquired concerning Shubert, it was discovered that the deceased had in some way fallen down the chute through the 16-inch opening.

April 5, Gold Hunter Mines; Shoshone County. Gust A. Larson, age 66, single, shoveler. A slab fell off the side of the stope, breaking the floor. Larson, jumping out of the way of the slab, stepped in a grizzly hole. This caused him to fall, and the slab fell on him.

April 18, Mackay Metals; Custer County. Herbert Hilts, age 38, single, shaft top man. Hilts and his partner had taken a loaded car of waste off the cage and pushed it on to the switch track. They signaled for the cage to go to the 700 level as usual for an empty car, which was to be dropped to the 1000-foot level for another load. While the cage was above the 800 level, Hilts looked into the shaft for some unknown reason, and the cage coming down hit him on the back of the head. He lived until 9:15 a.m. the following day.

May 5, Mackay Metals; Custer County. Frank Wornek, age 28, married, timberman. Wornek, with his partner, was cleaning off the top of square sets, preparatory to building a slide. He pushed off a large boulder, which hit the cap or girt, breaking it, and which allowed other timber to fall. He fell with the timbers.

May 27, Bunker Hill & Sullivan Mining & Concentrating Co.; Shoshone County. Frank Baran, age 36, married, motorman. Baran had finished loading the car, and his partner was handling the ore train. It is thought that the
deceased in some manner placed a steel bar, used for loosening the ore, on the trolley wire, thus causing electrocution. Deceased was subject to epileptic attacks. Accident is not fully established.

June 6, Franklin Placer Co.; Boise County. Leo Unternahrer, age 65, single, placer miner. He was cutting race to extend sluice boxes, and a piece of clay fell out of side of cut and hit him, causing internal injuries from which he died in a few hours.

June 13, Sunshine Mining Co.; Shoshone County. Max Barcus, age 38, married, miner. Deceased with his partner was working in No. 3 chute, 500 level. The chute was full of muck. While his partner was below pulling the chute, deceased fell down the chute and was instantly killed.

Sept. 12, Bunker Hill & Sullivan Mining & Concentrating Co.; Shoshone County. Steven W. Markell, age 40, married, laborer. In performing his regular work he breathed into his lungs considerable lead and arsenic, accidentally and unintentionally; and, after being disabled for about three months as a result, died from the effects of the poison.

Sept. 19, Bunker Hill & Sullivan Mining & Concentrating Co.; Shoshone County. Phillip Clark, age 38, married, miner. A slab fell from the back of the drift knocking him down and causing suffocation and probable internal injuries, from which he died on the way out of the mine.

Nov. 1, Federal Mining & Smelting Co.; Shoshone County. August Kaipi, age 38, married, miner. The men were engaged in setting an inclined cap in about the center of the scaffold. The superintendent of the mine was on the station and was about to get into the cage to go down the shaft. The deceased and his partner wished to change the framing of the cap and wanted to ask the superintendent's permission. Kaipi was seen to step off of the scaffold on the westerly end down upon the conduits and water pipe. He either did not think of the trolley wire or thought he could slip down between the wire and the south side of the trolley by climbing down the conduits. He was facing the south side of the tunnel when his back contacted with the trolley wire while one foot was resting on the water pipe line, so a circuit became grounded through his body from the trolley wire to the pipe line. Resuscitation was started immediately and continued for three hours without result.

Dec. 12, Sherman Howe Mining Co.; Idaho County. Jack Busija, age 40, married, miner. Deceased started drilling into an 8-inch hole without first inspecting and cleaning out hole. Evidently a small portion of the charge was left in the hole, which had not exploded when the former round was fired. The drill exploded this powder and shot fine rock and dust into the Busija's face, knocking him unconscious for a few minutes. He died on Dec. 19.

MEN EMPLOYED AND WAGES

The year closed with very few of the producing mines in the State in operation. Those operating maintained a payroll equal to that of previous years, although none were on a seven-day producing basis. As a whole, 1930, from a labor standpoint, was one of the worst years ever experienced. There was a surplus of labor throughout the year, and the turnover was exceedingly small, so that the companies were assured a constant working force without the necessity of breaking in new men.

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 the companies vary as to the number of days. The average payroll reported was 3,800, and 1,000 has been added as an estimate to cover lessees, prospectors, and small companies which did not report; thus giving a total of 4,800 for the year, which is known to be a conservative estimate.

The table below gives the different wage scales that were in force in the State during 1930. Column No. 1 gives the average wage throughout the State for the year, and column No. 2 gives the wage scale in effect in the Coeur d'Alene district from January 1, 1930, to March 15, 1930.
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 be added was as follows:

<table>
<thead>
<tr>
<th>Price Range</th>
<th>Bonus Rate per Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>5c and under 6c</td>
<td>$0.25 per day</td>
</tr>
<tr>
<td>6½c and under 7c</td>
<td>$0.50 per day</td>
</tr>
<tr>
<td>7c and under 7½c</td>
<td>$1.00 per day</td>
</tr>
<tr>
<td>7½c and under 8c</td>
<td>$1.25 per day</td>
</tr>
<tr>
<td>8c and under 8½c</td>
<td>$1.50 per day</td>
</tr>
<tr>
<td>8½c and under 9c</td>
<td>$1.75 per day</td>
</tr>
<tr>
<td>9c and under 9½c</td>
<td>$2.00 per day</td>
</tr>
<tr>
<td>9½c and under 10c</td>
<td>$2.25 per day</td>
</tr>
<tr>
<td>10c and under 10½c</td>
<td>$2.50 per day</td>
</tr>
<tr>
<td>10½c and under 11c</td>
<td>$2.75 per day</td>
</tr>
</tbody>
</table>

After March 1, 1927, the price of lead declined so rapidly that if the bonus scale had been adhered to the wages would have been cut to a point entirely out of proportion to wages in other parts of the State and too low under existing high-living costs, so the signatories to the bonus scale waived their agreement and maintained until March 15, 1930, the wages set forth in column No. 2 below, which were on a basis of lead selling up to 9c per pound or $1.75 per day.

Early in 1930 the price of lead fell so rapidly that a reduction in wages became necessary. The bonus scale was again waived, and instead of wages being adjusted thereto they were reduced on a basis of lead selling up to 8c a pound or $1.25—a reduction of 50c a day. The wage scale maintained during the remainder of the year throughout the State is set forth in column No. 1.

A few companies operating in remote parts of the State maintained a wage scale 25c higher than the scale set forth in column No. 1.

The cost of board and room at company boarding houses, hotels, and at private homes averages 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.
MINERAL RESOURCES

Idaho contains an area of 83,888 square miles; its maximum width at the southern end is approximately 312 miles, and its length from the southwest corner to the northwest corner is about 486 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 (see map, page 9.) In addition to these a great variety of uncommon metals and minerals, many of which have been successfully exploited during the past few years, occur in sufficient extent to be of commercial importance.

This great diversity of mineral wealth, consisting of practically all the metals used in modern arts and many of the uncommon minerals for which a demand is continually being developed, establishes Idaho as one of the principal mining States in 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, over $1,100,000,000.
- Average annual production for past 25 years, over $25,500,000.
- Average annual mine payroll, over $9,000,000.
- Average annual mine dividends from lead-silver mines, over $5,000,000.
- Average annual expenditure on new mine development and prospecting, over $4,000,000.

METALS

Lead

Lead is the most important metal found in Idaho, and excepting in the years 1926 and 1927, this State has always ranked second in the United States in the production of lead, Missouri ranking first, and Utah third. During the two years aforementioned Utah held second place, although the production of the two States was almost on a parity. 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. Other important lead-producing mines in Idaho and their respective ranks in the United States are: Federal Mining and Smelting Co., third; Hecla Mining Co., fifth.

The principal lead mines in the State are those in Shoshone County, which produce 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.

Silver

Idaho ranks third in the United States in the production of silver, the first three States in order of rank being Utah, Montana, Idaho. Idaho produces one-eighth of all the silver mined in the United States.

Silver is found associated with all of 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. Accordingly, the production of silver fluctuates with and parallels that of lead.

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.
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.

Gold

Gold is found in practically all of the counties in 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 tenth 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 hydraulicked 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.

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 discovered 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 that of tenth, which 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 producers. Bonner, Idaho, Blaine, Butte, Clearwater, Latah, and Lewis counties also contain copper mines of importance.

Antimony

Deposits of antimony, principally the sulphide (stibnite), are found in Shoshone, Valley, Boise, Blaine, Idaho, Owyhee, and Custer counties. Those in the Coeur d'Alene district of Shoshone County have been extensively 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.

**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.

**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, Belshazzar, and Buckskin mines, Boise County, in association with lead, probably galenobismuthite or similar lead-bismuth minerals.

**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. These deposits are described by Frank L. Hess under "Cobalt" in U. S. Geological Survey: Mineral Resources of the United States, part I, 1917. This metal is reported to have been found also in Kootenai and Latah counties.

**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 in Bannock County, and the deposits in Lemhi County constitute a large potential resource. Describing the Bannock County deposits in "Manganese and Manganiferous Ores in 1926," U. S. Bureau of Mines: Mineral Resources of the United States, J. W. Furness said: "D. F. Hewett, of the United States Geological Survey, reports that the Idaho Manganese Co. has been exploiting since April, 1924, a manganese deposit on the McGregor ranch, 1 mile east of Cleveland, Bannock County, Idaho. The shipments in 1926 were 830 tons and during 1927 will probably be larger. The ore consists of nodules of the several oxides embedded in brown wad and forms a distinct bed in Pleistocene (Ice Age) sediments. In the explored area the bed will probably yield 3,000 tons per acre; the extent of the bed is assuredly several acres and may be more. Most of the shipments range from 42 to 48 per cent manganese. The ore is shipped by auto truck to Grace, 14 miles north, thence by rail to the Columbia Steel Co., Ironton, Utah."

**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.

**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, Part I, 1917.

**Quicksilver**

Cinnabar, the sulphide of mercury, has been found in the placer deposits of Custer and Valley counties and in lode-deposits in 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.
Tin

Tin has been found in the placer mines in the Gravel Range mining district of Lemhi County. Its occurrence is described by Clyde P. Ross in Idaho Bureau of Mines and Geology Pamphlet No. 25, "Ore Deposits in Tertiary Lava in the Salmon River Mountains, Idaho." Mr. Ross includes in this a list of all published references relating to his subject.

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 these deposits to indicate that tungsten is one of the State's substantial mineral resources.

NON-METALLIC MINERALS

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 markets 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. The deposits on Deer Creek vary in width from 50 to 100 feet, and one outcrop is over 1000 feet long; this was described by Arthur Lakes in the Mining Reporter for August 16, 1906, under the title, "A New and Large Deposit of Barite in Idaho," as follows:

"In visiting some mining prospects in the Wood River region of Idaho I came across an unusually large massive deposit of the mineral called barite. "It forms a steep cliff on the crest of a hill and descends as a vein down the gulch. The thickness is apparently from 50 to over 100 feet. Its course passes very near some silver-lead prospects and not far from it on one side is a huge outcrop of iron oxide. "The material is of a dull white color and resembles at a distance a vein of calcite or a vein of white feldspar and quartz. It has not been opened up but there must be thousands of tons in sight."

Bentonite

Bentonite, a plastic clay, is valuable for its high absorbent qualities; it has the capacity for 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 caramels; and as a packing for horses' hoofs.

Bentonite occurs in commercial extent in Clark and Custer counties, and has been reported to be found in Cassia, Owyhee, and Oneida counties. The deposits in Clark and Custer counties are described by V. R. D. Kirkham in Pamphlet No. 19 Idaho Bureau of Mines and Geology, "A Geologic Reconnaissance of Clark and Jefferson and Parts of Butte, Custer, Fremont, Lemhi, and Madison counties, Idaho": "A commercial grade of bentonite, a peculiar type of clay with extraordinary absorptive qualities, was found at two localities in the area. One is near the railway in the vicinity of Mackay, the other is more remote and lies west of Dubois."
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
hitherto only the gem varieties, including emerald and aquamarine, have been actively sought. In several localities, however, ordinary beryl is produced as a by-product in mining mica and feldspar. * * * A. V. Petar, U. S. Bureau of Mines I. C. 6190.

The occurrence of beryl in the mica deposits of Latah County has been reported.

**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 Company in quarrying and converting sandstone to building purposes. This enterprise is fully described, with illustrations, in the Twenty-sixth Annual Report of the Mining Industry of Idaho for the Year 1924. The most notable building in Idaho, the State Capitol, is constructed of this stone.

The sandstones in Bear Lake County are described in U. S. Geological Survey Professional Paper No. 152, "Geography, Geology, and Mineral Resources of Part of Southeastern Idaho," by George Rogers Mansfield; pages 336-338.

**Clay**

"The different kinds of clay have so many uses that it is probably impossible to list them all, but the following rough 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. Potteries: Tableware, kitchenware, sanitary ware, etc." From U. S. Bureau of Mines Information Circular No. 6155, Clay, by Paul M. Tyler. This publication contains complete information on the occurrence, use, methods of testing, classification and preparation of various kinds of clays.

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.

**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 of the Teton Coal Company in Horseshoe Basin, Teton County. In discussing the Horseshoe Basin coal in Pamphlet No. 10, Idaho Bureau of Mines and Geology, "The Horseshoe Basin Area of the Teton Coal Field in Southeastern Idaho," George Watkins Evans said:

"The chemical analysis of this coal indicates that the coal in this field is of as good quality as any mined in Utah or Wyoming. The principal question is whether or not this field can produce a sufficient percentage of lump coal to compete with the larger sizes from Utah and Wyoming.

"From the limited information at hand, it is impossible to make a reliable estimate of the minable tonnage in this field. In the first place, we do not know exactly the total area of the coal bearing strata, nor do we know the number of workable coal beds contained within this field. Any tonnage estimate made at this time must be based upon arbitrary figures and the quantity might be either much more or much less than the figures given.

"If we assume that the Horseshoe bed and the Brown Bear bed are two separate and distinct beds and that the Horseshoe bed will contain 9 feet of coal and that this bed can be mined for a distance of one-half mile on the dip, and that the bed will continue of fairly uniform character for a distance of 2 miles along the strike, there would be within the Horseshoe bed approximately 5,000,000 tons of coal, provided it will average 6 feet of minable coal and if we allow 1300 tons per foot acre. The Brown Bear bed has an average thickness of about 4 feet and on the same basis would contain a little over 3,000,000 tons of coal. The Boise bed, allowing an average thickness of 3½
feet of minable coal, contains nearly 3,000,000 tons—in all approximately 11,000,000 tons of coal.

"It is not improbable that with future investigations it will be found that the total tonnage of coal in this field is very much greater than the amount of tons suggested. On the other hand, it might be found that the coal contained within these beds is very friable and will not produce any considerable quantity of the larger sizes, and furthermore, it is probable that the market tributary to this field will be so exacting that only the larger sizes can be successfully marketed."

The Teton Coal Company has recently completed a 3600-foot crosscut with a 600-foot connecting raise to the surface, and a tipple for grading the coal. The tunnel intersected three coal beds, two of which were not included in the above estimate; as yet the tunnel has not been completed to the Horseshoe and Boise beds, so it appears that the total tonnage, when this field is fully developed, may be in excess of the estimate.

Lignite is found in Cassia, Boise, Owyhee, Washington, Idaho, Lemhi, and Clearwater counties.

**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, which are of such proportions that they must be identified chiefly by the aid of the microscope.

The principal uses of diatomaceous earth are: Sawed brick 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 limestones. 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 sand-paper, 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.

**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—infusibility, 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 as an ingredient in 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.

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.

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

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 the grain and 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 non-conduction 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.

"Mica deposits of probable value have been found in about half the States of the United States. The principal producing States have been North Carolina, New Hampshire, South Dakota, Idaho, New Mexico, Colorado, Virginia, South Carolina, Alabama, and Georgia."—Schaller, W. T., Mica: U. S. Geological Survey Mineral Resources, pt. 2, p. 280; 1915. The production which gave Idaho this prominent rank was from the mica mines in Latah County.

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

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 the more numerous, and at many of them sanitariums 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.

**Monazite**

The mineral monazite consists chiefly of the phosphate of cerium and variable amounts of thorium, the value depending primarily upon the thorium content. It is a resinous golden-yellow mineral occurring as a placer sand in practically all of the gold placer mines in 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.

**Nitrates**

The occurrence of nitrate in Camas, Elmore, and Owyhee counties has been reported.

**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 for the occurrence of oil.

Gas has been developed in Payette and Washington counties.

**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 which have been withdrawn from public entry. These deposits are fully described with maps, illustrations and analyses by G. R. Mansfield in U. S. Geological Survey Professional Paper No. 152, "Geography, Geology, and Mineral Resources of Part of Southeastern Idaho," from which the following is quoted:

"In Utah, Idaho, Wyoming, and Montana the great bulk of the phosphate rock is on public land, though some has passed into private ownership. The public lands are withdrawn from entry pending their examination and classification. No estimates of the acreage of phosphate land in private ownership are available, but the acreage of the outstanding withdrawals of public land in the States named is shown in Table 38.

**TABLE 38—Outstanding phosphate withdrawals, July 31, 1927**

<table>
<thead>
<tr>
<th>State</th>
<th>Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Utah</td>
<td>301,945</td>
</tr>
<tr>
<td>Idaho</td>
<td>396,612</td>
</tr>
<tr>
<td>Wyoming</td>
<td>996,539</td>
</tr>
<tr>
<td>Montana</td>
<td>279,944</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,966,390</strong></td>
</tr>
</tbody>
</table>

"In addition to the land embraced in the outstanding phosphate withdrawals, 268,299 acres in Idaho, 25,293 acres in Wyoming, 3,833 acres in Montana, and 160 acres in Utah—297,585 acres in all—have been examined in detail and formally classified as phosphate land. * * *

"Under the act of July 17, 1914, agricultural entries may be made upon withdrawn phosphate lands, but the mineral rights are reserved to the United States."
### TABLE 74a—Estimate of phosphate rock in the United States available December 31, 1925, in long tons

<table>
<thead>
<tr>
<th>FIELD</th>
<th>Estimated quantity available</th>
<th>FIELD</th>
<th>Estimated quantity available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern field:</td>
<td></td>
<td>Western field:</td>
<td></td>
</tr>
<tr>
<td>Arkansas</td>
<td>20,000,000</td>
<td>Idaho</td>
<td>4,997,855,000</td>
</tr>
<tr>
<td>Florida</td>
<td>291,000,000</td>
<td>Montana</td>
<td>391,323,000</td>
</tr>
<tr>
<td>Kentucky</td>
<td>878,000</td>
<td>Utah</td>
<td>326,745,000</td>
</tr>
<tr>
<td>South Carolina</td>
<td>8,788,000</td>
<td>Wyoming</td>
<td>115,754,000</td>
</tr>
<tr>
<td>Tennessee</td>
<td>83,500,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>404,166,000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Less approximate quantity mined since 1906: 350,000

5,831,677,000

5,831,327,000

404,166,000

6,235,493,000

### 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.

### 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. The salt springs and deposits are described by W. C. Phalen, who estimates 5,000,000 tons in sight, in U. S. Geological Survey Bulletin 669, "Salt Resources of the United States":

"Although the salt bodies or old alkali flats are thus meager in extent, especially in comparison with the other prominent salt-producing areas of the United States, the conservative estimate of 5,000,000 tons for the Crow Creek rock-salt body and the possibility of a larger salt body near the Tygee and Stump Creek forks indicate that the amount of salt apparently in sight in some of the present areas would be sufficient (if proper railroad connections existed) to yield returns on large workings for a long time. It also appears quite probable that all the areas, including the smaller brine springs, contain sufficient salt to return the sums that may be advisedly invested in their development."

### Sulphur

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

### Talc

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

Ada is one of the southwestern counties, adjoining and lying north and east of Owyhee and Canyon counties, and south of Boise County. It contains 1,154 square miles and was accredited with a population of 37,925 in the 1930 census. Boise, the largest city in the State, is the State capital and county seat. The county is noted for its excellent irrigated farms, and its livestock, farming, and fruit-raising industries.

The State highway, Oregon Trail, extending from the southeast corner of the county to Boise, thence west to Nampa, and the excellent county highways and roads, give this county some of the best roads in the State as well as easy access to the mineralized areas.

Ada is not recognized as a mining county, yet its small mountainous area was once the scene of many active mining operations; and Boise was established as the principal distributing point for miners' supplies when the rich placer diggings of Boise County and adjacent areas were worked in the early days.

The early day mining was based on free gold operations and, as the sulphide zone was encountered at a shallow depth, the mines were soon closed and have remained dormant for many years. The principal ores are lead and zinc, carrying high values in silver and gold, occurring in fissure veins and as replacement deposits in granite. The ore occurrences are well defined and offer good opportunities to prospectors and small operators in search for these metals.

The chief mineral resources are building stone, gold, lead, silver, zinc, and arsenic. Building stone and its accompanying enterprise were fully described in the Twenty-sixth Annual Report, for the year 1924.

1930 Activities

During 1930 the mines and prospects in this county witnessed but little increase in attention and development over that of the previous year, although there was a decided activity coupled with publicity in the promotion of oil development enterprises.

The Boise Stone Co. was active throughout the year and reported that a large quantity of stone was quarried and cut.

BERGDAHL OIL CO.
Office: 260-261 Sonna Bldg., Boise. Officers: A. F. Bergdahl, Pres.-Mgr.; C. M. Godfrey, Sec., both of Boise. Inc.: July 16, 1927. Capital: 1,000,000 shares; par value $1; 250,000 shares issued. Property: Leases on 2760 acres of patented land in Ada and Gem counties. Development: Unknown. Plant: Unknown. Mineral sought: Oil and gas. Men employed: Unknown. Remarks: Active publicity campaign for purpose of selling stock, maintained through the year. Part of this publicity was to the effect that a derrick had been erected and a small hole drilled to a depth of about 500 feet. The company's report did not state whether it owned the equipment or was leasing it.

BOISE MINING, MILLING & SMELTING CO.

GOLD KING-DELHI MINES CORPORATION
Office: 326 Noble Bldg., Boise. Officers: Frank Burroughs, Pres.; Albert Beck, Sec., both of Boise. Inc.: July 13, 1929. Capital: 300,000 shares; par value $1; 8,000 shares issued. Property: Gold King-Delhi groups; 4 patented, 4 unpatented claims, part of which are held under lease and option; Shaw Mountain dist.; Boise. Development: By 1 tunnel 202 ft. long and 2 side drifts. Ore: Gold. Men employed: Average, 2. Remarks: A small amount of work during the early part of the year, after which financial and legal difficulties were encountered.
PIONEER IDAHO OIL CO.

RED ROSE GOLD MINES CO.

RELIANCE GOLD MINES CO.

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. Adelmann 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
Sorrel Horse et al. Black Hornet N. R. C. Adelmann 221 Jeff. St., Boise
White Mineral Black Hornet H. J. Leppert 506 S. 3d St., Boise

BIBLIOGRAPHY
See pages 7-8 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.‡


ADAMS COUNTY

Adams is one of the southwestern counties, adjoining and lying south of Idaho County, north of Washington County, and west of Valley County. The Snake River, which flows north, forms the entire western boundary. The county contains 1,366 square miles and was accredited with a population of 2,867 in the 1930 census, or 2.1 inhabitants to the square mile. The larger part of the population is located in Weiser River and Little Salmon River valleys. The headwaters of the Weiser River, which flows south, and those of the Little Salmon River, which flows north, are located in this county. It is primarily an agricultural county and is noted for its high-quality apples and livestock industry.

The Snake River, which flows north, forms the entire western boundary. Branch roads leading to all of the outlying settlements are maintained by the county and U. S. Forest Service. These are kept in good repair and are open to travel during the larger part of the year. In 1925 the Legislatures of Oregon and Idaho each appropriated $25,000 for the construction of a joint State wagon bridge across the Snake River at Ballard’s Landing, about three miles north of Homestead, Oregon. It has proved to be an important connecting link between the Oregon highway at Baker and the Idaho highway at Council, which is the county seat and largest settlement of Adams County.

The county is served by two railroads: the Pacific and Idaho Northern, which extends from Weiser to New Meadows, and the Oregon Short Line branch from Huntington to Robinette, Oregon.

Over 90 per cent of the county is mountainous. The mountains are rough and rugged and the bold relief that many of them show on the skyline presents scenic views that are unsurpassed in grandeur, the principal one of which is the Seven Devils, seven serrated peaks which reach high into the skyline, and from which the Seven Devils mining district is named.

During the eighties and early nineties this district was an active mining center. Many mines were in operation, a railroad was projected into it and partly constructed, a smelter was in operation, and three towns of fair sized populations were established. The boom died down in the panic of 1893 and since then no large operations or shipments of any consequence have taken place. The latent mineral resources are practically undeveloped and unprospected. The bold relief permits cheap development work by tunnels and drifts and, as the mineral resources are diverse and varied, the county offers many excellent opportunities to prospectors and development companies. The ores of the Seven Devils district are principally copper carrying silver and gold, with an occasional deposit of lead-zinc ore. The ores of the Indian Creek section are those of silver-copper and lead-zinc-silver. In addition to the five principal metals—copper, silver, gold, lead, zinc—deposits of mica, feldspar, and garnet, of commercial importance, occur in this county. The mica deposits of Council Mountain have received a little attention, although they have never been prospected or developed in proportion to the possibilities which they offer. When the mineral resources of Adams County are properly exploited and developed this county may be recognized as one of the principal mining counties in the State.

1930 Activities

This county experienced but little mining activity during the year, and no new enterprises were started. The Idaho Copper Co., whose properties were placed under receivership in November, 1927, continued in receivership until October, 1929, and no development work of any kind has been performed since then. A few prospectors in the Council Mountain, Heath and Indian Creek districts increased their work over that of the previous year, and one marketed a small shipment of ore. The Kleinschmidt Bros. were active in developing the Blue Jacket in the Seven Devils district. The mica deposits in the Council Mountain district received more attention than in previous years, and the work done greatly enhanced the possibility of these deposits being of commercial importance.
AMERICAN MINING CO., LTD.
Office: 630 Monroe Ave., Helena, Mont. Officers: Amelia H. Klein­
schmidt, Pres., Helena, Mont. Inc.: Sept. 11, 1911. Capital: 50,000
shares; par value $1; none issued. Property: Peacock and White Monu­
ment groups; 10 patented claims, Seven Devils dist.; Cuprum. Ore: Cop­
per, silver. Remarks: Idle.

BLACK HORSE GROUP
Owners: Jacob Stites, Council, and W. H. Willard, R. 4, Nampa. Property:
Black Horse group; 15 unpatented claims, unorganized district; Council.
Development: By 4 short tunnels. Ore: Gold and silver. Remarks: Active
development work throughout the year.

EDNA MAY GROUP
Owner: J. M. DeLay, Weiser. Property: Edna May group; 6 unpatented
of work during the year.

IDAHO COPPER CO.
Cooley Butler, Mgr., both of 745 Rowan Bldg., Los Angeles, Calif.; Carey
H. Nixon, Sec., Boise. Inc.: Jan. 10, 1920, as Idaho Copper Co., Ltd. Name
changed May 24, 1926. Capital: On Feb. 9, 1925, the capital was increased
from 50,000 shares, par value $10, to 10,000,000 shares, par value $1;
9,864,755 shares issued. Property: Red Ledge group; 31 patented, 22
unpatented claims, Seven Devils dist.; R. R. and P. O. Homestead, Ore.,
18 miles. Development: 3 tunnels on Deep Creek: No. 1, 950 ft. long; No.
2, 2400 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. I. R. compres­
sor, driven by 120 h. p. Diesel engine; complete mining equipment and
camp at No. 4 tunnel. Ore: Copper. Men employed: One watchman.
Remarks: Idle throughout the year. Property mortgaged to Cooley Butler.

IDAHO COPPER CORPORATION
Cooley Butler, Mgr., both of 745 Rowan Bldg., Los Angeles, Calif.; Carey
H. Nixon, Sec., Boise. Inc.: Incorporated in Delaware, Oct., 1924; filed in
Idaho, April 4, 1925. Capital: 2,500,000 shares; par value $1; all shares
issued. Property: South Peacock group; 3 patented, 5 unpatented claims;
Seven Devils dist.; Cuprum. Development: 1 vertical shaft, 325 ft. deep;
completed in 1901 by prior owners. Total development, approximately
1300 ft. Plant: Partly installed steam-driven hoist and compressor. Ore:
Copper. Men employed: None. Remarks: Idle for many years.

IDAHO MINES CO., LTD.
Office: Weiser. Officers: S. H. Travis, Pres., Chehalis, Wn.; B. S. Varian,
Sec., Boise. Inc.: Jan. 5, 1904. Capital: 5,000,000 shares; par value $1;
1,503,700 shares issued. Property: California group; 3 patented claims;
Seven Devils dist.; Cuprum; R. R. Homestead, Ore., 30 miles. Ore: Cop­
paper. Remarks: Idle for many years.

NATIONAL COPPER MINES CO.
Office: 307 Fitzpatrick Bldg., Portland, Ore. Officers: R. Fennell, Sec.,
Portland, Ore. Inc.: April 28, 1906. Capital: 3,000,000 shares; par value
$1; shares issued, unknown. Remarks: Failed to file the reports required
by law. A letter from the secretary stated that the property was leased
to the Cuprum Mines Co., C. E. Carter, Spalding Bldg., Portland, Ore.,
and that this company performed the necessary annual labor. The latter
company also failed to file the reports required by law.

RUBY MINING CO.
Office: 83 Cowley Road, Riverside, Ill. Officers: John Ball, Riverside,
Ill. Inc.: July 21, 1928. Capital: 120 shares; par value $100; shares issued,
unknown. Remarks: Failed to file the reports required by law.
<table>
<thead>
<tr>
<th>NAME OF MINE</th>
<th>MINING DIST.</th>
<th>OWNER</th>
<th>P. O. ADDRESS</th>
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</thead>
<tbody>
<tr>
<td>Alaska et al.</td>
<td>Seven Devils</td>
<td>Mrs. S. J. Stephens</td>
<td>Cuprum</td>
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<tr>
<td>Amadore et al.</td>
<td>Seven Devils</td>
<td>Mrs. Anna Dimick</td>
<td>San Antonio, Texas</td>
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<td>American Flag et al.</td>
<td>Mountain View</td>
<td>Mary Z. Finney</td>
<td>Cleveland, Ohio</td>
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<tr>
<td>Andy O'Toole Gr.</td>
<td>Seven Devils</td>
<td>L. A. Aplington</td>
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<td>Arkansaw</td>
<td>Seven Devils</td>
<td>E. C. Westervelt</td>
<td>11 Broadway, New York City</td>
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<td>Azurite Gr.</td>
<td>Seven Devils</td>
<td>John Bottcher</td>
<td>Tacoma, Wash.</td>
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<td>Bald Eagle</td>
<td>Seven Devils</td>
<td>Mrs. Mabel Sprouls</td>
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<td>Big Indian et al.</td>
<td>Seven Devils</td>
<td>Loren Gogochea</td>
<td>Ontario, Ore.</td>
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<td>Black Garnet</td>
<td>Seven Devils</td>
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<td>Blue Bird Gr.</td>
<td>Seven Devils</td>
<td>Mose Fuchs</td>
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<td>Blue Bucket</td>
<td>Seven Devils</td>
<td>Irene Imhaus</td>
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<td>Bryan et al.</td>
<td>Seven Devils</td>
<td>Mose Fuchs</td>
<td>Baker, Ore.</td>
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<td>Camp Ground et al.</td>
<td>Mountain View</td>
<td>Martin Bradley</td>
<td>Cuprum</td>
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<td>Chameleon Gr.</td>
<td>Seven Devils</td>
<td>Thos. G. Potter</td>
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<td>Chieftain et al.</td>
<td>Seven Devils</td>
<td>J. A. Stewart</td>
<td>Indian Valley</td>
</tr>
<tr>
<td>Cliff et al.</td>
<td>Seven Devils</td>
<td>Mrs. P. L. Gaarden</td>
<td>Bear</td>
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<tr>
<td>Copper Belt Gr.</td>
<td>Seven Devils</td>
<td>G. W. McCarty</td>
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<td>Copper Bottom</td>
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<td>Copper Queen et al.</td>
<td>Unorganized</td>
<td>Lynn Snow</td>
<td>Newburg, Ore.</td>
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<td>Decorah</td>
<td>Seven Devils</td>
<td>R. E. Wilson</td>
<td>Cambridge</td>
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<td>Decorah</td>
<td>Seven Devils</td>
<td>Mary Steele</td>
<td>1516 S. Negley Ave., Pittsburg, Pa.</td>
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<td>Deep Creek Gr.</td>
<td>Seven Devils</td>
<td>Frank Lauzon</td>
<td>Cuprum</td>
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<td>Faye L.</td>
<td>Seven Devils</td>
<td>Anna Adams</td>
<td>Cuprum</td>
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<td>Glenn G.</td>
<td>Seven Devils</td>
<td>J. F. Glenn et al</td>
<td>Fruitvale</td>
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<td>Gold Coin Gr.</td>
<td>Mountain View</td>
<td>Adams County</td>
<td>Council</td>
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<td>Golden Star Gr.</td>
<td>Seven Devils</td>
<td>J. H. Hawley</td>
<td>Boise</td>
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<td>Grandview Gr.</td>
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<td>Frank Shelton</td>
<td>Cuprum</td>
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<td>Grant Gr.</td>
<td>Seven Devils</td>
<td>J. A. Walsh</td>
<td>Helena, Mont.</td>
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<td>Greenhorn Gr.</td>
<td>Seven Devils</td>
<td>Collins Lynes</td>
<td>Cuprum</td>
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<td>Seven Devils</td>
<td>R. A. Weddle et al.</td>
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<td>Hollister Gr.</td>
<td>Unorganized</td>
<td>L. A. Darland</td>
<td>Cuprum</td>
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<td>Idaho Standard</td>
<td>Seven Devils</td>
<td>Owen Hill</td>
<td>Homestead, Ore.</td>
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<td>Iowa &amp; Josie</td>
<td>Seven Devils</td>
<td>E. D. Ford</td>
<td>Weiser</td>
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<td>Kinney</td>
<td>Seven Devils</td>
<td>Chas. Warner</td>
<td>Bear</td>
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<td>Last Chance Pl.</td>
<td>Seven Devils</td>
<td>Walter James</td>
<td>Cuprum</td>
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<td>Seven Devils</td>
<td>I. R. Smith</td>
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<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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<td>Lola Group</td>
<td>Seven Devils</td>
<td>A. J. Cole</td>
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<td>Mammoth Gr.</td>
<td>Seven Devils</td>
<td>Chas. Anderson</td>
<td>Cuprum</td>
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<td>Margaret Gr.</td>
<td>Seven Devils</td>
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<td>Mayflower Gr.</td>
<td>Seven Devils</td>
<td>Mrs. F. Hildebrand</td>
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<td>Mineral Hill Gr.</td>
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<td>Monarch Mica Gr.</td>
<td>Seven Devils</td>
<td>Gillman Rinehart</td>
<td>Council</td>
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<td>Moonlight</td>
<td>Seven Devils</td>
<td>J. A. Reynolds</td>
<td>Weiser</td>
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<td>North Alaska</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>Pres. Wilson et al.</td>
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<td>L. A. Darland</td>
<td>Cuprum</td>
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<td>Rabbit's Foot et al.</td>
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<td>Chas. A. Theobold</td>
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<td>Collis Lynes</td>
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<td>River Queen Gr.</td>
<td>Seven Devils</td>
<td>Bernard Haas</td>
<td>Weiser</td>
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<td>Ruby Bell</td>
<td>Mountain View</td>
<td>Mary Z. Finney</td>
<td>Cleveland, Ohio</td>
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<tr>
<td>Schley et al.</td>
<td>Seven Devils</td>
<td>Geo. A. Jones</td>
<td>Boise</td>
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</tbody>
</table>
MINING INDUSTRY OF IDAHO

NAME OF MINE  MINING DIST.  OWNER  P. O. ADDRESS
Silver 1 & 2  Seven Devils  F. Alers  Cuprum
Star Gr.  Mountain View  Thos. G. Potter  Pollock
Virginius  Seven Devils  Andrew Wilmot  Kendrick
Virginius  Seven Devils  Adams County  Council
Walker  Seven Devils  Orrill Lewis  Council
Whale  Seven Devils  Adams County  Council
Wild Horse Gr.  Seven Devils  Mrs. C. R. Braasch  Homestead, Ore.

BIBLIOGRAPHY

See pages 7-8 for publisher's address, meaning of reference marks, and abbreviations.


The Seven Devils and the Snake River district, by G. D. Reid: Eng. and Min. Jour., vol. 84, p. 401, Aug. 31, 1907.§


BANNOCK COUNTY

Bannock County is one of the largest and most important of the southeastern counties. It is bounded on the north by Bingham County, on the east by Caribou and Bear Lake counties, on the south by Franklin and Oneida counties, and on the west by Power County. It has an area of 1837 square miles and was accredited with a population of 31,266 in the 1930 census. Pocatello, the second largest city in the State, is the county seat and principal division point of the Oregon Short Line Railroad.

The county is served by two State highways, the Oregon Trail, and Yellowstone Park. The former is the main east and west trunk line, and the latter is the main north and south trunk line of the State system.

The principal mineral resources are phosphate rock, limestone, manganese, copper, silver, gold, and building stone. The limestone is suitable for Portland cement and, as the deposits are extensively distributed and adjacent to transportation, they will eventually add a new and important industry. The phosphate rock covers a large area and constitutes an important latent resource. Considerable prospecting has been done on the copper veins which are found in the Portneuf Mountains south of Pocatello. In 1909 a mill was constructed at one mine; but other than the necessary annual labor no work of importance has been conducted for a number of years. Reports on the manganese deposits near Cleveland and Lava Hot Springs, which were discovered during 1924, indicate that the ore is high grade and that there is a large tonnage available.

1930 Activities

An important enterprise started in 1928 was that of the Idaho Portland Cement Co., near Inkom, about 12 miles south of Pocatello. This company acquired a large deposit of limestone, constructed a new railroad siding, and commenced installation of a 1500-barrel Portland cement plant. Construction was completed and the manufacture of cement started during 1929. The company's product is marketed under the trade name of "Eagle Brand." Operations were conducted throughout 1930, and a large tonnage of cement was manufactured and marketed.

Two manganese mines near Cleveland and one at Lava Hot Springs were active throughout the greater part of the year, and two of them produced and marketed a substantial tonnage of high-grade manganese ore.

BANNOCK MANGANESE MINING CO., LTD.

Office: Box 502, Pocatello. Officers: Lewis E. Munk, Pres., Georgetown; L. E. Glennon, Sec.; Wm. Sharp, Mgr., both of Pocatello. Inc.: Dec. 17, 1928. Capital: 100,000 shares; par value $1; 75,000 shares issued. Remarks: Failed to file the reports required by law.

CHATTERTON MINING CO.


CLEVELAND MINING CORPORATION


FORT HALL MINING & MILLING CO., LTD.

IDAHO MANGANESE MINING CO.

IDAHO PORTLAND CEMENT CO.

LAVA MANGANESE MINING CO.

LEAD BELL MINING CO.
Office: Lava Hot Springs. Officers: S. D. Cotton, Pres., 1460 McClelland St., Salt Lake City; Drusilla Godfrey, Sec., Lava Hot Springs. Inc.: Nov. 12, 1925. Capital: 1,000,000 shares; par value 10c; shares issued, unknown. Property: Lead Bell group; 9 unpatented claims, Portneuf dist.; Lava Hot Springs. Remarks: Company states, "This is only a prospect and is not being worked."

NORTON GAS & OIL CO.

BIBLIOGRAPHY
See pages 7-8 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.‡


Triassic and Jurassic formations in southeastern Idaho and neighboring regions, by G. R. Mansfield: Am. Jour. Sci., vol. 50, pp. 53-64, July, 1920.§

BEAR LAKE COUNTY


BEAR LAKE COUNTY

Bear Lake is the extreme southeastern county of the State. It is bounded on the east by the State of Wyoming and on the south by the State of Utah. On the north and west it adjoins Caribou, Bannock, and Franklin counties. It has an area of 980 square miles and was accredited with a population of 7,872 in the 1930 census. Montpelier, situated in the center of a rich agricultural valley, is the largest town; and Paris, located near the north end of Bear Lake, is the county seat.

The State highway, Oregon Trail, and the main line of the Oregon Short Line Railroad traverse the county east and west, thus giving it good transportation facilities.

The principal mineral resources are phosphate rock, gypsum, manganese, copper, lead, and silver. There are also excellent possibilities for petroleum. Estimates made by geologists of the U. S. Geological Survey credit the State with more than five billion tons of minable phosphate rock, over 85 per cent of the total known phosphate resources of the world. The largest and most accessible areas containing this rock are in Bear Lake County. Phosphate is a necessary soil constituent and it is through the existence of the Idaho deposits that the future of American agriculture is assured. These deposits are practically untouched, as present freight, market, and price conditions are preventing profitable production. They are the greatest potential mineral resources within the State and when properly developed the mining enterprises will dwarf many of the now famous mining districts in the United States. These deposits are fully described, with analyses and tonnage estimates included, in the numerous publications referred to in the bibliography of this county. Four mines are properly equipped with the necessary surface and mining plants, all have a large available tonnage, and production can be started without delay whenever conditions will warrant it.

One of the most outstanding publications issued by the U. S. Geological Survey in recent years is Professional Paper 152, by G. R. Mansfield: “Geography, Geology, and Mineral Resources of Part of Southeastern Idaho.” This appeared during 1927; it is profusely illustrated with pictures, maps, and diagrams, and describes in detail the subjects mentioned in its title, dealing especially with the immense areas of phosphate rock found in this county.

Many structures favorable to the accumulation of gas and petroleum in commercial quantities are found in this county. As the formation is similar to the formations in Wyoming which are producing oil, it is reasonable to expect that the probabilities should be at least equal on the Idaho side of the State line.

1930 Activities

One of the principal new activities, and one of great importance to the State, is that of the Solar Development Co. in acquiring and starting work on a phosphate mine near Paris. This company is a subsidiary of the Consolidated Mining & Smelting Co. of Trail, B. C. During 1929 and 1930 the latter company expended over $7,000,000 in the construction of an acid phosphate plant at Trail, and the phosphate rock which is being mined by the Solar Development Co. is being shipped to this plant for treatment. The property was acquired during the latter part of the year. Buildings were constructed, mining equipment was installed, and work was started on sinking an inclined shaft.

Another enterprise which appears to be of importance is that of the Agricultural Potassium-Phosphate Co. of California, Ltd. This company acquired 320 acres of phosphate land near Paris under lease and option, reha-
bilitated the old mine workings, commenced active mining operations, and produced a small tonnage of phosphate rock, which was shipped to the company's manufacturing fertilizer plant at San Pedro, California.

The Paris Mining & Milling Co., Inc., whose activities are based on the development of a copper property near Paris, was incorporated and commenced active development during the year. Reports were to the effect that the work resulted in encountering an excellent showing of copper ore, and that a substantial tonnage was placed in storage. The Sunset Mining Co. was active at its lead property near St. Charles. A substantial amount of mine development was done, and a small tonnage of high-grade ore was mined and placed in storage. The Utah-Idaho Mining & Milling Co., which is developing a copper property near Paris, rehabilitated its mine buildings and machinery and commenced sinking its vertical shaft an additional 100 feet.

AGRICULTURAL POTASSIUM-PHOSPHATE CO. OF CALIFORNIA, LTD.

BLACKSTONE MINING & POWER CO.

COPPER RESERVE MINING & REDUCTION CO.

GOLD STAR MINING CO.

KEYSTONE PHOSPHATE CO.

PARIS MINING & MILLING CO., INC.

SAN FRANCISCO CHEMICAL CO.
SOLAR DEVELOPMENT CO.
Office: Trail, B. C. Officers: J. J. Warren, Pres., Montreal, Quebec; E. G. Randall, Sec., Trail, B. C. Inc.: Sept. 14, 1928. Capital: 500 shares; no par value; 420 shares issued. Property: 3 patented claims held under lease and option from Francis A. Jeffs, Rockland, Mich. Plant: Gas-driven 310 cu. ft. air compressor; complete mining equipment. Ore: Phosphate rock. Men employed: Average, 26. Remarks: This company is a subsidiary of the Consolidated Mining & Smelting Co., Trail, B. C. During the year the latter company constructed a large acid phosphate plant at Trail, B. C., and the phosphate rock mined by the Solar Development Co. is being shipped to Trail for treatment. The property was acquired during the latter part of the year, buildings were constructed, equipment was installed and work was started on sinking an inclined shaft. The entry of this company into Idaho was one of the most important events of the year.

STOCKHOLDERS' SYNDICATE

SUNSET MINING CO.

UTAH-IDAHO MINING & MILLING CO.
Office: Paris, Idaho. Officers: L. W. Johnson, Pres., Provo, Utah; H. H. Broomhead, Sec., Bloomington. Inc.: Aug. 23, 1926. Capital: 1,000,000 shares; par value 2c; 750,000 shares issued. Property: Old Boulder group, 18 unpatented claims, unorganized dist.; Paris. Development: By 3 tunnels: No. 1, 600 ft. long; No. 2, 150 ft. long; No. 3, 200 ft. long; and a vertical shaft 200 ft. deep. Plant: Small steam-driven compressor. Ore: Copper. Men employed: Average, 4. Remarks: In September the mine buildings were enlarged, and work was started on sinking the shaft to a greater depth. Three stock assessments of 1 mill each were levied during the year.

WASATCH MINING & DEVELOPMENT CO.

BIBLIOGRAPHY
See pages 7-8 for publisher's address, meaning of reference marks, and abbreviations.
Lake Bonneville, by G. K. Gilbert: U. S. Geol. Survey Mon. 1, 1890.*


BENEWAH COUNTY

Benewah is one of the northern counties. It is bounded on the west by the State of Washington, on the north by Kootenai County, and on the east and south by Shoshone and Latah counties. It has an area of 786 square miles and was accredited with a population of 6,371 in the 1930 census. St. Maries, the county seat, is the largest town in the county. Except a small area along the St. Joe and St. Maries Rivers, and the section adjacent to the town of Plummer, which is devoted to agriculture, the entire county is mountainous and heavily timbered. The county is noted for its timber and lumbering industries.

The county is served by lake-boat transportation from Coeur d'Alene to St. Maries, and by two railroads: The Tekoa, Wn.-Wallace, Idaho, branch of the O. W. R. & N. (Union Pacific System), and the main line of the Chicago, Milwaukee & St. Paul Railroad, with its branch line extending from St. Maries to Elk River (Clearwater County).

The principal mineral resources are gold, copper, silver, lead, zinc, iron, and clay. The deposits containing the principal metals have received a small amount of attention; and many of the clays are exceptionally adapted to the ceramic industry. The St. Joe district, which lies east of St. Maries, and the Hoodoo and Camas Cove districts, in the southeastern corner, are the principal mining districts.

1930 Activities

The principal operation in this county was that of the Rainbow Mining & Milling Co., whose property is located in the St. Joe district, near Medimont. This company is driving a long crosscut tunnel, which was advanced approximately 1,000 feet during the year.

Two companies, whose properties are located near Round Top Mountain, did a small amount of development during the summer months. Their work and a slight increase in the number of prospectors gave this county a little more than its usual amount of mining activity.

BUTTE MINING CO.


OTHELLO MINING CO.


RAINBOW MINING & MILLING CO.


ROUND TOP MINING CO.

SILVER STAR MINING & DEVELOPMENT CO.

NAME OF MINE     MINING DIST.   OWNER    P.  O. ADDRESS
Alice Group      Camas Cove     S. R. Walker St. Maries
Alice Gr.        Grass Mountain Thos. Egan St. Maries
Aurora           St. Joe        E. F. Montandon St. Maries
Bonanza et al.   St. Joe        James M. Warren St. Maries
Cabin et al.     St. Joe        Fulton Cook St. Maries
Cedar Creek      Camas Cove     W. I. Hupp et al. St. Maries
Connelly Bros.   Camas Cove     Connelly Bros. Tyson
Copperhead       Camas Cove     Bert Whitehead St. Maries
Donson-Woodard   St. Joe        L. B. Dunson St. Maries
Flying Stone     Unorganized    William F. Schultz Plummer
Gladiator Gr.    St. Joe        O. E. Hailey et al. St. Maries
McLean Placer   Camas Cove     C. A. McLean Santa
Red Boy          Camas Cove     J. E. Hemmerway St. Maries
Seleoria         Camas Cove     Sadie Caverni Clarkia
Tom et al.       Unorganized    William Russell Chatcolet

BIBLIOGRAPHY
See pages 7-8 for publisher's address, meaning of reference marks, and abbreviations.

A geological reconnaissance in northern Idaho and northwestern Montana, by F. C. Calkins, with notes on the economic geology by D. F. MacDon-


Ground water for municipal supply at St. Maries, Idaho, by V. R. D. Kirk-
ham: Idaho Bureau of Mines and Geology Pamphlet 17, 1926.*


BINGHAM COUNTY

Bingham, a southeastern county, is primarily an agricultural community. It occupies a large part of the Snake River Valley and is bounded by Butte, Blaine, Power, Bannock, Caribou, Bonneville, and Jefferson counties. It has an area of 2,184 square miles and was accredited with a population of 18,561 in the census of 1930.

The extensive phosphate beds of southeastern Idaho are exposed in the Blackfoot Mountains which cover the eastern part of the county. Coal also has been found in these mountains, notably along Willow Creek, a small stream which flows in a northerly direction through the east end of the county. The coal beds have received a little attention from prospectors but no coal of commercial importance has been discovered. Structures that appear likely for the presence of petroleum are present also. The fine gold in the placer deposits along Snake River is the only metal resource of the county. In the past these deposits have received the attention of placer miners, but nothing of importance was reported during the year.
MARY LEE GOLD MINING CO.

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
Parsons Placer  Snake River  W. G. Parsons  Aberdeen
Snake River Pl.  Snake River  G. E. Parsons  Blackfoot
Woodruff Bend Pl.  Snake River  James G. Walsh  Blackfoot

BIBLIOGRAPHY
See pages 7-8 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.


BLAINE COUNTY

Blaine County is bounded on the west by Camas County, on the north by Custer County, and on the east and south, in its greater extent, by Butte and Lincoln counties. Its principal area comprises the drainage basin of Big and Little Wood rivers, which flow in a southerly direction. Its total area is 2797 square miles. The 1930 census accredited the county with a population of 3,768, or 1.3 persons to the square mile. In location it is one of the southcentral counties and comprises part of the region known as "Central Idaho's Mineral Empire." The county is primarily recognized as a mining county, but it is also noted for its agricultural and stock raising industries; particularly sheep, as it is one of the largest sheep shipping points in the United States.

The county is served by the Wood River branch of the Oregon Short Line Railroad, which extends from Shoshone to Ketchum; by the Sawtooth Park State highway (U. S. No. 93), State highway No. 22, and a well-kept system of county roads which extend into all of the various mining districts.
and sections. All roads are kept in good repair and are open to travel during the larger part of the year. Hailey is the largest town and county seat.

The first discovery of lead-silver ore in the State was made in Blaine County, which was then called Alturas County. The first ore was marketed in 1880 and since then this county has been a consistent producer of these metals. Most of the ores are of such high grade that they can be shipped direct to the smelter without preliminary treatment, thus assuring immediate returns from all discoveries. This fact and the possibilities of discovering and opening new ore bodies will continue to hold Blaine County, particularly the Wood River district, in popular esteem as a favorite section of the State for prospectors, development companies, and those seeking a worthy field for mining enterprises.

The high-grade ores of lead and silver are widely distributed throughout the county, as well as those of gold, zinc, and copper. In addition to the five principal metals—lead, silver, zinc, gold, and copper—deposits of arsenic, antimony, bismuth, quicksilver, graphite, barytes and limestone are found in this county. These minerals occur in sufficient extent to be of commercial importance, and many of the deposits offer an excellent opportunity to development companies or to those in search of these minerals or metals. The barytes deposits are the largest that have ever been found west of the Mississippi River. One large deposit on Deer Creek has been purchased by the Bunker Hill & Sullivan Mining & Concentrating Co.

1930 Activities

The principal operation was that of the Hailey Triumph Mines Co., at the Triumph mine, which adjoins the North Star of the Federal Mining & Smelting Co. Both production and development were maintained until June, when production was suspended; but development, with a crew of 20 men, was continued until September, at which time all operations were suspended. The ore produced was shipped, crude, to a milling plant in Utah for reduction.

The Homestake Mines Corporation, whose property is located on Lake Creek, near Ketchum, was active for eight months in developing its property, the principal work being confined to the extension of its No. 6, or lowest, tunnel. The results of this work were very encouraging.

The Liberty Gem Mines, Inc., whose property is located 7 miles west of Hailey, devoted the entire year to the installation of electric power, construction of a mill building, and installation of milling machinery. These improvements were completed in December, after which mine development was resumed. This work consisted of sinking the principal vertical shaft, which is 100 feet deep, an additional 100 feet. This company's activities constituted the principal new mine plant installation of the year.

Silver Star-Queens Mines, Inc., at the Queen of the Hills group, near Bellevue, was active in reopening the lower or Lusk tunnel. Over 1,000 feet of this tunnel was rehabilitated. The Crooked River Mining Co., operating in the Muldoon district, actively developed its property under contract during the summer months. The United Mines Co. of Idaho, Inc., which is also operating in this district, did a small amount of development and constructed a new camp building. The Treasure Vault Mining Co., whose property is located west of Hailey, performed a small amount of development work. The Utah Bellevue Mines Co., on its property near Bellevue, commenced driving a new tunnel during the early part of the year and continued without interruption.

Peter L. Kent, at the Lone Pine Tree group, near the Red Cloud mine on Deer Creek, maintained development without interruption throughout the summer months. Charles Sonneleitner, lessee at the Star mine, produced and marketed a small tonnage of high-grade lead ore. Lessees at the Baltimore and Parker groups, near Ketchum, maintained development without interruption. A. F. Peery, who is operating the Vienna mine, in the Sawtooth district, conducted active development during the early and latter parts of the year. The Day Development Co. of Wallace, which controls the Badger group, adjoining the property of the Liberty Gem Mines, Inc., performed a
small amount of work during the summer months. Lessees produced and marketed a small tonnage of ore from the Independence and North Star mines owned by the Federal Mining & Smelting Co.

One of the principal geological publications issued during the year by the U. S. Geological Survey, in cooperation with the Idaho Bureau of Mines and Geology, was Bulletin 814, “Geology and Ore Deposits of the Wood River Region, Idaho,” by J. B. Umpleby, L. G. Westgate, C. P. Ross, and D. F. Hewett. This bulletin completely describes the Wood River district. It is profusely illustrated with pictures and geologic maps. The findings and conclusions expressed in this publication are favorable for the return of this district as a substantial producer of lead-silver ore.

ARGO MINING CORPORATION

ARGOSY MINING & MILLING CO., LTD.

BALTIMORE & VICTORIA MINING CO.

BLACKJACK MINES CORPORATION

BUNKER HILL & SULLIVAN MINING & CONCENTRATING CO.
(See Shoshone County)

CROOKED RIVER MINING CO.
DAISY MINING & MILLING CO., LTD.

DAY DEVELOPMENT CO.

ERVINE MINING CO.
Office: Ketchum. Officers: M. A. Costello, Sec., 40 Court St., Boston, Mass.; C. Fred Howe, Mgr., Ketchum. Inc.: March 14, 1922. Capital: 1,000,000 shares; par value $1; 400,000 shares issued. Property: Boyle Mtn. group; 7 patented, 13 unpatented claims, 320 acres, Warm Springs Creek dist.; Ketchum. Ore: Silver-lead. Remarks: Annual labor only.

EUREKA DEVELOPMENT CO., LTD.
Office: 319 Dooly Blk., Salt Lake City, Utah. Officers: W. A. Wilson, Pres.-Mgr., Salt Lake City, Utah. Inc.: June 28, 1905. Capital: 200,000 shares; par value 50c; 120,794 shares issued. Property: Eureka group; 12 patented, 10 unpatented claims, 782 acres, Warm Springs Creek dist.; Hailey, 7 miles. Development: Total development approximately 12,900 ft., the length of the principal workings being: Bay State, 1000 ft.; Chicagoan, 300 ft.; Whale, 1400 ft.; Eureka, 3820 ft.; Idahoan, 5000 ft. One inclined shaft 700 ft. long; 1 inclined shaft 435 ft. long. Plant: MINE: 8x10 Lidgerwood hoist; 1 Lidgerwood 8x10 air hoist; 1 C-P 420 cu. ft. compressor. MILL: 350-ton concentrator; jaw and gyratory crushers; rolls; Marcy ball mills; Hancock jigs; drag classifiers; Wilfley tables; Dorr thickeners; Oliver filters; electric power. Ore: Lead-silver. Men employed: Average, 2. Remarks: The mine was operated by two lessees during the year.

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, 782 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: 350-ton concentrator; jaw and gyratory crushers; rolls; Marcy ball mills; Hancock jigs; drag classifiers; Wilfley tables; Dorr thickeners; Oliver filters; electric power. Ore: Lead-silver. Remarks: Active mining operations were suspended on August 1, 1923, after which various parts of the Independence and North Star mines have been operated by lessees. A small tonnage was produced and marketed during the year.

FIELDS MUTUAL DEVELOPMENT CO.
HAILEY BONANZA MINING CO.

HAILEY TRAMWAY CO.

HAILEY TRIUMPH MINES CO.
Offices: 215 Felt Bldg., Salt Lake City, Utah. Officers: Geo. W. Snyder, Pres.; Guy M. Snyder, Sec., both of Salt Lake City; J. C. Jensen, Supt., Hailey. Inc.: Aug. 23, 1929. Capital: 1,000,000 shares; par value 25c; all shares issued. Property: Lease on Triumph mine, owned by Ivanhoe Mining Co.; Warm Springs Creek dist.; Hailey. Development: Principally by a vertical shaft 300 ft. deep in which there are 3 levels, and an inclined winze in No. 3 level 500 ft. long. Total development approximately 17,775 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: Average, 75. Remarks: Production and development maintained until June 20; after which production was suspended and development work maintained with a crew of 30 men until September, when all operations were suspended.

HOMESTAKE MINES CORPORATION
Office: Ketchum. Officers: H. L. Kaufman, Pres.-Mgr., Ketchum. Inc.: July 27, 1927. Capital: 1000 shares; par value $100; all shares issued. Property: Homestake group; 13 unpatented claims, Warm Springs Creek dist.; Ketchum. Development: Approximately 4000 ft. of workings, the principal being: No. 3 tunnel, 500 ft. long; No. 4 tunnel, 800 ft. long; No. 5 tunnel, 1500 ft. long; No. 6 tunnel, 1800 ft. long. Plant: Gas-driven C-P compressor; complete mining equipment. Ore: Lead-silver-zinc. Men employed: Average, 10. Remarks: Active development campaign throughout the summer months in extending No. 6 tunnel.

IDAHO MINERAL PRODUCTS CO., LTD.

IDAHO SILVER KING MINING CO.

IVANHOE MINING CO.
JENNIE R MINING CO.

LIBERTY GEM MINES, INC.
Office: 610 Eastman Bldg., Boise. Officers: Guy E. Mathews, Pres.; G. Arlon Mathews, Sec., both of Hailey. Inc.: Sept. 13, 1927. Capital: 250 shares; no par value; all shares issued. Property: Liberty group; 20 unpatented claims, Mineral Hill dist.; Hailey. Development: Numerous open cuts and 6 4x6-ft. vertical shafts, the deepest of which is 200 ft. Total development, 620 ft. Plant: MINE: 2 electrically driven compressors; air-driven hoist; complete mining equipment and camp. MILL: Fine-grinding selective flotation, 100-ton capacity. Ore: Lead-silver-zinc. Men employed: Average, 10. Remarks: Practically no mine development work was performed during the year. All work was directed toward erecting new mine, camp, and mill buildings, installing milling equipment, electric power and road construction; all of which was completed in December, after which work was started on sinking the principal vertical shaft 100 ft. The funds were derived from the sale of stock on a basis of $4,000 per share.

MIDVALE MINING CO.
Office: Ketchum. Officers: M. A. Costello, Sec., 40 Court St., Boston, Mass.; C. Fred Howe, Mgr., Ketchum. Inc.: March 14, 1922. Capital: 1,000,000 shares; par value $1; 400,000 shares issued. Property: Pay group; 8 unpatented claims, Warm Springs Creek dist.; Ketchum. Ore: Zinc. Remarks: Annual labor only.

PANDORA MINING CO.
Office: Hootzinger Bldg., Yakima, Wash. Officers: Charles A. Mayo, Pres.-Mgr.; Thos. W. Ward, Sec., both of Yakima, Wash. Inc.: Unknown. Capital: 1,000,000 shares; par value 10c; 512,210 shares issued. Property: Pandora group; 16 unpatented claims held under lease and option, Lava Creek dist.; Blaine and Butte counties; Carey. Development: Principally by 1 tunnel 900 ft. long. Plant: Portable I-R gas-driven compressor; complete mining equipment and camp. Ore: Lead-silver. Men employed: Average, 6. Remarks: Operations were suspended in April on account of financial difficulties. During the closing months of the year arrangements were being completed for the resumption of operations.
QUINCY JUNIOR MINING CO.

RED ELEPHANT CONSOLIDATED MINES CO.

SILVER SPAR MINING CO.

SILVER STAR-QUEENS MINES, INC.

SUNBEAM MINING CO.

TIP TOP GROUP MINING CO.

TORBANEHILL MINING CO.

TREASURE VAULT MINING CO.

UNITED MINES CO. OF IDAHO, INC.
MINING INDUSTRY OF IDAHO


UTAH-BELLEVUE MINES CO.

WAVA MINING & MILLING CO.

WOOD RIVER MINING CO.
Office: Thorsen Bldg., Blackfoot. Officers: F. T. Halvorson, Pres., Carl Swager, Mgr., both of Blackfoot. Inc.: July 30, 1923. Capital: 1,000,000 shares; par value 10c; 387,000 shares issued. Property: Puritan group; 8 unpatented claims, Warm Springs Creek dist.; Ketchum. Development: By 3 tunnels; No. 1, 170 ft. long; No. 2, 290 ft. long; No. 3, 934 ft. long. Ore: Silver and lead. Men employed: Average, 4. Remarks: A small amount of development work was performed during the summer months.

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 | Hailey
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
Baltimore Ext. | Warm Spgs. Cr. | H. W. Kelley | Hailey
Barbara | Mineral Hill | John Utsch | Hailey
Battling Jack Gr. | Sawtooth | J. J. Vorberg | Hailey
B B B | Mineral Hill | Jos. Siker | Hailey
Beaver Gr. | Sawtooth | Thos. Mizer, Sr. | Hailey
Belmont Gr. | Mineral Hill | E. B. Williams | Boise
Big Mint | Mineral Hill | H. R. Plughoff Est. | Hailey
Black Barb | Mineral Hill | Mrs. Cecilia Roark | Bellevue
Black Diamond | Warm Spgs. Cr. | Magnolia Gutches | Hailey
Black Horse | Mineral Hill | Mrs. Cecilia Roark | Bellevue
Blue Bell | Warm Spgs. Cr. | Augustine Johnson | Hailey
Bob Tail | Mineral Hill | Rodney Brown | Hailey
Bonanza | Mineral Hill | J. L. Van Over | Bellevue
Boulder Gr. | Warm Spgs. Cr. | M. W. Wood | Boise
Boyle Mt. Gr. | Warm Spgs. Cr. | C. Fred Howe | Ketchum
Broadway | Warm Spgs. Cr. | Fred Vancil | Hailey
Bromide et al. | Mineral Hill | Ella Bresnahan | Hailey
Bull Whacker | Mineral Hill | G. G. Brown | Hailey
California | Mineral Hill | W. J. Sowden Est. | Hailey
Carboniferous | Mineral Hill | Mrs. Frank Campbell | Bellevue
Chloride Point | Warm Spgs. Cr. | Frank H. Morris | Hailey
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**BIBLIOGRAPHY**

See pages 7-8 for publisher’s address, meaning of reference marks, and abbreviations.


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


MINING INDUSTRY OF IDAHO


BOISE COUNTY

Boise is one of the principal mining counties in the southwestern part of the State. It is bounded by Ada, Gem, Valley, Custer, Blaine and Elmore counties. Included within its area are a part of the drainage basin of the Payette River, practically all of the drainage basin of the South Fork of the Payette River, and all of the drainage basins of Grimes Creek and Moore Creek. The last two comprise the area generally known as the Boise Basin. The county has a total area of 1,840 square miles, and was accredited with a population of 1,847 in the 1930 census, or one person to the square mile. The principal industries are mining, stock raising, timber and lumbering.

Different sections of the county are served by Federal and State highways, which are supplemented by well-maintained county roads. These roads extend into all the various mining districts and are open to automobile travel during the larger part of the year. The western part of the county is traversed by the Nampa-McCall branch of the Oregon Short Line Railroad; the central part, or Boise Basin, is served by the Intermountain Railroad, which extends from Barber, near Boise, to Stierman and Idaho City. Idaho City, the county seat, and one of the oldest towns in the State, dates its existence from 1863, the time of the original gold rush to the Basin. It once boasted of a population as high as seven to ten thousand.

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 of 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 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. This 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 850 feet only; at this point the ore is still persistent 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 850-ft. level of the Gold Hill mine, the production from the Belshazzar mine, and the new ore disclosures made during 1930 were instrumental in attracting much attention to the county, as well as proving the permanence of the ore bodies.

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, so the result is 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 are widely distributed throughout the county; and a few have been partially 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. Although Boise County has always been known as a gold producing county, there are numerous widely distributed deposits of lead, silver, zinc, copper, bismuth, and antimony; in addition to these, monazite is found in the placer deposits in sufficient quantity to be of commercial importance.

1930 Activities

The Gold Hill mine of the Talache Mines, Inc., continued to be the largest gold-producing mine in the State. The shaft was extended to the 850-foot level. The new ore opened on that level was of particular importance, not only because it increased the ore reserves, but because it proved the continuation of the ore with an increase in values as greater depth is obtained. The mine and mill were operated without interruption, new camp buildings were erected, and the mine and mill plants were improved.

The Idawa Gold Mining Co. continued to be an important producer of gold. Production, milling, and development work were conducted without interruption. The mine camp and mill were enlarged and improved, and a large amount of mine development work was performed. The Mineral Mining Co. completed the construction and alteration of its mill, did a large amount of mine development, and operated the mill intermittently. This company also started an extensive mine development campaign in December.

The Missouri Mining Co., Ltd. conducted an active mine development campaign and operated its mill intermittently until August, when operations were suspended on account of legal difficulties. The American Mines Development Co. at its calcite mine, near Banks, completed construction on ore bins and grinding plants and installed an aerial tramway connecting the mine and plant, which is located on the railroad siding. A small tonnage, which was sold to the agricultural and poultry industries, was produced and marketed. The Idaho Gold Dredging Corporation, which is operating a dredge on Grimes Creek, was active throughout the summer months and increased its production over that of the previous year. The Crooked River Mining Co., at the Kempner Ranch placer, changed its dredge from the flume type and conducted operations for a short period during the early part of the year, after which the dredge was again reconstructed and was operated at intervals during the summer months by a lessee. Late in the year the Continental Mining Co. and Inc. commenced the construction of a small gas-driven table concentrating mill at its property near Shafer Butte. Active mine development and construction work were conducted throughout the greater part of the year by the following: Boulder mine; Come Back Mining Co.; Franklin Placer Co.; Fryett Mining Co., Inc.; Penn Mining Co.; V. A. Thorn at the Banner mine; Jarvis Bros. at the Hayfork mine, and J. B. Eldridge at the Mayflower mine. The success of the Gold Hill mine has greatly stimulated prospecting, new locations and investigations by those seeking gold mines.
AMERICAN MINES DEVELOPMENT CO.
Inc.: Mar. 15, 1928. Capital: 1,000,000 shares; par value $1; 357,399 shares issued.

GRANDVIEW GROUP

BANKS MINE
Property: 144 acres patented farm land, unorganized dist.; Banks. Plant: 150-ton ore bin and 70-ton gas-driven dry-crushing equipment; aerial tramway connecting mine and grinding plant, which is located on the railroad siding. Ore: Agricultural limestone. Men employed: Average, 10. Remarks: Bins and grinding plant were enlarged and a tramway constructed during the year. A small tonnage was produced and marketed. The product is sold to the agricultural and poultry industries.

BOISE BASIN MINES, INC.
Office: Care of McNeal & Co., 208 S. La Salle St., Chicago, Ill. Officers: J. P. Slauson, Chicago, Ill. Inc.: Dec. 20, 1930. Capital: 1,000,000 shares; par value $1; shares issued, unknown. Remarks: Failed to file the reports required by law.

BOISE PLACER CO.
Office: Idaho City. Officers: Fleming Howell, Pres., Buckhannon, W. Va.; Paul C. Moore, Sec., Franklin, Pa.; E. F. Blain, Mgr., Boise, Inc.: Dec. 11, 1922. Capital: 750,000 shares; par value $1; 203,530 shares issued. Property: Plowman and Woodburn groups; 300 acres, Idaho City dist.; Idaho City. Plant: An oil-driven 10x7 compressor, and complete mining equipment. This equipment is used for the blasting of the big boulders in the hydraulic pits; complete hydraulic mining equipment. Ore: Placer gold. Men employed: Average, 8. Remarks: This company is the largest producer of placer gold in Boise County, and conducts the largest hydraulic mining operation in the State; however, as there was no water during the spring of 1930, the company could not operate. During the summer months ditches, pipe lines, and equipment were repaired.

BOULDER MINE

CLEAR CREEK DEVELOPMENT CO.

COME-BACK MINING CO.
Office: Pioneerville. Officers: Jos. Gonnick, Pres.; Louis Painich, Mgr., both of Pioneerville. Inc.: Apr. 30, 1928. Capital: 1,000,000 shares; par value 25c; all shares issued. Property: Come-Back group; 16 unpatented claims, Pioneerville dist.; Pioneerville. Development: Principally by 4 tunnels; No. 3, 385 ft. long; No. 4, 1431 ft. long. Ore: Lead-silver-gold. Men employed: Average, 6. Remarks: In addition to maintaining active development work throughout the year, a substantial tonnage of crude ore was produced and marketed. The results of the development work were encouraging.

CONSOLIDATED MINES SYNDICATE
changed to 10,000,000 shares, $2.50 par value; and on May 2, 1925, the capitalization was decreased to 10,000,000 shares, par value $1; 2,810,865 shares issued. **Property:** Washington and Subrosa groups; 4 patented, 14 unpatented claims, Gambrinus dist.; Idaho City. **Development:** Total development, approximately 12,000 ft., the principal part of which is the main crosscut tunnel 3700 ft. long, which intersects the bottom of a vertical shaft 414 ft. deep, near the bottom of which is a winze 150 ft. deep. **Plant:** Diesel oil engine driving a 480-cu.-ft. compressor, and complete mining equipment. Saw mill, modern boarding and bunk houses, change house, and complete camp. **Ore:** Silver-gold. **Remarks:** Idle since 1926.

**CONTINENTAL MINING CO. AND INC.**
Office: 1310 Main St., Boise. **Officers:** Fred A. Williams, Pres.-Mgr.; M. M. Stevens, Sec., both of Boise. **Inc.:** Oct. 15, 1929. **Capital:** 500,000 shares; par value $1; 282,600 shares issued. **Property:** Long Chance group; 12 unpatented claims, unorganized dist.; Shafer Creek; Horse-shoe Bend. **Development:** By 2 tunnels. **Ore:** Gold. **Remarks:** Work was started in October on a small gas-driven table concentrating plant.

**CROOKED RIVER MINING CO.**
Office: Dayton, Ohio. **Officers:** Melvin T. Rowland, Pres.-Mgr., Nampa; N. S. Talbott, Sec., Dayton, Ohio. **Inc.:** Oct. 5, 1927. **Capital:** 2000 shares common, no par value; 2000 shares preferred, par value $100; no shares issued. **Property:** Kemper Ranch placer; 1 patented, 60 unpatented claims, 1860 acres, Banner dist.; Idaho City. **Plant:** Screen-type dredge, 3-cu. ft. buckets; this dredge is driven by two 60-h. p. Diesel engines. **Ore:** Placer gold. **Men employed:** Average, 9. **Remarks:** During the early part of 1930 the dredge was changed from flume-type to screen and table type. It was operated by the company until June, after which it was further reconstructed and operated at intervals by Mr. Rowland during the remainder of the summer months.

**CURRY DITCH GOLD PLACER MINES ASSOCIATION**
Office: Oakland, Calif. **Officers:** P. E. Hall, Jr., Pres.-Mgr., 3118 Rawson Ave., Oakland, Calif. **Inc.:** An association. **Capital:** 500,000 shares; par value unfixed; 48,693 shares issued. **Property:** 3 patented, 2 unpatented placer claims, Pioneerville dist.; Pioneerville. **Remarks:** Idle.

**DIAMOND L MINING CO., LTD., OF IDAHO**
Office: Boise. **Officers:** Lottie Morehead, Pres.-Sec.-Mgr., Idanha Hotel, Boise. **Inc.:** July 1, 1918. **Capital:** 500,000 shares; par value 1 mill; 282,220 shares issued. **Property:** Buckskin group; 13 unpatented claims, Pioneerville dist.; Pioneerville. **Development:** Approximately 2,900 ft. of underground workings, the most important of which are 2 tunnels, 1 900 ft. long, and the other 500 ft. long. **Ore:** Lead-silver-gold. **Men employed:** Average, 2. **Remarks:** Development work was maintained throughout the year.

**EDNA MINES CO.**
Office: Idaho City. **Officers:** D. J. Atkins, Pres., 124 Front St., New York City. **Inc.:** Aug. 9, 1926. **Capital:** 200 shares; par value $100; all shares issued. **Property:** Edna group; 1 patented, 8 unpatented claims, Banner dist.; Idaho City. **Development:** Principally by 1 tunnel 1100 ft. long, and a vertical shaft 350 ft. deep with 3 intermediate levels. **Ore:** Silver-gold. **Men employed:** Average, 3. **Remarks:** Small amount of work throughout the year.

**FRANKLIN PLACER CO.**
Office: Idaho City. **Officers:** W. W. Miller, Pres.; Paul C. Moore, Sec., both of Franklin, Pa.; E. F. Blain, Mgr., Idaho City. **Inc.:** July 21, 1928. **Capital:** 300,000 shares; par value $1; 115,000 shares issued. **Property:** Leary and Brogan group, Placerville dist.; Placerville. **Ore:** Placer gold. **Remarks:** During the summer months the Leary and Brogan ditch was cleaned out and enlarged and many of the old flumes were replaced, preparatory to conducting operations.
FRYETT MINING CO., INC.

GOLDEN SEAL MINING & MILLING CO.

GOLD HILL & IOWA MINES CO.

GRIMES PASS MINING & MILLING CO.
Officers: Peter N. Alexander, 160 N. La Salle St., Chicago, Ill. Inc.: May 24, 1930. Capital: 1,000,000 shares; par value $1. Remarks: Failed to file the reports required by law.

HALLEY PLACER CO.

IDAHO DEVELOPMENT CO.

IDAHO GOLD DREDGING CORPORATION

IDAWA GOLD MINING CO.
Office: 521 Idaho Bldg., Boise. Officers: W. N. Harris, Pres., Turtle Lake, N. D.; E. A. Nordquist, Sec.-Mgr., Boise. Inc.: Jan. 3, 1919. Capital: 2,000,000 shares; par value 25c; 798,926 shares issued. Property: Belshazzar group, 22 unpatented claims, Quartzburg dist.; Quartzburg. Development: By 5 tunnels, the principal of which are No. 4, 1200 ft. long, and No. 5, 3000 ft. long. Total development, approximately 11,000 ft. Plant: MINE: Electrically driven compressor; complete mining equipment and camp. MILL: 25-ton amalgamation and table-concentration. Ore: Gold. Men employed: Average, 28. Remarks: Active production throughout the year. This is one of the principal gold-producing mines in the State, all operations being conducted through No. 4 tunnel, which is connected with the mill by an aerial tramway. During the year the mill and mine camp were enlarged and improved, and a large amount of mine development work was performed.
INDEPENDENT MINES SYNDICATE

IRON DYKE MINES CO.

McKINLEY MINE

MEADOW CREEK GOLD PLACER CO.

MINERAL MINING CO., LTD.
Office: Placerville. Officers: A. C. Gallupe, Pres.-Mgr., Placerville; C. C. Fairchild, Sec., Idaho City. Inc.: Feb. 6, 1920. Capital: 2,500,000 shares; par value 6c; Aug. 23, 1930, increased to 5,000,000 shares; 2,500,000 shares issued. Property: Enterprise and Smuggler groups; 12 patented, 21 unpatented claims; Enterprise group held under lease and bond from Exta Lightfoot, Pioneerville; Pioneerville dist.; Pioneerville. Development: Approximately 8000 ft. of underground workings. Plant: MINE: 25-h. p. steam-driven hoist on Smuggler group; complete mining equipment and camp. MILL: 100-ton concentrator. POWER: Small hydro-electric power plant. Ore: Lead-silver-zinc. Men employed: Average, 24. Remarks: Mill construction was completed and the mill operated for a few days. The mine was developed at intermittent intervals during the summer months.

MISSOURI MINING CO., L/PD.
Office: 2035 Osgood St. N. S., Pittsburgh, Pa. Officers: T. H. Reiners, Pres.; H. H. Rogge, Sec., both of Pittsburgh, Pa.; Harry A. Foreman, Mgr., Pioneerville. Inc.: Feb. 4, 1914. Capital: 50,000 shares; par value $1; on June 1, 1925, capitalization was increased to 1,000,000 shares, par value $1; 720,645 shares issued. Property: 12 unpatented claims, Pioneerville dist.; Pioneerville. Development: Approximately 1400 ft. of underground workings, the principal of which is an inclined shaft 210 ft. long. Plant: MINE: 210-cu. ft. C-P gas-driven compressor; complete mining equipment and camp. MILL: 50-ton flotation concentrator. Ore: Lead-silver-zinc. Men employed: Average, 14. Remarks: Active until Aug. 16, after which all operations were suspended on account of legal difficulties. A small tonnage of concentrates was produced and marketed.

NATIONAL MINING & DEVELOPMENT CO.

PASAYETTE COAL MINING CO.
PENN MINING CO.
Office: Placerville. 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; 72,500 shares preferred, all shares common issued. Property: Coin Bond group; 84 unpatented claims, Placerville dist.; Placerville. Development: Principally by 2 tunnels, one of which is 1555 ft. long, the other 1280 ft. long. Ore: Gold, lead-silver. Men employed: Average, 2. Remarks: Active throughout the year in rehabilitating the tunnels and in surface prospecting.

TALACHE MINES, INC.
Office: Quartzburg. Officers: A. H. Burroughs, Jr., Pres.-Mgr.; B. K. Burroughs, Sec., both of Quartzburg. Inc.: Apr. 21, 1917, as Armstead Mines, Inc.; name changed June 8, 1922. Capital: 1,000,000 shares common, 600,000 shares preferred; par value $1; 983,000 shares common, 579,233 shares preferred issued. Property: Lease and option on property owned by Gold Hill & Iowa Mines Co., which see. Development: Principally by a 700-ft., 3-compartment, vertical shaft and a 150-ft. vertical winze on the 700-ft. level. Total development, over 40,000 ft. in Gold Hill mine. Plant: MINE: 250-h. p. double-drum hoist and 600-cu. ft. I. R. compressor, both electrically driven. MILL: 150-ton, including crusher, rolls, Hardinge ball mill, amalgamating plates, concentrating tables, and regrinding. Ore: Gold. Men employed: Average, 72. Remarks: In March, 1927, property was acquired and operations started, the principal part of which was the unwatering of underground workings. This was completed early in 1928, after which a 100-ft. vertical winze was sunk from the 600-ft. level on the ore body. This winze and the drifts at the bottom of it proved the extension of the ore to this level, at which point it was more extensive and of higher grade than on the 600-ft. level. During 1929 the main shaft was connected with the 600-ft. level by raising from the 700-ft. level, and the 850-ft. level was opened by extending the vertical winze from the 700-ft. level. The mill building was enlarged, the mill entirely rehabilitated with practically all new equipment, the mine buildings were completely reconstructed, and a new hoist installed. This work was completed early in 1929; since then production has been maintained without interruption. In August, 1929, the entire town of Quartzburg, including the boarding and bunk house, all of which was owned by the company, was destroyed by fire. The construction of new buildings was completed in 1930. This property was first located in 1865, since which time it has been in practically continuous operation, with a production record of approximately $8,000,000, half of which was produced during the last 15 years prior to 1926, at which time the mine was closed and permitted to fill with water. Its reopening, rehabilitation, and new ore disclosures indicate a future productive period, the length of which can not yet be determined. See page 50 for further information.

WASHOE MINING CO.

WIONE MINING CO.
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BOISE COUNTY

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BIBLIOGRAPHY

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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 gold resources of Boise Basin, Boise County, Idaho, by S. M. Ballard: Idaho Bureau of Mines and Geology Bull. 9, 1924.**


BONNER COUNTY

Bonner constitutes an important part of the Idaho Panhandle and is one of the extreme northern counties. It is bounded on the east by the State of Montana, and on the west by the State of Washington; Boundary County adjoins it on the north, and Kootenai and Shoshone counties on the south. It contains an area of 1748 square miles and was accredited with a population of 13,152 in the 1930 census. The principal industries are lumbering, mining, stock raising, and agriculture. Although the county is recognized as one of the important mining counties of the State, the proportion of the population that is interested in mining is very small.

The county is exceptionally fortunate with respect to transportation facilities, as it is served by two State highways, lake boats, and three transcontinental railroads. Boats that can reach any point on Lake Pend d'Oreille give connection with the railroads at Sandpoint and Bayview.

Practically all the mining has been devoted to the areas adjacent to Pend d'Oreille and Priest lakes and the Clark Fork River. However, mining locations are numerous and widely scattered throughout the county. The mining history of the county dates back to the discovery of silver ores near Lakeview in 1888, which resulted in a stampede from the Coeur d'Alene district. Since that time there has always been a small amount of mining, but the county did not attract attention in recent years until the Talache mine was a proved and successful operation. The Talache has been a big factor in drawing attention to the mineral possibilities and prospecting opportunities of the county, resulting in a large increase in mining activities during the past few years.

The principal minerals are those of silver, lead, copper, zinc, and gold. These metals, and the limestone quarried near Lakeview, constitute the chief mineral resources. Silver is the most widely distributed metal and constitutes the most important part of the ores.

1930 Activities

The Whitedelf Mining & Development Co. maintained production and development without interruption, and during the latter part of the year commenced work on extending its shaft an additional 200 feet. The development work done by the Hope Mining Co. increased its ore reserves. Late in the year this company commenced work on installing electric power and an 85-ton flotation concentrator. The Idaho Lakeview Mines Co. at the Hewer Mine, in the Bayview district, extended the inclined shaft an additional 200 feet and performed a large amount of lateral development work during the early part of the year. The results were very encouraging. Explorers Inc., a new company, which holds the Boyer group under lease and option, did a small amount of diamond drilling, the results of which were sufficiently favorable to warrant further development; and work was started in December in sinking a shaft.

Press reports were to the effect that active operations were conducted and that a compressor and mining equipment were installed at the Silver Star group, near Cocolalla, by T. W. Roberts, who is holding the property under a lease and option and financing the operations through the sale of "options." Prospecting and small development companies which were active during a large part of the year were: Amazon Mines Inc.; Gene Lee Mines Inc.; Minerva Silver, Inc.; North Idaho Mining & Development Co.; Syringa Mining Co.

The success with which the Whitedelf and Hope mines, in the Clark Fork section, are meeting greatly stimulated prospecting and development work. Activities were further stimulated by the publication of Bulletin 12 of the Idaho Bureau of Mines and Geology, "Geology and Ore Deposits of the Clark Fork District, Idaho," by A. L. Anderson, which was issued in March.
AMAZON MINES, INC. (Proposed)

AMERICAN EAGLE MINING CO.

ARGUS MINING CO.

AUXER GOLD MINES CO.

BIG FIVE MINING CO.

BINARCH CREEK MINING CO.

BLACKTAIL CONSOLIDATED MINING CO.

BONNER MINING CO.
BOYER MINES, INC.

CAMPBIRD MINING & DEVELOPMENT CO.

CARPIE MINING CO.

CLARINDA COPPER MINING CO.

EMPIRE TUNGSTEN MINING CO.

EXPLORERS, INC.
Office: Spokane, Wash. Officers: John L. Dirks, Pres.; James P. Dillard, Sec., both of Spokane, Wash. Inc.: March 4, 1930. Capital: 250,000 shares; par value $1; 75,000 shares issued. Property: Boyer group; 2 patented claims, held under lease and option, Pend d'Oreille dist.; Sandpoint. Remarks: A small amount of diamond drilling during the early part of the year. In December arrangements had been completed for sinking a shaft.

FALLS CREEK MINING CO.
Office: Sandpoint. Officers: W. C. Ames, Pres.-Mgr.; Wm. Hollembaek, Sec., both of Sandpoint. Inc.: Nov. 11, 1911. Capital: 500,000 shares; par value $1. Remarks: Failed to file the reports required by law. Amazon Mines, Inc., reported that it is holding this property under lease and option.

GENE LEE MINES, INC.
GOAT MOUNTAIN MINING CO.


HALLIDAY MINING CO.


HOPE MINING CO.

Office: Clark Fork. Officers: O. A. Holte, Pres., Coeur d'Alene; C. C. Jensen, Sec.; S. W. Purdy, Mgr., both of Clark Fork. Inc.: Nov. 19, 1927. Capital: 1,500,000 shares; par value 10c; 1,485,000 shares issued. Property: Elsie K. group; 1 O 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 5000 ft. Plant: Gas-driven 6x6 compressor, complete mining equipment and camp. Ore: Lead-silver. Men employed: Average, 15. Remarks: A small tonnage of ore was produced and marketed by the company and lessee operations. During the closing months of the year construction and installation of an 85-ton flotation concentrator plant and the installation of electric power were started. Mine development work exceeding 1100 ft. was done during the year.

IDAHO LAKEVIEW MINES CO.

Office: Lakeview. Officers: D. M. Drumheller, Jr., Pres., Spokane, Wash.; E. G. Randall, Sec., Trail, B. C.; F. A. Fortier, Mgr., Kimberley, B. C. Inc.: June 28, 1928. Capital: 2,100,000 shares; par value 20c. Increased Nov. 23, 1929, to 2,310,000 shares; increased Apr. 3, 1930, to 2,510,000 shares; par value 20c; 2,310,000 shares issued. Property: Hewer group; 4 patented, 11 unpatented claims, Lakeview dist.; Lakeview. Development: Total development approximately 13,500 ft.; principally by 1 tunnel 2,200 ft. long, in which is an inclined shaft 1600 ft. long. Plant: MINE: 500-cu.-ft. I-R compressor; electrically-driven hoist; 75-kw. generator, driven by 100 h. p. semi-Deisel engine; complete mining equipment. MILL: 100-ton concentrator, fine grinding and flotation; driven by semi-Deisel oil engine. Ore: Silver-lead-zinc. Men employed: Average, 28. Remarks: During the early part of the year the inclined shaft was extended 200 ft. and a large amount of lateral development work was performed. All work, excepting pump attendance, was discontinued on June 1.

INTERNATIONAL PORTLAND CEMENT CO., LTD.


KANE MINING CO.

KANIKSU MINING CO.

KEEP COOL MINING CO.

KING SOLOMON'S MINES CO.

LAWRENCE CONSOLIDATED MINING CO.

LONE BUTTE MINING CO.

LUCKY STRIKE MINING CO.

MILWAUKEE MINES, INC.
Office: 501 City Hall Bldg., Spokane, Wash. Officers: J. W. Lloyd, Pres.; Arthur L. Hooper, Sec.-Mgr., both of Spokane, Wash. Inc.: Apr. 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. Remarks: Failed to file the reports required by law.

MINERVA SILVER, INC.
NAOMI MINING CO.

NEVADA MINES

NORTH IDAHO MINING & DEVELOPMENT CO.

OPPORTUNITY MINING CO.

PONDERA MINING & POWER CO.

PONDOROSA MINING CO.

PRIEST RIVER MINING CO.

REGAL MINING CORPORATION
R. J. PRICE MINING CO.

SILVER MOUNTAIN MINING CO.

SILVER STAR GROUP
Lessee: T. W. Roberts, 101 East Nora St., Spokane, Wash. Property: Silver Star group; 1 unpatented claim and 140 acres patented land, held under lease and option from Silver Star Mining Co., Ltd., Pend d'Oreille dist.; Cocolalla. Development: Principally by 1 tunnel 575 ft. long. Ore: Lead-silver-zinc. Men employed: Average, 3. Remarks: Development work is being financed through the sale of "options." Press reports were to the effect that active operations were conducted throughout the year, and that compressor and mining equipment were installed.

SILVER STAR MINING CO., LTD.

STANDARD STATIONS, INC.

SYRINGA MINING CO.

TALACHE MINES, INC.
Office: Talache. Officers: A. H. Burroughs, Jr., Pres.-Mgr.; B. K. Burroughs, Sec., both of Quartzburg. Inc.: Apr. 21, 1917, as Armstead Mines, Inc.; name changed June 8, 1922. Capital: 1,000,000 shares common, 600,000 shares preferred; par value $1; 983,000 shares common, 579,233 shares preferred issued. Property: Armstead mine; 18 patented, 44 unpatented claims, Pend d'Oreille dist.; Talache. Development: Approximately 34,591 ft. of underground workings, the principal of which are a main haulage tunnel, 3900 ft. long, the main inclined raise 916 ft. long and an inclined shaft 200 ft. long. Plant: Small gas-driven compressor. Ore: Gold. Remarks: A small amount of development work during the latter part of the year.

MINING INDUSTRY OF IDAHO

Operations were suspended in October, 1926. In March, 1927, the famous Gold Hill & Iowa mine at Quartzburg, Boise County, was acquired and operations were transferred to that mine.
### WHITEDELF MINING & DEVELOPMENT CO. MILL

**Officers:** John P. Delaney, Pres., 50 Broad St., New York; Compton I. White, Mgr., Clark Fork. **Inc.:** March 17, 1926. **Capital:** 100,000 shares, par value $1; 65,000 shares issued. Company reported 1000 shares; par value $100; all shares issued. Change not filed in Idaho. **Property:** 160 acres of patented land, Pend d'Oreille dist.; Clark Fork. **Development:** Principally by 3 tunnels, with a total of over 2500 feet, and an inclined shaft 300 ft. long. **Plant:** MINE: Electrically-driven compressor; complete mining equipment. MILL: 75-ton flotation concentrator. **Ore:** Lead-silver. **Men employed:** Average, 23. **Remarks:** In addition to the work performed by the company, part of the mine was under operation by lessees. A large tonnage of high-grade lead-silver crude ore and concentrate was produced and marketed. The development work consisted principally of lateral work on the 100, 200 and 300-ft. levels, and extending the shaft an additional 200 ft. The success with which this enterprise is meeting has been instrumental in attracting a large amount of attention to the Clark Fork district.

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NAME OF MINE | MINING DIST. | OWNER | P. O. ADDRESS
---|---|---|---
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., Spokane
Snowbird | Pend d'Oreille | Walter Blossom | Spokane
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 et al. | 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

BIBLIOGRAPHY
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BONNEVILLE COUNTY

Bonneville County is bounded on the south by Caribou and Bingham counties, on the west by Bingham County, on the north by Jefferson, Madison and Teton counties, and on the east by the State of Wyoming. It is one of the principal, as well as one of the largest, southeastern counties; and has an area of 1,904 square miles, and population of 19,664 at the time of the 1930 census. The larger part of the population is in the Snake River valley, which occupies all of the western part of the county. The southeastern part, which is occupied by the Caribou Range of the Snake River Mountains, is drained by the South Fork of the Snake River and its tributaries. It is primarily an agricultural county and is noted for its potato and sugar-beet industries, particularly potatoes, as it is one of the largest potato shipping points in the United States. Idaho Falls, the largest town, and civic center of the Upper Snake River valley, is the county seat.

Although recognized only as an agricultural community, this county was once the scene of many active mining operations. This was during the gold rush in the Mt. Pisgah, or Caribou, district at the time placer gold was discovered on McCoy and Gray's creeks. These placers produced a creditable amount of gold, and subsequently a few lode deposits were discovered and exploited. In late years a small dredge was constructed, but this and the deep mines are now idle and the only gold produced is from a few small placer operations.

The principal mineral resources of Bonneville County are gold, phosphate rock, copper, silver, and coal. Many structures favorable to the accumulation of petroleum in commercial quantity are found throughout the southern and eastern parts of the county.

The extensive phosphate beds of southeastern Idaho are exposed over a large area. These, and possibly petroleum, will eventually add to the county's prosperity and put it into the list of important mining counties.

1930 Activities

The placer deposits on McCoy's and Gray's Creeks received much attention from responsible operators, who had the thought in view of installing newly devised placer mining equipment.

BONNEVILLE MINING CO., INC.

THE CALIFORNIA CO.
Office: 225 Bush St., San Francisco, Calif. Officers: K. R. Kingsbury, Pres.; J. H. Tuttle, Sec., both of San Francisco; E. G. Lawson, Mgr., Kemmerer, Wyo. Inc.: Filed in Idaho Mar. 19, 1928. Capital: 5,000 shares; par value $100; 1,000 shares issued. Property: 920 acres held under oil and gas lease. Development: 14 to 10-in. well, 3780 ft. deep. Plant: 90-ft. steel derrick; complete drilling equipment, gas-driven; complete and modern camp. Mineral sought: Oil and gas. Men employed: Average, 4. Remarks: This company is a subsidiary of the Standard Oil Co. of California. The rig was installed in May, 1928, and active well-drilling operations were commenced on June 10, 1928, and continued without interruption throughout 1929. Operations were suspended in January, 1930.

IDAHO GOLD MINING CO.
NAME OF MINE  MINING DIST.  OWNER  P. O. ADDRESS
American Placer  Mt. Pisgah  W. H. Stocks  Gray
Anderson Bar et al.  Mt. Pisgah  Helmer Ronback, Agt.  Gray
Oneida Gr.  Mt. Pisgah  Fred Brenzinger, Agt.  Gray
Oneida South  Mt. Pisgah  Fred Brenzinger, Agt.  Gray
Pisgah Gr.  Mt. Pisgah  Fred Brenzinger, Agt.  Gray
Silver Bell Gr.  Mt. Pisgah  Leroy Layland  Gray
Timber Line  Mt. Pisgah  J. C. Beatty  Soda Springs
Toway  Mt. Pisgah  Amos S. Clark  Unknown
Wolfe Bar  Mt. Pisgah

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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, Feb., 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

Boundary County is bounded on the north by the Dominion of Canada, on the east by the State of Montana, on the west by the State of Washington, and on the south by Bonner County. Its principal area comprises the drainage basins of the Moyie River, which flows in a southerly direction, and the Kootenai River, which flows northerly from Bonners Ferry, the county seat and principal town. It has a total area of 1,276 square miles, and was credited with a population of 4,555 in the 1930 census. The principal industries are lumbering, farming, and mining.

The county is served by two transcontinental railroads, the Great Northern, with its branch line from Bonners Ferry to Porthill, on the Canadian border, and the Spokane International; by the North and South Highway, with an easterly outlet from Bonners Ferry; and by a system of county roads which extend into the different sections along the main stream valleys.

The principal mineral resources are lead, silver, gold, copper, zinc, tungsten, and molybdenum. These metals are widely distributed, and a few of the deposits have been partially developed. Heavy overburden, dense overgrowth, and limited accessibility have retarded prospecting, discovery, and development. The many favorable areas and wide diversity of mineralization make this county an exceptionally favorable field for the prospector and the small development company.

1930 Activities

The year 1930 witnessed but little new activity and but a small improvement in development work by the old companies. Two new enterprises, the Silver Spoon Mining Co., Inc., whose property is in the Moyie Yaak district, near Meadow Creek, and J. I. Zigler, at the Donahoe property, in the Moyie Yaak district, commenced work on sinking shafts. The Metals Mining Co. and the Moyie Cold Copper Mining & Milling Co., Ltd. both expanded their operations over those of the previous year. The Idamont Lead-Zinc Mines Co. was active for a few months. An attempt was made to reorganize the companies controlling two lead-silver properties in the Katka district. Newspaper reports were to the effect that a new discovery of lead-silver was made on the Moyie River.

BRUSH LAKE MINES CO.
Office: 412 Ziegler Block, Spokane, Wash.

CLANCY MINING CO.
Office: Bonners Ferry.

COPPER FALLS MINING CO.

CYNIDE GOLD MINING CO., LTD.
Property: Buckhorn group; 18 unpatented claims, Moyie Yaak dist.; Bonners Ferry. Remarks: Sold to bondholders on June 5; J. W. Reid, Trustee, Bonners Ferry.
DONAHOE PROPERTY

GOLDEN SCEPTRE MINING CO.

IDAMONT LEAD-ZINC MINES CO.
Office: Leonia. Officers: J. S. Hutchinson, Pres., Portland, Ore; M. E. Carson, Sec., Leonia. Inc.: Sept. 10, 1928. Capital: 1,000,000 shares; par value $1; 624,130 shares issued. Property: 66 placer and lode claims, approximately 2400 acres, Moyie Yaak dist.; Leonia. Development: 5-mile, 200 sec.-ft. capacity canal, giving a working head of approximately 450 ft.; in 2 sections, upper 3 miles long, lower 2 miles, with a difference in elevation of 210 ft. Water conducted from upper to lower through two 22-inch steel pipes; about 20 miles of road, 5 of which were very heavy construction. Lode claims developed by numerous cuts and tunnels. Plant: Approximately 3000 ft. steel pipe, one 8-inch giant, operating under a 480-ft. head and two 5-inch giants, operating under 150-ft. head; bed rock flume and spillway 300 ft. long on a grade of 10 inches in 12 ft.; in 3 sections, spillway 12 ft. wide by 8 ft. deep; one flume 6 ft. wide and one 12 ft. wide, both 8 ft. deep. Concentrates from flume discharge into cement lined tank of approximately 15,000-ton capacity from which they are elevated into cleaning plant on top of flume. Cleaning plant consists of Ogden tables, classifiers and specially designed riffles. Complete machine shop, sawmill, planing mill, overhead cable system operated by steam; tractor haulage; complete company buildings and 35 individual homes for the men. Ore: Principally placer gold. Men employed: Average, 6. Remarks: A reorganization of the Leonia Gold Mining Co., in order that the stock might be made assessable. The principal activity during the year was the development of a lead-zinc vein.

INTERNATIONAL MOLYBDENUM CO.

LEAD CONSOLIDATED MINING CO.
Officers: H. I. Monks, Bonners Ferry. Inc.: April 11, 1929. Capital: 3,000,000 shares; par value $1. Remarks: This company has never filed the reports required by law.

LUCKY ABE MINING CO.
MINING INDUSTRY OF IDAHO

METALS MINING CO.

MOYIE GOLD COPPER MINING & MILLING CO., LTD.

NORTH IDAHO DEVELOPMENT CO.

SILVER SPOON MINING CO., INC.

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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.§


Geology and ore deposits of Boundary County, Idaho, by V. R. D. Kirkham and E. W. Ellis: Idaho Bureau of Mines and Geology Bull. 10, 1926.**

BUTTE COUNTY

Butte is one of the south-central counties, being bounded by Lemhi, Custer, Blaine, Bingham, Jefferson, and Clark counties. The Big and Little Lost rivers flow in a southerly direction across the county, and the lower valleys of these rivers constitute the larger part of its area of 2,048 square miles. Arco, situated near the lower end of Big Lost River valley, is the largest town and the county seat. It is primarily an agricultural and stock-raising community, although its mining industry is gaining recognition and importance. The publicity given and the travel attracted to the new national monument, the Craters of the Moon, which is located in this county, have widely advertised the resources and scenic attractions of the State.

Two State highways have been designated and completely constructed, the Lost River Highway, which extends from Blackfoot to Challis and passes
through Arco and Big Lost River valley, and the Idaho Central Highway from Hailey to Dubois, which serves the Craters of the Moon. The county is served by the Blackfoot-Mackay branch of the O. S. L. Railroad.

The principal mineral resources are lead, silver, zinc, gold, tungsten, manganese, limestone, and marble, the high-grade lead-silver ores being the most important, as they are found in all the mining districts of the county. The other metals occur in sufficient extent to be of commercial importance. Butte is one of the principal lead-silver producing counties in southern Idaho.

1930 Activities

The Wilbert Mining Co., operating in the Dome district, maintained active production and mine development. This company is one of the largest producers of lead-silver ore in southern Idaho, and the success with which it is meeting has been instrumental in attracting much attention to the mineral resources of this county. The Dahle Bros., at the Horn Silver mine, in the Lava Creek district, whose company is known as the Horn Silver Consolidated Mines Co., maintained active development throughout the year. This work increased the known resources of the mine. One small shipment of crude ore was marketed. The other companies in this district performed only the necessary annual labor; however, there was a substantial increase, over that of the previous year, in the number of prospectors who were active throughout the summer months.

BADGER MINES CO.


BUTTE ANTELOPE MINING CO.

Office: Moore. Officers: H. E. Lisonbee, Sec., Moore. Inc.: Sept. 8, 1927. Capital: 1,000,000 shares; par value 5c. Remarks: Since 1928 this company has failed to file the reports required by law.

GOLDEN CHARIOT MINING CO.


HORN SILVER CONSOLIDATED MINES CO.

Office: Arco. Officers: Edward Dahle, Pres.-Mgr.; M. M. Dahle, Sec., both of Arco. Inc.: Dec. 21, 1925. Capital: 100,000 shares; par value $1; all shares issued. Property: Horn Silver group; 3 patented, 7 unpatented claims, held under lease and option; Lava Creek dist.; Martin. Development: By 3 tunnels: No. 1, 630 ft.; No. 2, 530 ft.; No. 3, 1500 ft. Plant: Gas-driven compressor; complete mining equipment and camp. Ore: Lead-silver. Men employed: Average, 7. Remarks: Active development work throughout the year, which consisted principally of drifting on the vein in No. 3 tunnel. This work opened a substantial showing of ore. All the men employed are interested in the mine and work without wages. The Dahle brothers are to be complimented for hard work, intelligent manner of developing the property and economy of operation.

LEAD BELT MINES CO.

Officers: C. S. Cresser, Moore. Inc.: Unknown. Remarks: Name of the company was obtained from the press stories given by Mr. Cresser.
MAUDE ELLEN OIL CO.

Metta Mining Co., Ltd.
Office: Blackfoot. Officers: W. R. Jones, Pres., Blackfoot. Inc.: Oct. 20, 1906. Capital: 1,000,000 shares; par value $1; 386,500 shares issued. Property: Metta group; 9 unpatented claims, Hamilton dist.; Howe. R. R. Dubois, 47 miles. Development: 3 short tunnels and 3 short vertical shafts; total development work approximately 1000 ft. Ore: Lead-silver. Remarks: This company states that the property has been leased to the Richmond Developing Co. The latter company has not filed the reports required by law.

ST. LOUIS MINING CO.

WILBERT MINING CO., LTD.
Office: 221 Kearns Bldg., Salt Lake City, Utah. Officers: J. A. Foley, Pres.-Mgr.; T. L. Mitchell, Sec., both of Salt Lake City, Utah. Inc.: Apr. 10, 1907. Capital: 2,000,000 shares; par value 50c; 1,566,128 shares issued. Property: Daisy Black group; 7 patented, 32 unpatented claims, Dome dist.; Howe. R. R. Arco, 42 miles. Development: Approximately 16,000 ft. of underground workings, the principal of which is No. 4 tunnel, in which there is 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 electrically-driven compressors; complete mining equipment and camp. MILL: 75-ton concentrator, electrically driven. Ore: Lead-silver. **Men employed:** Average, 25. **Remarks:** In addition to maintaining production and shipping a large tonnage of concentrate during the year, a large amount of mine development work was performed. This property is one of the largest lead-producing mines of southern Idaho.

<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>Apex, Apex 3</td>
<td>Lava Creek</td>
<td>Edward Dahle</td>
<td>Martin</td>
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<td>Badger 1, 2, 3, 4</td>
<td>Lava Creek</td>
<td>William Deusner</td>
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<td>Arco</td>
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NAME OF MINE       MINING DIST.     OWNER        P. O. ADDRESS
Sam & Tom         Lava Creek       Ira Petty     Howe
Second Chance     Lava Creek       Riley Kent    Arco
Senator Gooding   Lava Creek       D. W. Nichols Martin
Shail & Comstock  Dome            Shail & Comstock Rexam
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
West Idaho et al. Lava Creek       W. H. Miller et al. Arco

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Geology and ore deposits of the Lava Creek district, Idaho, by A. L. Anderson: Idaho Bureau of Mines and Geology Pamphlet 32, 1929.**

CAMAS COUNTY

Camas County is one of the south-central counties, being bounded on the north and east by Blaine, on the south by Lincoln and Gooding, and on the west by Elmore County. It has an area of 1,070 square miles, and was accredited with a population of 1,411 in the 1930 census, or 1.3 persons to the square mile. The population is engaged in stockraising and dry farming, which pursuits are confined to the 300,000 fertile acres of the Camas Prairie.

The county is served by locally maintained roads, two Forest Service highways, and the Shoshone-Hill City branch of the O. S. L. Railroad. Fairfield is the largest town and county seat.

The principal mining districts are the Rosetta, Little Smoky, and Skeleton. The Skeleton district includes the drainage area forming the headwaters of the South Fork of the Boise River, and Little Smoky district comprises the drainage area of Little Smoky and Carrie Leonard Creeks. The ores found in the latter are those of lead-silver and zinc, and the mines in the former are principally gold, both placer and lode. In addition to the foregoing, the other mineral resources are copper, tungsten, and diatomaceous earth.

The mines in the Carrietown section of the Little Smoky district have a good production record to their credit, and their latent possibilities still offer excellent opportunities for profitable mines, either through the apparent
possibility in some mines for finding the ore beyond the faults which caused a suspension of operations in the early nineties, or, in other mines, of adapting modern flotation methods to the large bodies of proven low-grade ore.

1930 Activities

One of the largest expenditures and the one of the most importance to the county was that of the Silver Star Queens Mines, Inc. in constructing the remaining 6 miles of highway between Fairfield and the Silver Star mine at Carrietown. This work was done in cooperation with the U. S. Forest Service. Its completion makes the Carrietown section accessible to the railroad by a standard forest highway.

The Consolidated Mines Syndicate, which is developing a prospect in the Willow Creek section, maintained exploration work with a small crew during 10 months of the year. The Perseverance Mines Co., Inc., was reorganized after an action brought by the stockholders in the U. S. Federal Court had removed the former president and general manager. Stock assessments were then levied, and the funds used to drive a new tunnel.

The gold resources of this county, both placer and lode, on the South Fork of the Boise River and in the Big Smoky section received more attention than during the previous year. Much prospecting and development work was done during the summer months. The Idaho Placer Mines Co., a new organization, constructed a 3-mile ditch and did a little trenching.
VIEW OF NEW HIGHWAY TO SILVER STAR MINE

IDAHO PLACER MINES CO.

MALAHAT MINING CO.
PERSEVERANCE MINES CO., INC.

RICHARD ALLEN MINES CO.

SILVER STAR-QUEENS MINES, INC.
Office: Wallace. Officers: L. K. Stratton, Pres., Spokane, Wash.; Wm. J. Stratton, Sec., Wallace. Inc.: Nov. 22, 1929. Capital: 10,000,000 shares; par value 10c; shares issued, 5,699,039. Property: Silver Star group, 11 patented claims, Little Smoky dist.; Fairfield. Development: By 3 tunnels; total development over 6000 ft., which opens the vein to a depth of 500 ft. Ore: Lead-zinc-silver. Remarks: In cooperation with the U. S. Forest Service 6 miles of standard highway were constructed during the summer months. This work completed the highway between the mine and Fairfield. A stock assessment of 5 mills was levied on July 15.

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 Hailey
Carrie Leonard Little Smoky Jas. Gilson, Agt. Fairview
Climax Little Smoky Jas. Williams Fairfield
Dollarside 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 Christofsen 209 So. 3d St., Boise
Hercules Big Smoky W. W. Counterman Fairview
Horn Silver Little Smoky P. E. Fletcher Fairview
Idaho Chief Little Smoky Philip B. Becker Fairview
Isabella Little Smoky Edw. Somers Est, Hailey
Gold Bar Placer Skeleton Creek Chris L. Giske Fairfield
King of the West Little Smoky Maylan C. Fox P. O. Box 774, Salt Lake City, U.
Little Bob Little Smoky M. Ryan Fairfield
Lucky Strike Little Smoky Joe Vogner Fairview
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

Owner
R. M. Angel
R. S. Mockett
Robt. Leaper
Jas. Gilson, Agt.
Jas. Williams
R. D. Leach
Wm. Finney
H. D. Jones
Chris Christofsen
W. W. Counterman
P. E. Fletcher
Philip B. Becker
Edw. Somers Est.
Chris L. Giske
Maylan C. Fox
M. Ryan
Joe Vogner
H. D. Jones
Geo. E. Ball
Roy Jones
H. D. Jones, Agt.
Ernest Worswick Est.
Robert Leaper
Wm. Lewis
MINING INDUSTRY OF IDAHO

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See pages 7-8 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.*


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 diatomaceous earth, various clays of excellent quality, and a few gold placer deposits along the Snake River. Three companies, based on the development of oil and gas in this county, were incorporated during the year. They obtained a large acreage under lease, but none of them commenced drilling operations.

INTERMOUNTAIN COOPERATIVE GAS & OIL CO.


TRI-STATE DEVELOPMENT CO., INC.

Officers: Hugh N. Caldwell, Caldwell. Inc.: Dec. 3, 1930. Capital: 100,000 shares; par value $1; 10,000 preferred, 90,000 shares common. Remarks: Failed to file the reports required by law.

UNITED UTILITIES CORPORATION


BIBLIOGRAPHY

See pages 7-8 for publisher's address, meaning of reference marks, and abbreviations.


CARIBOU COUNTY

Caribou is one of the large southeastern counties of the State, being bounded on the east by the State of Wyoming, on the south by Bear Lake, on the east by Bannock, and on the north by Bingham and Bonneville counties. It has an area of 1,263 square miles, and was accredited with a population of 2,121, or 1.7 persons to the square mile, in the 1930 census. Soda Springs, the county seat and the only settlement of importance, is situated in the southeastern corner. The county is principally a sheep raising and agricultural community, and Soda Springs is one of the largest sheep shipping points in the United States.

The southeastern corner of the county is served by the main line of the O. S. L. Railroad, with an 8-mile branch road to Conda, the scene of the Anaconda Copper Mining Co.'s operation, and by the main east and west State highway, the Old Oregon Trail.

The principal mineral resources are phosphate rock, salt, sulphur, and mineral springs, and there are excellent possibilities for the discovery of petroleum. These resources are different from those of most counties, and when properly exploited will be a material factor in the prosperity of the county and State.

A large part of the five billion tons of minable phosphate rock, estimated by geologists of the U. S. Geological Survey, is in this county. These deposits are practically untouched, and constitute one of the greatest potential mineral resources of the State. They are fully described, including analyses and tonnage estimates, in the numerous publications referred to in the bibliography. The Anaconda Copper Mining Co. is pioneering in the development of the rock phosphate industry and has expended over $2,000,000 in its mine, mine plant, mill, railroad, power lines, and townsite.

One of the most outstanding publications issued by the U. S. Geological Survey in recent years is Professional Paper 152, by G. R. Mansfield: "Geography, Geology, and Mineral Resources of Part of Southeastern Idaho". This appeared during 1927; it is profusely illustrated with pictures, maps, and diagrams, and describes in detail the subjects mentioned in its title, dealing especially with the immense areas of phosphate rock found in this county.

The only salt found in the State is in Caribou County. Geologists of the U. S. Geological Survey conservatively estimate five million tons in one deposit, with the possibility of a large tonnage in adjacent areas. The deposits are located on Stump and Tygee creeks, near the State line.

The mineral springs, which are located at Soda Springs, constitute an important resource which is lying dormant. The waters from these springs have exceptional medicinal qualities, are excellent for table use, and offer a great possibility if properly developed and exploited.

A number of structures favorable to the accumulation of petroleum are found in the eastern part of the county. The location and geology of these areas are fully described in the publications issued by the Idaho Bureau of Mines and Geology.

1930 Activities

The Anaconda Copper Mining Co., which is operating one of the largest phosphate mines in the United States, enlarged its mining equipment, constructed three new homes for its employees, maintained a large production throughout the greater part of the year, and extended its principal (No. 3) tunnel about 7,000 feet. The phosphate rock which this company is producing is shipped to Anaconda, Montana, where it is manufactured into high-grade fertilizer and sold under the trade name of "Anaconda treble superphosphate."
ANAconda COPPER MINING Co.
Office: Anaconda, Mont. Officers: C. F. Kelley, Pres.; A. H. Melin, Sec., both of 25 Broadway, New York City; E. M. Norris, Local Mgr., Conda, Idaho. Inc.: Filed in Idaho: Apr. 10, 1916. Capital: 12,000,000 shares; par value $50; 5,415,266 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, 6050 ft. long; No. 2, 2660 ft. long; No. 3, 8200 ft. long. The main operating tunnels are equipped with 25-lb. rail, 36-in. gauge track, 15-ton storage-battery locomotive 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. 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 sub-station, sawmill, and preservative plant for treating mine timbers all housed in fireproof gunited and steel buildings. 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-inch Traylor gyratory crusher, which reduces it to about 2½ inches. 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-inch 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
CARIBOU COUNTY

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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 post-office has been established, and a modern school erected and 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, 70. **Remarks:** During the greater part of the year active production was maintained at the rate of approximately 200 tons per day. Note pages 26 to 31 of Twenty-fifth Annual Report for complete description of this operation, and pages 28 and 29 of Thirty-first Annual Report for stoping methods used. No. 3 tunnel was extended without interruption. This tunnel ran through such heavy ground that it was necessary to support it for a length of 200 ft. with steel sets and reinforced concrete.

**GEBO CONSOLIDATED OIL CO.**

**Office:** 616 Walker Bank Bldg., Salt Lake City, Utah. **Officers:** Wm. R. Calvert, Pres., San Antonio, Texas; C. L. Cundick, Sec.; Orman W. Ewing, Mgr., both of Salt Lake City. **Inc.:** Filed in Idaho, Dec. 16, 1930. **Capital:** 2,000,000 shares; no par value; 474,919 shares issued. **Property:** 600 acres patented land on Crow Creek, held under oil and gas lease.

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Triassic and Jurassic formations in southeastern Idaho and neighboring regions, by G. R. Mansfield: Am. Jour. Sci., vol. 50, pp. 53-64, July, 1920.§

MINING INDUSTRY OF IDAHO

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.**
The Idaho phosphate field, by G. R. Mansfield: Mining and Metallurgy, vol. 9, pp. 19-20, January, 1928.§

CASSIA COUNTY

Cassia is one of the principal southern counties, being bounded on the south by the States of Nevada and Utah, on the west by Twin Falls, and on the east by Oneida and Power counties. Snake River forms its northern boundary, which is also a part of the southern boundary of Jerome, Minidoka, Blaine, and Power counties. It has an area of 2,595 square miles, and was accredited with a population of 13,116 in the 1930 census. The principal industries are stockraising and farming. Burley, which is on the Snake River, near the center of the Minidoka project of the U. S. Reclamation Service, is the largest town and county seat.

The northern part of the county is served by the Old Oregon Trail State Highway; the other parts by a well-maintained system of county roads. Its railroad is the Minidoka-Buhl branch of the O. S. L. Railroad, from which there are branch lines extending from Burley to Idaho, and from Burley to Oakley.

The minerals found in this county are silver, lead, copper, gold, limestone, building stone, marble, cinnabar, and lignite. In the past, a little drilling has been done for petroleum, but all the companies have been practically idle for the past four years. These varied mineral resources, particularly the high grade lead-silver and silver-copper ores of the Stokes and Dolomite districts, offer excellent opportunities and possibilities for prospectors and development companies.

1930 Activities

The Silver Hills Mining Co. was the only active company in the county during the year. New camp buildings were erected, a gas-driven compressor and complete mining equipment were installed, and a large amount of development was done. This company's property is located in the Black Pine district, which is in the southeast corner of the county near the Utah line.

BIG BERTHA MINING CO.

Officers: T. E. Walton, P. O. Box 354, Shoshone, Inc.: Sept. 30, 1924. Capital: 25,000 shares; par value $1. Remarks: Failed to file the reports required by law.

GOOSE CREEK OIL & DEVELOPING CO.


MELOCHER MINING & MILLING CO.

Office: 503 McIntyre Bldg., Salt Lake City, Utah. Officers: Samuel McIntyre, Sr., Pres.; Roy A. McIntyre, Sec., both of Salt Lake City. Inc.: May 2, 1899. Capital: 500,000 shares; par value 10c; all shares issued. Development: By 2 tunnels: No. 1, 3300 ft. long; No. 2, 1600 ft. long. Remarks: Annual labor only.
SILVER HILLS MINING CO.
Office: 1258 Crandall Ave., Salt Lake City, Utah. Officers: W. J. Burridge, Pres.-Mgr.; L. M. Francis, Sec., both of Salt Lake City, Utah. Inc.: Mar. 31, 1920. Capital: 800,000 shares; par value 10c; Aug. 7, 1930, increased to 1,000,000; 603,553 shares issued. Property: Busy Bee and Joven groups; 37 unpatented mining claims, Black Pine dist.; Black Pine. Development: 5 tunnels, 1 shaft; approximately 3300 ft. total development. Plant: Gas-driven compressor; complete mining equipment and camp. Ore: Lead-silver. Men employed: Average, 4. Remarks: A mine plant was installed, and a new boarding and bunk house, a new blacksmith shop, compressor building and a large water tank were erected. The mine development work progressed without interruption during the year.

NAME OF MINE    MINING DIST.    OWNER    P. O. ADDRESS
Alice            Stokes            W. E. Langford    229 W. 2d St. N., Salt Lake City
Albion Gr.       Stokes            J. E. Comerford    Rupert
Bimetallic       Stokes            F. E. Trayme     Albion
Giant            Stokes            Samuel McIntyre  Salt Lake City
Golden Eagle     Stokes            O. H. Melcher    Albion
Hazel Pine       Black Pine       F. B. Platt     265 E. Broadway, Salt Lake City
Ken-Sko          Dolomite         Robt. B. Kenner  Salt Lake City
Last Chance      Unorganized      Charles Ransom  Burley
Last Chance Gr.  Grape Creek      J. W. Durfee    Malta
Sample Placer    Snake River      Thomas C. Elgin  Neeley
Walton No. 2     Stokes            T. C. Walton    Burley

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Geology and water resources of the Goose Creek Basin, Cassia County, Idaho, by A. M. Piper: Idaho Bureau of Mines and Geology Bull. 6, 1923.*

CLARK COUNTY

Clark is one of the southeastern counties, adjoining and lying east of Lemhi and Butte counties, and bounded on the north by the State of Montana, on the east by Fremont County, and on the south by Jefferson County. It contains an area of 1,778 square miles and was accredited with a population of 1,122 in the 1930 census. Dubois is the principal town and county seat.

The Pocatello-Butte division of the O. S. L. Railroad, and the Idaho-Montana State highway traverse the county north and south, thus giving it good transportation facilities.

The Lemhi Mountains, which extend into the northwest corner of the county, constitute the principal mining district. This district is named from Birch Creek, which flows in a southern direction and which divides the district. The western part is an extension of the Dome, or Hamilton, district of Butte County, and the eastern part is an extension of the Nicholia district.
of Lemhi County. The ores found throughout this area are lead-silver, copper-silver, and zinc. The deposits have been partially developed and a small tonnage has been marketed.

Deposits of coal and bentonite of sufficient extent to be of commercial importance and structures favorable to the accumulation of oil and gas in commercial quantities occur in the Beaverhead Mountains, the summit of which is the state line between Idaho and Montana.

The geography, geology, and ore deposits of the Birch Creek district are fully described, together with maps and illustrations, in a publication issued during 1928 by the Idaho Bureau of Mines and Geology as Pamphlet No. 27: "Geology and Ore Deposits of the Birch Creek District, Idaho," by P. J. Shenon.

1930 Activities

The Birch Creek district experienced a small amount of development work and investigation during the year. Press reports were to the effect that the Monida Oil Co., an organization which entered the county in 1929, installed drilling equipment and conducted operations until July, when all operations were suspended.

BIRCH CREEK MINING CO., LTD.


MONIDA OIL CO.

Office: 11 Myler Bldg., Portland, Ore. Officers: Fred G. Ostland, Pres., Portland, Ore.; Paul R. Greever, Sec., Cody, Wyo. Inc.: Filed in Idaho Nov. 7, 1929; charter forfeited Nov. 30, 1930. Capital: 20,000 shares; par value $25. Remarks: Failed to file reports required by law. An active stock-selling campaign during the early part of the year. Press reports were to the effect that a well had been sunk to a depth of 1400 ft. and that operations were suspended in July.

NAME OF MINE MINING DIST. OWNER P. O. ADDRESS
Aviator et al. Birch Creek R. A. Connell and J. O'Brien Reno
Big Dyke Birch Creek John Peterson Winsper
Elephant Birch Creek David Bloom et al. Idaho Falls
Lead Basin Birch Creek Frank Worthing Reno
Lucky Strike No. 1 Birch Creek E. M. Kaufman Dubois
Lucky Strike No. 2 Unorganized C. H. Manhart Dubois
Snow Flake Pl. Birch Creek John Peterson Winsper
Sunset Birch Creek Ray Best et al. Dubois
Sun Shine Heart Mountain Geo. A. Briggs et al. Winsper
Tip Top Birch Creek Wm. Garretson et al. Dubois

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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.†


Geology and ore deposits of the Birch Creek district, Idaho, by P. J. Shenon: Idaho Bureau of Mines and Geology Pamphlet 27, 1928.**
CLEARWATER COUNTY

Clearwater is one of the large northern counties, being bounded on the north by Shoshone County, on the east by the State of Montana, on the south by Idaho County, and on the west by Lewis, Nez Perce, and Latah counties. It has an area of 2,508 square miles and was accredited with a population of 6,599 in the 1930 census. Orofino, which is on the Clearwater River, near the western border, is the largest town and county seat. Except a small area adjacent to Orofino, which is devoted to agriculture, the entire county is mountainous and heavily timbered. The largest body of virgin white pine timber in the United States is located in this county.

It is served by three State highways which are partly constructed, by good county-maintained roads, and by the Lewiston-Stites branch of the Northern Pacific Railroad, which follows the Clearwater River.

Pierce City, which is the principal mining district in the county, was the scene of the first gold discovery in Idaho. This discovery was made in 1860, and the ensuing stampede soon crowded the district and the overflow spread into other sections. The stampede and resulting overflow formed the nucleus of the State, and shortly thereafter the Territory of Idaho was formed. Practically all the placer gold that could be recovered by hand methods or hydraulic mining was exhausted years ago, and all recent operations have been devoted to dredging and lode mining.

Gold—placer and lode—silver, monazite, and copper are the principal minerals found in the Pierce City district. Lead, zinc, and silver occur in the Neva Hill section, and placer gold is still found in some of the isolated sections.

1930 Activities

The principal mining activities were those of the Clearwater Lime Co. and the Sewell Lime Co., whose properties are located near Orofino, and whose product, a high-grade white limewash, is sold to the agricultural, powder, and paper manufacturing industries. The former company completed construction and installation of an aerial tramway, ore bins, and grinding plants. It produced and marketed a substantial tonnage of rock. The Sewell Lime Co. commenced the construction of a railroad siding and the installing of quarrying equipment.

The gold resources of the Pierce City district received more attention than at any time during the past 10 years. Two new enterprises based on the recovery of placer gold and three new enterprises based on the development of quartz mines entered the district and did a small amount of work. The lead-silver deposits, in the Neva Hill section, near Elk River, received some attention, the principal operations being those of the Ruby Creek Mining Co., which did a little development work and commenced construction and installation of a small flotation concentrator. The Independence Placer Mining Co., Ltd. in the Moose City district performed a small amount of construction work during a period of four months. A publication of importance, which was issued in 1930, and which displays the geology and mineral resources of this county, was Pamphlet 34 of the Idaho Bureau of Mines and Geology, "Geology and Mineral Resources of the Region about Orofino, Idaho," by A. L. Anderson.

ALDER CREEK MINING CO.


AMERICAN PLACER MINING CO., LTD.

CLEARWATER LIME CO.

CLEARWATER PLACER MINING CO.

COBRA MINING & MILLING CO.
Officers: W. C. Kirby, Sec., 1516 Eighth Ave., Lewiston. Inc.: May 7, 1925. Capital: 5,000,000 shares; par value 1c. Remarks: Failed to file the reports required by law.

IDAHO DREDGING CO.

INDEPENDENCE PLACER MINING CO., LTD.

NEVA COPPER CO.

OXFORD COPPER MINING CO., LTD.

PIERCE CITY GOLD PROJECT
PIERCE ENTERPRISE CONSOLIDATED MINING CO., INC.

RUBY CREEK MINING CO.

SEWELL LIME CO.
Office: Orofino. Officers: Herbert D. Britan, Pres.; Joseph M. Molloy, Sec.-Mgr., both of Orofino. Inc.: Jan. 21, 1930. Capital: 500,000 shares; par value $1; 265,300 shares issued. Property: Lime Mountain; 240 acres held under mineral lease from the State. Mineral sought: Limestone. Men employed: Average, 6. Remarks: Work was started on constructing a railroad siding; mine camp buildings were erected; and preparatory work for quarrying operations was done.

WASHINGTON GOLDEN EAGLE MINING CO.
CUSTER COUNTY

Custer County is bounded on the north by Lemhi County, on the east by Butte, on the south by Blaine, and on the west by Boise and Valley counties. Its principal area comprises the drainage basins of the headwaters of the Salmon River, Big Lost River, and Little Lost River. It has an area of 4,921 square miles, and was accredited with a population of 3,162 in the 1930 census, or 0.6 persons to the square mile. A comparison of the area and density of population with the State of Connecticut, which contains 4,845 square miles and a population of 286,4 persons to the square mile, conveys a good idea of the size of Custer County and its lack of population. It is one of the south-central counties, and the area within its borders comprises the greater part of the region known as "Central Idaho's Mineral Empire."

It is principally a mining county and always ranks as one of the principal mineral-producing counties of the State. It is also noted for its agricultural and stockraising industries, particularly sheep, as it is one of the largest sheep raising sections in the State.

The county is served by the Blackfoot-Mackay branch of the O. S. L. Railroad, by the Sawtooth Park and the Lost River State highways and by well-maintained county and Forest Service roads, which extend into all the various mining districts. The roads are kept in good repair and are open to travel during the larger part of the year. Mackay, the terminus of the railroad, is the largest town and the supply point for most of the mines. Challis, which is 60 miles northwest of Mackay, is the county seat and oldest settlement.

The principal mineral resources are lead, silver, copper, gold—placer and lode, zinc, antimony, molybdenum, tungsten, graphite, bentonite, and garnet. The deposits are widely distributed throughout the county, and many of them offer exceptionally favorable opportunities to prospectors and development companies. Excepting the flat land and river bottoms, which are suitable to dredging and which fully justify investigation, practically all the...
 placer mines are exhausted. The diversity of mineralization and the favor­able geological conditions are attracting some of the largest organizations in the United States to this county, and many resulting new discoveries fully prove the possibilities that are in store for those who possess a little courage.

1930 Activities

The principal operation in this county was that of the Mackay Metals at the Empire Copper mine. Production, mine development, and the shipping of crude ore and concentrate, on behalf of both the company and the lessees, were maintained without interruption until August. The company then sus­pended its operations, but the lessees continued without interruption, although they stored all ore. The Seafoam Mines Corporation, in the Seafoam district, did a substantial amount of development during the summer months and operated its mill intermittently. A small amount of bullion and concentrate was produced and marketed. The Aztec Mining & Milling Co., in the Stanley district, constructed a new boarding house, completed the installation of a small Gibson mill, and did a small amount of mine development work during the summer months. The Mackay Leasing Co., a new organization, which obtained a lease in the Cossack tunnel of the Empire mine, extended a cross-cut in the tunnel 300 feet during the year. Lessees at the Ramshorn mine, in the Bayhorse district, produced and marketed a small tonnage of high-grade crude ore. The Pigtail Placer, Inc., whose property is located in the Stanley district, installed a small amount of hydraulic equipment and did a little prospecting during the summer months.

One of the principal geological publications issued during the year by the U. S. Geological Survey, in cooperation with the Idaho Bureau of Mines and Geology, was Bulletin 814, “Geology and Ore Deposits of the Wood River Region, Idaho,” by J. B. Umpleby, L. G. Westgate, C. P. Ross, and D. F. Hewett. This bulletin completely describes the Wood River district in Blaine County and the Alto district in Custer County. It is profusely illustrated with pictures and geological maps. The findings and conclusions expressed in this publication are favorable for the return of these districts as substantial pro­ducers of lead-silver ore.

AETNA MINING & INVESTMENT CO., LTD.

AZTEC MINING & MILLING CO.

BURNS MINING & MILLING 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: 1,000,000 shares; par value $1; 875,000 shares issued. Property: Crater group; 39 unpatented claims at the head of Slate Creek, Boulder dist.; Mackay; held under

**EAST STAR MINING CO.**
Office: Downey. Officers: Albert Christensen, Pres.; Geo. T. Hyde, Sec., both of Downey; Lars W. Johnson, Mgr., Driggs. Inc.: April 16, 1924. Capital: 1,000,000 shares; par value 25c; 800,000 shares issued. Property: 4 unpatented claims; Alder Creek dist.; Mackay. Development: 1 short tunnel and an inclined shaft. Ore: Copper. Remarks: Annual labor only.

**ESTES MOUNTAIN GOLD, INC.**
Office: Mackay. Officers: J. L. Bills, Pres.-Mgr.; Mabel Patterson, Sec., both of Mackay. Inc.: July 17, 1929. Capital: 1,000,000 shares; par value $1. Remarks: Failed to file the reports required by law.

**FORD MOTOR CO.**
Office: Highland Park, Mich. Officers: Edsel B. Ford, Pres.; B. J. Craig, Sec., both of Highland Park, Mich. Inc.: Filed in Idaho, Jan. 6, 1925. Capital: 1,000,000 shares; par value $100. Property: Red Bird and Silver Rule groups; 44 patented claims and 6 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, 2127 ft. long, giving a total depth of 900 ft. on the vein; total development approximately 23,000 ft. Plant: 2 1-R semi-Diesel engines, type POC-2, direct connected to compressors; complete mining equipment including 2 diamond drills; shops and mining camp consisting of 11 buildings. Ore: Lead-silver. Men employed: 1 watchman. Remarks: Idle.

**GREYHOUND MINING & MILLING CO., LTD.**
HORSE SHOE COPPER CO., LTD.

IDAHO DREDGING CO.

IDAHO HERMIT MINES, INC.

IDAHO SILVER & LEAD MINES, INC.

IVANHOE MINING CO.

LIVINGSTON MINES CORPORATION
Office: 67 Wall St., New York. Officers: A. W. Walker, Pres.-Mgr., Mackay; L. M. Turner, Sec., New York. Inc.: July 23, 1923. Capital: 2,000,000 shares; par value $1. Capitalization increased on Sept. 21, 1926, to 3,000,000 shares; par value $1; 2,922,012 shares issued. Property: Livingston group; 7 patented, 16 unpatented claims, Boulder dist.; Mackay, 62 miles. Development: Principally by 7 tunnels, averaging from 200 to 2400 ft. in length; No. 2, or Livingston, tunnel is 2000 ft. long, in which are 3000 ft. of crosscuts and drifts. Total development on Livingston lode, approximately 24,000 ft. Plant: MINE: 3 electrically-driven compressors, a 12x14 Sullivan, a 10x10 I-R, and a 12x16 I-R; storage-battery locomotive haulage; complete mining equipment and mine camp; 3-mile aerial tramway connecting Livingston No. 2 tunnel with the mill. MILL: 300-ton concentrator, including flotation, Blake crusher, Symonds disc-crusher, Davis rolls, 2 6-ft. Hardinge ball mills, 6 Wilfley tables, Callow flotation, complete mill camp. POWER PLANT: 380-h. p. hydroelectric power plant, supplemented with a 250-h. p. I-R vertical Diesel engine; 8-mile electric transmission and telephone lines connecting power plant, mill and mine. Ore: Lead-silver. Remarks: Failed to file the reports required by law. Company in receivership; Frank Oster, Receiver, Mackay, Idaho.
LOON CREEK HYDRAULIC PLACER MINING CO., LTD.
Office: Judge Bldg., Salt Lake City, Utah. Officers: J. Frank Judge, Pres., John J. Harvey, Sec., both of Salt Lake City; John P. Boyle, Mgr., Stanley. Inc.: May 17, 1905. Capital: 300,000 shares; par value $1; all shares issued. Property: 4 unpatented placer claims, Loon Creek dist.; Stanley. Plant: 4000 ft. timber flume, 5 ft. wide and 3 ft. high; two-thirds of a mile of ditch; sawmill, and complete mine camp. Remarks: This company owns a large tract of placer ground suitable for hydraulic mining. Annual labor only.

MACKAY LEASING CO., LTD.
Officers: Con Hurst, Pres.; D. V. Archbold, Sec., both of Mackay. Inc.: May 2, 1930. Capital: 25,000 shares; par value $1; 4,200 shares issued. Property: Lease in Cossack tunnel of Mackay Metals. Three hundred feet of development work was performed during the year.

MACKAY METALS
Office: Mackay. Officers: Chase A. Clark, Pres.; W. E. Narkaus, Sec.-Mgr., both of Mackay. Inc.: June 4, 1928. Capital: 1,500,000 shares; par value $1; 1,000,000 shares issued. Property: Empire Copper group; 19 patented, 20 unpatented claims, Alder Creek dist.; Mackay. Development: Over 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. Laird-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: Average, 75. Remarks: Mine development work, production, and shipping of crude ore and concentrate, both on company account and by lessees, were maintained without interruption until August, after which time all company activities were suspended, but the lessees continued without interruption.

MONTE CRISTO GOLD MINES CO.

MULE SHOE MINING CO.

PHEMSPACE MINES CO.

PIG TAIL PLACER, INC.

RAMSHORN MINES CO.
levels. **Plant:** MINE: Laidlaw-Dunn-Gordon duplex 13x8x10 compressor, electrically driven; complete mine equipment and camp. MILL: 60-ton fine grinding flotation, gyratory crusher; primary and secondary rolls; ball mill; Dorr classifier; Fagergren and Janney flotation cells; American vacuum filter; dryer. Entire mill electrically driven. **Ore:** Silver-copper. **Remarks:** Property operated throughout the year by lessees, who produced and marketed a small tonnage of ore.

**Salmon River Mining Co.**

**Office:** c/o Terre Haute Nat'l Bank & Trust Co., Terre Haute, Ind. **Officers:** John T. Beasley, Pres.; William K. Hamilton, Sec., both of Terre Haute, Ind. **Inc.:** July 6, 1910. **Capital:** 500,000 shares; par value $1; 400,000 shares issued. **Property:** Pacific group; 12 patented claims, Bay Horse dist.; Bay Horse. **Remarks:** Idle for 14 years.

**Seafoam Mines Corporation**

**Office:** 265 Fortieth St., Pittsburgh, Pa. **Officers:** J. C. Hungerman, Pres.; George L. Lafbury, Sec., both of Pittsburgh, Pa. **Inc.:** Oct. 17, 1923. **Capital:** 500,000 shares; no par value; 350,000 shares issued. **Property:** 16 patented, 1 unpatented claim, Seafoam dist.; Stanley. **Development:** Total development approximately 2300 ft., the principal part of which is confined to the Silver King claim, where it opens the vein 200 ft. in depth. **Plant:** MINE: Electrically-driven 8x10 I-R compressor; steel sharpener; complete mining equipment; steam-driven saw-mill; mine camp consisting of a large boarding house, 2 two-story bunkhouses, and 10 residences. MILL: 50-ton amalgamation, including fine grinding and table concentration. POWER PLANT: 230-h. p. hydroelectric power plant, operating under a 270-ft. head through a 3400-ft. flume; 4-mile transmission line. **Ore:** Gold-silver-lead. **Men employed:** Average, 9. **Remarks:** Small amount of development work during the summer months. The mill was operated for a short period, and a small amount of bullion and concentrate was marketed.

**Stanley-Five Bars Mining Co.**

**Office:** P. O. Box 1388, Boise. **Officers:** O. O. Haga, Pres.; H. M. Jeffrey, Sec., both of Boise. **Inc.:** Sept. 8, 1925. **Capital:** 25,000 shares; par value $1; 20,000 shares issued. **Property:** Gold Dust group; 6 unpatented placer claims; Stanley. **Remarks:** Annual labor only.

**Stanley Lake Mining & Development Co.**

**Officers:** W. A. Brodhead, Hailey. **Inc.:** Nov. 12, 1930. **Capital:** 500,000 shares; par value $1. **Remarks:** Failed to file the reports required by law.

**Twin Apex Mines Co.**

**Office:** 423 Ness Bldg., Salt Lake City. **Officers:** G. F. McGonagle, Pres.; C. J. Ulrich, Sec.; A. G. Guthell, Mgr., all of Salt Lake City. **Inc.:** Sept. 19, 1925. **Capital:** 1,000,000 shares; par value 6c; 800,000 shares issued. **Property:** Twin Apex group; 4 patented, 11 unpatented claims, on Squaw Creek, Bay Horse dist.; Clayton. **Development:** Principally by 2 tunnels; No. 2, 550 ft. long; No. 3, or crosscut, 2000 ft. long. **Plant:** Gas-driven 8x9 Sullivan compressor; complete mining equipment and camp. **Ore:** Lead-silver. **Remarks:** Annual labor only.

**White Knob Mining Co.**

**Office:** Newhouse Bldg., Salt Lake City, Utah. **Officers:** D. D. Muir, Jr., Pres.; W. W. Rager, Sec., both of Salt Lake City, Utah. **Inc.:** Aug. 23, 1919. **Capital:** 500,000 shares; par value $1; 127,510 shares issued. **Property:** White Knob group; 3 unpatented claims, Alder Creek dist.; Mackay. **Development:** Principally by 2 tunnels and 1 vertical shaft 250 feet deep. **Plant:** 40-h. p. gas-driven hoist. **Ore:** Lead-silver. **Remarks:** Operated by lessees who made a number of shipments during the year.

**Yankee Fork Placer Co., Ltd.**

**Office:** 605 Eastman Bldg., Boise. **Officers:** James H. Hawley, Jr., Mgr., Boise. **Inc.:** Apr. 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:** Idle.
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**BIBLIOGRAPHY**

See pages 7-8 for publisher's address, meaning of reference marks, and abbreviations.


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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.‡


Ground water in Pahsimeroi Valley, Idaho, by O. E. Meinzer: Idaho Bureau of Mines and Geology Pamphlet 9, 1924.**


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**

Elmore is one of the southwestern counties, being bounded on the south by Owyhee, on the west by Ada, on the north by Boise, and on the east by Blaine, Camas, and Gooding counties. A large part of the drainage basin of the Boise River is included within its 2,808 square miles, which was accredited with a population of 4,491 in the 1930 census. The chief industries are stockraising—principally sheep—farming, and mining.
The southern part of the county is served by the main line of the O. S. L. Railroad and the principal east-west State highway, the Old Oregon Trail; a well built and maintained system of county roads extends into all the various mining districts and sections. Mountain Home is the largest town and county seat.

The principal mineral resources are gold, silver, copper, lead, zinc, arsenic, molybdenum, diatomaceous earth, and potassium nitrate.

In past years this county was a noted producer of high-grade gold-silver ores and placer gold, particularly when the mines in the Atlanta and Rocky Bar districts were being worked. The placer ground which could be hydraulicked has long been exhausted, and the quartz mines have been dormant for years, having been closed down either through litigation, lack of power, or finances. These districts offer many opportunities to development companies and, since power is within easy reach from Featherville, there appears to be no reason why the mines are not receiving more attention.

1930 Activities

The Rocky Bar district witnessed no improvement over that of the previous year in the starting of new enterprises, and no work of any importance was performed.

One of the most important enterprises which started in 1929 was the commencement of operations at the Boise-Rochester mine near Atlanta by the St. Joseph Lead Co. This company acquired the Boise-Rochester in 1917, but, other than necessary repairs to the buildings and principal tunnels, nothing was done with it. In the latter part of 1929 the Monarch group, which is adjacent to the Boise-Rochester, was acquired, and the development of both properties was commenced. This work, which consisted of extending No. 6 tunnel of the Boise-Rochester group to the intersection of the vertical shaft of the Monarch group, was conducted without interruption until July, 1930, at which time all operations were temporarily suspended. The Consolidated Mines Syndicate, at the Revenue group, in the Volcano district, near Hill City, installed a small gas-driven compressor and commenced driving a long tunnel. This work was continued until October, when all operations were suspended. Preliminary plans for the development of the placer deposits on Feather River were completed during the latter part of the year. A small amount of development work was done on the Deckard property at Pine during the summer months.

APEX GOLD MINING CO.

BLACKSTONE MINING CO., LTD.
Officers: Charles W. Mack, Sec., Boise. Inc.: Dec. 26, 1899. Capital: 1,000,000 shares; par value 10c; shares issued, unknown. Property: 5 patented claims, Blackstone dist.; Hill City.

BLACK WARRIOR MINES, INC.
Office: 6 Delkin Bldg., Las Vegas, Nev. Officers: Peter Buol, Pres.; W. H. O'Neil, Sec., both of Los Angeles, Calif. Inc.: Filed in Idaho Jan. 30, 1929. Capital: 2,500,000 shares; par value $1; 1,007,588 shares issued. Property: Black Warrior group; 12 unpatented claims, held under lease and option; Black Warrior dist.; Atlanta. Ore: Placer gold. Men employed: Average, 3. Remarks: This company is a reorganization of the La Trinidad Mining Co. Annual labor only.

CONSOLIDATED MINES SYNDICATE
Office: 623 First Nat'l Bank Bldg., Boise. Officers: Frank E. Johnesse, Pres.-Mgr.; Paul L. Oakes, Sec., both of Boise. Inc.: May 6, 1924. Capital: 10,000 shares; no par value. On Aug. 15, 1924, the capitalization was changed to 10,000,000 shares, $2.50 par value; and on May 2, 1925, capitalization was decreased to 10,000,000 shares, par value $1; 2,810,865 shares issued. Property: Revenue group; 11 unpatented claims, Volcano dist.; Hill City. Development: By 1 tunnel 835 ft. long. Plant: Gas-driven
compressor; complete mining equipment and camp. Ore: Copper-silver.

Men employed: Average, 7. Remarks: Mine plant installed during the early part of the year and work on driving the principal tunnel continued until October, at which time all operations were suspended.

FEATHER RIVER GOLD PLACER CO.


FRANKLIN CONSOLIDATED GOLD MINES CO.

Office: Box 1262, Boise. Officers: John J. Stanford, Pres., Spokane, Wash.; Fred T. Kelly, Sec.-Mgr., Boise. Inc.: Dec. 22, 1925. Capital: 1,250,000 shares; par value $1; 634,400 shares issued. Property: Franklin group; 2 patented, 4 unpatented claims, held under lease and option, Pine Grove dist.; Pine. Development: Approximately 3000 ft. of underground workings, the principal of which is No. 3 tunnel, 860 ft. in length. Plant: An old 10-stamp mill including cyanide equipment. Ore: Gold. Men employed: Average, 2. Remarks: Owing to litigation, only the necessary annual labor was performed.

GAS DOME OIL CO.


GEORGE F. ROTH CO.


IDAHO MINES INC.


LITTLE QUEEN GROUP


MARSH CREEK MINING CO.

Officers: Roy Y. Bogard, Pres.-Mgr., Burns, Ore.; Curtis F. Pike, Sec., 1317 Idaho St., Boise. Inc.: July 9, 1921. Capital: 1,000,000 shares; par value $1; 39,855 shares issued. Property: 2 unpatented claims on Marsh Creek, Bear Creek dist.; Featherville. Remarks: Annual labor only.

MINERVA MINING & MILLING CO., LTD.


NORTHWESTERN DEVELOPMENT CO.

Office: P. O. Box 941, Boise. Officers: William Williams, Pres.-Mgr.; Geo. L. Fleharty, Sec., both of Boise. Inc.: April 30, 1927. Capital: 1,500,000 shares; par value $1; 1,055,850 shares issued. Property: 5 groups of unpatented placer claims on Boise River, 1820 acres, unorganized dist. Ore: Placer gold. Remarks: Three men were employed on annual labor for a period of 6 months.
ST. JOSEPH LEAD CO.
Office: 250 Park Ave., New York City. Officers: Clinton H. Crane, Pres.; Leonidas H. Besson, Sec., both of New York City. Inc.: Filed in Idaho Apr. 3, 1929. Capital: 2,000,000 shares; par value $10; 1,950,509 shares issued. Property: Boise-Rochester group, 5 patented, 11 unpatented claims, owned by company; Monarch group, 11 patented, 6 unpatented claims, held under lease and option; Atlanta, Ore. Men employed: Average, 23. Remarks: In 1917 this company purchased the Boise-Rochester group and, other than necessary repairs to the buildings and principal tunnel, the property remained idle. In the latter part of 1929 the Monarch group was secured under lease and option; provisions and supplies were installed, development work was started and continued without interruption until July, 1930. This work consisted of extending No. 6 tunnel of the Boise-Rochester group to an intersection with the vertical shaft of the Monarch group.

SOUTH PARK DREDGING CO.

STANLEY-FIVE BARS MINING CO.
Office: P. O. Box 1388, Boise. Officers: O. O. Haga, Pres.; H. M. Jeffrey, Sec., both of Boise. Inc.: Sept. 8, 1925. Capital: 25,000 shares; par value $1; 20,000 shares issued. Property: Five Bars group; 4 unpatented placer claims, Middle Boise dist.; Atlanta. Remarks: Annual labor only.

NAME OF MINE
Ada Elmore Gr.
Alice et al.
Alma Placer Gr.
April Fool
Avis et al.
Badger No. 1
Badger et al.
Baltimore et al.
Bear Gr. et al.
Ben Hur
Benton Gr.
Big Five et al.
Big Four et al.
Big Lode
Bird Gr.
Black Diamond
Black Ribbon
Black Warrior
Bobolink et al.
Boise Bar
Bonanza et al.
Bonaparte Gr.
Bonnie Annie Gr.
Bowerman
Brooklyn et al.
Cabin Claim
Capital et al.
Cock Robin et al.
Colorado et al.
Cornuopeia et al.
Debs Gr.
Doclitle Gr.
Edna et al.

MINING DIST.
Bear Creek
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Bear Creek

OWNER
Grant McCargo
R. Y. Bogard
R. A. Peck
J. C. Birdwell
Ray J. Allison
Chas. Fell
John T. Hammack
Robt. B. Browne
F. M. Dodge
E. W. Lothrop
G. L. Bixby
Frank Bayhouse
Rupert Winters
Frank T. Wyman
Mrs. Alice M. Reecy
Clara R. Brassch
E. C. Helfrich
C. H. Allison
Walter Walsh
Thomas Walker
Chas. Wyatt
Rupert Winters
B. F. Skelton
M. R. Wood
Louise A. S. Allen
Chester W. Rose
John Bell
Walter Walsh
Francis M. Nixon
John Hermo

P. O. ADDRESS
Pittsburgh, Pa.
Burns, Ore.
Rocky Bar
Atlanta
Pine
R. D. 5, Boise
R. D. 5, Boise
Atlanta
Rocky Bar
Mountain Home
Atlanta
Boise
Featherville
Boise
Mountain Home
Mountain Home
Beverly Hills, Cal.
Rocky Bar
Atlanta
Rocky Bar
Featherville
Pine
606 Marion St.,
Seattle, Wash.

City
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<td>Monroe E. Shraft</td>
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<td>Middle Boise</td>
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<td>Boise</td>
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<td>M. E. Rineback</td>
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<td>White Bird et al.</td>
<td>Bear Creek</td>
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<td>Yuba Gold Chest</td>
<td>Middle Boise</td>
<td>C. W. Joy</td>
<td>Emmett</td>
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</tbody>
</table>
MINING INDUSTRY OF IDAHO

BIBLIOGRAPHY

See pages 7-8 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.$


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 7-8 for publisher's address, meaning of reference marks, and abbreviations.


GEM COUNTY

Gem is one of the smallest counties in area in the State, but one of the largest in population per square mile. Its area is 567 square miles, and the 1930 census credited it with a population of 7,419 or 13.1 persons per square mile. The chief industries are fruit growing, farming, and livestock. It is particularly noted for its fruit farming, which is confined to the valley of the Payette River, which flows westerly through the southern end of the county.

It is one of the southwestern counties, being bounded by Ada, Canyon, Payette, Washington, Adams, Valley, and Boise counties. The drainage basin of Squaw Creek and twenty-five miles of the Payette River valley make up the larger part of its area. Emmett, the county seat and only settlement of importance, is near the center of the southern part of the county.

The county is served by a good system of locally maintained roads and by the Nampa-McCall and Payette-Emmett branches of the O. S. L. Railroad.

The Pearl district, once a famous gold-producing camp, and a few undeveloped sections where a small amount of prospecting has been done, are the only mineralized areas in the county. The principal minerals occurring in these districts are gold, silver, lead, zinc, copper, and arsenic. Gold predominates, and occurs in a free-milling quartz and combined with the sulphides of lead, zinc, and iron. The deposits containing the complex sulphide ore are of commercial importance and have not been mined, as transportation and the metallurgical methods in use at the time the Pearl district was active prevented profitable operations. The sulphide ores are amenable to modern flotation methods, and, as there is a large tonnage in many of the old mines that are lying dormant, they will again become profitable operations when properly equipped, financed, and managed.

1930 Activities

The only active operation during 1930 was that of the American Mines Development Co. at the old Liberty mine, near Sweet. The tunnel was extended approximately 1,000 feet under contract.

AMERICAN MINES DEVELOPMENT CO. (See Boise County)
Office: 325 Idaho Bldg., Boise. Officers: L. S. Honstead, Pres.; C. R. Hanan, Sec., both of Boise. Inc.: Mar. 15, 1928. Capital: 1,000,000 shares; par value $1; 269,882 shares issued. Property: Old Liberty group; 4 patented claims, Squaw Creek dist.; Sweet. Held under lease and option. Development: By 1 tunnel 1,000 ft. long. Plant: Gas-driven G-D compressor; complete mining equipment and camp. Ore: Copper-silver. Remarks: The tunnel was extended to a distance of approximately 1,000 ft. during the year.

COOPERATIVE OIL EXPLORATION FUND

FELIX MINING CO.

GRANITE STATE CONSOLIDATED MINES CO.
patented, 16 unpatented claims, West View dist.; Pearl. Development: Principally by 1 tunnel 2300 ft. long. Remarks: Annual labor only on unpatented claims.

HECLA-CHECKMATE MINING & MILLING CO., LTD.

JOHNSON MINING CO., LTD.

LINCOLN MINE OPERATING CO.
Officers: Wm. I. Phillips, Pres.; M. W. Hallam, Sec., both of Miami, Fla. Inc.: May 20, 1926. Capital: 1,000,000 shares; par value 25c. Remarks: Idle throughout the year. Failed to file the reports required by law.

NEW LIBERTY MINING CO.

OLD LIBERTY MINING CO.

YELLOW GOLD PLACER CO.
Office: Mountain Home. Officers: Ernest Tacha, Pres.; Hetta M. Tacha, Sec.; Edward N. Crawford, Mgr., all of Mountain Home. Inc.: May 16, 1927. Capital: 500,000 shares; par value $1; 281,000 shares issued. Property: Owns 320 acres and lease on 320 acres of farm land, West View dist.; Pearl. Remarks: Active stock-selling campaign throughout the year. This enterprise is based on high values in rare metals, the presence of which was determined by assayers whose methods have been questioned by the U. S. Bureau of Mines.

<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>Apache</td>
<td>West View</td>
<td>Jas. H. Hawley</td>
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<td>Black Jack</td>
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<td>Edgar McFadden</td>
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<td>Checkmate</td>
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<td>Dewey</td>
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<td>Wolverine</td>
<td>West View</td>
<td>H. B. Williams</td>
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GOODING COUNTY

Placer gold, which is found in the gravel bars and sand along the Snake River, constitutes the only mineral resource 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>
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BIBLIOGRAPHY

See Snake River Gold under General Bibliography.

IDAHO COUNTY

This county occupies a vast region about midway between the northern and southern boundaries of the State, extending from Montana, on the east, to Oregon, on the west. It is bounded on the north by Nez Perce, Lewis, and Clearwater counties, on the east by the State of Montana, on the south by Lemhi, Valley, and Adams counties, and on the west by the State of Oregon. It contains 8,539 square miles, or an area which is larger than the combined areas of the States of Rhode Island, Delaware, and Connecticut. The 1930 census accredited it with a population of 10,107, or 1.2 persons to the square mile. The larger part of the population is located on Camas Prairie, a table-land of about 400 square miles. The chief industries are farming, principally wheat, for which Camas Prairie is famous; stockraising, and mining.

The western part of the county is served by the North and South State Highway, which extends from the southern to the northern boundary, and by the Elk City and Lewis & Clark highways, which are partly constructed. Its railroads are the Lewiston-Stites branch of the Northern Pacific Railroad, and the Lewiston-Grangeville branch, which is owned jointly by the Union Pacific and Northern Pacific railroads. Both these railroads serve Camas Prairie, or the northwestern part of the county. Grangeville is the largest town and county seat.
Idaho County is the largest in the State in area, and one of the greatest in diversity of mineral resources and mining opportunities. The principal metals and minerals which occur in sufficient extent to be of commercial importance are gold—placer and lode—silver, copper, lead, zinc, antimony, tungsten, asbestos, molybdenum, talc, and mica.

During the early days of Idaho this county was one of the largest gold-producing districts in the United States, and at the present time it offers more possibilities for profitable gold mining than any other section. Many of the millions produced during those days were won from placer deposits which occur in practically all the 17 mining districts within the county. Excepting the flat land and river bottoms, which are suitable for dredging, and which fully justify investigation, practically all the placer mines are exhausted.

The greatest handicap which the county is compelled to undergo is the lack of transportation, and under present road conditions only the highest grade free-milling ores can be successfully handled. Railroads into the various mining districts are a far removed possibility; however, a good automobile or motor truck road would serve to open many of the districts which are now dormant.

Much of the ore is a free-milling gold, and if not, a high-grade concentrate can be made which will permit a long haul. The latter statement applies particularly to the ores of the Ten Mile, Orogrande, Elk City, Buffalo Hump, and Dixie districts. The highway from Grangeville to Elk City up the South Fork of the Clearwater River will make all these districts accessible by a water grade road, and their development will soon follow. This highway is one of the most meritorious projects in the State, and everyone interested in mining in these districts is looking forward to its early completion. In July, 1926, the prospectors and companies holding unpatented claims in the Elk City, Orogrande, Dixie, and Buffalo Hump districts voted to do their annual labor on this road. As a result of their faith in these districts, over six miles of road and a bridge crossing the Red River were constructed on the Elk City end. The lower end of the road was extended a distance of six miles during 1929 to the intersection of the old road between Newsome and Golden at Huston. The completion of the road to this point permitted the discontinuance of the road between Stites, Harpster, and Newsome, and the elimination of that portion over Mt. Baldy, one of the highest divides in the State of Idaho to be crossed by a road. On November 16, 1929, the starting point of the mail route to Elk City was changed from Stites to Grangeville, and now all traffic into Elk City and environs is using this road from Grangeville to Huston and then the old road from Huston to Elk City. This change has added over two months to the period during which the Elk City region is accessible to motor vehicles, and has greatly reduced the time required for transporting the mail.

1930 Activities

One of the most important events was the continuation of the construction of the Elk City highway from Huston toward Elk City for a distance of six miles. The inception of the new work gave assurance that this highway would be completed to Elk City at an early date, and it greatly stimulated interest in the Elk City, Dixie, Orogrande, and Buffalo Hump districts. These districts, particularly Elk City, witnessed the incoming of the largest number of prospectors, mining engineers and geologists representing responsible companies and the starting of more new enterprises than at any time during the past 15 years. These activities stimulated the rebuilding of Elk City, a large part of which was destroyed by a disastrous fire in March. A new hotel and community hall were constructed and plans were completed for the erection of new business buildings.

The principal activities in the Elk City district were those of the Cal-Idaho Mining Co. and the Day Development Co. The former company, which acquired the Gold Hill placer, rehabilitated the eight-mile ditch, installed complete hydraulic equipment, and constructed new camp buildings. This operation was one of the largest new hydraulic placer mine enterprises in the
IDAHO COUNTY

State. The Day Development Co., of Shoshone County, which acquired the Center Star group in October, constructed four miles of trail, installed a gas-driven compressor and complete mining equipment, and started sinking a 100-foot inclined shaft. This property has an excellent showing of ore and its development is of particular importance to this part of the State. The Moose Creek Placers Co. continued work on its ditch and flume line, repaired its hydraulic equipment, and constructed new camp buildings to replace those which were destroyed by fire early in the year. A discovery of high-grade gold ore, which appears to be of importance, was made by John Larson, a prospector, on Elk Mountain. A large number of prospects and old properties were investigated by prominent mining companies. Many of these investigations were satisfactory, and late in the year arrangements were being completed for the acquisition and development of the properties. Press stories were to the effect that the Elco Gold Mining Co. was actively engaged in the reopening of the tunnels of the French Creek-Gold Mining & Milling Co.

The Orogrande district witnessed more activity in 1930 than in 1929, particularly at the Homestake group of the Homestake Gold Mining Co., which was operated throughout the year by lessees. A large mining organization was active during the closing months of the year in reopening the old mine workings and sampling one of the "dike" deposits. The Golden or Ten Mile district was one of the most active sections throughout 1930. F. O. Miller and son, at the Lone Pine group, maintained development work without interruption, operated their mill for a short period during the early part of the year, and installed a 30-horsepower semi-Diesel engine, belted to an electric generator, as supplemental power for the mill. The development work greatly increased the known ore resources. This mine was one of the largest gold-producers in the county. The Buffalo-Idaho Mining Co. maintained development work throughout a large part of the year and operated its mill for a short period. The Sentinel Mines Corporation and E. J. Dalley, new entries into this district, were active in the development of their properties. Two concerns, whose form of organization is unknown, gave themselves considerable publicity in the press.

The Unity Gold Mines Co., in the Warren district, maintained active operations and produced a substantial amount of bullion during the early part of the year. The Warren Meadows placer deposits were acquired under lease and option by eastern operators and were actively prospected throughout the summer months. This district also witnessed a large amount of investigation by those seeking new gold mining enterprises. From the standpoints of men employed, production, new construction, development work, and investigations by prospectors and companies seeking new gold mines, the Marshall Lake district was the most active section of the county throughout the year. The Sherman Howe Mining Co. constructed additional new camp buildings, greatly enlarged its mine plant, expended a substantial sum on road building, and maintained development work without interruption. This company's production was one of the largest in the county. One of the most important disclosures of new ore made in the State during the year was that of the Golden Anchor Mining Co. at the Holte mine. In February this company's 1600-foot lower tunnel intersected the ore at a distance of approximately 300 feet below the bottom of the upper workings; drifts and a raise which were run on the ore proved the importance of this disclosure. The Long Tom Mining Co., at the Cuban and West Goodenough groups, commenced active development work at both groups during the latter part of the year. The new highway, which the Forest Service is constructing between Burgdorf and this district, was extended over five miles. This road is of great assistance to the companies now operating and is an encouragement to the development of the district.

Press reports were to the effect that the War Eagle group in the Dixie district was operated through the year under lease and option by the Central Idaho Mining & Milling Co., and that this company constructed a considerable distance of trail and installed a small power plant and sawmill. The placer deposits in this district received some attention. There was a small increase
in the amount of the annual labor and development over that of the previous year.

The Bunker Hill & Sullivan Mining & Concentrating Co. and allied interests, which entered the Green Mountain section in 1929, maintained active development work until November. The property held by this company is a copper-silver deposit. Its development has been a material factor in stimulating interest in this district and its environs, particularly Elk City.

Other than annual labor, the principal activity in the Harpster district was that of F. W. Watson at the Dewey group. A substantial amount of development work was performed, and a small tonnage was produced and shipped for experimental purposes.

The alleged presence of rare metals in the black graphitic lime shales in the Salmon River or Simpson district in the vicinity of Lucile continued to be used as a lure for the sale of stock and "units." No work of any consequence was done by those promoting these rare metal enterprises.

**ABBA CORPORATION**

**ACME GOLD MINES, INC.**

**ALTA-IDAHO GOLD & COPPER MINING CO.**
Officers: M. C. Hetler, Pres., Berwick, Pa.; Mrs. Rachel E. Fine, Sec., Cassadaga, Fla.; Geo. M. Snyder, Mgr., Pardee. Inc.:Filed in Idaho June 17, 1903. Capital: 1,000,000 shares; par value $1; 745,000 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.

**BLACKTAIL MINING CO.**

**B. R. & R. MINING CO., INC.**

**BUFFALO-IDAHO MINING CO.**
IDAHO COUNTY

CAL-IDAHO MINING CO.
Office: Elk City. Officers: Edward H. Cookingham, Pres., Lindsay, Calif.; McClellan G. Jones, Sec., Huntington Beach, Calif.; Thomas Berry, Mgr., Elk City. Inc.: Not filed in Idaho. Capital: 250,000 shares; par value $1; 31,800 shares issued. Property: Gold Hill placer; 8 patented, 9 unpatented claims, 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, 60. Remarks: The ditch, in which is a large amount of flume, was completely reconstructed, and hydraulic equipment and mine camp were installed during the year. This operation is one of the largest new hydraulic placer mine enterprises in the State.

CENTRAL IDAHO GOLD MINES, INC.

CENTRAL IDAHO MINING & MILLING CO.
Office: Seattle, Wash. Officers: S. F. Chadwick, Sec., Seattle; W. F. Newton, Dixie. Inc.: Nov. 12, 1929. Capital: 1,000,000 shares; par value $1. Remarks: Refused to file the reports required by law. Newspaper stories were to the effect that this company operated the War Eagle group, which is located southeast of Dixie, and that a small power plant and sawmill were installed and that a considerable distance of trail was constructed.

COMMODORE GOLD MINING CO.

CONSOLIDATED MINES SYNDICATE (See Camas County)

COPPER QUEEN MINING CO.

CROOKS CORRAL MINES, LTD.

DAVIS MINING CO.
DAY DEVELOPMENT CO.
Office: Wallace. Officers: Harry L. Day, Pres.; W. B. Heitfield, Sec., both of Wallace. Inc.: Nov. 27, 1928, as Hercules Exploration Co.; name changed Nov. 25, 1930. Capital: 10,000 shares; par value $1,000; 9,900 shares issued. Property: Center Star group, Enk City dist.; Elk City. Held under lease and option. Plant: Gas-driven compressor; complete mining equipment and camp. Ore: Gold. Men employed: Average, 10. Remarks: Property acquired in October, after which 4 miles of trail were constructed, a gas-driven compressor and mining equipment were installed, and active work was started in sinking a 150-ft. inclined shaft. This property has an excellent showing of ore and its development by this company is one of the principal new mining enterprises to start in the State during the year.

DIATOM PRODUCTS CO.

DYKE GOLD MINING & MILLING CO.

ELCO GOLD MINING CO.
Office: 415 Hyde Bldg., Spokane, Wash. Officers: G. A. Foster, Sec., Spokane, Wash. Inc.: Sept. 6, 1930. Capital: 4,000,000 shares common, par value 10c; 100,000 shares common, par value $1. Remarks: Refused to file the reports required by law. According to press stories this company is supposed to have a lease and option on the property owned by the French Creek Gold Mining & Milling Co. near Elk City. An active stock-selling campaign was conducted throughout the year. Press stories were to the effect also that C. B. Collier and J. B. Ellis, both of Spokane, are connected with this company. The newspapers stated that mining operations were conducted during the latter part of the year, and that these resulted in exposing a good showing of commercial ore. The reasons for failing to file the necessary reports are probably best known to the officers of this company.

EMPIRE METALS CO.

ESPERANZA GOLD DIKES MINING CORPORATION

GARNER ELECTRIC RANGE CO.

GOLDEN ANCHOR MINING CO.
Office: Boise. Officers: J. A. Czizek, Pres.-Mgr.; J. F. Koelsch, Sec., both of Boise. Inc.: Apr. 14, 1928. Capital: 1,000,000 shares; par value $1; 500,000 shares issued. Property: Holte group; 22 unpatented claims,
Marshall Lake dist.; Burgdorf. Development: Approximately 3200 ft. of underground workings, the principal of which are 4 tunnels: No. 1, 400 ft. long; No. 2, 1860 ft. long; No. 3, 600 ft. long; No. 4, 1600 ft. long; 1 vertical shaft 150 ft. deep. Plant: MINE: Electrically-driven compressor, complete mining equipment, sawmill, assay office and complete camp. MILL: 50-ton steam-driven Lane Chilean mill; cyanide plant. POWER: Small hydroelectric power plant; 3-mile transmission line. Ore: Gold.

Men employed: Average, 8. Remarks: In February No. 4 tunnel intersected the ore at a distance of approximately 300 ft. below the bottom of the shaft in No. 3 tunnel. Drifts were then run on the ore, after which a vertical raise 200 ft. high was driven to an intersection with the vein. The ore disclosed by this work was one of the most important new ore disclosures in the State during the year. Operations were suspended in October.

GOLDEN MINES, LTD., INC.

GOLD ZONE MINING & MILLING CO., LTD.

GOODENOUGH UNITED MINING & MILLING CO., LTD.

HOMESTAKE GOLD MINING CO.

HOMESTAKE PLACER MINE

IDAHO GOLDFIELDS, INC.
Office: 533 Exchange Nat. Bank Bldg., Spokane, Wash. Officers: H. B. Davis, Spokane, Wash. Inc.: May 10, 1930. Capital: 500,000 shares; par value 10c. Remarks: Refused to file the reports required by law, although twice notified to do so. Letters of inquiry relative to this company addressed to the inspector of mines indicate that this enterprise is based on the recovery of rare metals from the graphitic lime shales, which are located near Lucile, by secret methods known only to the company.

IDAHO MOTHER LODE GOLD MINES CO.
Officers: W. G. Tanner, Seattle, Wash. Inc.: Not filed in Idaho. Remarks: Failed to file the reports required by law, although notified to do so. Press stories, which evidently were issued by the company, were to the effect that the company controlled 70 claims in the Ten Mile district, Golden.
IDAHO & NEVADA MINING CO.

JUMBO MINING & MILLING CO., LTD.

LIBERTY MINING CO.
Office: Tacoma, Wash. Inc.: Not filed in Idaho. Remarks: Name gleaned from the press. Supposed to have an option on property near Grangeville.

LONR PINE GROUP
Owner: F. O. Miller, 735 Riverview Blvd., Clarkston, Wash.; S. O. Miller, Supt., Lewiston. Property: Lone Pine group; 4 patented, 10 unpatented claims, Ten Mile dist.; Golden. Development: By 6 tunnels, totaling over 2100 ft. Plant: 2-stamp mill, 1250-lb. stamps, water-driven. Ore: Gold. Men employed: Average, 8. Remarks: This property is one of the principal gold-producing mines in Idaho County. During the high-water season a substantial tonnage was produced and milled. Active development work was maintained throughout the year. This work resulted in exposing an unknown vein and a large tonnage of high-grade ore. A 30-h. p. C-F semi-Diesel engine, belted to a 20-k. w. generator, was installed as supplementary power for the mill.

LONG TOM MINING CO.
Office: Weiser. Officers: Chas. Black, Pres., Boise; Milo Phillibeo, Sec., Weiser. Inc.: Aug. 12, 1930. Capital: 500,000 shares; par value $1; 125,000 shares issued. Property: Cuban and West Goodenough groups; 6 unpatented claims, held under lease and option, Marshall Lake dist.; Burgdorf. Ore: Gold. Men employed: Average, 5. Remarks: During the latter part of the year work was started under contract on both properties and continued without interruption.

LUCKY FIVE MINING CO.

McKINLEY GOLD MINING CO.

MAC B MINING & MILLING CO.

MAMMOTH MINE CORPORATION
MAMMOTH MINING CO.
Officers: J. F. Leonard, Grangeville. Remarks: Property supposed to be located near Grangeville; name obtained from the press.

MAMMOTH MINING & DEVELOPMENT CO.

MONTE CRISTO MINING CO.

MOOSE CREEK PLACERS CO.
Office: Kellogg. Officers: D. Williams, Pres., Lewiston; Max R. Crosby, Sec.-Mgr., Golden. Inc.: Nov. 22, 1927. Capital: 2,500,000 shares; par value 10c; 1,153,375 shares issued. Property: Moose Creek placers; 20 unpatented claims, 395 acres, Newsome dist.; Newsome. Ore: Placer gold. Men employed: Average, 8. Remarks: During the summer months ditch and flume lines and hydraulic mining equipment repaired and rehabilitated. Mine camp buildings which were destroyed by fire early in the year were rebuilt.

NORTH HILL MINING CO.

OROGRANDE GOLD MINING CO.

PULLMAN MINING & MILLING CO.
Office: Pullman, Wash. Officers: A. C. Baker, Pres.; D. C. Dow, Sec., both of Pullman, Wash. Inc.: Dec. 26, 1911. Capital: 2,000,000 shares; par value $1. Remarks: This company has not filed the reports required by law since 1923. Newspaper reports are to the effect that it is active each year.

RAPID RIVER MINING & MILLING CO., LTD.

REVENUE MINING & MILLING CO.
SALMON RIVER MINERS, INC.

SECESH DREDGING SYNDICATE

SELWAY MINING CO.
Office: Unknown. Inc.: Not filed in Idaho. Remarks: Name gleaned from the press. The property is supposed to be located northeast of Kooskia.

SENTINEL MINES CORPORATION

SHERMAN HOWE MINING CO.
Office: Burgdorf. Officers: A. W. Walker, Pres., Burgdorf; J. W. David, Sec.; V. W. Bailey, Mgr., all of Burgdorf. Inc.: Mar. 19, 1929. Capital: 250,000 shares; par value $1; all shares issued. Property: Walker-Wilcox group; 45 unpatented claims, Marshall Lake dist.; Burgdorf. Development: Principally by 3 tunnels: No. 1, 850 ft.; No. 2, 2200 ft.; total development approximately 5600 ft. Plant: MINE: I-R compressor; complete mining equipment and camp. MILL: 150-ton, fine-grinding amalgamation and flotation. POWER: 250-h. p. Diesel engine, direct connected to electric generator; 3-mile transmission line. Ore: Gold. Men employed: Average, 34. Remarks: This company's property adjoins that of the Golden Anchor Mining Co. and covers the western extension of the Holte vein system. This was one of the principal new enterprises to start in the State during 1929, and continued without interruption throughout 1930. Its expenditures were among the largest in the State. Additional new camp buildings were constructed and the mill was completed and operated throughout a large part of the year. A substantial sum was expended on road building. See page 47 for description of the mill.

SLATE CREEK GOLD MINING CO.

SPHINX GOLD MINING CO.

SPRING BARR PLACER CO.
STATE MINING CO.

STOWELL GOLD MINING CO.

SYLVANITE GOLD-COPPER CO.

THREE STAR MINES CORPORATION
Office: 201 N. Naches Ave., Yakima, Wash. Officers: L. L. Iles, Pres.; W. T. Carpenter, Sec., both of Yakima, Wash. Inc.: Oct. 23, 1929. Capital: 3,000,000 shares; par value 1c; 664,442 shares issued. Property: 17 unpatented claims, Ten Mile dist.; Golden. Ore: Gold. Men employed: Average, 2. Remarks: Active for about 6 months. This company is supposed to have changed its name to Clearwater Mining Co., although such a name has not been officially filed.

TRI METALLIC MINING CO., LTD.

UNA MINE CO.

UNITY GOLD MINES CO.
Office: 120 Broadway, New York City. Officers: Lorren M. Hart, Pres.; J. B. Neumuller, Sec., both of New York City; Granville T. Eyman, Mgr., Warren. Inc.: May 25, 1916. Capital: 500,000 shares; par value $5; all shares issued. Property: Little Giant and Rescue groups; 10 patented, 14 unpatented claims, Warren dist.; Warren. Development: Over 10,000 ft. of underground workings, the principal of which is the Unity or main crosscut tunnel, which is 5400 ft. in length. Plant: MINE: Storage-battery locomotive haulage; one 300-cu.-ft. and one 700-cu.-ft. electrically driven compressor; complete mining equipment. MILL: 10-stamp mill, 1000-lb. stamps, simple amalgamation. POWER PLANTS: A 50-h. p. hydroelectric plant on Warren Creek and a 600-h. p. hydroelectric plant on Elk Creek, the latter consisting of 2 units driven by Pelton impulse water wheel operating under a vertical head of 415 ft.; 9½-mile transmission line connecting power plant and mine. Ore: Gold. Men employed: 15. Remarks: Active operations and a substantial production during the early part of the year, after which all operations were suspended.
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Wild Rose Pl. | Dixie | J. R. Cunningham | Shoup
Wilson | Newsome | A. E. Carpenter | Newsome
Winslow | Robins | Ed Heightsman | Ontario, Ore.
Wise Boy | Robins | E. N. Oliver Est. | Grangeville
Wizzard Gr. | Robins | Jack Cameron | Orogrande
Yale | Robins | J. M. Shissler | Grangeville
Yankee Girl | | | Orogrande

BIBLIOGRAPHY

See pages 7-8 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.†*
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**

Kootenai is one of the northern counties and constitutes an important part of the Idaho Panhandle. It is bounded on the west by the State of Washington, on the north by Bonner County, on the east by Shoshone County, and on the south by Benewah County. It contains an area of 1,253 square miles and was accredited with a population of 19,469 in the 1930 census. The principal industries are lumbering, dairying, and farming. Its lumbering industry is the most important and the largest in the State.

The county is exceptionally fortunate with respect to transportation facilities. It is served by three State highways, one of which is completed, and the other two partly so; by six railroads, which include main lines or their branches; and by lake boats on Lakes Pend d'Oreille and Coeur d'Alene. Coeur d'Alene is the largest town and county seat.

The principal mining districts are the Little North Fork of the Coeur d'Alene River, Hayden Lake, and isolated sections bordering on Lake Coeur d'Alene, throughout which zinc, lead, silver, copper, gold, arsenic, and high-grade clays occur. A limited amount of development work has been done on some of the veins, with encouraging results, and many others are worthy of further attention.

1930 Activities

The county witnessed more development work, prospecting, and new construction than during the previous year. Much of this was confined to the Beauty Bay section, where the Coeur d'Alene Beauty Bay Mining & Milling Co., a custom milling enterprise based on milling the ore from all of the mines in this section, purchased the milling plant of the Caribou Mining Co., Ltd., enlarged the building, and installed new power and milling equipment, consisting of gas-driven engines and a fine-grinding flotation concentrator of 50 tons capacity. All work was completed, and the mill was adjusted to commence operations in December. The Royal Mining Co., Silver Tip Mining Association, Caribou Mining Co., Ltd., Coeur d'Alene Mountain Mining Co., and the Blue Bird Mining Co., whose properties are located in this section of the county, were active throughout the greater part of the year.

The Burnt Cabin Mining Co. and the Great Western Copper Co., in the Hayden Lake district, were active during the summer months.

Two new organizations in the Harrison Lake section did a small amount of work during the summer months, and press reports were to the effect that one of them encountered an excellent showing of high-grade lead-silver ore.
BEAUTY BAY MINING CO.

BLUE BIRD MINING CO.

BURNT CABIN MINING CO.

CARIBOU MINING CO., LTD.

COEUR D'ALENE-BEAUTY BAY MINING & MILLING CO.
Office: Coeur d'Alene. Officers: Dr. B. A. Loveless, Pres.; C. O. Sowder, Sec., both of Coeur d'Alene. Inc.: July 31, 1929. Capital: 25,000 shares preferred, par value $10; 10,000 shares common, no par value; 240 shares preferred, 138 shares common issued. Property: MILL: 50-ton gas-driven flotation concentrator. Remarks: During the year the mill was purchased from the Caribou Mining Co., Ltd.; the building was completely remodeled and new equipment was installed. This enterprise was organized to conduct a custom milling business based on treating the ores from all of the mining companies operating in the Beauty Bay section.

COEUR D'ALENE CLAY CO., LTD.

COEUR D'ALENE MOUNTAIN MINING CO.

COEUR D'ALENE OIL & DEVELOPMENT CO.
KOOTENAI COUNTY

COEUR D'ALENE-SPOKANE MINING CO.

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 unpatented claims, unorganized dist.; Lane. Ore: Lead-silver. Remarks: Annual labor only.

COMMONWEALTH METALS CO.


CONNIE MINING & MILLING CO.


EAGLE AND BLUEBELL MINING CO.


ESTELLA METALLURGICAL CO.


GRAY WOLF MINING CO.


GREAT WESTERN COPPER CO., INC.

Office: Coeur d’Alene. Officers: Jackson C. Hill, Pres.-Mgr., Coeur d’Alene; George Lee, Sec., Richmond, Calif. Inc.: Not filed in Idaho. Capital: 200,000 shares; par value $1; 7,400 shares issued. Property: 4 unpatented claims, Hayden Lake dist.; Hayden Lake. Development: 1 short tunnel. Ore: Copper, gold, silver and lead. Men employed: Average, 2. Remarks: A 335-ft. tunnel and a 60-ft. shaft, at the bottom of which is a 70-ft. drift, were driven during the year. The principal tunnel was extended a short distance.

HAMBURG AMERICAN COPPER MINING & MILLING CO.

Office: Kellogg. Inc.: Nov. 30, 1908. Capital: 1,500,000 shares; par value $1. Remarks: Has failed to file the reports required by law since 1928.

HAYDEN LAKE MINING & MILLING CO.

LITTLE NORTH FORK COPPER MINING & MILLING CO., LTD.


MASON BUTTE MINING CO.


PALISADE MINING & MILLING CO.


RADIO MINING CO.


RIVERSIDE COPPER MINING CO., LTD.


ROYAL MINING CO.


SHAMROCK MINE


SILVER TIP MINING ASSOCIATION


TWIN GULCH MINING CO.

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<td>Commander et al.</td>
<td>Medimont</td>
<td>Albert T. Allen</td>
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<td>Kaiser William et al.</td>
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<td>W. D. Tuck</td>
<td>Lane</td>
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<td>Hayden Lake</td>
<td>Arthur Jacobson</td>
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<td>Burnt Cabin</td>
<td>Adolf V. Johnson</td>
<td>Coeur d'Alene</td>
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<td>Ruby</td>
<td>Unorganized</td>
<td>A. Benjamin</td>
<td>Athol</td>
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<td>Seven Stubbs et al.</td>
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<td>R. W. Metler et al.</td>
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<td>Sunset Gr.</td>
<td>Unorganized</td>
<td>G. C. Staggs et al</td>
<td>Athol</td>
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**BIBLIOGRAPHY**

See pages 7-8 for publisher's address, meaning of reference marks, and abbreviations.


**LATAH COUNTY**

Latah County is bounded on the north by Benewah, on the south by Nez Perce, on the west by the State of Washington, and on the east by Shoshone and Clearwater counties. It has an area of 1,071 square miles, and was accredited with a population of 17,798 in the 1930 census. Moscow is the largest town and county seat, as well as the location of the University of Idaho and the Idaho Bureau of Mines and Geology. The county is recognized primarily as an agricultural community, particularly for wheat raising.

The principal mineral resources are copper, gold, silver, opals, mica, feldspar, beryl, and high-grade fire clay. The clay occurs near the town of Troy and two companies are engaged in manufacturing it into brick and refractory products. The principal company is the Idaho Fire Brick Co. and its output is in great demand throughout the entire northwest. The copper, gold, silver, beryl, and mica occur in the northern part of the county, north of the towns of Harvard and Vassar, in the Gold Hill, or Blackfoot, Hoodoo, and Avon districts. These districts are served by the Washington, Idaho and Montana Railroad, which connects with the Northern Pacific and the Spokane and Eastern railroads at Palouse, Washington, and the St. Maries-Elk River branch of the Chicago, Milwaukee and St. Paul Railroad at Boville.

The mica mines have produced a large tonnage of high-grade micas. The resources of the old ones have not been exhausted, many of the prospects justify further development, and there are still many possibilities for the
discovery of new veins. As there are many chances for the development of profitable enterprises, these deposits are worthy of more attention than they have been receiving in the past few years.

1930 Activities

The presence of beryl in the mica deposits near Avon was reported during the year, and one enterprise was active in attempting to extract and market it. The result of their efforts is unknown.

The Idaho Fire Brick & Clay Co. maintained operations throughout the year. The success with which this company is meeting and the grade of its product are attracting attention to the ceramic clays of this county.

ACE MINING CO.

CASSIDY GOLD MINING & MILLING CO., LTD.

COPPER CHIEF MINING & MILLING CO., LTD.

COPPER MOUNTAIN MINING CO.

GOLD CREEK METALS CO.

GOLD HILL MINING & MILLING CO.

IDAHO CERAMIC MATERIALS CO.
IDAHO FIRE BRICK & CLAY CO.
Office: Troy. Officers: J. F. McCarthy, Pres.; Ellis L. Hale, Sec., both of Wallace. Inc.: May 31, 1928. Capital: 1,000 shares; par value $100; all shares issued. Property: 77 acres of patented land, held under a 99-year lease. Plant: Electrically driven drag-line hoist. MILL: Steam-driven puddling and molding equipment furnaces. Mineral sought: Fire clay. Men employed: Average, 19. Remarks: This company is the largest manufacturer of fire clay and refractory products in the State. Its output is in great demand throughout the Northwest, smelters and railroads being the principal consumers. A large part of the fire clay is obtained on a royalty basis from property other than that which the company controls.

MUSCOVITE MICA CO.
Office: Box 166, Lewiston. Officers: Homer Lipps, Pres., Kooskia; W. E. Parry, Sec., Lewiston. Inc.: Feb. 7, 1927. Capital: 5000 shares; par value $100. Remarks: Refused to file the reports required by law. Newspaper stories were to the effect that beryl occurs in the property owned by this company.

PRIMUS PLACER GOLD CO.

SPOKANE-IDAHO COPPER CO.
Office: 1103 Paulsen Bldg., Spokane, Wash. Officers: Paul H. Graves, Pres.; Will H. Hoppe, Sec., both of Spokane, Wash.; D. C. Livingston, Mgr., Harvard. Inc.: Nov. 27, 1929. Capital: 8,000,000 shares; par value 25c. Remarks: Failed to file the reports required by law. Press reports were to the effect that the company constructed new boarding and bunk houses and approximately 4 miles of road during the year.

TROY GOLD & COPPER MINING CO., LTD.

TROY MICA CO.

NAME OF MINE	MINING DIST.	OWNER	P. O. ADDRESS
Anny Gr.	Hoodoo	P. Doffner	Harvard
Avon	Hoodoo	J. H. Nesbit	Deary
Bonanza Gold Pl.	Gold Creek	Wm. J. Schmidt	Potlatch
Carrico Pl.	Gold Creek	Paul Bockmier	Paulsen Bldg.,
Clara Lester Gr.	Gold Creek	James C. Throop	Spookane, Wash.
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 7-8 for publisher's address, meaning of reference marks, and abbreviations.


LEMHI COUNTY

Lemhi County is situated in central-eastern Idaho, bounded on the north and east by the State of Montana, on the west by Idaho and Valley counties, and on the south by Custer, Butte, and Clark counties. It has an area of 4,597 square miles, which is about equal to the State of Connecticut, and was accredited with a population of 4,643 in the 1930 census, or 1.0 person to the square mile. A provisional county government was organized in July, 1867, and in January, 1869, the Territorial Legislature permanently established the county with Salmon City as the county seat, an honor which it has always retained. The larger part of the population is located in the Lemhi River and Pahsimeroi River valleys, and is engaged in the pursuits of agriculture and stockraising.

It is one of the principal mining counties of the State, and always ranks as one of the largest producers. The extensive and varied mineral resources; the many veins that have been discovered, yet not developed; the many undiscovered veins; the excellent mining conditions; the many producing mines and prospects; and its location, both geographically and geologically, place this county within the area known as Central Idaho's Mineral Empire.

The county is served by the Pittsburg & Gilmore Railroad, which plies between Armstead, Montana, and Salmon, with a branch line from Leadore to Gilmore; by the Sawtooth Park State highway from Challis to Salmon, which follows the Salmon River and which is fully completed; and by a system of county roads which lead into all the outlying settlements and mining districts.

The principal mineral resources are lead, copper, silver, gold, zinc, tungsten, manganese, molybdenum, nickel, cobalt, gypsum, tin, and lignite. The formations in which the various mineral deposits occur range from early sedimentary rocks to late igneous rocks and include all those which are favorable to the deposition of ore in commercial quantities. The deposits are widely distributed throughout the vast mountainous areas which comprise a large part of the county. The wide distribution of the deposits, the diversity of mineralization, the favorable geological conditions, and the many opportunities for the development of profitable enterprises, make this county an exceptionally favorable field for prospectors and development companies.

1930 Activities

In point of production and number of men employed Gilmore for many years has been one of the largest lead-producing sections in the State outside of the Coeur d'Alene district. The Pittsburg-Idaho mine, of the United Idaho Mining Co., a subsidiary of the U. S. Smelting, Refining & Mining Co., the Latest Out, and the Allie are the largest mines in this district. In 1929 one of the large Diesel engines in the power plant of the United Idaho Mining Co. exploded and was completely wrecked, and operations were suspended until additional power could be obtained. As the principal owners were unable to arrive at an agreement on the installation of a new power plant, the mine
has been idle since then. A large number of lessees at the Allie and Latest Out mines produced and marketed a substantial tonnage of high-grade lead-silver ore. Funds to cover the cost of the development work done by some of these lessees were advanced by one of the large smelting companies. These operations increased the activities and the number of men employed in this camp over those of 1929.

The Nicholia district was more active than during any year since production was suspended. Lessees at the old Viola mine did a large amount of development and produced and marketed a substantial tonnage of lead-silver ore. The Lead Mountain Mining Co., which entered this district in 1929, maintained one of the largest development campaigns in the county at the Nicholla group. This company completed a vertical shaft to a depth of 400 feet and opened 1,200 feet of crosscuts and drifts at the bottom of the shaft.

In the Spring Mountain district the property of the Idaho Minerals Co. was optioned to the South Gilmore Mining Co. The latter and the Spring Mountain Mining Co., Inc., were both active during the summer months.

The only work in the Leadore district was the necessary annual labor and the completion of the topographic survey by the U. S. Geological Survey preparatory to a thorough geological study of the district in cooperation with the Idaho Bureau of Mines and Geology.

In the Pratt Creek district the Goldstone Mines Corporation, one of the largest and most active companies in the county, completed the construction of its hydroelectric power plant and a 100-ton fine-grinding amalgamation and flotation mill, which was started in 1929. The mill was operated for a short period, and a large amount of mine development work was done.

Two discoveries, one of high-grade copper-gold ore on Agency Creek in the McDevitt district, the other of high-grade gold ore in the Parker Mountain district, were reported.

The copper mines in the vicinity of Salmon were less active than in 1929. A small amount of work was done by four lessees at the property of the Harmony Mines Co. and the Winder-Stillman Con was active during the early part of the year. The Hecla Mining Co. and an organization of prospectors were active throughout the summer months in developing a discovery of high-grade copper-gold ore on Allison Creek, 10 miles south of Salmon on the divide between the Lemhi and Salmon Rivers.

Mrs. H. T. Steen, at the Continental group in the Yellow Jacket district, and the United Maco Smelters, Inc., which was holding the old Yellow Jacket mine under lease and option, each performed a small amount of work.

The Shoup district received more attention than at any time during the past 10 years. Two new organizations commenced work; and press stories were to the effect that one of them installed a small hydroelectric power plant and excavating machinery preparatory to operating a placer deposit. There was a substantial increase in prospecting.

The principal activities in the Leesburg district were based on hydraulic mining. Three companies constructed ditches and dams and installed a small amount of hydroelectric mining equipment during the summer months.

There was a slight increase in prospecting and development work in the Gibbonsville district, and the Rescue Gold Mines Co. was active throughout the summer months in reopening the principal entry at the A. D. & M. mine.

Gold mining has received more than its usual amount of attention in most of the districts of the county, and there has been a substantial increase in the number of prospectors and investigators seeking gold enterprises.

An important means of advertising the mineral resources of the county has been the mineral exhibit of the Salmon Commercial Club. The exhibit is housed in a large room, and it contains excellent specimens of ore from almost every district in the county.

**ALLIE MINE**

**Office:** Gilmore. **Owners:** Gilmore Mercantile Co., Gilmore. **Property:** Allie group; 12 patented claims, Texas dist.; Gilmore. **Development:** Principally by 1 tunnel 6000 ft. long, in which are 2 inclined shafts with 6 intermediate levels, opening the vein 290 ft. below the tunnel. **Plant:**
40-kw. electric generator, driven by Fairbanks-Morse semi-Diesel engine; 2 electrically-driven hoists; 1200-ft. aerial tramway; mine buildings. **Ore:** Lead-silver. **Remarks:** The property was operated throughout the year by two groups of lessees, who produced and marketed a substantial tonnage of high-grade lead-silver ore.

**BEAVERHEAD LEAD MINES CO.**

**Office:** Cheney Bldg., Reno, Nev. **Officers:** John Salesberry, Pres., Mills Bldg., San Francisco; J. E. Sullivan, Sec., Cheney Bldg., Reno, Nev. **Inc.:** Filed in Idaho, May 12, 1927. **Capital:** 3,000,000 shares; par value 10c; no shares issued. **Property:** Viola group; 1 patented, 1 unpatented claim, Nicholla dist.; Gilmore. **Ore:** Lead-silver. **Remarks:** Operated throughout the year by lessees, who produced and shipped a small tonnage of ore.

**CLORIDE EUREKA CO.**

**Office:** Carmen. **Officers:** S. E. Bowler, Pres.-Mgr.; Harriet Bowler, Sec., both of Carmen. **Inc.:** Oct. 9, 1928. **Capital:** 500,000 shares; par value $1; 3 shares issued. **Remarks:** This company owns no property and is not conducting mining operations.

**CONTINENTAL GROUP**

**Owner:** Mrs. H. F. Steen, P. O. Box 1434, Stockton, Calif. **Property:** Continental group; 4 patented claims, Yellow Jacket dist.; Forney. **Development:** Principally by 1 tunnel 420 ft. long. **Plant:** Gas-driven Rix compressor; complete mining equipment and camp. **Ore:** Copper-gold-silver. **Men employed:** Average, 4. **Remarks:** Active during the summer months.

**CONTINENTAL STANDARD MINING CO.**

**Office:** 655 Dexter Horton Bldg., Seattle, Wash. **Officers:** C. M. Sonoda, Pres., Seattle, Wash. **Inc.:** Jan. 2, 1926. **Capital:** 100,000 shares preferred, 1,000,000 shares common; Jan. 23, 1930, common stock increased to 2,000,000 shares; par value $1; 727,309 shares issued. **Property:** Grizzly Hill group; 25 unpatented claims, Junction dist.; Leadore. **Development:** By 5 tunnels, totaling approximately 1000 ft., and an inclined shaft 175 ft. long. **Plant:** 200-cu.-ft. C-P compressor, driven by semi-Diesel engine; air-driven hoist. **Ore:** Lead-silver. **Remarks:** Annual labor only, the funds for which were derived from stock assessments. The company failed to file information as to the amount of preferred stock issued, although requested to do so.

**GOLDEN AGE MINING CO.**

**Office:** Sandy, Utah. **Officers:** J. R. Jensen, Pres.; J. P. Jensen, Sec., both of Sandy, Utah. **Inc.:** Nov. 29, 1930. **Capital:** 500,000 shares; par value 10c; 250,000 shares issued. **Property:** 6 unpatented claims, held under lease and option, Gibbonsville dist.; North Fork. **Development:** By 2 tunnels; No. 1, 700 ft. long; No. 2, 300 ft. long. **Ore:** Lead-silver. **Remarks:** Annual labor only.

**GOLDSTONE MINES CORPORATION**

**Office:** 905 American Bank Bldg., Seattle, Wash. **Officers:** Arthur J. Thels, Pres.-Mgr.; William S. Akers, Sec., both of Seattle, Wash.; Andrew Prader, Supt., Baker. **Inc.:** Apr. 9, 1928. **Capital:** 2,000,000 shares; par value 25c; 1,900,000 shares issued. **Property:** Goldstone group; 9 unpatented claims held under lease and option, Pratt Creek dist.; Baker. **Development:** Principally by 1 tunnel 2150 ft. long. **Plant:** MINE: Electrically driven compressor; complete mining equipment and camp. MILL: 100-ton fine-grinding amalgamation and flotation. POWER: 195-kw. hydroelectric power plant driven by a Pelton wheel. **Ore:** Gold. **Men employed:** Average, 10. **Remarks:** Construction of the power plant and mill, which was started in 1928, was completed early in the year. A large amount of mine development was performed, and the mill was operated intermittently.
HARMONY MINES CO.

IDAHO CONSOLIDATED MINING CO.
Officer: John Igou, Salmon. Remarks: The name was gleaned from the press, which indicated that the company was a local organization developing the Spare Time group on Rattlesnake Creek.

IDAHO PREMIER MINES CORPORATION

IMA CONSOLIDATED MINING & MILLING CO.

IMA MINES CORPORATION
Officer: W. P. Barton, May. Inc.: Mar. 12, 1930. Capital: 1,000,000 shares; par value $1. Remarks: Failed to file the reports required by law. Lease and option on the property owned by the Ima Consolidated Mining & Milling Co. This is the fourth company that Mr. Barton has organized on this property, the former ones being: Blue Wing Tungsten Mining & Milling Co., incorporated Mar. 23, 1921, charter forfeited Nov. 30, 1923; Republic Consolidated Mining & Refining Co., incorporated Aug. 9, 1922, charter forfeited Nov. 30, 1924; Patterson Mines Corporation, incorporated Apr. 3, 1927.

LATEST OUT MINING & SMELTING CO., LTD.

LEAD MOUNTAIN MINING CO.
Office: 218 Felt Bldg., Salt Lake City, Utah. Officers: George W. Snyder, Pres.-Mgr.; Guy M. Snyder, Sec., both of Salt Lake City. Inc.: Aug. 26, 1929. Capital: 1,000,000 shares; par value 25c; all shares issued. Property: Nicholla group; 36 unpatented claims, some of which are held.
under lease and option, Nicholia dist.; Reno. **Development:** By 2 tunnels: No. 1, 1000 ft. long; No. 2, 300 ft. long; and an inclined shaft 150 ft. long; vertical shaft 400 ft. deep, at the bottom of which is 1200 ft. of prospects and drifts. **Plant:** Hoist and 2-drill Sullivan compressor, both gas-driven; complete mining equipment and camp. **Ore:** Lead-silver. **Men employed:** Average, 16. **Remarks:** The property was acquired in June, 1929, after which new camp buildings were erected, equipment was installed, and work was started on sinking the vertical shaft. Since then the development has progressed without interruption. This was the largest development enterprise in the county.

**LEADORE-LEMHI COPPER MINING CO.**

**Office:** Leadore. **Officers:** J. D. Pritchett, Pres.-Mgr., Leadore; J. E. Pritchett, Sec., Salmon. **Inc.:** Aug. 22, 1927. **Capital:** 500,000 shares; par value 10c; 150,000 shares issued. **Property:** Baltimore group; 3 unpatented claims, McDevitt dist.; Leadore. **Development:** By 2 short tunnels. **Ore:** Copper-silver. **Men employed:** Average, 1. **Remarks:** Active during the summer months.

**LEESBURG BONANZA PLACER CO.**

**Office:** 611 Isabell St., Los Angeles, Calif. **Officers:** Cari A. Poulsen, Pres.-Mgr.; Hans Therkelsen, Sec., both of Los Angeles, Calif. **Inc.:** Apr. 2, 1929. **Capital:** 2,500,000 shares; par value 10c; 1,863,337 shares issued. **Property:** Bonanza placers; 12 unpatented claims, Mackinaw dist.; Leesburg. **Ore:** Placer gold. **Men employed:** Average, 3. **Remarks:** Small amount of work on hydrauliciking equipment was performed during the summer months. This company is a reorganization of the Bonanza Placer, Inc. Annual labor only.

**LEESBURG LODE & PLACER MINING CO.**

**Office:** Salmon. **Officers:** O. E. Kirkpatrick, Pres.-Mgr., Leesburg; J. A. Herndon, Sec., Salmon. **Inc.:** May 12, 1930. **Capital:** 600,000 shares; par value 10c; 401,050 shares issued. **Property:** Gold Dust group; 6 patented claims, Mackinaw dist.; Salmon. **Development:** Approximately 3000 ft. **Plant:** An old steam-driven 10-stamp mill. **Ore:** Gold.

**LEMHI MINING CO.**

**Office:** Winchester, Ind. **Officers:** Albert Warren, Pres., Cleveland, Ohio; A. L. Nichols, Sec., Winchester, Ind.; R. E. Lee Ramey, Mgr., Forney. **Inc.:** Jan. 16, 1924. **Capital:** 5000 shares; no par value; 4942 shares issued. **Property:** Rabbit Foot group; 8 unpatented claims, Gravel Range dist.; Forney. **Development:** By 3 tunnels, the principal one of which is 1700 ft. long. **Plant:** Steam-driven hoist and 100-cu.-ft. I-R compressor; complete mining and logging equipment; sawmill; complete camp and buildings. **Ore:** Gold. **Remarks:** Failed to file the reports required by law.

**MONTANA COAL & IRON CO.**

**Officer:** T. H. Freeman, Shoup. **Inc.:** Not filed in Idaho. **Remarks:** Failed to file the reports required by law. Press stories were to the effect that this company was operating a placer property near Shoup, and that it had installed a 100-kw. hydroelectric power plant and excavating machinery.

**MONTANA MINING & LIVESTOCK CO.**

**Office:** William Taylor Hotel, San Francisco, Calif. **Officers:** F. H. Barnes, Pres.; E. H. Devlan, Sec., both of San Francisco, Calif. **Inc.:** Mar. 8, 1919. **Capital:** 5,000,000 shares; par value 10c; 1,208,830 shares issued. **Property:** Leesburg group; 9 unpatented placer and 6 unpatented lode claims, 500 acres deeded land, Mackinaw dist.; Leesburg. **Plant:** Steam-driven hoist and 100-cu.-ft. I-R compressor; complete mining and logging equipment; sawmill; complete camp and buildings. **Ore:** Gold. **Remarks:** Annual labor only.

**NORTHEASTERN DEVELOPMENT CO., LTD.**

**Office:** Ashland, Ky. **Officers:** C. E. Williams, Pres.; Thomas Boggess, Sec., both of Ashland, Ky. **Inc.:** Aug. 28, 1915. **Capital:** 500,000 shares; par value $1; 239,840 shares issued. **Property:** Primrose group; 6 patented claims, Eldorado dist.; Salmon. **Plant:** Gas-driven compressor; complete mining equipment and mine camp. **Ore:** Gold-silver-copper. **Remarks:** Idle.
OWL MINING CO., INC.

POCATELLO-LEMHI MINING & EXPLORATION CO.

PORTLAND MINING CO.

RESCUE GOLD MINES CO.
Office: P. O. 624, Pasadena, Calif. Officers: Chas. Mushrush, Pres.; Willis H. Brown, Sec., both of Pasadena, Calif.; A. B. Post, Agent, P. O. 624, Pasadena, Calif. Inc.: Apr. 25, 1919. Capital: 90,000 shares; par value $1; 13,303 shares issued. Property: A. D. & M. group; 23 patented claims, Dahlonega dist.; Gibbonsville. Ore: Gold. Remarks: A small amount of work, which consisted principally of reopening the old workings, was done during the summer months.

SOUTH GILMORE MINING CO.

SPRING MOUNTAIN MINING CO., INC.

UNITED IDAHO MINING CO.
UNITED MACE SMELTERS, INC.
Office: 2763 Blake St., Denver, Colo. Officers: Robert G. Ainsworth, Pres.; M. G. Ainsworth, Sec.; C. H. Mace, Mgr., all of Denver, Colo.; John Lingelbach, Agent, Forney. Inc.: Filed in Idaho, Dec. 15, 1930. Capital: 1,500,000 shares; par value $1; 614,985 shares issued. Property: Yellow Jacket group; 7 patented, 37 unpatented claims, held under lease and option, Yellow Jacket dist.; Forney. Men employed: Average, 3. Remarks: A small amount of work during the summer months in reopening the old workings. The statements in the press by Mr. Lingelbach were to the effect that the company proposed installing a Mace smelter.

UTANA MINING CORPORATION

VIRGINIA GOLD MINING & MILLING CO.

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. Men employed: Average, 25. Remarks: Active operations during the early part of the year. A substantial tonnage of concentrate was produced and marketed.

NAME OF MINE | MINING DIST. | OWNER | P. O. ADDRESS
--- | --- | --- | ---
Alex Stevens | Texas | Wm. 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 Creek Pl. | Mackinaw | Christ Stuckey | Leesburg
Baby Joe Gr. | Junction | W. F. Stone | Leadore
Belcher | Gibbonsville | Chas. Goff | North Fork
Big 8-Mile | Junction | J. D. Pritchett | Leadore
Big Windy | Spring Mountain | Joe Jugovich | Gilmore
Blue Bird | McDevitt | E. G. Lynch | Digby, N. S.
Boulder Gulch | Mineral Hill | John Brittain | Salmon
Brown Bull | Texas | E. C. Ross | Gilmore
Bryn Mawr et al. | Indian Creek | Davis Davies | North Fork
Buck-a-roo | Junction | W. J. Shoup | Salmon
Buckhorn | Eureka | Sellers Bros. | Salmon
Burlington | Unorganized | Paul Rossier | Salmon
Cabin | Mackinaw | Frank G. Worthing | Reno, Idaho
California Pl. | Texas | A. C. Ludwig | Salmon
Carrie Cody | Texas | H. S. Knight | 222 Kears Bldg., Salt Lake City, U.
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**BIBLIOGRAPHY**

See pages 7-8 for publisher's address, meaning of reference marks, and abbreviations.


LEWIS COUNTY

Lewis is one of the northern counties, being bounded on the north and west by Nez Perce, on the northeast by Clearwater, and on the east and south by Idaho County. Containing an area of but 470 square miles, and a population of 11.1 persons to the square mile, it is one of the smallest counties in the State in area and one of the largest in density of population. Excepting the small area occupied by Craig Mountains, practically all the county is tillable, and the principal industries are wheat raising and lumbering.

The county is served by the North and South State highway, by the Lewiston-Stites branch of the Northern Pacific Railroad, by the Lewiston-Grangeville branch, which is owned jointly by the Union Pacific and Northern Pacific railroads, by the Nez Perce & Idaho Railroad from Craigmont to Nez Perce, the county seat, and by the Craig Mountain Railroad from Reubens to Winchester.

The principal mineral resources are copper, gold, silver, marble, and limestone. Veins containing copper, gold, and silver have been discovered and developed in the Craig Mountains, principally along Deer Creek. At one time this section received considerable attention, and a small mill was constructed at one of the mines. The marble and limestone occur on Mission Creek near the Nez Perce County line. The marble occurs in all shades, colors, and diagrams familiar to the marble industry; it is exceptionally adaptable to commercial use.

The Winchester Copper Mining & Smelting Co., which acquired the Forest group of copper claims on Deer Creek in 1926, was active throughout the summer months.

CRAIG MOUNTAIN MINING & MILLING CO.


WINCHESTER COPPER MINING & SMELTING CO.


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NEZ PERCE COUNTY

Nez Perce is one of the principal northern counties, bounded on the south and east by Idaho and Lewis counties, on the north and east by Clearwater and Latah counties, and on the west by the States of Washington and Oregon. It has an area of 851 square miles and was accredited with a population of 17,591 in the 1930 census. It is primarily an agricultural county, and Lewiston, the largest town and civic center of north-central Idaho, is the county seat. The county was originally organized under an act of the Legislature of Washington Territory before the Territory of Idaho was organized, and Lewiston was first settled in 1861, consequent to the discovery of, and as a supply point for, the placer mines in Clearwater and Idaho counties.

Lewiston is at the junction of the Snake and Clearwater rivers; steamboats can reach it from Portland, Oregon, although they are not used as a means of transportation from that point, and both rivers are navigable for boats of light draft. In addition to river boats, the county is served by the Union Pacific and Northern Pacific railroads, and by the North and South, and Lewis and Clark State highways.

The principal mineral resources are copper, silver, gold, marble, and limestone. The metals occur in isolated sections of the county and have never received much attention. The limestone, which is adaptable to Portland cement, occurs on the Snake River north of Lewiston, but the deposits have never been developed. The marble, which is of excellent grade and quality, occurs on the Clearwater River near Agatha. A little attempt has been made to exploit the marble deposits.

BONANZA GOLD MINING & MILLING CO.

INDEPENDENT MARBLE & LIME CO.

MISSION CREEK LIME PRODUCTS CO.

TAMMANY OIL CO.
Office: Lewiston. Officers: B. F. Lorang, Pres., Lewiston. Inc.: Jan. 24, 1921. Capital: 100,000 shares; par value $1; July 13, 1921, increased to 1,000,000 shares. Remarks: Failed to file the reports required by law.

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Geology and water resources of Nez Perce County, Idaho, by I. C. Russell: U. S. Geol. Survey Water-Supply Papers 53 and 54, 1901.‡

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†

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

Owyhee is one of the historic counties of Idaho. It is situated in the southwestern portion of the State, and is bounded on the north by Canyon, Ada and Elmore counties, on the east by Twin Falls County, on the south by the State of Nevada, and on the west by the State of Oregon. Its area is 7,956 square miles, being larger than the State of New Jersey, and its population according to the 1930 census was only 4,103, or 0.5 persons to the square mile. The principal industries are farming, stockraising, and mining. Silver City, one of the oldest towns in the State, is the county seat.

The history of this county dates back to the discovery of placer gold and the rich veins of War Eagle Mountain in 1863. The first quartz mill was constructed in 1864, and for many years thereafter Owyhee was the principal mining county. The ores which occur in this county are the richest gold-silver ores ever discovered in the State, and many tons which were either milled or sent directly to smelter had a phenomenal value. Early statistics are not very reliable, but from the best sources available, an estimated production of over $40,000,000 is conservative.

The principal mineral resources of the county are silver, gold, copper, lead, zinc, antimony, diatomaceous earth, opals, manganese, and nitrates. The diversity of mineralization, the favorable geological conditions, and the wide distribution of the deposits throughout the county make it an exceptionally favorable field for prospectors and development companies, particularly because all the high-grade ore in the old mines has not been exhausted, nor have all the veins been discovered.

1930 Activities

One of the largest and most important new enterprises which was started in the State during 1929 was that of the Exploration Company of California, at the Golconda group in the South Mountain district. Late in 1929 new buildings were constructed, complete mining equipment was installed, and development work was started. Except for a period of 30 days, this company was active throughout the year. A large amount of crosscutting, drifting and sinking was done, and reports were to the effect that this work greatly increased the known resources of the property. This company's operation is the largest in the county. On account of the shortage of water, the American Gold Dredg-
ing Corporation was able to operate only during the early spring months. Three new development enterprises were started in the Reynolds Creek section of the Carson district, one of which installed a small gas-driven mill. There was a substantial increase of investigations in the Silver City district, and press stories were to the effect that a new organization had been perfected to consolidate the principal old mines on War Eagle Mountain. Two enterprises based on the presence of platinum in the volcanic glass sands lying at a depth of about 250 feet in the artesian basin of Little Valley near Bruneau were active throughout the year and one gave its project a large amount of publicity through circulars designed to further the sale of stock.

**AFTERTHOUGHT MINING CO.**

*Office:* 434 First Nat'l Bank Bldg., Boise. *Officers:* E. V. Orford, Pres.; S. L. Tipton, Sec., both of Boise. *Inc.:* Feb. 15, 1927. *Capital:* 400,000 shares common, 100,000 shares preferred; par value $1; 165,030 shares common, 3300 shares preferred issued. *Property:* Afterthought group; 1 patented, 4 unpatented claims, French dist.; Silver City; held under lease and option from E. V. Orford, Boise. *Development:* Principally by a vertical shaft 470 ft. deep, in which there are 5 intermediate levels. *Ore:* Silver-gold. *Remarks:* Annual labor only.

**AMERICAN GOLD DREDGING CORPORATION**

*Office:* 4817 W. Vernon Highway, Detroit, Mich. *Officers:* Walter J. Long, Pres.-Mgr., 8th St. & Garden Ave., Boise; L. H. Marvill, Sec., Detroit, Mich. *Inc.:* Filed in Idaho, Jan. 2, 1926. *Capital:* 300,000 shares common, 200,000 shares preferred; par value $1; 163,100 shares common, 172,200 shares preferred issued. *Property:* Meadow Creek group; 18 unpatented placer claims, containing 360 acres, part of which are held under lease and option; Steele dist.; Triangle. *Plant:* Electrically-driven table-type Yuba dredge with 2½-cu.-ft. buckets close connected. *Ore:* Placer gold. *Men employed:* Average, 10. *Remarks:* During 1927 this company constructed its dredge, new mine camp, and 4-mile electric transmission line. Dredging operations were commenced in January, 1928, continued until freezing weather interrupted, and were then resumed for a short period in the spring of 1929, after which operations were suspended and the dredge was converted from flume type to table type, with revolving screens and new stacker added. Operations were continued for a short period during the early part of the year.
BANNER MINING & MILLING CO.

B. B. & M. OIL AND GAS CO.

BIG FOUR DEVELOPMENT CO.

COSMOPOLITAN MINING CO., LTD.

E. B. MINING CO.

ECLIPSE MINING CO., INC.

EMPIRE MINES CO.

EXPLORATION COMPANY OF CALIFORNIA
Office: 351 California St., San Francisco, Calif. Officers: Charles Butters, Pres.; A. L. Dahl, Sec., both of San Francisco, Calif. Inc.: Filed in Idaho Nov. 12, 1929. Capital: 200,000 shares; no par value; 18,290 shares issued. Property: Golconda group; 15 patented, 10 unpatented claims, South Mountain dist.; Jordan Valley. Held under lease and option from Golconda Group Mining Co. and M. G. Sacrider. Development: Principally by 4 tunnels totaling over 3500 ft. Plant: 2 gas-driven compressors; gas-driven hoist; complete mining equipment and camp. Ore: Lead-zinc-silver. Men employed: Average, 30. Remarks: The company was organized and the property acquired late in 1929, after which camp buildings were erected, equipment and machinery installed, and development work started. Except for a period of four weeks during 1930, work has progressed without interruption, and a large amount of crosscutting, drifting, and sinking has been done. The results of the new work are encouraging. This company is one of the largest development enterprises in the State.
GOLCONDA GROUP MINING CO.

GOLD STANDARD MINING CORPORATION
Office: Boise. Officers: W. C. Dewey, Pres.-Mgr.; Victor Shawe, Sec., Boise. Inc.: Dec. 23, 1930. Capital: 2,000,000 shares common, 1,000,000 shares preferred; par value $1; shares issued, unknown. Property: Sunnyside group; 12 unpatented claims on Reynolds Creek, Carson dist.; Murphy. Development: By 1 tunnel 380 ft. long and a vertical shaft 150 ft. deep. Ore: Gold. Remarks: This company was organized and acquired its property in December. Plans have been completed to commence sinking operations at an early date. The property has a fair record of production from the old upper workings.

GOLD STAR MINING CO.

GREAT HOME MINING CO.
Office: Bruneau. Remarks: Name gleaned from the press. Failed to file the reports required by law when requested to do so. Supposed to be developing for platinum lying in volcanic glass sands in the artesian basin of Little Valley.

GREAT WESTERN MINES CO.

HOOSIER LEASING CO.

IDA BELL GOLD MINES, INC.

IDAHO GOLD & PLATINUM MERGER MINES CO.
Office: Box 150, Bruneau. Officers: H. O. Milner, Pres., Twin Falls; E. A. Thom, Sec.; Phil Thom, Mgr., both of Bruneau. Inc.: Filed in Idaho Oct. 30, 1928. Capital: 5,000,000 shares; par value 10c; 3,978,426 shares issued. Property: 10 unpatented claims, 1380 acres, unorganized dist.; Little Valley; Bruneau. Plant: 30-h.p. gas-driven hoist; steam-driven compressor; complete mining equipment and camp. Ore: Platinum. Men employed: Average, 8. Remarks: This company's enterprise is based on
the presence of platinum in a volcanic glass sand lying at a depth of about 250 ft. in an artesian basin. In 1929 work was started on sinking a vertical shaft lined with concrete. This work was continued throughout 1930 to a total depth of approximately 170 ft. The funds were obtained from a 1 mill stock assessment, levied on May 15, and from the sale of stock, which was furthered by extensive advertising.

**IMPERIAL MINING & MILLING CO., LTD.**


**NEVER SWEAT MINING CO.**


**OWYHEE DEVELOPMENT CO., INC.**


**OWYHEE GOLD MINING CO.**


**OWYHEE SILVER MINES CO.**


**PIXLEY BASIN MINING CO.**


**WAR EAGLE CONSOLIDATED MINING CO.**

WAR EAGLE MINING & MILLING CO.
Office: Boise.
Inc.: Jan. 4, 1927.
Capital: 1,000,000 shares; par value 10c; 510,000 shares issued.
Property: Red Jacket group; 5 unpatented claims, French dist.; Silver City.
Development: 3 tunnels, the principal one of which is over 2000 ft. long.
Plant: Electrically driven compressor; complete mining equipment and camp.
Ore: Gold and silver.
Men employed: Average, 2.
Remarks: A small amount of work during the summer months.

NAME OF MINE MINING DIST. OWNER P. O. ADDRESS
American Eagle et al. Carson Henry Hugg Silver City Mrs. Lois Steen Oreana
Browney Carson J. W. Daly Silver City
Chief Unorganized W. R. Helm Jordan Valley, Ore, John Grete Silver City
Daly Group Carson Demming Ex. Co. Trst Nampa
De Lamar Carson Elisha Lewis Sliver City
Deluge et al. Carson Charles Cook Silver City
Demming et al. Steele V. Richardson Silver City
Dubueque et al. Carson Asher A. Getchell Twin Falls
Gold Bug French H. P. Cox Murphy
Gold Hen et al. Carson A. T. Evans Mountain Home
Golden Gate Carson
Happy Boy Unorganized
Henrietta Carson

Home et al. Carson W. J. Stoddard Silver City
Homestake French Mrs. George Schlack Silver City
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
Perseverance Flint R. V. Thurston Payette
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 Silver City
Sunnyside Carson I. E. Barber, Trus. Boise
Tennessee et al. Carson John Nemanic Silver City
Village Blacksmith Carson Duncan & Lackey Silver City
Wennerstein Gr. Carson Andrew Wennerstein Nampa
War Eagle Gr. French Wm. Healy Boise

BIBLIOGRAPHY
See pages 7-8 for publisher's address, meaning of reference marks, and abbreviations.


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.

Late in 1926 the Idaho Petroleum Co. at Payette acquired the property and equipment owned by the Idaho Oil & Gas Co., whose well was 1100 feet deep. Work was then started sinking the well to a further depth and was carried on intermittently throughout 1927, until a total depth of 1800 feet was gained. The encountering of gas was reported at the depths of 1485 and 1550 feet. During 1928 the assets of the Idaho Petroleum Co. were acquired by the Idaho-Oregon Petroleum Corporation through an exchange of stock; and an additional well was sunk to a depth of 1180 feet to further prove the extent of the gas. No operations were conducted during 1930 by this company, which reported that its property was under lease to the International Finance Corporation, although such a company has never qualified to do business in Idaho. Articles of incorporation filed by two other oil companies indicated that they expected to operate in this county.
IDAHO-OREGON OIL & GAS CO.

IDAHO-OREGON PETROLEUM CORPORATION

INTERMOUNTAIN BASIN OIL & GAS CO.

PAPETTE VALLEY OIL & GAS CORPORATION

BIBLIOGRAPHY
See pages 7-8 for publisher's address, meaning of reference marks, and abbreviations.


Oil and gas possibilities of eastern Oregon, by J. P. Buwalda: Oregon Bureau of Mines and Geology, vol. 8, No. 2, 1921.*


POWER COUNTY

The most active development work done in this county during the year was that of the Independent Mining Co. at its lead-silver prospect near Rockland. The oil development companies were practically idle throughout the year.

A few placer mines along the Snake River produced and marketed a small amount of placer gold.

ARBON VALLEY OIL CO.
Office: Pocatello. Officers: D. C. Ray, Pres.; L. B. Evans, Sec., both of Pocatello. Inc.: Feb. 20, 1923. Capital: 250,000 shares; par value $1; 222,500 shares issued. Property: Oil leases on patented farm land which have been assigned to Gem State Petroleum Co.

GEM STATE PETROLEUM CO.
IDAHO RESEARCH AND DEVELOPMENT CO.

INDEPENDENT MINING CO.

NAME OF MINE  MINING DIST.  OWNER  P. O. ADDRESS
Bannock Peak  Unorganized  Frazier & McClandon  American Falls
Diamond et al Pl.  Snake River  Wm. M. Main  Aberdeen
Golden Clift Pl.  Snake River  Geo. J. Wheeler  American Falls

SHOSHONE COUNTY

Shoshone County lies in the northern part of the State, and is bounded on the east by the State of Montana, on the south by Clearwater County, on the west by Latah, Benewah, and Kootenai counties, and on the north by Bonner County. In area it is one of the largest counties in the State covering 2,597 square miles. Lying approximately in the geographical center of the county is the famous Coeur d'Alene mining district, which contains an area of approximately 400 square miles, and which is known throughout the world as one of the largest lead-silver producing regions of the United States.

The entire county is mountainous, containing but a very small area of agricultural land, and is entirely dependent upon the mining and timber industries, particularly mining. These industries are well established, and it is to them that credit must be given for making this county one of the wealthiest in the State, as well as the county having the smallest public debt, one of the lowest tax levies, and the greatest per capita wealth.

It is the largest and most important mining county in the State, and for many years has produced 90 per cent of the lead and 85 per cent of the silver that has been derived from Idaho mines. Its importance can be better judged from the fact that Idaho ranks second in the United States in the production of lead and third in the production of silver. In addition to its production of lead and silver, Shoshone is the principal zinc producing county in the State, and one of the most important gold producers. The other metals which occur
in commercial quantities are copper, antimony, and tungsten. At one time copper was one of the principal metal products and the largest copper mines ever developed in the State were those near Mullan.

The county is served by the O.-W. R. & N. and Northern Pacific railroads, by the Coeur d'Alene-Yellowstone State highway, which is paved between Mullan, Wallace, and Pine Creek, and by well-maintained county roads, which reach the principal mines. Wallace is the county seat and the civic and business center. Kellogg, the home of the Bunker Hill & Sullivan M. & C. Co., is the largest town. The 1930 census accredited the county with a population of 19,060.

1930 Activities

The year 1930 was one of curtailment in production, plant construction, new enterprises, and mine development work. Most of the large companies reduced their production, and some of them suspended entirely. The totals of production, number of men employed, and expenditures for construction and mine plant installation were the smallest that the county has witnessed for many years. The Sherman Lead Co. was the only new dividend paying company; however, the dividend paid in 1930 was from the 1929 profits, and production was suspended in March. Practically all of the large mines, whether they suspended production or not, maintained an active development campaign throughout the year. This work, with scarcely an exception, greatly increased the known ore reserves. A large number of companies improved their mine and mill plants. With increased ore reserves and surface plants in excellent condition, the mining industry of this county is in a position to return rapidly to normalcy as soon as metal prices reach a higher level.

The attention which all of the large operators are giving to safety conditions and supervision was reflected in the very small number of fatal accidents. Working conditions throughout the Coeur d'Alene district are exceptionally favorable. All of the mines are well ventilated, and the operators devote much time, thought, and money to making the mines safe and to keeping them in such a condition that the men can do a full day's work without expending the energy which is required in poorly ventilated mines. It can safely be said that the mines of this district are the best ventilated ones in the United States. The subject of ventilation in the Coeur d'Alene mines was studied in 1930 by G. E. McElroy of the U. S. Bureau of Mines in cooperation with the Idaho Bureau of Mines and Geology. The publication of Mr. McElroy's report on "Mine Ventilation in the Coeur d'Alene Mining District," is expected early in 1931. The solarium, installed by the Bunker Hill & Sullivan M. & C. Co., in 1929, was a distinct contribution to welfare work. It continued to be used throughout the year by a large number of the company's employees and their families, and the results have been beneficial.

The principal producing mines in which the ore reserves were increased by new development work, the most important new construction, new mine plant installations, new enterprises, and outstanding development work can best be reviewed by companies.

The extensive development work in the Bunker Hill mine has greatly increased its resources. The completion of a winze from the 1,900 to the 2,000-foot level and the opening of the ore bodies at that depth, where the ore and geological conditions were found to be normal, together with the opening on Nos. 9 and 10 levels of the new ore first disclosed in 1929 on No. 6 level, have added many years to the life of the mine. The company increased its production but decreased its dividends during the year.

The many plant betterments which were added greatly increased the efficiency of the enterprise. The principal ones were the remodeling of all mills to conform with the most recent developments in flotation, many of which have been evolved under this company's direction, and the doubling of the capacity of the lead smelter. The expenditure for these and other plant improvements constituted the largest expenditure for new plant betterments made in the State during the year. The Crescent or Hooper tunnel, which was started late in 1928, was completed in 1930, and a 500-foot vertical
PARTIAL VIEW, MINE AND MILL PLANTS, BUNKER HILL & SULLIVAN M. & C. CO.
raise was driven to the upper levels. Production from this property was maintained throughout the year.

The enlargements and modernization of the smelter, commenced in 1929, were completed early in 1930. The production for the year, as a result of treating the entire output of the Bunker Hill mines, was the largest of any year since the smelter started operating.

The Bunker Hill & Sullivan M. & C. Co., because of the magnitude of the Bunker Hill mine, has become more of a manufacturing than a mining operation, and with its smelter, mills, experimental plants, and organization, is one of the largest organizations of its kind in the world.

The Hecla Mining Co., which is recognized as one of the principal lead-silver mining companies in the United States, increased its ore reserves in the Hecla mine. Development work, which consisted principally of putting the lower levels in condition for production, was conducted throughout the year. Normal production was maintained until September, when the continued low price of metals caused a reduction to a five-day-week basis. The mine and mill plants were further improved. The usual dividend rate was maintained. The company was actively engaged in developing two other properties in the Coeur d'Alene district and one in Lemhi County, and it maintained throughout the year an active scouting and investigating campaign in a search for additional properties. The management is progressive, and the life of the Hecla mine is assured for many years.

The Morning mine of the Federal Mining & Smelting Co., which is one of the oldest mines in the Coeur d'Alene district in point of continuous production, as well as one of the largest lead-silver-zinc mines in the United States, was maintained at capacity production throughout a large part of the year. The number of years that this record will continue is unknown, as development work on the 3,250, 3,450, and 3,650-foot levels has proved the ore bodies to be larger and more extensive than those on any of the upper levels, and the ore on the 3,450-foot level has been found to be richer in metal content than that on any of the levels above it.

During the year the shaft was extended to a depth of 153 feet below the 3,650-foot level, and the vein was crosscut on the 3,650-foot level. The 3,250-foot level was opened for the full length of the ore, and the 3,450-foot level was opened for a length of 590 feet. The mine and mill plants were greatly enlarged, and the mill was further improved to conform with recent developments in flotation practice. In addition to the ore mined under company operation, a large tonnage was extracted from the upper levels by lessees.

The Page mine of the Federal Mining & Smelting Co., in Government Gulch near Kellogg, was operated throughout the year at capacity production. The mill was enlarged and improved, principally by the addition of new crushing equipment. Additional mine and camp buildings were erected, a large amount of new mining equipment was installed, and approximately 1,000 feet of development work in the Black Hawk ground on the 1,200-foot level of the Page shaft was done. The success of this operation can be accredited entirely to flotation, because with the old milling methods it was impossible to mine and mill the ore at a profit.

The Sullivan Mining Co., which suspended production at the Star mine in 1928, pending completion of the zinc plant, and which resumed in February, 1929, maintained production at the rate of approximately 450 tons per day until April, 1930, when the low price of metals caused a suspension. The 4,000-foot level of the Star mine is connected with the 2,000-foot level of the Hecla mine by the Star crosscut, which is 8,900 feet long. This crosscut made a blind connection with the Star vein at a point 2,800 feet below the Star tunnel. After production was suspended in April, work was continued in driving the vertical operating raise and the vertical shaft which are to connect the Star crosscut and the upper tunnels of the Star mine. Construction of the cadmium recovery plant, which was started in 1929, was completed, and the plant was put into operation in May. In April the zinc plant was put on a greatly curtailed basis. The zinc and cadmium produced by the electrolytic plants of this company are of an especially high
grade and are finding a ready market, the zinc selling at an increase in
price over that of any other zinc metal. The electrolytic plants of this
company now constitute one of the largest and most important enterprises
in the Pacific Northwest, and one which insures the permanence of the
mining industry in Shoshone County.

One of the largest expenditures made by any company in the Coeur
d'Alene district during the year for mine development, new mine plant in-
stallation, and new mill was made by the Jack Waite Mining Co. An extension
of the railroad was graded for a distance of three miles, the principal haul-
age tunnel was entirely rehabilitated and relaid with heavier rails, a new
I-R compressor was added to the mine plant, a new mill building was con-
structed, and the installation of entirely new milling equipment was started.
It was expected to have the mill fully completed and ready for operation
early in 1931. The new mine development work greatly increased the known
ore reserves, and a large tonnage of crude ore and concentrate was
marketed.

The extensive improvement campaign started in 1929 by the Sunshine
Mining Co., which consisted of rebuilding the principal haulage tunnel, No.
5, of constructing a new hoist station and skip pockets, new inclined shaft,
and new buildings, of installing a new hoist and compressor, and of enlarg-
ing the mill to 500-ton capacity, was completed early in 1930, and capacity
production was maintained throughout the year. The inclined shaft was sunk
from the 1,300 to the 1,700-foot level, and a large amount of drifting on the
1,300-foot level and the levels above it was done. This work greatly increased
the ore reserves of the mine. The ore on the 1,300-foot level was found to
be of higher grade and greater extent than on any of the upper levels. This
company is one of the largest producers and dividend payers in the Coeur
d'Alene district, although the low price of silver caused a reduction in the
dividend rate.

One of the principal mines in the Coeur d'Alene district to be placed
on a profitably operating basis in 1929 and the only addition to the list of
dividend paying mines in the State during 1930 was the Sherman Lead Co.
This company's mine is connected with No. 5 tunnel of the Hercules Min-
ing Co., through which it is operated, and the ore is sold to the Hercules
custom mill at Wallace. Production was maintained until March, when the
low price of metals caused a suspension. However, development work was
continued, and over 2,500 feet of raises and drifts were run. This work
exposed a large amount of new ore, which greatly increased the known
resources of the mine. Control of this company is held by the Tamarack &
Custer Consolidated Mining Co.

One of the few companies which maintained production throughout the
year was the Dayrock Mining Co.; however, it reduced to a one-shift basis
in March and later to six days a week. Over 3,000 feet of crosscuts, drifts,
and raises were run on the four principal levels of the Dayrock mine. This
work greatly increased the known ore reserves, and the mine is fast develop-
ing into one of the most important producers in the Coeur d'Alene district.
During the year three additional properties, the Option, Black Cloud, and
California groups, were acquired. This company now has a large, compact
holding as compared with three claims held under lease and option when it
was formed in 1924.

The Golconda Lead Mines enlarged and improved its mine plant, installed
a large electrically driven hoist and compressor, extended its new shaft from
the 1,400 to the 1,800-foot level, and performed a large amount of develop-
ment work on the 1,600 and 1,800-foot levels. The ore opened on these levels
greatly increased the known resources of the mine. Capacity production was
maintained until March 15, when the low price of metals forced a suspension;
however, milling operations on a one-shift basis were resumed on August 1.
The company obtained the property owned by the Square Deal Mining &
Milling Co. under lease and option and started a crosscut on the 1,400-foot
level to develop it. An important discovery of high-grade lead-silver ore was
made late in the year on the surface of the Mayflower group about 2,000 feet
east of the known ore bodies. Logging operations exposed the ore, and work was started in driving a tunnel to explore it. This company is fast becoming recognized as one of the principal operations in Shoshone County.

At the Galena mine of the Callahan Zinc-Lead Co., the principal work consisted of crosscutting to and drifting on the 800 and 1,000-foot levels on the new south vein, which was discovered by diamond drilling in 1928 and opened on the 600-foot level in 1929. This work resulted in exposing such a substantial amount of new ore that the company is fast becoming reestablished as one of the principal operators in the Coeur d'Alene district. As the Galena mine is located in the so-called "dry belt," in the south side of the district, the success it is attaining, particularly as ore and geologic conditions are improving at depth, has been an important factor in stimulating development throughout this section.

At the Sidney mine, operated by the Sidney Leasing Co., the principal shaft was extended 200 feet. A large amount of development work was performed, and production was maintained until July. The new development work, particularly on the lower levels, was successful in greatly increasing the known ore reserves of this mine. The fact that this mine is located on Pine Creek and that the ore is improving in grade and extent as depth is gained has been significant in proving that this section of the Coeur d'Alene district is not without merit; and the success of this enterprise has greatly stimulated mine development in this part of the district.

The Tamarack & Custer Consolidated Mining Co., which operates one of the substantial producing mines of the Coeur d'Alene district, maintained a steady output and an extensive development campaign until late in March, when production was entirely suspended. A crew of 12 men was retained on development work, which consisted of sinking a 200-foot winze on the vein in No. 7 tunnel. It was reported that this work indicated the existence of a new ore body. The development and exploratory work performed during the year amounted to over 2,400 feet. The company's ore is transported in railroad cars to the Hercules mill, which buys the entire output.

The Gold Hunter Mines, Inc., at Mullan, one of the oldest mines in Shoshone County in point of continuous production, maintained capacity output and an extensive development campaign during the first three months of the year. All operations were then suspended because of the low price of metals.

The Constitution Mining & Milling Co. maintained mine development and production until July, when the low price of metals compelled suspension. The principal development work consisted of sinking the vertical shaft from the 600-foot level to the 800-foot level and drifting on the latter level. The new ore exposed by this work greatly increased the known reserves of the mine. The company's expenditure for mine development and mine plant improvement was among the largest expenditures in the Pine Creek section.

Construction of the new mill, which was started late in 1929, by the Pine Creek Lead-Zinc Mining Co. was completed; No. 3 tunnel was rehabilitated; and the mine and mill were placed in condition for production. This company's expenditure was one of the largest made in the Pine Creek section during the year.

The Douglas Mining Co., Ltd., whose property is located on Pine Creek near the Constitution, during the first four months of the year maintained an active development campaign, consisting principally of drifting on the vein at the 300-foot level of the inclined shaft. The new ore developed by this work was one of the important disclosures of the year in the Pine Creek district.

The Atlas Mining Co. conducted active mine development work during the early part of the year, after which this work was suspended. Ore bins and a 2,000-foot aerial tramway, connecting the mine and the mill of the Gold Hunter Mines, Inc., were constructed. Upon the completion of the tramway, mine work was resumed. The mine development consisted of 1,490 feet of crosscuts and drifts, 920 feet of diamond drilling, and the extraction of sufficient ore to make a one-car shipment of concentrate.
The Granada Lead Mines, Inc., a new organization, whose property adjoins that of the Golconda Lead Mines, installed a power line, an electrically driven compressor, and complete mining equipment; erected mine buildings; and commenced driving a long crosscut tunnel. Work on the tunnel was continued without interruption, and it was extended over 500 feet. Two veins containing a good showing of lead-silver ore were encountered. These disclosures greatly increased the attractiveness of the enterprise.

The Metropolitan Mines Corporation, Ltd., whose property is located on Big Creek, extended the power line to its mine and installed an electrically driven compressor during the early part of the year, after which the principal tunnel was extended without interruption.

The Bunker Chance Mining Co., whose property is in Milo Gulch near Wardner, installed an electrically driven compressor and complete mining equipment, and continued its principal tunnel throughout the year.

The New Jersey Consolidated Mines Co., at the King of Pine Creek mine, during the early part of the year extended its vertical shaft to the 300-foot level and did a large amount of drifting on the vein on this level. This work greatly enhanced the possibilities of this enterprise. The work was hampered by an exceedingly large flow of water, which made it necessary to install powerful electrically driven pumps. This company's expenditures were among the largest in the Pine Creek section during 1930.

The Coeur d'Alene Mines Corporation, which is operating the Mineral Point and St. Elmo groups near Osburn, conducted an active development campaign, which consisted of extending the principal tunnel approximately 2,000 feet.

The Stratton Silver Summit, Inc. was one of the principal development enterprises in the Coeur d'Alene district which maintained work throughout the year. The crosscut was extended 1,676 feet to a total distance of 4,716 feet, and 540 feet of a drift was driven west from the crosscut at a point 4,300 feet in from the portal. The drift encountered ore minerals containing good values in silver. This encouragement greatly enhanced the possibilities for a successful outcome.

The Mutual Mines Development Co. was active throughout the year and commenced building a flotation concentrator. Definite information as to its activities and mill construction is lacking.

The General Mines Corporation received a larger amount of publicity from the press than any other mining company in the State. Press reports were to the effect that the principal tunnel was extended, and that this work revealed a mineralization dissimilar to any other in the district.

The Ajax Mining Co. drove over 2,000 feet of tunnels and drifts on the Bixby tunnel level during the year. This company is one of the oldest development enterprises in the Coeur d'Alene district and one which has conducted work without interruption for many years. The development work was encouraging. The company's persistence is deserving of success.

The Independence Lead Mines Co. conducted work throughout the year. A 100-foot vertical shaft was sunk on the vein, and a large amount of drifting at the bottom of the shaft was done. This work encountered a good showing of lead-silver ore.

Little Sunshine Mining Co. added a compressor and an air-driven hoist and started sinking a vertical shaft in April. The shaft is located in the principal tunnel at a distance of 4,200 feet from the portal. It was completed to a distance of 300 feet, and a large amount of exploratory work was done on two levels.

The Coeur d'Alene Mining & Smelting Co., whose property is located on Nine Mile Creek and whose stock is controlled by residents of Wallace, extended its principal tunnel without interruption.

The mill owned by John P. George, operator of the Roberts lease at Wardner in the old Last Chance mine of the Bunker Hill & Sullivan M. & C. Co., was destroyed by fire in June. A new mill was constructed and placed in operation during the closing months of the year.

The United Metals Co., at the Black Bear group, was active for six months and extended the principal tunnel 900 feet.
The Pearson Mining Co., in the St. Joe district near Falcon, was active throughout the year in extending its long crosscut.

Companies whose work amounted to more than the legal requirement and which were active during a large part of the year were as follows:

Blue Eagle Mining Co.; Blue Ribbon Mining Co.; Commercial Traveler Mining Co.; Keystone Mining Co.; North Star Mining & Development Co.; Sonora Mining & Milling Co.; and Vendetta Chief Mining Co.

**AETNA MINING & MILLING CO., LTD.**

**Office:** Wallace. **Officers:** P. J. Maggy, Pres.; W. A. Devan, Sec., both of Wallace. **Inc.:** March 9, 1915. **Capital:** 1,500,000 shares; par value 10c; all shares issued. **Property:** 4 unpatented claims, Lelande dist.; Burke. **Development:** By 2 tunnels: No. 1, 250 ft. long; No. 2, 762 ft. long. **Remarks:** Annual labor only. A stock assessment of 2 mills was levied on Oct. 4.

**AJAX MINING CO.**

**Office:** 714 W. 14th Ave., Spokane. **Officers:** F. Moriarity, Pres.; J. A. Havighorst, Sec., both of Spokane, Wash.; A. G. Anderson, Mgr., Burke. **Inc.:** Oct. 20, 1902. **Capital:** The capital stock was increased to 2,000,000 shares on July 6, 1925; par value $1; 1,614,122 shares issued. **Property:** 17 patented, 3 unpatented claims, Lelande dist.; Burke. **Development:** Principally by 3 tunnels and 3 shafts. Total development approximately 32,000 ft. Main or Bixby tunnel is located in Gorge Gulch a short distance above the town of Burke. This tunnel intersects the Ajax vein at a distance of 6000 ft., at which point is a 400-ft. vertical shaft with over 2000 ft. of drifting at the 200 and 400-ft. levels. **Plant:** MINE: Type-10 I-R 550-cu.-ft. electrically-driven air compressor; 1-R No. 50 steel sharpener; Hoar shovel. **Ore:** Lead-silver. **Men employed:** Average, 12. **Remarks:** Over 2000 ft. of crosscuts and drifts were run on the Bixby tunnel level. Stock assessments were levied during the year as follows: Jan. 7, 1c; June 20, 1c; Oct. 31, 1c.

**ALAMEDA MINING CO.**

**Office:** Wallace. **Officers:** O. W. Lewis, Pres.; James A. Wayne, Sec.-Mgr., both of Wallace. **Inc.:** Feb. 14, 1910. **Capital:** 1,500,000 shares; increased on Sept. 20, 1929, to 2,000,000 shares; par value $1; 1,500,000 shares issued. **Property:** Alameda group; 8 patented, 7 unpatented claims, Lelande dist.; Wallace. **Development:** By 2 tunnels: No. 1, 500 ft. long; No. 2, 3600 ft. long. **Plant:** Electrically-driven I-R compressor and complete mining equipment. **Ore:** Lead-zinc-silver. **Remarks:** Failed to file the reports required by law. A stock assessment of 3 mills was levied on Sept. 25.

**ALHAMBRA MINING CO., LTD.**

**Office:** 504 Empire State Bldg., Spokane, Wash. **Officers:** W. J. C. Wakefield, Pres., Peyton Bldg., Spokane, Wash.; William A. Corey, Sec., Spokane, Wash. **Inc.:** Dec. 26, 1898. **Capital:** 1,000,000 shares; par value $1; 987,399 shares issued. **Property:** Alhambra group; 23 patented claims, Yreka dist.; Kellogg. **Development:** Approximately 13,200 ft. **Ore:** Lead-silver. **Plant:** MINE: 12x12 Laidlaw-Dunn Gordon electrically-driven compressor, complete mining equipment. **Remarks:** Property under lease to Bunker Hill & Sullivan M. & C. Co., which is operating it through the Hooper tunnel on Big Creek.

**ALICE MINING CO.**

**Office:** Wallace. **Officers:** James F. McCarthy, Pres.; Leo J. Hoban, Sec., both of Wallace. **Inc.:** July 30, 1902. **Capital:** 1,000,000 shares; par value $1; all shares issued. **Property:** 21 patented, 2 unpatented claims, Hunter dist.; 3½ miles east of Wallace. **Development:** 10,000 ft. of underground workings. **Plant:** MINE: Complete mine camp and buildings. **MILL:** Partly dismantled 125-ton concentrator. **Ore:** Lead-silver. **Remarks:** Idle.
ALMA RAY MINING CO.

ALPENA COPPER MINING CO., LTD.

AMAZON MANHATTAN MINING CO.

AMBERGRIS CONSOLIDATED MINING CO.
Office: Wallace. Officers: Harry L. Day, Pres.; W. B. Heitfeld, Sec., both of Wallace. Inc.: Dec. 14, 1928. Capital: 3,500,000 shares; par value $1; 3,476,300 shares issued. Property: Ambergris, Guelph, and Honolulu groups; 13 patented, 10 unpatented claims, Beaver and Lelande dists.; Burke. Development: Mine opened and operated through No. 5 Hercules tunnel, in addition to which there are 8 intermediate tunnels and 3 shafts; total development, approximately 19,000 ft. Plant: Mine plant and equipment leased from Hercules Mining Co. Ore: Lead-silver. Remarks: This is a consolidation of the Ambergris Mines Co., the Guelph Mining & Milling Co., Ltd., and the Honolulu Mining Co., Ltd. Annual labor only and a small amount of work by lessees, who extracted and shipped a small tonnage of mill ore.

AMERICAN LEAD MINES, LTD.

AMERICAN METALS CORPORATION

AMERICAN MINING CO., LTD.

ANACONDA COPPER MINING CO.
ANCHOR MINING CO.

ARCTIC MINING & MILLING CO., LTD.

ARGENTA MINING CO., LTD.

ASSOCIATED MINES CORPORATION, LTD.
Office: Lindelle Bldg., Spokane, Wash. Officers: Matt Baumgartner, Pres.-Mgr., Spokane, Wash.; Roy H. Kingsbury, Sec., Wallace. Inc.: Nov. 7, 1930. Capital: 3,000,000 shares; par value 10c; shares issued, unknown. Remarks: This company was organized with assessable stock to take over the property of the Delaware Mines Corporation, whose stock is non-assessable.

ATLANTIC MINING CO.
Office: Mullan. Officers: Thomas F. Keeley, Pres., 516 E. 28th St., Chicago; Charles K. Cartwright, Sec.; W. Earl Greenough, Mgr., both of Mullan. Inc.: Mar. 4, 1924. Capital: 2,000,000 shares; par value $1; all shares issued. Property: Atlas group; 19 patented, 19 unpatented claims, Hunter dist.; Mullan. Development: 7 tunnels and 2 inclined shafts; the principal of which is the Atlas tunnel 7030 ft. long, at the end of which is the Carbonate Hill drift 3000 ft. long. Plant: Electrically driven compressor, and complete mining equipment. Ore: Lead-silver. Men employed: Average, 12. Remarks: The property of the Atlas Mining Co. is a consolidation of four properties, the Carbonate Hill, Idaho Giant, Boulder Creek, and Atlas, on which there is approximately 22,000 ft. of tunneling, drifting, crosscutting, and sinking. Active mine development work during the early part of the year, after which this work was suspended. Ore bins and a 2000-ft. aerial tramway connecting the mine and the mill of the Gold Hunter Mines, Inc., were constructed. Upon the completion of the tramway, mine work was resumed. The mine development consisted of 1490 ft. of crosscuts and drifts, 920 ft. of diamond drilling, and the extraction of sufficient ore to make a one-car shipment of concentrate. Stock assessments were levied as follows: March 18, 1c; June 27, 1c.

ATLAS MINING CO.
Office: Mullan. Officers: James A. Wayne, Pres.; M. M. Yeoman, Sec., both of Wallace; W. Earl Greenough, Mgr., Mullan. Inc.: Nov. 24, 1906, as Carney Copper Co., Ltd. Name changed Jan. 7, 1928. Capital: 1,500,000 shares; par value $1; 746,042 shares issued. Property: Carney group; 9 unpatented claims; Mullan. Development: By 3 tunnels: No. 1, 500 ft. long; No. 2, 1600 ft. long; No. 3, 1050 ft. long. Remarks: Control of stock in this company is held by the Atlas Mining Co.
AULBACH GROUP
Owner: Adam Aulbach, Murray. Property: Aulbach group; 5 patented, 1 unpatented claim, Coeur d'Alene dist.; Murray. Development: By 3 tunnels, the longest of which is No. 2, 450 ft. long. Ore: Lead-silver. Remarks: This property is one of the oldest locations in the Coeur d'Alene district and has been held almost continuously by the present owner.

BASIN MINING CO.

BEAR PLACER MINING CO.

BELL MINING CO.

BELL OF THE WEST MINING CO.
Office: Wallace. Officers: George R. Trask, Pres.-Mgr.; M. E. Trask, Sec., both of Wallace. Inc.: Oct. 23, 1899. Capital: 1,500,000 shares; par value 5¢; all shares issued. Property: Bell of the West group; 2 patented, 4 unpatented claims, Placer Center dist.; Wallace. Development: 2 tunnels: No. 1, 250 ft. long; No. 2, 1000 ft. long with 300 ft. of crosscuts. Plant: Electrically driven hoist and I-R compressor; complete mining equipment and mine camp. Ore: Lead-silver. Men employed: Average, 8. Remarks: This company's property was under option to Western Mines, Ltd., until June 1, 1930, when the lease and option was transferred to the Silver Cloud Mines, Inc.

BELMONT MINING CO., LTD.

BENTON MINING CO., LTD.

BIG DIVIDE MINING CO., LTD.

BIG ELK MINING CO., LTD.
BIG IT MINING & MILLING CO.

BIG THREE MINING CO.
Office: Wallace. Officers: William Tyler, Pres., Burke; Therrett Towles, Sec., Wallace. Inc.: Sept. 14, 1929. Capital: 1,500,000 shares; par value 25c; 963,200 shares issued. Property: 6 patented, 2 unpatented claims, patented land being held under lease and option; Lelande dist.; Burke. Development: By 2 tunnels: No. 1, 90 ft. long; No. 2, 800 ft. long. Ore: Lead-silver. Remarks: After organization was completed, development work was started. A stock assessment of 2 mills was levied on May 27.

BISMARCK MINING CO.

BITTER ROOT MOUNTAIN MINING CO.

BLACK BEAR MINES CO.

BLACK HAWK MINING & DEVELOPMENT CO., LTD.

BLAINE & EMMETT MINING CO., LTD.

BLUE EAGLE MINING CO.
complete mining equipment. **Ore: Lead-zinc-silver. Men employed:** Average, 2. **Remarks:** A small amount of road construction and the principal tunnel extended a short distance during the year. A stock assessment of 1 mill was levied on May 5.

**BLUE RIBBON MINING CO.**
Office: 601 N. Monroe St., Spokane, Wash. **Officers:** Al Harris, Sec., Spokane, Wash. **Inc.:** Oct. 22, 1914. **Capital:** 1,500,000 shares; par value 10c; 388,000 shares issued. **Property:** Blue Ribbon group; 9 unpatented claims, Hunter and Lelande dists.; Burke. **Development:** Principally by 1 tunnel 2,500 ft. long. **Men employed:** Average, 3. **Remarks:** Active throughout the year. Stock assessments were levied as follows: Jan. 2, 1 mill; March 24, 1 mill; May 19, 1 mill.

**BLUE STAR MINING & MILLING CO., LTD.**
Office: Kingston. **Officers:** Peter Weida, Pres., Kellogg; A. C. Morbeck, Sec., Kingston. **Inc.:** June 8, 1901. **Capital:** 1,000,000 shares; par value $1; 800,000 shares issued. **Property:** 160 acres patented land, Yreka dist.; Kingston.

**BLUE WING MINING CO., LTD.**
Office: Wallace. **Officers:** Herman J. Rossi, Sec., Wallace. **Inc.:** July 8, 1901. **Capital:** 1,000,000 shares; par value 10c; all shares issued. **Property:** Blue Wing group; 3 patented, 12 unpatented claims, Placer Center dist.; Wallace. **Plant:** Electrically driven compressor; complete mining equipment. **Ore:** Lead-silver. **Remarks:** Property under lease and option. Lessee extended principal tunnel approximately 1000 ft. during the year.

**BOBBY ANDERSON GROUP MINING CO.**
Office: Kellogg. **Officers:** F. N. Johnson, Pres., Spokane, Wash.; T. R. Mason, Sec., Kellogg. **Inc.:** June 16, 1906. **Capital:** 1,500,000 shares; par value $1. Increased on March 25, 1929, to 2,000,000 shares; par value $1; 1,935,000 shares issued. **Property:** Bobby Anderson group; 15 unpatented claims, Yreka dist.; Kellogg. **Development:** Principally by 1 tunnel 1800 ft. long and an inclined shaft 100 ft. long. **Plant:** Electrically-driven compressor and hoist; complete mining equipment and camp. **Ore:** Lead-zinc-silver. **Men employed:** Average, 9. **Remarks:** Late in the year a contract was given to extend the principal tunnel 500 ft. A stock assessment of 5 mills was levied on Oct. 25.

**BONANZA MINES CORPORATION**
Office: Wallace. **Officers:** Therrett Towles, Sec., Wallace. **Inc.:** July 12, 1927. **Capital:** 1,500,000 shares; par value 25c; 613,503 shares issued. **Remarks:** Owns no property.

**BRITISH AMERICAN MINES & SMELTER CORPORATION**
Office: Smith Tower Bldg., Seattle, Wash. **Inc.:** Not filed in Idaho. **Remarks:** Has never filed the reports required by law.

**BULLFROG SILVER LEAD MINING CO.**
Office: Burke. **Officer:** L. J. Oatman, Burke. **Inc.:** May 17, 1930. **Capital:** 500,000 shares; par value 20c. **Remarks:** Failed to file the reports required by law.

**BULLION MINING CO., LTD.**
Office: Wallace. **Officers:** William Squance, Pres.; James H. Taylor, Sec.-Mgr., both of Wallace. **Inc.:** Dec. 5, 1902. **Capital:** 1,500,000 shares; par value $1; all shares issued. **Property:** Bullion group; 16 patented, 1 unpatented claim, St. Joe dist.; Mullan. **Development:** 3 tunnels: No. 1, 500 ft. long; No. 2, 2000 ft. long; No. 3, 4800 ft. long; 1 vertical shaft 100 ft. deep. **Plant:** Pelton water wheel driving an I-R compressor. **Ore:** Copper-gold. **Remarks:** Idle throughout the year.

**BUNKER CHANCE MINING CO.**
Office: Wardner. **Officers:** Nick Petrinovich, Pres.-Mgr.; R. L. Brainard, Sec., both of Wardner. **Inc.:** May 8, 1922. **Capital:** 1,500,000 shares; par value 25c; 1,200,000 shares issued. **Property:** Bunker Chance group; 1 patented, 6 unpatented claims, Yreka dist.; Wardner. **Development:** By
SHOSHONE COUNTY

4 tunnels, the principal one of which is 1250 ft. long. **Plant:** Electrically driven 7x9 I-R compressor and complete mining equipment. **Ore:** Lead-silver. **Men employed:** Average, 2. **Remarks:** Mine plant and equipment were installed and the principal tunnel was extended without interruption throughout the year.

**BUNKER HILL & SULLIVAN MINING & CONCENTRATING CO.**

**Office:** Kellogg. **Officers:** F. W. Bradley, Pres.; J. W. Crosby, Sec., both of 1022 Crocker Bldg., San Francisco, Calif.; Stanley A. Easton, Mgr., Kellogg. **Inc.:** Originally incorporated in Oregon and filed in Idaho, Aug. 20, 1903; changed to a Delaware corporation and filed in Idaho, April 16, 1924. **Capital:** 327,000 shares common; par value $10; 20,000 shares preferred; par value $100; all common shares issued. **Property:** Bunker Hill; 355 patented, 44 unpatented claims, Yreka dist.; Kellogg. **Development:** The principal adit is the Kellogg tunnel, which is 24,000 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. In the main shaft are 13 intermediate levels. Total development, approximately 60.6 miles. **Plant:** MINE: 2 electrically driven hoists, 2 electrically driven I-R compressors, one 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: Four 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 1140.

**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 completed early in 1930. The production for the year, as a result of treating the entire output of the Bunker Hill mines, was the largest of any year since the smelter started operating.

**REMARKS**

This company is the largest dividend payer and maintains the largest pay roll of any mine in Idaho; it is also the largest producer of lead-silver ore in the State, if not in the world; and is one of the few companies in the United States that mine, mill, smelt, refine, manufacture, and sell lead ore and lead products. The enterprise, particularly the mine
and mill, has been established for such a long period and all operations have become so well founded that it has practically expanded into a manufacturing operation. The mine is opened by over 59 miles of underground workings and has a sufficient tonnage of ore reserves to assure many years of continued operations.

During the past few years this organization has been actively engaged in prospecting and developing mining properties throughout the State, and during 1924 acquired the mines owned by the Hall-Interstate Mining Co. and the Lost Pilgrim Mining Co., situated near the head of the Deadwood River in Valley County. The interest shown in developing lead mines outside of the Coeur d'Alene district is having a tremendous influence in attracting attention to the State's undeveloped resources.

The management is progressive and intelligent and an unusual amount of initiative is shown in the conduct of the affairs of the company and civic activities. An excellent spirit of cooperation has been created and maintained in the employees, and everything possible is done to promote their welfare. The common stock was listed on the New York Curb Exchange during the latter part of 1926; in January, 1927, it sold at a low of $67.50 per share; in March, 1929, it had risen to a high of $165 per share, and in January, 1930, it had dropped to a low of $48 per share, these being the highest and lowest points.

This company owns a 50 per cent interest in the Hecla Mining Co. in the Sullivan Mining Co., the owner of the Star mine in the Coeur d'Alene district; and a 50 per cent interest in the Alaska-Treadwell Gold Mining Co. and the Treadwell Yukon Co., Ltd., both of Alaska. Ore from the latter property was shipped to the smelter at Kellogg. In addition to the foregoing, the company is actively interested in developing properties in Nevada; at Sudbury, Ontario, Canada; and the Green Mountain group in the Elk City district, Idaho County, Idaho.

The extensive development work in the Bunker Hill mine has greatly increased its resources. The completion of a winze to the 2000-ft. level and the opening of the ore bodies at that depth, where the ore and geological conditions were found to be normal, together with the opening of Nos. 9 and 10 levels of the new ore first disclosed in 1929 on No. 6 level, have added many years to the life of the mine. The company increased its production but decreased its dividends during the year.

The many plant betterments which were added greatly increased the efficiency of the enterprise. The principal ones were the remodeling of all mills to conform with the most recent developments in flotation, many of which have been evolved under this company's direction, and the doubling of the capacity of the lead smelter. The expenditure for these and other plant improvements constituted the largest expenditure for new plant betterments made in the State during the year. The Crescent or Hooper tunnel, which was started late in 1928, was completed in 1930, and a 500-ft. vertical raise was driven to the upper levels. Production from this property was maintained throughout the year.

BURKE MINING CO., LTD.


BUTTE & COEUR D'ALENE DEVELOPMENT CO.

MINING INDUSTRY OF IDAHO

CALABRIA MINING CO.

CALEDONIA MINING CO.

CALEDONIA SILVER-LEAD MINING CO.

CALLAHAN ZINC-LEAD CO.
Office: Wallace. Officers: D. A. Callahan, Pres.; C. W. Newton, Sec.-Mgr., both of Wallace. Inc.: July 18, 1912, as Consolidated Interstate Mining Co.; name changed March 25, 1921. Capital: 1,000,000 shares; par value $10; 716,592 shares issued.

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

GALENA MILL: CALLAHAN ZINC-LEAD CO.
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. Men employed: Average, 2. Remarks: At one time this property was one of the largest zinc mines in the United States. No ore has been mined since October, 1923.

GALENA MINE
Property: Chicago-Boston, Killbuck, Vulcan, Argentine, Wallace, and Silver Range groups; 31 patented, 67 unpatented claims, Lake Gulch, Placer Center dist.; Wallace. Development: By 33 tunnels, a 600-ft. vertical shaft, and an 800-ft. vertical winze in the 600-ft. level. Total development, approximately 34,000 ft. Plant: MINE: One 150-h. p. Lidgerwood, one 200-h. p. Coeur d'Alene Hdw. electrically-driven hoist; 3 I-R electrically-driven compressors, total capacity 1500 cu. ft.; complete equipment and mine camp. MILL: 150-ton flotation. Ore: Lead-silver. Men employed: Average, 30. Remarks: An extensive development campaign was maintained throughout the year and the mill was operated on a one-shift basis on ore extracted in development work. The principal work consisted of crosscutting to and drifting on the 800 and 1000-ft. levels on the new south vein, which was discovered by diamond drilling in 1928 and opened on the 600-ft. level in 1929. This work resulted in exposing such a substantial amount of new ore that this company is fast becoming reestablished as one of the principal operators in the Coeur d'Alene district. As the Galena mine is located in the so-called "dry belt," in the south side of the district, the success it is attaining, particularly as ore and geologic conditions are improving at depth, has been an important factor in stimulating development throughout this section.

CARBONATE MINING & MILLING CO.

CEDAR CREEK MINING & DEVELOPMENT CO., LTD.
Office: Wallace. Officers: Charles Bollinger, Pres.; L. W. Defenbach, Sec., both of Wallace. Inc.: June 28, 1905. Capital: 1,000,000 shares; par value $1; all shares issued. Property: Cedar Creek group; 5 patented, 28 unpatented claims, Summit dist.; Murray. Development: 3 tunnels: No. 1, 1200 ft. long; No. 2, 2125 ft. long; No. 3, 4430 ft. long; 1 inclined shaft 343 ft. long. Total development, approximately 9500 ft. Plant: MINE: 12x12 electrically-driven compressor and air-driven hoist; complete mining equipment and camp. MILL: 100-ton flotation concentrator. Ore: Lead-zinc-silver. Men employed: Average, 3. Remarks: A small amount of development work during the year. Stock assessments were levied as follows: March 26, 1c; June 25, 1c.

CENTRAL MINING CO.

CHESTER MINING CO., LTD.
CINCINNATI MINING CO.

CLEAR GRIT MINING CO., LTD.

CLIMAX SILVER-LEAD MINING CO.

COEUR D'ALENE BIG CREEK MINING CO.

COEUR D'ALENE CHAMPION MINING CO.

COEUR D'ALENE CRESOENT MINING CO.

COEUR D'ALENE EAGLE LEAD SILVER MINING CO., LTD.

COEUR D'ALENES LEAD CO.
Office: Wallace. Officers: Walter H. Hanson, Pres.; Herman Marquardt, Sec., both of Wallace. Inc.: Apr. 28, 1927. Capital: 4,000,000 shares; par value $1; 3,550,000 shares issued. Remarks: "The only assets of this company are 500,000 shares of the capital stock of the Atlas Mining Co." Stock assessments of 2 mills each were levied on July 24 and Nov. 7.

COEUR D'ALENE METALS CO.

COEUR D'ALENE MINES CORPORATION
Office: 605 Columbia Bldg., Spokane, Wash. Officers: George Turner, Pres.; F. E. Coffeen, Sec.; S. H. Richardson, Mgr., all of Spokane. Inc.: Nov. 1, 1928. Capital: 3,000,000 shares; par value $1; 1,473,934 shares issued. Property: Mineral Point and St. Elmo groups; 2 patented, 14 unpatented claims, held under lease and option; Evolution dist.; Osburn. Development: By 12 tunnels: No. 3, 1000 ft. long; No. 4, 1100 ft.
long; No. 5, 4600 ft. long. Total development, approximately 9500 ft.
Plant: 350-cu. ft. Worthington compressor, electrically driven; complete
mining equipment. Ore: Lead-silver. Men employed: Average, 7. Remarks:
Active development campaign maintained throughout the year
without interruption.

COEUR D'ALENE MINING CO.
John P. Wright, Sec., both of Boston, Mass. Inc.: July 20, 1900. Capital:
125,000 shares; par value $10; 118,586 shares issued. Property: Placer
claims, which were exhausted by Yukon Gold Co.

COEUR D'ALENE MINING & SMELTING CO.
both of Wallace. Inc.: July 18, 1904. Capital: 1,000,000 shares; par
value $1; 923,800 shares issued. Property: 9 unpatented claims, Placer
Center dist.; Wallace. Development: By 2 tunnels: No. 1, 450 ft.; No. 2,
The principal tunnel was extended without interruption. Stock assessments
were levied as follows: April 17, 3 mills; Sept. 24, 3 mills.

COEUR D'ALENE SILVER-LEAD MINING CO.
Office: 1004 E. 8th Ave., Spokane, Wash. Officers: Charles J. Heidenreich,
Capital: 1,200,000 shares; par value $1; 752,800 shares issued. Property:
6 patented claims, Hunter dist.; Mullan. Development: By 2 tunnels:
No. 1, 1200 ft. long; No. 2, 300 ft. long. Ore: Lead-silver. Remarks:
Idle for 10 years.

COEUR D'ALENE SYNDICATE MINING CO.
Office: Wallace. Officers: Philip Wiseman, Vice-Pres.; P. Kenneth Wise-
man, Sec., both of 1206 Pacific Mutual Bldg., Los Angeles, Calif. Inc.: Sept.
16, 1922. Capital: 900,000 shares; 200,000 preferred, par value $5;
700,000 common, par value $1; $5,333 common shares issued. Property:
Flynn and Senator groups held under lease and bond; 42 patented, 4 un-
patented claims, Lelande and Hunter dists.; Gem. Development: 11,000
compressor; drill sharpener and complete mining equipment; Hoar shovel.
Ore: Lead-silver. Remarks: Failed to file the reports required by law.

COLUMBIA COPPER CO., LTD.
Office: Wallace. Officers: Joseph Huber, Pres.-Mgr., Mullan; C. W.
Betts, Sec., Wallace. Inc.: April 24, 1914. Capital: 2,500,000 shares; par
value $1; 1,635,385 shares issued. Property: Columbia group; 22 unpat-
eted claims, Hunter dist.; Mullan. Development: By 11 tunnels, totaling
approximately 2500 ft. Ore: Lead-silver, copper. Remarks: Annual
labor only.

COMMERCIAL TRAVELER MINING CO.
Office: 203 Standard Stock Exchange Bldg., Spokane, Wash. Officers:
H. N. Dias, Pres.; M. L. Lieb, Sec., both of Spokane; Otto Achord, Mgr.,
Masjonla. Inc.: May 6, 1926. Capital: 2,000,000 shares; par value 5c;
1,666,665 shares issued. Property: 12 unpatented claims, Pine Creek,
Yreka dist.; Kellogg; held under lease and option from Shrine Mining Co.
Development: By 4 tunnels, the principal one of which is 1800 ft. long.
Plant: Electrically-driven D-G compressor; complete mining equipment
and camp. Ore: Lead-zinc-silver. Men employed: Average; 4. Remarks:
The principal tunnel was extended a short distance during the year. A
stock assessment of 5 mills was levied on March 28.

COMSTOCK COPPER MINING CO.
both of Wallace. Inc.: Nov. 23, 1906. Capital: 1,000,000 shares; par
value $1; all shares issued. Remarks: The officers of this company report
that the property has been sold to the British American Mines & Smelter
Corporation. The latter company has never filed articles of incorporation
in Idaho, nor has it filed with the inspector of mines the reports required
by law.
CONSOLIDATED INDEPENDENT CALUMET MINING CO.
Office: Wallace. Officers: John H. Nordquist, Pres.-Mgr.; A. G. Kennedy, Sec., both of Wallace. Inc.: Oct. 9, 1906, as Lucky Calumet Copper Mining Co., Ltd. Name changed Nov. 24, 1928. Capital: 1,500,000 shares; par value $1; 1,134,267 shares issued. Property: Lucky Calumet group; 13 patented, 2 unpatented claims, Hunter dist.; Mullan. Development: Principally by 2 tunnels: No. 1, 1400 ft. long; No. 2, 1950 ft. long. Total development, approximately 12,585 ft. Plant: Electrically driven 5-drill I-R two-stage compressor; complete mining equipment and camp. Ore: Lead-silver. Men employed: Average, 5. Remarks: Active development work for 3 months. This company is developing its property through the lower tunnel of the National Copper Mining Co., Ltd. A stock assessment of 5 mills was levied on April 16.

CONSOLIDATED METALS, INC.
Office: Wallace. Officers: Geo. D. Evans, Wallace. Inc.: Oct. 21, 1921. Capital: 1,000,000 shares; par value 25c. Remarks: Has never filed the reports required by law. Supposed to have a lease on part of the property owned by the Lincoln Mining Co.

CONSTITUTION MINING & MILLING CO.
price of metals compelled suspension. The principal development work consisted of sinking the vertical shaft from the 600-ft. level to the 800-ft. level and drifting on the latter level. The new ore exposed by this work greatly increased the known reserves of the mine. The expenditure for mine development and mine plant improvement was one of the largest expenditures in the Pine Creek section. This enterprise is fully described in the September, 1929, issue of the Mining Congress Journal.

**Copper Chief Mining Co.**

**Office:** Wallace. **Officers:** D. E. Wickward, Pres.; James H. Taylor, Sec.-Mgr., both of Wallace. **Inc.:** Sept. 25, 1907. **Capital:** 1,000,000 shares; par value $1; all shares issued. **Property:** Copper Chief group; 7 patented, 4 unpatented claims, St. Joe dist.; Adair. **Ore:** Copper-gold. **Remarks:** Failed to file the reports required by law.

**Copper King Mining & Smelting Co.**

**Office:** Wallace. **Officers:** W. B. Heitfeld, Pres.; W. A. Devan, Sec., both of Wallace. **Inc.:** Aug. 13, 1901. **Capital:** 1,500,000 shares; par value $1; 1,224,402 shares issued. **Property:** Copper King group; 18 patented, 3 unpatented claims, Lelande and Hunter dist.; Mullan. **Development:** Principally by 3 tunnels: No. 1, 200 ft. long; No. 2, 2000 ft. long; No. 3, 5000 ft. long. Total development, approximately 10,000 ft. **Plant:** Electrically driven compressor; complete mining equipment and camp. **Ore:** Lead-silver. **Remarks:** Mining claims patented during the year. Stock assessments were levied as follows: April 17, 5 mills; Sept. 8, 5 mills.

**Corby Lode Mining Co.**

**Office:** Kellogg. **Officers:** John B. Steffes, Pres.-Mgr.; F. William Voigtlander, Sec., both of Kellogg. **Inc.:** Jan. 27, 1930. **Capital:** 1,000,000 shares; par value 25c; 6018,000 shares issued. **Property:** Corby group; 5 unpatented claims, Pine Creek, Yreka dist.; Kellogg. **Development:** 1 tunnel 650 ft. long. **Ore:** Gold-copper-silver.

**C. & R. Mining Co.**

**Office:** 812 Old Nat'l Bank Bldg., Spokane, Wash. **Officers:** E. R. Week, Pres.; Ben L. Collins, Sec.; Russell P. Collins, Mgr., all of Spokane, Wash. **Inc.:** June 16, 1904. **Capital:** 1,250,000 shares; par value $1; all shares issued. **Property:** C. & R. group; 10 patented claims, on Sunset Peak, Lelande dist.; Burke. **Development:** By 3 tunnels: No. 1, 400 ft.; No. 2, 1200 ft.; No. 3, 6000 ft. **Plant:** Electrically-driven I-R compressor; complete mining equipment. **Ore:** Lead-silver. **Remarks:** Refused to file the reports required by law.

**Cuba Mining Co.**

**Office:** Wallace. **Officers:** W. H. Hanson, Pres.; Herman Marquardt, Sec., both of Wallace. **Inc.:** Nov. 18, 1899. **Capital:** 1,000,000 shares; par value $1; all shares issued. **Property:** Cuba group; 2 patented claims, Placer Center dist.; Wallace. **Development:** 2 tunnels: No. 1, 500 ft. long; No. 2, 1100 ft. long. **Plant:** Electrically-driven I-R compressor; complete mining equipment. **Ore:** Lead-silver. **Remarks:** Idle.

**Day Development Co.**

**Office:** Wallace. **Officers:** Harry L. Day, Pres.; W. B. Heitfeld, Sec., both of Wallace. **Inc.:**Filed in Idaho as Hercules Exploration Co. Nov. 27, 1928; named changed Nov. 25, 1930. **Capital:** 10,000 shares; par value $100; 10 shares issued.

**Dayrock Mining Co.**

**Office:** Wallace. **Officers:** F. M. Rothrock, Pres., Spokane; Jerome J. Day, 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; 1,755,800 shares issued. **Property:** Dayrock, Panhandle, and Monarch-Bonanza groups; 35 patented, 19 unpatented claims, Placer Center dist.; Wallace. **Development:** Dayrock group: Principally by 1 tunnel 1450 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 380 ft. long, with 3 intermediate levels, which opens the vein to a
vertical depth of 253 feet. Total development in both groups, over 21,000 ft. **Plant:** Electrically driven hoist and 2 electrically driven compressors; complete mining equipment; storage-battery locomotive haulage. **Ore:** Lead-silver. **Men employed:** Average, 50. **Remarks:** Other than rehabilitation and annual labor all operations were confined to the Dayrock group. Over 3000 ft. of crosscuts, drifts, and raises were run on the four principal levels. Production was maintained without interruption; however, it was reduced to a one-shift basis in March and later to 6 days a week. The ore is sold to the Hercules custom mill at Wallace. Three additional properties, Option, Black Cloud, and California groups, were acquired. This company now has a large compact holding as compared with the three claims held under lease and option in 1924. The property is conservatively and intelligently managed, and the management is to be congratulated upon the attention which it gives to safety and avoidance of accidents. The development work of the past year greatly increased the known ore reserves. The mine is fast developing into one of the most important producers of the Coeur d'Alene district.

**SURFACE PLANT: DAYROCK MINING CO.**

**DECKER DEVELOPMENT CO.**

*Office:* Kellogg. **Officers:** George Decker, Pres.-Mgr.; Mrs. M. E. Morgan, Sec., both of Kellogg. **Inc.:** Oct. 1, 1927. **Capital:** 500,000 shares; par value 10c; 244,430 shares issued. **Property:** Stewart group; 11 patented, 8 unpatented claims, held under lease; Yreka dist.; Kellogg. **Development:** By Fir tunnel, 2400 ft. long. **Ore:** Lead-silver. **Remarks:** Idle.

**DEEP WONDER MINE**

*Office:* 408 Ziegler Bldg., Spokane, Wash. **Officers:** Charles J. Kapps, Trustee, Spokane, Wash. **Property:** Deep Wonder group; 12 patented claims, Hunter dist.; Mullan. **Ore:** Lead-silver. **Remarks:** Property under lease and option to Mutual Mines Development Co.

**DEER CREEK MINING CO.**

*Office:* Wallace. **Officers:** C. E. Biggs, Pres.; N. S. Jacobs, Sec., both of Spokane, Wash. **Inc.:** May 23, 1925. **Capital:** 2,000,000 shares, par value 1c; increased on Jan. 22, 1930, to 2,000,000 common, par value 20c, 10,000 preferred, par value $10; 1,491,000 common issued. **Property:** 30 unpatented claims, part of which are held under lease and option, Beaver dist.; Wallace. **Development:** Principally by an 800-ft. tunnel and a 100-ft.
SHOSHONE COUNTY

inclined shaft. Plant: Gas-driven 10x12 Sullivan compressor and hoist; complete mining equipment and camp. Ore: Lead-silver. Remarks: Annual labor only. Part of 2 claims under lease to Delta Leasing Co.

DELWARE MINES CORPORATION
Office: 323 Lindelle Bldg., Spokane, Wash. Officers: Matt Baumgartner, Pres.; A. L. Hooper, Sec., both of Spokane; F. C. Bailey, Mgr., Wallace. Inc.: March 10, 1926. Capital: 5,000,000 shares; par value 10c; 3,416,201 shares issued. Property: Rex and Red Monarch groups; 6 patented, 51 unpatented claims, Placer Center and Beaver dists.; Wallace. Development: By 4 tunnels, the principal of which are No. 4 or Rex tunnel, approximately 4000 ft. long, in which is a vertical shaft 700 ft. deep; and Red Monarch tunnel, 5900 ft. long. Plant: 3 electrically driven compressors; complete mining equipment and 2 mine camps. Ore: Lead-zinc-silver. Remarks: Failed to file the reports required by law. A preliminary report filed by the Associated Mines Corporation stated that the latter company, whose stock is assessable, was being organized to take over the assets of this company, whose stock is nonassessable.

DICKENS CONSOLIDATED MINES CO.

DICKENS-EAST MINING CO.

DOUGLAS MINING CO., LTD.

DU BOIS MINING CO.

DULUTH MINING CO.
EAGLE CREEK GOLD MINING CO.

EAST ALAMEDA MINING CO., LTD.

EAST CALEDONIA MINES CO.

EAST HECLA MINING CO., LTD.

EAST STANDARD MINING CO.
Office: Wallace. Officers: J. E. Gyde, Sec., Wallace. Inc.: Aug. 9, 1911. Capital: 1,000,000 shares; par value $1. Remarks: Has refused to file the reports required by law since 1926. The Big Three Mining Co. reports that it is operating the property owned by this company under a lease and option.

EASTERN STAR MINING CO., LTD.

ELDORADO MINING & SMELTING CO., LTD.

ELGIN & OGDEN MINING CO.

ENCHANTED HILL MINING CO.
ENTERPRISE MINING CO.

EQUITABLE MINING & MILLING CO.

EVOLUTION MINING CO.
Office: Wallace. Officers: Montgomery Waddell, Pres., New York City; Julius P. Hall, Mgr., Wallace. Inc.: July 25, 1927. Capital: 1,000,000 shares; par value $1; all shares issued. Property: Evolution group; 8 unpatented claims, Evolution dist.; Osburn; held under lease and option from the Coeur d'Alene Crescent Mining Co. Development: By 1 tunnel 1500 ft. long; a vertical shaft 300 ft. deep; and an inclined shaft 800 ft. long, giving a vertical depth of 340 ft. Plant: Electrically-driven compressor and hoist; complete mining equipment. Ore: Lead-silver. Remarks: Idle through the year.

FANNIE GREMM MINING CO.

FEDERAL MINING & SMELTING CO.
Office: 120 Broadway, New York City. Officers: F. H. Brownell, Pres.; J. L. Martin, Sec., both of New York City; H. G. Washburn, Mgr., Wallace. Inc.: Sept. 24, 1903. Capital: 200,000 shares preferred, 100,000 shares common; par value of each, $100; 29,876 shares preferred, 60,000 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, 2850 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 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-D. C.) 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. Ricks 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, including flotation. Two ore-sorting plants and complete modern change house. Ore: Lead-silver-zinc. Men employed: Average, 540, exclusive of lessees. Remarks: Capacity production maintained throughout the year. The number of years that this record will
MORNING MILL AND SURFACE PLANT, FEDERAL M. & S. CO.
SHOSHONE COUNTY

PAGE MINE: FEDERAL M. & S. CO.

continue is unknown, as development work on the 3250, 3450 and 3650-ft. levels has proved the ore bodies to be larger and more extensive than on any of the upper levels, and the ore on the 3450-ft. level has been found to be richer in metal content than on any of the levels above it. During the year the shaft was extended to a depth of 153 ft. below the 3650-ft level, and the vein was crosscut on the 3650-ft. level. The 3250-ft. level was opened for the full length of the ore, and the 3450-ft. level was opened for a length of 590 ft. The mine and mill plants were greatly enlarged, and the mill was further improved to conform with recent developments in flotation practice. In addition to the ore mined under company operation, a large tonnage was extracted from the upper levels by lessees.

PAGE GROUP

Property: 86 patented claims, Yreka dist.; Kellogg. Development: By 9 tunnels, the principal one of which is the Curlew, 650 ft. long; and an inclined shaft 900 ft. long, giving a vertical depth of 700 ft. Total development, approximately 23,000 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 2 storage-battery locomotives; complete and modern mine camp, equipment and buildings. MILL: 300-ton flotation concentrator. Ore: Lead-zinc-silver. Men employed: Average, 119. Remarks: During the year the mill was enlarged and improved, principally by the addition of new crushing equipment. New mine and camp buildings were erected, and a large amount of new mining equipment was installed. Production was maintained without interruption throughout the year, and approximately 1000 ft. of development work in the Black Hawk
ground on the 1200-ft. level of the Page shaft was done. The success of this operation can be accredited entirely to flotation, because with the old milling methods it was impossible to mine and mill the ore at a profit.

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 4 miles. Plant: MILL: Two 500-ton concentrators, including flotation. Ore: Lead-silver. Remarks: Except for the operation of a few lessees, who produced a small tonnage of ore, this property was idle. No. 6 tunnel is now known as No. 7 of the Tamarack & Custer Consolidated Mining Co.

PAGE MILL: FEDERAL M. & S. CO.

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 6 miles. Ore: Lead-zinc-silver. Remarks: A substantial tonnage of ore was produced by lessees during the year.

BIG CREEK GROUP
SHOSHONE COUNTY

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

Property: One-half interest in 2 patented claims and one-third interest in 2 patented claims, Yreka dist.; Kellogg. Development: By 2 tunnels: No. 1, 320 ft. long; No. 2, 125 ft. long. Ore: Lead-zinc-silver.

REMARKS

This company is one of the largest lead-zinc-silver producers in the United States, operating properties in Missouri and Idaho. The total production from its Idaho properties makes it rank second in production in Idaho.

FIDELITY COMPANY, LTD.

Office: Wallace. Officers: Oscar B. Bergstrom, Pres., 149 Broadway, New York City; Allan G. Kennedy, Sec.-Mgr., Wallace. Inc.: Nov. 5, 1915. Capital: 2,500,000 shares; par value 20c; 1,675,309 shares issued. Property: Monarch group; 7 patented, 29 unpatented claims, Summit dist.; Murray. Development: By 2 tunnels, the principal of which is No. 3, or main crosscut tunnel, which is 3120 ft. long; and an inclined shaft 300 ft. deep; total development, approximately 18,500 ft. Plant: Ottumwa air-driven hoist, 10-drill water-driven compressor, complete mining equipment and camp. Mill: 150-ton concentrator, jigs and tables. Ore: Lead-zinc-silver. Men employed: 1 watchman. Remarks: Annual labor only.

FIRST NATIONAL SILVER MINES, LTD.


FLAGSTAFF MINING CO.


FLORENOE MINING & MILLING CO., LTD.


FLYNN GROUP MINING CO.


FORMOSA LEAD MINING CO., LTD.

FORT WAYNE MINING CO.

GALENA MINING CO.
Office: Wallace. Officers: A. H. Featherstone, Pres.; W. L. Coe, 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; 10 unpatented claims, Placer Center dist.; Plymouth group, 2 unpatented claims, West Federal group, 12 unpatented claims, Hunter dist.; Wallace. Remarks: This company is a consolidation of and acquired the property, through an exchange of stock, of the following companies: Idaho Galena Mining Co., Plymouth Lead Mines Co., and West Federal Mining Co. Annual labor only.

GEM STATE MINING CO.

GENERAL MINES CORPORATION
Office: 402 Empire State Bldg., Spokane, Wash. Officers: C. Roholt, Pres., Worley; H. G. Loop, Sec., Spokane, Wash. Inc.: Nov. 23, 1925. Capital: 2,000,000 shares; par value 5c; shares issued, unknown. Property: Big Eight group; 12 unpatented claims and 106 acres patented land, Yreka dist.; Kellogg. Development: Principally by 1 tunnel 2850 ft. long. Plant: Electrically driven G-D compressor; complete mining equipment. Remarks: Failed to file the reports required by law, although twice notified to do so. During the year this enterprise received a larger amount of publicity from the press than any other mining company in the State. The press reports were to the effect that the principal tunnel was extended, and that this work revealed a mineralization dissimilar to any other in the district.

GERTIE MINING CO.

GIANT MINING & DEVELOPMENT CO.

GOLCONDA LEAD MINES
Office: Wallace. Officers: A. H. Featherstone, Pres., Wallace; Chas. P. Lund, Sec.; Wm. A. Beaudry, Mgr., both of Spokane, Wash. Inc.: Jan. 18, 1927. Capital: 2,000,000 shares; par value $1; all shares issued. Property: Hector group; 14 patented, 6 unpatented claims, Hunter dist.; Wallace; Mayflower group; 14 unpatented claims, Lelande and Hunter dists.; Wallace. Development: Mine opened by the Mayflower tunnel, 5000 ft. in length, an inclined raise 800 ft. long, and a vertical shaft 800 ft. deep, both from Mayflower tunnel (1000-ft. level). Plant: MINE: Two electrically driven 750-cu.-ft. Sullivan compressors; 2 air-driven hoists
and a large electrically driven hoist; storage-battery locomotive haulage; sawmill, yards, and timber-shed; complete mining equipment. **MILL:** 200-ton concentrator, fine-grinding, flotation. **Ore:** Lead-zinc-silver. **Men employed:** Average, 115. **Remarks:** The mine plant was enlarged and improved; a large new electrically driven hoist and a compressor were installed. The main shaft was extended from the 1400 to the 1800-ft. level, and a large amount of development work was done on the 1600 and 1800-ft. levels. The ore opened on these levels greatly increased the known resources of the mine. Capacity production was maintained until March 15, when the low price of metals forced a suspension; however, milling operations on a one-shift basis were resumed on August 1. The property owned by the Square Deal Mining & Milling Co. was obtained under lease and option, and a crosscut was started on the 1400-ft. level to develop this property. One of the most important discoveries of the year of high-grade lead-silver ore was made on the surface of the Mayflower group about 2000 ft. east of the present operations. This discovery was made late in the year through logging operations, and work was started to develop it. The money for the development work, plant additions, and improvements was obtained from mine profits. This company is fast becoming recognized as one of the principal operations in Shoshone County.

**GOLCONDA LEAD MINES:** **MILL**

**GOLD HUNTER MINES, INC.**

**Office:** 516 E. 28th St., Chicago, Ill. **Officers:** Edwin C. Hennessy, Pres.; Thomas F. Keeley, Sec., both of Chicago, Ill.; C. K. Cartwright, Mgr., Mullan. **Inc.:** April 24, 1925; formerly Gold Hunter Mining & Smelting Co. **Capital:** 20,000 shares; par value $10; all shares issued. **Property:** Gold Hunter; 12 patented claims, Hunter dist.; Mullan. **Development:** Principal main haulage tunnel 7600 ft. long, from which level is a shaft 1500 ft. deep to the 1200-ft. level, in which there is another shaft 600 ft. deep. **Plant:** MINE: Complete and modern; electric hoist; two 3000-cu.ft. electrically-driven compressors; pumps; machine and blacksmith shop; electric haulage. **MILL:** 500-ton concentrator, including flotation. **Ore:** Lead-silver. **Men employed:** Average, 160. **Remarks:** Capacity output and extensive development campaign conducted for the first three months of the year, after which all operations were suspended because of the low price of metals.
GOODENOUGH MINING CO.

GOVERNMENT GULCH MINING CO.

GRANADA LEAD MINES, INC.

GRANADA LEAD MINES, LTD.

GREEN HILL CLEVELAND MINING CO.

HAPPY DAY MINING CO., LTD.

HEOLA EXTENSION MINING CO.
SHOSHONE COUNTY

HECLA MINING CO.

HECLA MINING CO.'S MILL

REMARKS
Mine development work, which consisted principally of placing the lower levels in condition for production, was conducted throughout the year. Normal production was maintained until September, when the continued low price of metals caused a reduction to a 5-day-a-week basis. The mine and mill plants were further improved. The usual dividend rate was maintained. The company was actively engaged in developing two other properties in the Coeur d'Alene district and one in Lemhi County, and it maintained throughout the year an active scouting and investigating campaign in a search for additional properties. This company is one of the principal lead-silver producing companies in the United States. The management is progressive, and the life of the Hecla mine is assured for many years.

HENNESSY-BURNS MINING CO.

HERCULES MINING CO.
HERCULES GROUP

Property: Hercules group, 36 patented claims; Columbia lode, 1 patented claim; Lelande and Placer Center dists.; Burke. Development: Principally by 5 tunnels: No. 1, 280 ft.; No. 2, 3350 ft.; No. 3, 3900 ft.; No. 4, 5900 ft.; No. 5, 8550 ft.; and a 4-compartment vertical shaft 1300 ft. deep, with 8 intermediate levels. Total development, approximately 18 miles. Plant: MINE: Special first motion, double-reel, Nordberg electric hoist, direct connected to 700-h. p. motor. One 22x16 I-R and 1 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. See pages 23 to 27 of the 1929 report for complete description. Ore: Lead-silver. Men employed: Average, 52.

MAHER-HEARN GROUP

Property: 38 patented claims; Lelande dist.; Burke. Development: Through 4500-ft. tunnel of Gertie Mining Co., at the end of which is over 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.

ANDREWS GROUP

Property: 4 unpatented claims, Lelande dist.; Burke. Development: By 1 tunnel 300 ft. long.

REMARKS

During the year the Hercules mine surface plant and tunnels Nos. 4 and 5 were used in the operation of the Sherman Lead Co., the Humming Bird Mining Co., and the Ambergris Consolidated Mining Co. The mill was operated on a custom basis and treated the entire output of the Sherman Lead Co., Dayrock Mining Co., and Tamarack & Custer Mining Co., in addition to that of a large number of small producers and lessees. The principal mines and mining companies which this company owns or controls are: Hercules and Maher-Hearn mines, Ambergris Consolidated Mining Co.; Humming Bird Mining Co.; Roanoke Mining Co.; Western Union Mining Co.; and Marsh Mines, Consolidated.

HIDDEN TREASURE MINING CO.


HIGH CROPPING SILVER-LEAD MINING CO.


HIGHLAND-SURPRISE CONSOLIDATED MINING CO.

HERCULES MINING CO.: MILL
HILARITY LEAD-SILVER MINING CO.

HILL MINING & MILLING CO.

HORNSILVER MINING & MILLING CO.

HORSESHOE MINING CO.

HULL SILVER LEAD CO.

HUMBOLT MINING CO.

HUMBOLT MINING & MILLING CO.
Office: Wallace. Officers: Geo. Noble, Sec., East 314 17th St., Spokane, Wash. Inc.: April 13, 1929. Capital: 3,000,000 shares; par value 50c. Remarks: Failed to file the reports required by law. The report filed for 1929 stated that this company was a reorganization of the Deer Creek Mining Co., which see.

HUMMING BIRD MINING CO.
HYPOTHEEK MINING & MILLING CO.

IDAHO COPPER MINING CO., LTD.

IDAHO & EASTERN MINING & MILLING CO.

IDAHO-LEADVILLE MINES CO.

IDAHO & LOS ANGELES MINING & MILLING CO.

IDAHO MONTANA MINING & OIL CO.

IDAHO-MONTANA AND ORLANDO CONSOLIDATED MINING CO.

IDAHO SILVER MINE MINES CO.
IDAHO STAR MINING CO.

IDORA MINING CO., LTD.

IMPERIAL MINING CO.

INDEPENDENCE LEAD MINES CO.
Office: Wallace. Officers: W. D. Greenough, 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; 2,500,000 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, 190 ft. long; No. 2, 1160 ft. long; No. 3, 1300 ft. long; No. 4, 2500 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 100-ft. vertical shaft in No. 4 tunnel. Plant: Electrically-driven 9x12 Sullivan compressor; complete mining equipment. Ore: Lead-silver. Men employed: Average, 5. Remarks: During the year the 100-ft. vertical shaft was sunk, and a large amount of crosscutting and drifting at the bottom of the shaft was done. This work uncovered a good showing of lead-silver ore. A stock assessment of 2c was levied on April 14.

INDEPENDENCE MINING CO., LTD.

INLAND EMPIRE MINING & MILLING CO.
INSPIRATION LEAD CO., INC.

SURFACE PLANT OF INSPIRATION LEAD CO., INC.

INTERNATIONAL MINES, LTD.

INTERNATIONAL MINING CO.

IONE MINING CO.

IRON KING MINING CO., LTD.
Office: Wallace. Officers: Herman J. Rossi, Pres.; Otto A. Olsson, Sec., both of Wallace. Inc.: Jan. 8, 1904. Capital: 1,000,000 shares; par value $1; all shares issued. Property: Iron King group; 4 unpatented claims,
SHOSHONE COUNTY


ISAIAH MINING & MILLING CO.

IVANHOE MINING CO., LTD.

JACK WAITE MINING CO.
Office: P. O. Box 1832, Seattle, Wash. Officers: Robert S. Terhune, Pres.; G. W. Klinefelter, Jr., both of Seattle, Wash.; John R. Turner, Mgr., Murray. 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; 3,000,000 shares issued. Property: Jack Waite group; 4 patented, 17 unpatented claims in Idaho; Silver King group: 30 unpatented claims in Montana; Eagle dist.; Prichard. Development: Jack Waite group: principally by 2 tunnels: No. 1, 2100 ft. long; No. 2, 4600 ft. long, in which is an inclined shaft 200 ft. deep. Silver King group: principally by 1 tunnel 1820 ft. long. Plant: MINE: 1 air-driven and 1 electrically driven hoist; 3 electrically driven compressors; electric trolley haulage; complete mining equipment and camp. MILL: 500-ton, fine-grinding, flotation concentrator. Men employed: Average, 172. Ore: Lead-silver-zinc. Remarks: After reorganization was completed, an extension of the railroad was graded for a distance of 3 miles, the principal haulage tunnel was entirely rehabilitated and relaid with heavier rails, a new I-R compressor was added to the mine plant, a new mill building was constructed, and the installation of entirely new milling equipment was started. It was expected to have the mill fully completed and ready for operation early in 1931. The expenditure for the mine development and new construction constituted one of the largest expenditures in the State. The new mine development work greatly increased the known ore reserves, and a large tonnage of crude ore and concentrate was marketed.

MILL: JACK WAITE MINING CO.
JIM BLAINE SILVER SYNDICATE, LTD.

JUPITER MINING CO.

KELLOGG SILVER-LEAD MINES CO.

KENNAN MINING CO.

KEYSTONE MINING CO.

KING OF PINE CREEK MINING CO.

LACLEDE MINING CO., LTD.

LANSING SILVER-LEAD MINING CO.
LEAD BLOSSOM MINING & MILLING CO.

LEAD CRYSTALS MINING CO., LTD.

LEROY GOLD & COPPER CO., LTD.

LEWIS & CLARK MINING CO.

LEXINGTON MINING CO.

LIBERAL KING MINING CO.
Office: Kellogg. Officers: Magnus Cheyne, Pres.; Stella Brown, Acting Sec., both of Kellogg. Inc.: June 12, 1928. Capital: 1,500,000 shares; par value 10c; 948,048 shares issued. Property: Liberal King group; 10 unpatented claims, Pine Creek, Yreka dist.; Kellogg. Development: By 2 tunnels: No. 1, 800 ft.; No. 2, 800 ft. Ore: Lead-zinc-silver. Men employed: Average, 4. Remarks: Press reports were to the effect that an electrically driven compressor was installed, that work was started on a new tunnel, and that stock was sold, all under the direction of Albert M. Nash.

LINCOLN MINING CO.
LINFOR COPPER CO.

LITTLE BUTTE MINING CO.

LITTLE MINT MINING CO.

LITTLE SUNSHINE MINING CO.
Office: 902 Second Ave., Seattle, Wash. Officers: John R. Moore, Pres.; H. S. Brown, Sec., both of Seattle, Wash.; C. A. Fay, Mgr., Wallace. 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, unknown. 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 Palmer group: Electrically driven compressor and complete mining equipment. Ore: Lead-silver. Men employed: Average, 10. Remarks: Another electrically driven compressor and an air-driven hoist were installed, and work was started on sinking a vertical shaft in April. The shaft is located in the principal tunnel at a distance of 4200 ft. from the portal. It was completed to a distance of 300 ft., and a large amount of exploratory work was done on two levels. The funds for this work were derived from the sale of stock. A stock assessment of 3c was levied on Aug. 27.

LOG CABIN MINING & MILLING CO., LTD.
Office: Wallace. Officers: O. H. Linn, Pres., Portland, Ore.; Otto A. Olson, Sec., both of Wallace. Inc.: Nov. 21, 1906. Capital: 1,000,000 shares; par value $1; all shares issued. Property: Log Cabin group; 5 unpatented claims, Placer Center dist.; Wallace. Development: By 2 tunnels: No. 1, 200 ft. long; No. 2, 80 ft. long. Ore: Lead-silver. Remarks: Other electrically driven compressor and an air-driven hoist were installed, and work was started on sinking a vertical shaft in April. The shaft is located in the principal tunnel at a distance of 4200 ft. from the portal. It was completed to a distance of 300 ft., and a large amount of exploratory work was done on two levels. The funds for this work were derived from the sale of stock. A stock assessment of 3c was levied on Aug. 27.

LOMBARDY MINING & MILLING CO.

LON CHANEY MINING & MILLING CO.

LOOKOUT MOUNTAIN MINING & MILLING CO.
Office: Kellogg. Officers: C. W. Simmons, Pres.; S. A. Germo, Sec., both of Kellogg; C. A. Fay, Mgr., Wallace. Inc.: June 2, 1916. Capital: 2,000,000 shares; par value 25c. Increased Sept. 25, 1928, to 3,000,000 shares; par value 25c; 2,520,000 shares issued. Property: lookout Mountain group; 40 unpatented claims, Yreka dist.; Kellogg; part of which are held under lease and option. Development: Principally by 3 tunnels: No. 1, 100 ft. long; No. 2, 2500 ft. long; No. 3, 5000 ft. long; a vertical shaft in No. 3 tunnel 200 ft. deep; and a 500-ft. raise connect-
ing No. 2 and No. 3 tunnels. **Plant:** 2 electrically-driven Gardner compressors; complete mining equipment and camp. **Ore:** Lead-silver. **Men employed:** Average, 3. **Remarks:** Annual labor only. A stock assessment of 1c was levied on Jan. 18.

**LUCKY BOY MINES CORPORATION**

**Office:** Kellogg. **Officers:** O. L. Plumtree, Pres.-Mgr.; Robert Skeman, Sec., both of Kellogg. **Inc.:** March 10, 1930. **Capital:** 2,000,000 shares; par value 5c; 1,420,000 shares issued. **Property:** 5 unpatented claims, Yreka dist.; Kellogg. **Development:** By 2 short tunnels. **Ore:** Lead-silver-copper. **Men employed:** Average, 2. **Remarks:** A small amount of work during the year.

**LUCKY BOY MINING & CONCENTRATING CO., LTD.**

**Office:** Mullan. **Officers:** M. D. Needham, Pres.-Mgr.; Agnes Needham, Sec., both of Mullan. **Inc.:** Jan. 12, 1907. **Capital:** 1,000,000 shares; par value $1; 390,030 shares issued. **Property:** Lucky Boy group; 31 unpatented claims, Hunter dist.; Mullan. **Development:** By 8 tunnels, the principal of which is 2800 ft. long. **Ore:** Lead-silver. **Remarks:** Annual labor only.

**MCGREGOR MINING CO.**

**Officers:** L. L. Ruthruff, Sec., Kellogg. **Inc.:** Aug. 31, 1925. **Capital:** 700,000 shares; par value 50c. **Remarks:** Failed to file the reports required by law.

**MACEDONIA MINING CO.**

**Office:** Wallace. **Officers:** A. M. Mundell, Pres.-Mgr., Wallace; W. S. Leland, Sec., Prichard. **Inc.:** Oct. 8, 1921. **Capital:** 1,500,000 shares; par value 10c; 11,000 shares issued. **Property:** Macedonia group; 23 unpatented claims, at the head of West Fork of Slate Creek; St. Joe dist.; Wallace. **Remarks:** Active development work throughout the summer months by the president.

**MAINE-STANDARD MINING CO., LTD.**

**Office:** Wallace. **Officers:** Carlton Fox, Pres.; Otto A. Olsson, Sec.-Mgr., both of Wallace. **Inc.:** March 4, 1907. **Capital:** 1,500,000 shares; par value $1; all shares issued. **Property:** Maine-Standard group; 5 unpatented claims, Moon Creek, Yreka dist.; Kellogg. **Development:** By 1 tunnel, 1200 ft. long. **Ore:** Lead-silver. **Remarks:** Annual labor only.

**MAJESTIC MINING CO., LTD.**

**Office:** Wallace. **Officers:** James Dunne, Pres.-Mgr., Burke; Therrett Towles, Sec., Wallace. **Inc.:** Aug. 23, 1904. **Capital:** 1,500,000 shares; par value 25c; 994,306 shares issued. **Property:** Majestic group; 12 patented claims, Lelande and Summit dists.; Burke. **Development:** Principally by 1 tunnel 2000 ft. long. **Ore:** Lead-silver. **Remarks:** Annual labor only.

**MARSH MINES CONSOLIDATED**

**Office:** Wallace. **Officers:** Edward Pohlman, Pres.; F. Wallace Rothrock, Sec., both of Spokane, Wash. **Inc.:** Filed in Idaho: Aug. 17, 1916. **Capital:** 2,000,000 shares, increased on Oct. 14, 1930, to 4,000,000 shares; par value 25c; shares issued, unknown. **Property:** Marsh group; 13 patented, 1 unpatented claim, Lelande dist.; Burke. **Development:** By 2 tunnels: No. 1, 300 ft. long; No. 2, 2000 ft. long; a vertical shaft 900 ft. deep with 5 intermediate levels; and an inclined shaft 400 ft. long. Total development, approximately 9900 ft. **Plant:** MINE: One I-R 1150-cu.-ft. compressor and one 690-cu.-ft. Franklin compressor, both electrically driven; complete mining equipment. MILL: 200-ton concentrator, including flotation. **Ore:** Lead-silver. **Remarks:** Idle.

**MERGER MINES CO.**

**Office:** Presumably Wallace. **Officers:** Stock certificates issued in 1930 bore the names of George H. Walters, secretary, and Morris Pearson, vice president. **Inc.:** Never filed in Idaho. Stock certificates give Arizona as the state of incorporation. **Capital:** Stock certificates show 3,000,000 shares, par value $1; shares issued, unknown. Stock salesmen represented that this company's property was located in Evolution district. **Remarks:** An active stock-selling campaign has been maintained for two years.
and stock assessments have been levied during this period, two of 5 mills each having been levied in 1930; one on June 18, the other on October 24. It is not known whether any of the stockholders questioned the legality of the assessments or not. The newspaper notices of the June assessment were signed by George H. Walters, as secretary; notices of the October assessment were signed by L. A. White, as secretary.

**MERRY WIDOW MINING CO.**
- **Office:** Wallace. **Officers:** Howard Hazeltine, Pres.-Mgr.; A. L. Strope, Sec., both of Wallace. **Inc.:** Nov. 5, 1924. **Capital:** 1,500,000 shares; par value 10c; 1,200,000 shares issued. **Property:** Merry Widow group; 2 unpatented claims, Placer Center dist.; Wallace. **Development:** By 2 tunnels: No. 1, 60 ft. long; No. 2, 400 ft. long. **Ore:** Lead-silver. **Remarks:** Annual labor only.

**METROPOLITAN MINES CORPORATION, LTD.**
- **Office:** Wallace. **Officers:** R. L. Brainard, Pres., Wardner; Roy H. Kingsbury, Sec., Wallace; Matt Baumgartner, Mgr., Spokane, Wash. **Inc.:** Nov. 21, 1929. **Capital:** 3,000,000 shares; par value 10c; 1,751,000 shares issued. **Property:** Sterling Silver group; 20 unpatented claims, Big Creek, Evolution dist.; Kellogg. **Development:** Principally by 1 tunnel 1000 ft. long. **Plant:** 12x12 G-D electrically driven compressor; complete mining equipment and camp. **Ore:** Lead-silver. **Men employed:** Average, 4. **Remarks:** The electric power line was extended to the mine and a new electrically driven compressor was installed, after which work in extending the tunnel was maintained without interruption. Stock assessments were levied during the year as follows: June 3, 3 mills; Aug. 5, 3 mills; Oct. 11, 3 mills; Dec. 5, 3 mills.

**MILITARY MINING & MILLING CO., LTD.**
- **Office:** R. F. D. 4, Spokane, Wash. **Officers:** P. A. Renkert, Pres.; George K. Renkert, Sec.-Mgr., both of Spokane, Wash. **Inc.:** Apr. 30, 1907. **Capital:** 1,000,000 shares; par value $1; 567,000 shares issued. **Property:** 2 patented claims, Lelande dist.; Burke. **Development:** 2 tunnels: No. 1, 150 ft. long; No. 2, 100 ft. long. **Ore:** Copper.

**MINERAL FARM MINING CO., LTD.**
- **Office:** Mullan. **Officers:** C. J. Carlson, Pres.-Mgr., 1215 Gem Ave., Spokane, Wash.; C. D. Miller, Sec., Mullan. **Inc.:** Aug. 28, 1903. **Capital:** 1,500,000 shares; par value $1; 798,676 shares issued. **Property:** Mineral Farm group; 8 patented claims, Hunter dist.; Mullan. **Development:** Principally by 1 tunnel 1200 ft. long. **Ore:** Lead-silver.

**MINERAL POINT MINING CO.**
- **Office:** Wallace. **Officers:** H. E. Worstell, Pres.; Paul Leuschel, Sec., both of Wallace. **Inc.:** July 7, 1904. **Capital:** 1,200,000 shares; par value $1; 544,390 shares issued. **Property:** 1 patented, 7 unpatented claims, Evolution dist.; Osburn. **Ore:** Lead-silver. **Remarks:** Property under lease and option to Coeur d’Alene Mines Corporation.

**MISSOULA COPPER MINING CO.**
- **Office:** Wallace. **Officers:** J. R. Bean, Sec., Wallace. **Inc.:** Nov. 4, 1901. **Capital:** 1,500,000 shares; par value $1. **Remarks:** Has not filed the reports required by law since 1927.

**MOE MINING CO., LTD.**
- **Office:** Wallace. **Officers:** W. K. Moe, Pres.-Mgr.; G. W. Dougherty, Sec., both of Wallace. **Inc.:** Apr. 8, 1922. **Capital:** 1,000,000 shares; par value 10c; 718,527 shares issued. **Property:** Gold Creek group; 16 unpatented claims, Hunter dist.; Mullan. **Development:** 3 tunnels: No. 1, 500 ft. long; No. 2, 1100 ft. long; No. 3, 2400 ft. long. **Ore:** Lead-silver-copper. **Remarks:** Under lease and option to Inspiration Lead Co., Inc.

**MOHAWK MINING CO.**
- **Office:** Kellogg. **Officers:** James G. Ferbrache, Pres.-Mgr.; M. A. Miller, Sec., both of Kellogg. **Inc.:** Sept. 8, 1927. **Capital:** 1,000,000 shares; par value 5c; 623,249 shares issued. **Property:** 5 unpatented claims, Yreka dist.; Kellogg. **Development:** By 3 tunnels: No. 1, 70 ft.; No. 2, 200 ft.; No. 3, 50 ft. **Plant:** Small water-driven compressor; complete mining equipment. **Ore:** Lead-silver. **Remarks:** Annual labor only.
MOONLIGHT MINING CO.

MOUNTAIN CON MINING CO., INC.

MOUNTAIN QUEEN MINING CO.

MULLAN MINING CO.

MURRAY HILL MINING CO.

MUTUAL MINES DEVELOPMENT CO.
Office: 312 Old Nat'l Bank Bldg., Spokane, Wash. Officers: Harley Little, Pres.-Mgr.; Ben L. Collins, Sec., both of Spokane, Wash. Inc.: May 20, 1925. Capital: 2,000,000 shares; par value 10c; shares issued, unknown. Property: 24 patented, 30 unpatented claims, of which 20 are owned, the remainder are held under lease and option from the Formosa Lead Mining Co., Ltd., the Deep Wonder Mining Co., and Messrs. Gus Kallman and Ed. Johnson; Hunter and Lelande dists.; Wallace. Development: Principally by 1 tunnel 3000 ft. long. Total development, over 12,000 ft. Plant: Electrically-driven compressor and complete mining equipment. Ore: Lead-silver. Remarks: This company was active throughout the year and commenced building a new flotation concentrator. An active stock-selling campaign was maintained throughout the year, but as the company failed to file the reports required by law, although twice notified to do so, the amount of the stock issued, the number of men employed, and definite information as to the mill construction are unknown.

NABOB SILVER LEAD CO.

NATIONAL LEAD MINING CO.
NEVADA STEWART MINING CO.

NEW HOPE MINING CO., LTD.

NEW JERSEY CONSOLIDATED MINES CO.
Office: Wallace. Officers: L. K. Stratton, Pres.; Wm. J. Stratton, Sec., both of Wallace. Inc.: June 20, 1928. Capital: 5,000,000 shares; par value 10c; 3,732,758 shares issued. Stock assessments were levied as follows in 1930: Jan. 6, 1c; July 15, 5 mills.

KING OF PINE CREEK GROUP
Property: King of Pine Creek group; 9 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: Holst and 2 I-R compressors, all electrically driven; complete mining equipment. Ore: Lead-zinc-silver. Men employed: Average, 12. Remarks: During the early part of the year the vertical shaft was completed to the 300-ft. level, and a large amount of drifting on the vein was done on this level. This work was hampered by an exceedingly large flow of water, which made it necessary to install powerful electrically driven pumps. The work on the 300-ft. level greatly enchanced the possibilities of this property.

SURFACE PLANT, KING OF PINE CREEK MINE OF NEW JERSEY CONSOLIDATED MINES CO.
SHOSHONE COUNTY

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 FORK DEVELOPMENT CO.

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.

OOM PAUL CONSOLIDATED MINING CO.

PACIFIC MINING AND MILLING CO.

PAPUREL & GRAHAM MOUNTAIN MINING CO.

PARADISE MINES ASSOCIATION

PARADISE MINING CO., INC.

PARAGON MINING CO.

PARAMOUNT MINES CORPORATION

PARK COPPER & GOLD MINING CO., LTD.

PATUXENT MINING CO.

PEARSON MINING CO.
Office: Wallace. Officers: John F. Ferguson, Sec.; Harry P. Pearson, Mgr., both of Wallace. Inc.: April 26, 1929. Capital: 500,000 shares; par value $1; 320,581 shares issued. Property: 4 patented, 70 un patented claims, St. Joe dist.; Falcon. Development: Principally by 3 tunnels: No. 1, 500 ft. long; No. 2, 4000 ft. long; and No. 3, 4300 ft. long. Plant: Water-driven Sullivan compressor; complete mining equipment and camp. Ore: Copper-gold. Men employed: Average, 3. Remarks: Mining operations, which consisted of extending No. 3 tunnel, were conducted without interruption throughout the year.

PINE CREEK CONSOLIDATED MINING CO.

PINE CREEK LEAD-ZINC MINING CO.
Office: Wallace. Officers: M. L. Savage, Pres.-Mgr., Kellogg; Herman J. Rossi, Sec., Wallace. Inc.: Nov. 8, 1929. Capital: 1,000,000 shares; par value 10c; 110,000 shares issued. Property: Little Pittsburg group; 5 patented claims, Pine Creek, Yreka dist.; Kellogg. Development: By 3 tunnels: No. 1, 220 ft. long; No. 2, 480 ft. long; No. 3, 1600 ft. long. Plant:
MINING INDUSTRY OF IDAHO

MINE: Electrically driven 10-drill I-R compressor; complete mining equipment and camp. MILL: 200-ton fine-grinding flotation concentrator. Ore: Lead-zinc-silver. Men employed: Average, 8. Remarks: Construction of the new mill, which was started late in 1929, was completed; No. 3 tunnel was rehabilitated; and the mine and mill were placed in condition for production when the price of metals will permit profitable operation. This company's expenditures were one of the largest made in the Pine Creek section during the year.

PIONEER MINING CO., LTD.

PLAINVIEW MINING CO., INC.

POLARIS DEVELOPMENT & MINING CO.

PONTIAC MINING CO.

PROGRESS GOLD MINING CO.

PURITAN MINING CO., LTD.

RAINBOW MINING & MILLING CO., LTD.

RAMONA MINING CO.
RAVEN MINING CO., I/TP.

RAY JEFFERSON MINING CO.

RED CLOUD MINING CO.

REINDEER-QUEEN MINING CO.
Office: Wallace. Officers: Harry P. Pearson, Pres.; Julius P. Hall, Mgr., both of Wallace. Inc.: Sept. 27, 1913. Capital: 2,000,000 shares; par value 10c; 316,000 shares issued. Property: Reindeer-Queen group; 3 patented, 12 unpatented claims, Hunter dist.; Mullan. Development: Principally by 5 tunnels: No. 1, 3100 ft. long; No. 5, 7700 ft. long. Plant: Water-driven compressor and complete mining equipment. Ore: Copper-lead-silver. Remarks: Annual labor only. Stock assessments were levied as follows in 1930: June 2, 1c; Sept. 11, 1c.

REVENUE CONSOLIDATED MINING CO.

REVETT MINING CO.

REX LEASING & DEVELOPMENT CO.
Officers: M. H. Hebble, Sec., Wallace. Inc.: Name gleaned from the press; it is evidently a local lessees' organization working at the Rex mine of the Delaware Mines Corporation. A stock assessment of 5c was levied on April 1.

RHODE ISLAND MINING CO., LTD.

RICHMOND CONSOLIDATED MINING CO.
Office: 824 Old National Bank Bldg., Spokane. Officers: John B. White, Pres.; E. E. Alverson, Sec., both of Spokane. Inc.: June 29, 1923. Capital: 2,500,000 shares; par value 10c; all shares issued. Property: Richmond group; 7 patented claims, St. Joe dist.; Adair. Development: Approximately 8000 ft. of underground workings. Ore: Copper-gold. Remarks: During 1926, mine plant was dismantled and all operations were suspended.
ROANOKE MINING CO., LTD.

ROBERTS COEUR D'ALENE M. & M. CO.

ROB ROY MINING CO.

ROCKFORD MINING CO., LTD.
Officers: W. H. Hanson, Wallace. Inc.: Sept. 9, 1907. Capital: 1,500,000 shares; par value 25c. Remarks: Has failed to file the reports required by law since 1922.

RUTH CONSOLIDATED MINING & MILLING CO.

SABINA MINES CO.

ST. JOE LEAD & SILVER MINES CO.

SAINT LOUIS & IDAHO MINING & MILLING CO.

SAMSON MINING & DEVELOPMENT CO., LTD.

SAVAGE MINING CO.
SHADOW PEAK MINING CO.

SHERMAN LEAD CO.
Office: Wallace. Officers: Jerome J. Day, Pres.; P. J. Maggy, Sec.; Henry L. Day, Mgr., all of Wallace. Inc.: Nov. 4, 1918. Capital: 3,500,000 shares; par value 25c. Increased Aug. 27, 1928, to 3,675,000 shares; par value 25c; all shares issued. Property: Sherman and Oreano groups; 9 patented claims, Lelande dist.; Burke. Development: Total development, over 27,000 ft., consisting principally of Sherman No. 5 tunnel, 5660 ft. long; Sherman No. 6 tunnel, 2000 ft. long; Oreano No. 2 tunnel, 5000 ft. long; and 2 1000-ft. inclined raises connecting Sherman No. 6 tunnel and Oreano No. 2 tunnel, in which are 7 intermediate levels. Plant: 2 electrically driven hoists; trolley locomotive haulage and all mining equipment, furnished by Hercules Mining Co. Ore: Lead-silver. Men employed: Average, 100. Remarks: One of the principal mines in the Coeur d'Alene district to be placed on a profitably operating basis in 1929 and the only addition to the list of dividend paying mines in the State during 1930. The mine is connected with No. 5 tunnel of the Hercules Mining Co., through which it is operated, and the ore is sold to the Hercules custom mill at Wallace. Production was maintained until March, when the low price of metals caused a suspension. However, development work was continued, and over 2500 ft. of raises and drifts were run. This work exposed a large amount of new ore, which greatly increased the known resources of the mine. Control of this company is owned by the Tamarack & Custer Consolidated Mining Co.

SHRINE MINING CO.

SIDNEY LEASING CO.
Office: Kellogg. Officers: J. B. Cox, Pres.; W. T. Simons, Sec., both of Kellogg. Inc.: Feb. 27, 1925. Capital: 25,000 shares; par value $1; 7215 shares issued. Property: Lease on property of the Sidney Mining Co. Plant: 4½-mile aerial tramway; a 538-cu.-ft. I-R and an 1170-cu.-ft. I-R electrically-driven compressor; electrically-driven hoist; Waugh drill sharpener; complete mining equipment and camp. Ore: Lead-zinc-silver. Men employed: Average, 68. Remarks: The inclined shaft was extended 200 feet, a large amount of development work was performed, and production was maintained until July, when the low price of metals forced a suspension of operations. The new development work was successful in greatly increasing the known ore reserves. The fact that this mine located on Pine Creek, is being operated at a substantial profit and that its ore is improving in grade and extent as depth is gained, is significant in proving that this section of the Coeur d'Alene district is not without merit; and the success of this enterprise is greatly stimulating mine development in this part of the district.

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: Property under operation throughout the year by lessees, who produced and marketed a small tonnage of ore.

SILVER BASIN CONSOLIDATED MINING CO.

SILVER CLIFF GOLD & COPPER MINING CO., LTD.

SILVER CLOUD MINES, INC.
Officers: Henry N. Conover, Wailstburg, Wash. Inc.: June 18, 1930. Capital: 5,000,000 shares; par value 25c. Remarks: The Bell of the West Mining Co. reported that its property was under lease and option to this company, which has failed to file the reports required by law.

SILVER CRESCENT MINING CO.

SILVER DALE & BIG HILL MINING CO.
Office: Kellogg. Officers: D. W. Knudson, Kellogg. Inc.: Sept. 10, 1917. Capital: 1,000,000 shares; par value 1c; increased Oct. 25, 1927, to 25c. Remarks: This company has refused to file the reports required by law since 1927, although each year it has levied stock assessments. During 1930 two assessments of 5 mills each were levied on Feb. 22 and Aug 4.

SILVER EAGLE MINING CO., LTD.

SILVER MOON MINING CO., LTD.
SILVER REEF MINING CO.

SILVER STANDARD MINING CO.

SILVER SUMMIT MINING CO.

SLAVONIAN MINING CO.

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.

SNOWSTORM SILVER LEAD CO.

SONORA MINING & MILLING CO.
Office: Wallace. Officers: Otto Dubach, Pres., Gem; G. L. Richardson, Sec.-Mgr., Wallace. Inc.: Nov. 5, 1897. Capital: 1,000,000 shares; par value $1; 743,339 shares issued. Property: Sonora group; 11 patented,
MINING INDUSTRY OF IDAHO

4 unpatented claims, Lelande dist.; Burke. Development: Principally by 1 tunnel 5120 ft. long. Ore: Lead-silver. Men employed: Average, 2. Remarks: The principal tunnel was extended a short distance. Stock assessments were as follows in 1930: May 27, 3 mills; Nov. 3, 2 mills.

SPOKANE TUNNEL MINING CO.

SQUARE DEAL MINING & MILLING CO., LTD.

STANLEY MINING CO.

STERLING MINING CO., LTD.

STRATTON SILVER SUMMIT, INC.
Office: Walla, Walla. Officers: L. K. Stratton, Pres.; Wm. J. Stratton, Sec., both of Walla. Inc.: Feb. 6, 1929. Capital: 10,000,000 shares; par value 10c; 9,513,292 shares issued. Property: Jumbo group, Silver Summit Mining Co.; held under lease and option. Development: Principally by 1 tunnel 4716 ft. long. Plant: Electrically-driven double-drum hoist; 2 electrically-driven compressors; complete mining equipment. Ore: Lead-silver. Men employed: Average, 12. Remarks: One of the principal development enterprises in the Coeur d'Alene district which maintained work throughout the year. The crosscut was extended 1676 ft. to a total distance of 4716 ft. and 540 ft. of a drift was driven west from the crosscut at a point 4300 ft. from the portal. The drift encountered ore minerals containing good values in silver. This encouragement greatly increased the attractiveness of the enterprise. Stock assessments were levied during 1930 as follows: April 14, 1c; Sept. 16, 5 mills.

SUCCESS MINING CO., LTD.
Office: Walla, Walla. Officers: Dan P. Mahoney, Pres., Perma, Mont.; H. H. Miller, Sec., Walla. Inc.: April 7, 1905. Capital: 1,500,000 shares; par value $1; all shares issued. Property: Success group; 8 patented claims, Placer Center dist.; Walla. Development: Principally by 3 tunnels: No. 1, 1220 ft. long; No. 2, 4585 ft. long; No. 3, 3360 ft. long; and a vertical shaft 1070 ft. deep, with 8 intermediate levels; total development, approximately 25,700 ft. Plant: MINE: Electrically-driven double-drum hoist; 2 electrically-driven compressors; complete mining equipment. MILL: 300-ton concentrator, including flotation and magnetic separation. Ore: Lead-zinc-silver. Remarks: In July, 1926, all operations were suspended, underground equipment was removed, and part of the mining and milling equipment was disposed of. A small tonnage was produced and marketed in 1930 by lessees.
SULLIVAN MINING CO.


REMARKS

In 1916 the Bunker Hill & Sullivan M. & C. Co. secured an option on the Star mine from the Star Mining Co.; as the most feasible method of opening this mine was through the Hecla mine, the Hecla Mining Co. was offered and accepted a 50 per cent interest in the option.

The Sullivan Mining Co. was then formed to take over the Star option and to operate the mine. After litigation to perfect title to the Star vein system was settled in favor of the Star Mining Co., the Star crosscut was started and continued without interruption, excepting the time lost from July 13, 1923, to March 1, 1924, as a result of the Burke fire.

On November 13, 1925, the Star ore body was encountered at a point 1650 ft. west of the east end-line, and at a depth of 4000 ft. below the apex of the vein. After encountering the ore body development work continued, and during 1925 it was opened the entire distance of 1650 ft. and a connection was made with the 2250 level of the Morning mine of the Federal Mining & Smelting Co. On account of the great depth of the Star crosscut, the development work necessary to open the mine for the extraction of ore involved a large amount of drifting and raising. This work progressed throughout 1929 and the principal raises were extended to the Star tunnel. The Star crosscut is 4000 ft. below the apex and about 70 ft. below the 2250-ft. level of the Morning mine; the Morning vein has been proved to the 3650-ft. level, and as the Morning and Star veins are conceded to be the same, it is evident that the Star mine contains an ore body of tremendous size. An authorized statement made during 1926 was to the effect that: "At the present capacity (475 tons per day) there is sufficient proven ore in the Star mine to assure it a life of 50 years."

Production, which was suspended in 1928 pending completion of the zinc plant, was resumed in February, 1929, and maintained at the rate of approximately 450 tons per day until April, 1930, when the low price of metals caused a suspension. Development work, which consisted principally of extending the two main operating raises and of mine repair work, was conducted throughout the year. Construction of the cadmium recovery plant, which was started in 1929, was completed, and the plant was put into operation in May. In April the zinc plant was put on a greatly curtailed basis. The zinc and cadmium produced by the electrolytic plants of this company are of an especially high grade and are finding a ready market, the zinc selling at an increase in price over that of any other zinc metal. The electrolytic plants of this company now constitute one of the largest and most important enterprises in the Pacific Northwest, and one which insures the permanence of the mining industry in Shoshone County.

SUNRISE MINES CO.

10c. Remarks: Refused to file the reports required by law, although twice notified to do so. Statements appearing in the press were to the effect that this company was developing a property on Sunset Peak.

SUNSET MINING CO.

SUNSHINE MINING CO.
Office: Yakima, Wash. Officers: John Sawbridge, Pres.; R. B. Kenyon, Sec., both of Yakima, Wash.; C. C. Samuels, 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, Big Creek, Yreka dist.; Kellogg. Development: Principal development by 5 tunnels: No. 1, 100 ft. long; No. 2, 170 ft. long; No. 3, 800 ft. long; No. 4, 1000 ft. long; No. 5, 3000 ft. long, in which is a vertical shaft 500 ft deep, and an inclined shaft connecting No. 5 tunnel level and the 1700-ft. level. Plant: MINE: 2 1-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: Lead-silver. Men employed: Average, 210.

REMARKS
The extensive improvement campaign, started in 1929, which consisted of rebuilding the principal haulage tunnel, No. 5, of constructing a new hoist station and skip pockets, new inclined shaft, and new buildings, of installing a new hoist and compressor, and of enlarging the mill to 500-ton capacity, was completed early in 1930, and capacity production was maintained throughout the year. The inclined shaft was sunk from the 1300 to the 1700-ft. level, and a large amount of drifting on the 1300-ft. level and the levels above it was done. This work greatly increased the ore reserves of the mine. The ore on the 1300-ft. level was found to be of higher grade and greater extent than on any of the upper levels. This company is one of the largest producers and dividend payers in the Coeur d'Alene district, although the low price of silver caused a reduction in the dividend rate. For a complete description of the new hoist see page 45.

SUNSHINE MINING CO., LTD.

SYNDICATE MINING & EXPLORATION CO., LTD.
Office: Kellogg. Officers: Ed. Lagerstrom, Pres.; J. L. Moore, Sec., both of Kellogg. Inc.: June 24, 1907. Capital: 1,500,000 shares; par value 25c; 712,000 shares issued. Property: 7 unpatented claims, Yreka dist.; Kellogg. Development: Principally by 1 tunnel, 1700 ft. long. Ore: Lead-silver. Remarks: Principal tunnel was extended a short distance during the year. A stock assessment of 1 mill was levied on April 15.
TAMARACK & CUSTER CONSOLIDATED MINING CO.

Office: Wallace. Officers: Jerome J. Day, Pres.-Mgr.; Harry L. Day, Sec., both of Wallace. Inc.: Aug. 6, 1912. Capital: 5,000,000 shares; par value $1; all shares issued. Property: Tamarack & Custer; 56 patented, 2 unpatented claims, Lelande and Placer Center dists.; Gem. Development: The three principal tunnels are: No. 5, 12,300 ft. long; 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; and a 3-compartment raise 800 ft. long connecting No. 6 and No. 7 tunnels. Total development, approximately 14 miles. Plant: Mine: 100-h. p. electrically-driven hoist; 3 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 houses, and camp. Ore: Lead-silver-zinc. Men employed: Average, 225. Remarks: Production and an extensive mine development campaign were maintained until late in March, when production was entirely suspended on account of the low price of metals. A crew of 12 men was retained on development work, which consisted of sinking a 200-ft. winze on the vein in No. 7 tunnel. It was reported that this work indicated the existence of a new ore body. The development and exploratory work performed during the year amounted to over 2400 ft. The company's ore is transported in railroad cars to the Hercules mill, which buys the entire output. This mine has been one of the principal producers in the Coeur d'Alene district for many years.

TEDDY MINING & MILLING CO., LTD.


TIBERIUS MINING CO.


TORINO MINING CO.


TRADE DOLLAR MINING CO., LTD.


TRAPPER MINING & SMELTING CO., LTD.


TREASURE VAULT MINING CO., LTD.

TUCKER MINING & MILLING CO.

TUSCUMBIA MINING CO., LTD.

UNITED AMERICAN MINES CO., LTD.

UNITED METALS CO.

UNITED STATES SILVER LEAD MINES CO.
Office: W. 2011 Sinto Ave., Spokane, Wash. Officers: N. J. Jacobs, Pres., Ellensburg, Wash.; R. J. Toner, Sec., Spokane, Wash. Inc.: Sept. 24, 1917. Capital: 1,000,000 shares; par value 10c; shares issued, unknown. Property: 21 unpatented claims, held under lease and option, Eagle dist.; Prichard. Remarks: Failed to file the reports required by law. Two stock assessments were levied during the year. The manner of levying and collecting the assessments is unknown.

VENDETTA CHIEF MINING CO.

VERDE MAY MINING CO., LTD.
Office: Wallace. Officers: Walter H. Hanson, Sec., Wallace. Inc.: Nov. 21, 1906. Capital: 1,000,000 shares; par value $1. Remarks: Has refused to file the reports required by law since 1924.

VIENNA-INTERNATIONAL MINING & MILLING CO., LTD.

VINDICATOR MINING CO.
WALLACE IDAHO LEAD MINES, INC.

WALLACE SILVER-LEAD MINES CO.
Office: Wallace. Officers: Walter H. Hanson, Pres.; Chas. Horning, Sec., both of Wallace. Inc.: Aug. 17, 1927. Capital: 5,000,000 shares; par value 10c. Remarks: Has never filed the reports required by law, although many times requested to do so. Statements appearing in the newspapers were to the effect that this company did a small amount of work during the year.

WALL STREET MINING CO.

WASHINGTON-IDAHO MINING CO.
Office: 707 Hutton Bldg., Spokane, Wash. Officers: Dr. James Murray, Pres., Hayden Lake; A. B. Thomson, Sec., Thos. Murray, Mgr., both of Spokane, Wash. Inc.: Oct. 21, 1927. Capital: 2,500,000 shares; par value 10c; 1,500,000 shares issued. Property: Crescent group; 22 unpatented claims, 5 of which are held under lease and option from the Crescent Mining & Milling Co.; Moon Creek, Yreka dist.; Kellogg. Development: By 3 tunnels, the principal one of which is 1200 ft. long. Plant: Electrically driven I-R compressor and complete mining equipment. Ore: Lead-zinc-silver. Remarks: Annual labor only.

WASHINGTON MINING CO.

WEIGLE MINING & MILLING CO.

WEST BELL MINING CO., LTD.

WEST GEM MINING CO.
WEST HECLA MINING CO.

WEST HUNTER MINING CO., LTD.

WEST MAMMOTH MINING CO.

WESTERN MINES, LTD.

WESTERN UNION MINING CO.

WILLOW CREEK MINING CO.

WISCONSIN MINING CO.
Office: Kellogg. Officers: W. W. Papesh, Pres.-Mgr.; S. A. Germo, Sec., both of Kellogg, Inc.: Mar. 13, 1913. Capital: 1,500,000 shares; par value $1; 450,000 shares issued. Property: Wisconsin group; 5 unpatented claims Yreka dist.; Kellogg. Development: 1 tunnel 700 ft. long and a vertical shaft 100 ft. deep. Plant: Water-driven compressor; hoist; and complete mining equipment. Ore: Silver-lead. Remarks: Failed to file the reports required by law. A stock assessment of 2 mills was levied on Oct. 2.

WOLVERINE MINING CO., LTD.
Office: 304 Lindelle Bldg., Spokane, Wash. Officers: P. C. Harrington, Pres.-Mgr.; Harold M. Glessen, Sec., 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; 1,600,000 shares issued. Property: Wolverine group; 7 unpatented claims, Big Creek, Yreka dist.; Kellogg. Development: By
3 tunnels: No. 1, 450 ft. long; No. 2, 315 ft. long; No. 3, 87 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 labor only.

**WONDERFUL MINING CO., LTD.**

**Office:** Wallace. **Officers:** H. E. Howes, Vice-Pres.; A. H. Featherstone, Sec., both of Wallace. **Inc.:** Oct. 15, 1906. **Capital:** 1,500,000 shares; par value $1; all shares issued. **Property:** Wonderful group; 4 patented claims, St. Joe dist.; Mullan. **Remarks:** Idle for a number of years.

**WYOMING MINING & MILLING CO., LTD.**

**Office:** Wallace. **Officers:** Alfred Page, Pres., Spokane, Wash.; A. W. Hoover, Sec.; Frederick Burbidge, Mgr., both of Wallace. **Inc.:** May 3, 1901. **Capital:** 1,000,000 shares; par value 10c; 935,554 shares issued. **Property:** Wyoming group; 11 patented claims, Yreka dist.; Kellogg. **Development:** Principally by 2 tunnels: Ranger, 2150 ft. long; Wyoming, 600 ft. long. Total development, approximately 5400 ft. **Ore:** Lead-zinc-silver. **Remarks:** Idle.

**YAKIMA-SHOSHONE MINING CO.**

**Office:** Standard Stock Exchange Bldg., Spokane, Wash. **Officers:** E. S. Crane, Pres.; W. J. Crane, Mgr., both of Kellogg; A. P. Grommesch, Sec., Yakima, Wash. **Inc.:** Oct. 11, 1928. **Capital:** 1,500,000 shares; par value 10c; increased on Apr. 2, 1930, to 2,000,000 shares; shares issued, unknown. **Remarks:** In 1929 this company held the Nellie and Plainview groups under lease and option. The 1930 activities of the company are unknown, as the reports required by law were not filed.

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TETON COUNTY


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TETON COUNTY

Teton is one of the southeastern counties, being bounded on the east by the State of Wyoming, on the south by Bonneville County, on the west by Madison County, and on the north by Fremont County. Containing an area of but 463 square miles, it is the second smallest county in the State. The 1930 census accredited it with a population of 3,573 or 7.7 persons to the square mile, the larger part of which is located in the Teton River valley. Practically all the county is farming land, and the principal industries are wheat, potato and stockraising.

The county is served by the Teton State highway, good county roads, and the Ashton-Victor branch of the O. S. L. Railroad. Driggs is the largest town and county seat.

The principal mineral resources of Teton County are coal, phosphate rock, natural gas, limestone, and asbestos; and there are excellent possibilities for the discovery of petroleum. This county is one of the few in the State in which coal occurs in commercial quantity. Compared with the coal produced at Rock Springs, Wyoming, it is equal in quality and similar in appearance. As well as being of excellent quality for domestic and industrial purposes, it is especially adaptable for powdered coal.

The principal coal-bearing area is the Horseshoe district, seven miles west of Driggs. This district has never been sufficiently developed to prove the number or extent of the coal beds. Those which have been proved vary from one to eleven feet in thickness and repose at an angle of approximately 45 degrees. The Horseshoe district has been examined by the U. S. Geological Survey and by the U. S. Bureau of Mines in cooperation with the Idaho Bureau of Mines and Geology. The reports issued by these organizations are listed in the bibliographies, to which the reader is referred for complete descriptions, analyses, and tonnage estimates.

1930 Activities

The most active enterprise in this county during 1930 was the Grand Teton Oil Co., which, in 1929, acquired the holdings and equipment of the Tieton Land & Leasing Co. and a large additional acreage, installed additional well-drilling equipment, and started sinking two wells known as Blevins No. 1 and Bevan No. 1. During 1930 Blevins No. 1 was extended 1,500 feet, to a total depth of 3,300 feet; and Bevan No. 1 was extended 100 feet, to a total depth of 1,465 feet.
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, 3300 ft. deep; Bevan No. 1 well, 1465 ft. deep. Plant: 2 complete well-drilling rigs and equipment. Mineral sought: Oil and gas. Men employed: Average, 11. Remarks: This organization, in 1929, acquired the holdings of the Tieton Land & Leasing Co. and its equipment and a large additional acreage, installed additional well-drilling equipment, and started sinking two wells known as Blevins No. 1 and Bevan No. 1. During 1930 Blevins No. 1 was extended 1500 ft. and Bevan No. 1, 100 ft. This company was one of the most active oil prospecting enterprises in the State during the year.

IDAHO COAL MINING CO.

SUPERIOR COAL MINING CO.
Office: Pocatello. Officers: Roy L. Black, Pres.; S. Hansen, Sec., both of Pocatello. Inc.: Dec. 24, 1924. Capital: 1,000,000 shares; par value $1; 170,000 shares issued. Property: Assignment of prospecting permits and applications for lease on 2400 acres; Horseshoe dist.; Sam. Development: By 8 short tunnels, the longest being 520 ft., all of which are drifts on coal veins; and an inclined shaft 158 ft. long. Plant: Steam-driven hoist. Mineral sought: Coal. Men employed: Average, 3. Remarks: The principal tunnels were extended a distance of 100 ft. during the year.

TIETON VALLEY LAND & LEASING CO.

BIBLIOGRAPHY
See pages 7-8 for publisher's address, meaning of reference marks, and abbreviations.
VALLEY COUNTY

Valley County occupies the geographical center of the State. It is bounded on the north by Idaho, on the east by Lemhi and Custer, on the south by Boise, and on the west by Gem and Adams counties. It contains an area of 3,779 square miles, and was accredited with a population of 3,488 in the 1930 census, or 0.9 persons to the square mile. The principal industries are farming, stockraising, lumbering and mining. Cascade is the county seat.

The State highway, Payette, extending from Boise to Cascade, McCall, and New Meadows, is the principal highway; the Forest Service highways from Cascade to Landmark and Yellow Pine, and from Landmark into Deadwood Basin and Bear Valley, connecting with the Sawtooth Park and Payette highways, are practically completed and opened to travel. The Nampa-McCall branch of the O. S. L. Railroad is the only railroad in the county.

Isolation and lack of transportation have prevented mineral development and compelled many valuable properties to lie idle, but the system of forest roads which has been designated and partly constructed, is making many of the various sections accessible to travel, and is stimulating mining. When these roads are completed the largest undeveloped mineralized area in the State will become available to profitable development and exploitation. The fact that this county had the largest increase (38.2 per cent) in population of any county in the State during the Interim from the 1920 to the 1930 census verifies this prediction.

The principal mineral resources of Valley County are gold (placer and lode), lead, silver, zinc, antimony, mercury, copper, tungsten, molybdenum, and monazite. Many mines containing these minerals are undeveloped but justify the finances to prove their possibilities, and many others warrant investigation. These properties and the possibilities in undiscovered veins present many opportunities to the investor, prospector, and development company.

WINTER TRANSPORTATION: OLD METHOD

1930 Activities

The expenditure made by the Yellow Pine Co. for power plant construction and installation, for new mining equipment, erection of new buildings, road construction, and mine development work was the largest in southern Idaho during 1930. This company has inaugurated one of the large-
est mine development campaigns ever undertaken in the history of the State, and the expenditures it has made indicate that a new mining district of magnitude is being established. During the year the Monday tunnel camp was selected as the principal base of operations and was established as a post office with the name of Stibnite, having a mail service three times a week.

The Monday and Cinnabar tunnels, on each side of Meadow Creek, are at the same elevation and the portals are connected with a long trestle, thus making all equipment and camp facilities accessible to both tunnels. The Cinnabar tunnel is projected to develop the gold and mercury deposits of the Cinnabar group. Its total length when completed will be about 10,000 feet, and it will intersect the ore zones approximately 1,600 feet below the upper levels. The Monday tunnel, which is practically a drift on the Meadow Creek vein, has projected length of 8,000 feet and a depth of 410 feet below the Meadow Creek tunnel. In the Meadow Creek tunnel there is approximately 4,500 feet of crosscuts, drifts, and raises that open the ore bodies 400 feet below the surface. New buildings erected in Stibnite were: assay office, post office, machine shop and compressor house, change house, large barn, warehouse, woodsheds, oil house, metal house, large cellar, large bunkhouse. New equipment installed: Two large electrically driven compressors, electrically driven ventilator blower, steel sharpener, oil furnaces, lathes and machine tools, storage battery locomotive haulage, and complete mining equipment. At the Meadow Creek camp a new slaughter house, corrals, an additional residence and a warehouse were erected. The compressor was converted to electrically driven. An electrically driven hoist, complete equipment for shaft sinking and for fire protection were added. A new 525-kw. hydroelectric power plant was installed on Meadow Creek. The generator is driven by a Pelton water wheel operating under a 520-foot head. The water is delivered through an 11,000-foot, 28-inch, redwood-stave pipe and a 1,620-foot, 24-inch steel penstock. Construction work was started on the 1st of June, and the plant was completed and in operation on the 1st of November. This work involved also the clearing of a right-of-way for the pipe line and transmission lines through heavy forest for a width of 200 feet. Mine develop-
ment work was maintained throughout the year in the Meadow Creek tunnel and in extending Monday and Cinnabar tunnels. A station and skip pockets were cut in Meadow Creek tunnel, hoist and sinking equipment were installed therein, and all arrangements were completed for sinking a 410-foot vertical shaft on the ore. When completed, Monday tunnel will connect with this shaft. This company is the one mining enterprise in the State to use an airplane for the delivery of mail during the winter. Prior to 1930, mail was delivered by dog team from Cascade. The airplane mail service started in November and continued during the remainder of the year, requiring about an hour from Cascade, as compared with three days by dog team. Plane service included also the transportation of men and light supplies.

Throughout the year the Bunker Hill & Sullivan M. & C. Co., at the Hall Interstate and Lost Pilgrim mines, continued to be one of the most outstanding enterprises in south-central Idaho. Mining and milling were conducted throughout the year, and a substantial tonnage of lead-silver and zinc concentrates was produced and shipped to the company's plant at Kellogg. New camp buildings and concentrate bins were erected, additional mining equipment was installed, and a large amount of mine development work was performed.

The Amalgamated Red Metals Mines Co. and the Profile-Tamarack Mines Co., operating in the Profile section, and the Keystone Gold Mines, Inc., at the Werdenhoff group in the Edwardsburg district, all conducted active exploratory work throughout the summer months.

In the Thunder Mountain district, McRae and Davis maintained work at the Sunnyside mine throughout the summer months and operated their mill intermittently. This district received a large amount of investigation from those seeking new gold-mining enterprises. A project of importance to the Yellow Pine, Profile, Big Creek, and Edwardsburg sections is the construction of the highway from the junction of the present Yellow Pine Meadow Creek highway to the mouth of Profile Creek. Construction of this road was started during the year.

AMALGAMATED RED METALS MINES CO.

BIG CREEK GOLD MINES, INC.

BUNKER HILL & SULLIVAN MINING & CONCENTRATING CO.
(See Shoshone County.) Officers: F. W. Bradley, Pres., 1022 Crocker Bldg., San Francisco, Calif.; Stanly A. Easton, Mgr., Kellogg; C. Y. Garber, Local Mgr., Bernard, Via Cascade. Property: Lease and option on mines owned by Hall Interstate Mining Co. and Lost Pilgrim Mining Co., Deadwood dist.; Cascade, 52 miles; Bernard. Development: Principally by the Independence tunnel 7000 ft. long, in which is a 700-ft., 3-compartment raise with 4 intermediate levels; total development, over 13,000 ft. on both groups. Plant: MINE: 160-kw. hydroelectric power plant operating under a 520-ft. head; 375-kw. hydroelectric power plant operating under a 180-ft. head; 385-cu.-ft. I-R compressor; storage battery locomotive haulage; saw-
mills; complete mining equipment and camp. MILL: 100-ton flotation concentrator. Ore: Lead-silver-zinc. Men employed: Average, 45. Remarks: This enterprise is one of the largest and most important in south-central Idaho. The surface plants were further enlarged and improved, and mining and milling operations were conducted without interruption throughout the year. For a complete description, see pages 32 to 40 of this report.

MEADOW CREEK CAMP: YELLOW PINE CO.

CASCADE VALLEY CORPORATION

COPPER CAMP MINING CO.

DEADWOOD MINING CO., LTD.
Office: Boise. Officers: C. B. Steunenberg, Sec., Boise. Inc.: June 10, 1921. Capital: 1,000,000 shares; par value 10c; 307,504 shares issued. Property: Deadwood group; 8 unpatented claims, Deadwood dist.; Knox. Development: Principally by 1 tunnel, 600 ft. long. Ore: Lead-silver. Remarks: A small amount of development work during the year, funds for which were derived from a stock assessment of 5 mills, levied on March 12.

GOLD FORK MINING CO.
GREAT NORTHERN MINES CO.

HALL INTERSTATE MINING CO.

HOLCOMB CO., LTD.

HURLEY CREEK MINING & MILLING CO.

IDAHO CENTRAL MINES CO.

INDEPENDENCE MINES & POWER CO.

KEYSTONE GOLD MINES, INC.

LOST PILGRIM MINING CO.
Office: Boise. Officers: Chas. W. Mack, Sec., Boise. Inc.: Nov. 22, 1921. Capital: 600,000 shares; par value $1; 355,144 shares issued. Property: Lost Pilgrim group; 8 unpatented 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: Under lease and option to Bunker Hill & Sullivan M. & C. Co.
MERRY BLUE MINES CORPORATION

NATIONAL MERCURY CORPORATION

PROFILE-TAMARACK MINES CO.

PROSPECTORS MINING & DEVELOPING CO., LTD.

RAPID CREEK MINING CO., LTD.
Office: Cascade. Officers: F. M. Kerby, Pres., Cascade; E. J. Geelan, Sec., McCall. Inc.: Nov. 1, 1928. Capital: 1,000,000 shares; par value 10c; 465,000 shares issued. Property: Rapid Creek group; 41 unpatented claims; McCall. Ore: Lead-silver-copper. Remarks: Annual labor only.
VIEW OF PIPE LINE MEADOW CREEK POWER PLANT: YELLOW PINE CO.

SMITH CREEK HYDRAULIC MINING CO., INC.

SOUTH SALMON PLACER MINING CO.

UNITED MERCURY MINES CO.

YELLOW PINE CO.
Office: 1022 Crocker Bldg., San Francisco, Calif. Officers: Fred W. Bradley, Pres.; E. A. Griffin, Sec., both of San Francisco; Geo. W. Worthington, Supt., Stibnite. Inc.: Filed in Idaho May 25, 1928. Capital: 200,000 shares; par value $1; 62,605 shares issued. Property: Cinnabar, Meadow Creek, and Babbitt Metals groups, 11 patented, 426 unpatented claims, held under lease and option from United Mercury Mines Co.; 13 quartz and 2 placer claims, unpatented, held under lease and option from Great Northern Mines Co. Development: Meadow Creek group: Meadow Creek tunnel, over 3000 ft. long, 2 inclined raises in which are 3 intermediate levels, total development over 4500 ft.; Monday tunnel, 1500 ft. long; Cinnabar group: Cinnabar tunnel 1100 ft. long. Plant: POWER: South Meadow Creek: hydroelectric, 75-kw., driven by Pelton water wheel under a 422-ft. head. Meadow Creek: hydroelectric, 525-kw., driven by
Pelton water wheel under a 520-ft. head; 11,000 ft. 28-inch redwood pipe; 1620 ft. 24-inch steel penstock; 5 miles of transmission lines. MINE:
Meadow Creek Camp: 12x10 1-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 1-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. Ore: Mercury, gold-silver, antimony. Men employed: Average, 90.

REMARKS

The expenditure made by this company for power plant construction and installation, for new mining equipment, erection of new buildings, road construction, and mine development work was the largest in southern Idaho during 1930. The Monday tunnel camp was selected as the principal base of operations and was established as a post office with the name of Stibnite, having a mail service three times a week. The Monday and Cinnabar tunnels, on each side of Meadow Creek, are at the same elevation and the portals are connected with a long trestle, thus making all equipment and camp facilities accessible to both tunnels. The Cinnabar tunnel is projected to develop the gold and mercury deposits of the Cinnabar group. Its total length when completed will be about 10,000 ft., and it will intersect the ore zones approximately 1,600 ft. below the upper levels. The Monday tunnel, which is practically a drift on the Meadow Creek vein, has a projected length of 8,000 ft. and a depth of 410 ft. below the Meadow Creek tunnel. In the Meadow Creek tunnel there is approximately 4,500 ft. of crosscuts, drifts, and raises that open the ore bodies 400 ft. below the surface. New buildings erected in Stibnite were: assay office, post office, machine shop and compressor house, change house, large barn, warehouse, woodsheds, oil house, meat house, large cellar, large bunkhouse. New equipment installed: Two large electrically driven compressors, electrically driven ventilator blower, steel sharpener, oil furnaces, lathes and machine tools, storage battery locomotive haulage, and complete mining equipment. At the Meadow Creek camp a new slaughter house, corrals, an additional residence and a warehouse were erected. The compressor was converted to electrically driven. An electrically driven hoist, complete equipment for shaft sinking and for fire protection were added. A new 525-kw. hydroelectric power plant was installed on Meadow Creek. The generator is driven by a Pelton water wheel operating under a 520-ft. head. The water is delivered through an 11,000-ft., 28-inch, redwood-stave pipe and a 1620-ft., 24-inch steel penstock. Construction work was started on the 1st of June, and the plant was completed and in operation on the 1st of November. This work involved also the clearing of a right-of-way for the pipe line and transmission lines through heavy forest for a width of 200 ft. Mine development work was maintained throughout the year in the Meadow Creek tunnel and in extending Monday and Cinnabar tunnels. A station and skip pockets were cut in Meadow Creek tunnel, hoist and sinking equipment were installed therein, and all arrangements were completed for sinking a 410-ft. vertical shaft on the ore. When completed, Monday tunnel will connect with this shaft. This company has inaugurated one of the largest mine development campaigns ever undertaken in the history of the State, and the expenditures it has made indicate that a new mining district of magnitude is being established. This company is the one mining enterprise in the State to use an airplane for the delivery of mail during the winter. Prior to 1930, mail was delivered by dog team from Cascade. The airplane mail service started in November and continued during the remainder of the year, requiring about an hour from Cascade, as compared with three days by dog team. Plane service included also the transportation of men and light supplies.
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WASHINGTON COUNTY

Washington is one of the southwestern counties, adjoining and lying north of Payette and Gem counties, east of Gem, and east and south of Adams County. The Snake River, which flows north, forms the entire western boundary. The county contains an area of 1,479 square miles, and was accredited with a population of 7,962 in the 1930 census. It is primarily an agricultural and stockraising community; that part which occupies the Snake River Valley is intensively cultivated, and is the location of the larger part of the population. Weiser is the county seat.

The North and South highway extends from the southern to the northern boundary and is situated about in the geographical center. Branch roads leading to all the settlements are maintained by the county; these are kept in good repair and open to travel the larger part of the year. The county is served by three railroads, the Pacific and Idaho Northern, which extends from Weiser to New Meadows; the main line of the O. S. L. Railroad, and the Huntington-Robinette, Oregon, branch of the same road.

The principal mineral resources are silver, copper, gold, lead, zinc, manganese, diatomaceous earth, pyrites, gypsum, clay, and garnet, practically all of which occur in the three mining districts—Washington, Cuddy Mountain, and Heath—the principal of which is the Washington, or Mineral, district; and natural gas near Weiser. At one time the Mineral district was a large producer of silver; two blast furnaces were in operation, and the camp of Mineral was a goodsized town; but it has been deserted for many years, the smelters have been dismantled, and the district has almost reverted to its primitive condition. Nearly all the deposits are high-grade silver-copper ores, rather complex, and in some mines partly oxidized, but amenable to modern flotation methods. Many of the deposits in this district are extensive, a large tonnage of ore is available, and there appears to be no reason why the district should not be receiving more attention than it has during the past few years, as there are many properties that are worthy of investigation and development. Large deposits of pyrites and disseminated copper ore also occur in this district.
1930 Activities

An event of importance to this county and to southern Idaho was the entry of the Idaho Mineral Mining Co., a subsidiary of the Goldfield Deep Mines Co. of Nevada, into the Mineral district late in 1929. This company acquired practically all of the principal properties adjacent to the old town of Mineral and consisting of three groups on each side of Dennett Creek; a small gas-driven compressor and complete mining equipment were installed; active development work was commenced and was continued throughout 1930.

The Crystal Dome Oil & Gas Co., whose property lies between the towns of Payette and Weiser, erected an 84-foot derrick, installed a standard steam-driven drilling rig, and commenced operations in sinking a 12½-inch well in November, 1929, and completed the well to a depth of 1,470 feet in 1930. On Sept. 28, 1930, at a depth of 1,865 feet, a showing of natural gas was encountered. In November this company entered into an operating agreement with the Mountain States Oil & Gas Co., which has conducted all subsequent operations.

The Cuddy Mountain district received a small amount of attention during the summer months, and G. T. Hamill produced and shipped a carload of high-grade lead-silver ore.

CRYSTAL DOME OIL & GAS CO.
Office: Box 1573, Boise. Officers: B. P. Kramlich, Pres.; Charles F. Reddoch, Sec., both of Boise. Inc.: Aug. 8, 1929. Capital: 6000 shares; par value $25; 3702 shares issued. Property: Oil and gas leases on 23,000 acres near Weiser. Development: By a 12-in. well 1865 ft. deep. Plant: 84-ft. wooden derrick; standard steam-driven rig; complete drilling equipment. Mineral sought: Oil and gas. Men employed: Average, 4. The company states: “Crystal Dome Oil & Gas Co. has an operating agreement with the Mountain States Oil & Gas Co. and is no longer in the active development itself. The company began its operations in November, 1929, and drilled one well to a depth of 1470 ft., which was lost by reason of two joints of 12½-inch pipe getting lost at the bottom of the well. Another well was commenced about June 14, 1930, and a showing of gas was struck on Sept. 28, 1930. (at a depth of 1865 ft.) * * * Oper­ations since about Nov. 1 have been by the Mountain States Oil & Gas Co.”

CUDDY MOUNTAIN GOLD MINING CO.

EDNA MAY MINES CO., INC.

IDAHO MINERAL MINING CO.
IDAHO-OREGON COAL MINING CO.

INDIAN HEAD CALCITE CO.

LIME PHOSPHATE PRODUCTS CORPORATION

MOUNTAIN STATES OIL & GAS CO.
Office: Weiser. Officers: Willard Scowcroft, Pres., Ogden, Utah; Charles F. Reddoch, Asst. Sec., Boise; John Sandburg, Mgr., Weiser. Inc.: Oct. 14, 1930. Capital: 2,000,000 shares; par value $1; 466,300 shares issued. Property: Oil and gas leases near Weiser, and an operating agreement with the Crystal Dome Oil & Gas Co.

SILVER STILL MINING CO.

WEISER GAS & PETROLEUM CO.

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BIBLIOGRAPHY

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UNKNOWN MINING AND OIL COMPANIES

Companies whose corporate charters are in good standing, for which information is entirely lacking, and which are not mentioned elsewhere in this report, because they failed to file with the inspector of mines the reports required by law:

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1930 METAL PRODUCTION

The total value of the gold, silver, lead, zinc, and copper produced in Idaho in 1930 was $22,258,483.41, a decrease of $12,757,521.91 as compared with that of 1929, which was $35,016,005.32. The production of gold increased about 400 ounces, and that of the other metals suffered a large decline. The low production and low value were caused by the world-wide depression, which greatly decreased metal prices, thus causing many companies to curtail production and others to suspend entirely. Excepting Valley, Boise, and Idaho counties, every metal-producing county witnessed the lowest production record for many years. The increase in Valley County was caused by the production of the Bunker Hill & Sullivan M. & C. Co. from the Hall Interstate-Lost Pilgrim mines, and that of Boise and Idaho counties from an increase in gold production. The number of producers declined thirty, although there was an increase in the number of gold producers. These increases are indicative of an expansion in gold mining and of attention directed to the gold resources of the State.

Shoshone County continued to maintain its position as the principal mining county in the State; its rank in percentage as compared with the rest of the State was practically the same as in the previous year; in 1930 it was 91.82 per cent, while it was 91.48 per cent in 1929. Its total production in 1930 was $20,438,084.32 as against $32,030,870.21 in 1929. This county was first in the production of lead, silver, zinc, and copper; Boise County was first in the production of gold. All of the copper produced in Shoshone County was derived as a by-product from lead-silver-zinc ores. Custer County was first and Lemhi County second in the production of copper from copper mines. The respective rank of the principal mining counties in point of total production was: Shoshone, Blaine, Valley, Boise, Custer, Bonner, Butte, Idaho, Lemhi, and Owyhee.

Gold

The 1930 output of gold was 21,137.52 ounces, valued at $436,912.54, an increase of 395.90 ounces and $8,183.25 as compared with that of 1929, which was 20,741.62 ounces, valued at $428,729.29. This increase was more significant than the figures indicate, as there was a large loss in gold recovered as a by-product from lead, silver, zinc, and copper ores and a substantial increase in gold recovered from placer and quartz mines.

The respective rank of the leading mining counties in point of gold produced was: Boise, Idaho, Valley, Owyhee, Custer, Shoshone, Lemhi, and Blaine.

The principal gold-producing companies and their respective ranks were: Talache Mines, Inc., Idawa Gold Mining Co., and Idaho Gold Dredging Corporation, Boise County; Sherman Howe Mining Co., Idaho County; Bunker Hill & Sullivan M. & C. Co. at the Hall Interstate and Lost Pilgrim mines, Valley County; Mackay Metals, Custer County; American Gold Dredging Corporation, Owyhee County; F. O. Miller, Idaho County.

Silver

The output of silver decreased from 9,446,654.44 ounces with a value of $5,006,065.59 in 1929 to 9,032,588.57 with a value of $3,446,408.32 in 1930, a decrease of 413,765.87 ounces and a decrease of $1,559,657.27 in value. The small decrease as compared with the large decrease in lead was caused by the increase in production of the Sunshine Mining Co., which gained the rank of the largest silver-producing company in the State. The large decrease in value was due to the decrease in the price of silver from $0.52993 per ounce in 1929 to $0.38154 per ounce in 1930. The decrease is significant, as it indicates a decrease in the output of lead, zinc, and copper ores, from which over 80 per cent of the silver is derived. Excepting Valley County, all other counties had a marked decrease in production.
The 1930 silver production in Shoshone County was 8,438,208.56 ounces valued at $3,219,514.11, as compared with 8,786,525.25 ounces valued at $4,656,243.33 in 1929. That of Blaine County for the respective years was 218,765.92 ounces valued at $83,467.95, and 203,589.87 ounces valued at $107,888.38. That of Valley County increased from 8,831.07 ounces valued at $4,679.85 in 1929, to 181,154.05 ounces valued at $69,117.52 in 1930. The production of Shoshone County, which was 93.4 per cent of the total for the State, indicates the importance of mining in the Coeur d'Alene district, particularly as Idaho produces approximately one-third of all of the silver of the United States.

The order of prominence of the principal silver-producing counties was: Shoshone, Blaine, Valley, Bonner, Custer, Boise, and Butte.


In other counties the most important producers were: Hailey Triumph Mines Co., Blaine County; Bunker Hill & Sullivan M. & C. Co., Valley County; Whitedelf Mining & Development Co., Bonner County; Mackay Metals, Livingston Mines Corporation, and lessees at the mine of the Ramshorn Mines Co., Custer County; Wilbert Mining Co., Ltd., Butte County.

Lead

The production of lead decreased from 312,151,644 pounds valued at $21,529,321.83 in 1929 to 263,599,300 pounds valued at $14,542,773.34 in 1930, being the lowest production since 1925 and the lowest in value since 1922. The average price of lead in 1930 was 5.517 cents per pound, while in 1929 it was 6.833 cents per pound, thus accounting in part for the large decrease in value.

Shoshone County furnished 96.4 per cent of the State total with a production of 254,178,645 pounds, a decrease of 42,367,355 pounds under that of the previous year. The mines in all other counties, excepting Valley, reported a large decrease.

The importance of Idaho as a lead-producing State, and particularly of Shoshone County, is apparent from the fact that Idaho ranks second in the United States and produces approximately one-fourth of the entire output of the Nation.

The order of prominence of the principal lead-producing counties was: Shoshone, Blaine, Butte, Valley, Bonner, Custer, and Lemhi.

The Bunker Hill & Sullivan M. & C. Co. maintained its record as the largest lead-producing company in the State, if not in the United States; The Federal Mining & Smelting Co. was second; and the Hecla Mining Co. was third. The other large lead-producing companies in Shoshone County, in their order of prominence, were: Dayrock Mining Co., Sherman Lead Co., Gold Hunter Mines, Inc., Sullivan Mining Co., Tamarack & Custer Consolidated Mining Co., Sidney Leasing Co., Golconda Lead Mines, Constitution Mining & Milling Co., Sunshine Mining Co., and Callahan Zinc-Lead Co.

Important lead producers in other counties were: Hailey Triumph Mines Co. in Blaine County; Bunker Hill & Sullivan M. & C. Co., Valley County; Whitedelf Mining & Development Co., Bonner County; Wilbert Mining Co., Ltd., Butte County; Livingston Mines Corporation, Custer County; lessees at the P-I, Allie, and Latest Out mines at Gilmore, Lemhi County.

Zinc

The 1930 production of recoverable zinc greatly decreased from that of 1929, which was the State's record production. The total for the year was 75,136,539 pounds valued at $3,423,220.72, as compared with 110,767,523 pounds valued at $7,213,181.10 in 1929. The unsatisfactory price level which zinc maintained throughout the year caused many producers to suspend
production and others greatly to curtail it. In 1929 the price of zinc averaged 6.512 cents per pound, as compared with the price of 4.556 cents per pound in 1930. The Sullivan electrolytic zinc plant at Kellogg reduced output early in the year, and this curtailment was reflected in the total production of the State. The Anaconda Copper Mining Co., of Anaconda, Montana, and the Sullivan Mining Co. purchased the entire State output of zinc concentrate. The metal produced by the Sullivan Mining Co. is the highest grade zinc ever obtained and is sold at a premium in price over any other zinc metal.

Shoshone, Blaine, and Valley counties were the only ones that produced a marketable zinc product. The production of Blaine County was obtained from the Triumph mine of the Hailey Triumph Mines Co. and the North Star of the Federal Mining & Smelting Co., and that of Valley County from the Hall Interstate and Lost Pilgrim mines of the Bunker Hill & Sullivan M. & C. Co.


Copper

The output of copper in 1930 was about one-half that of 1929 and was the lowest of any year since 1922. In addition to the marked decrease in production, there was a great decrease in value due to the decrease in the price of copper under that of the previous year, which was 18.107 cents per pound, as compared with 12.982 cents per pound in 1930. The 1930 production of copper was 3,151,814 pounds valued at $409,168.49, as compared with 5,736,497 pounds valued at $1,038,707.51 in 1929, a decrease of 2,584,683 pounds and $629,539.02 in value. The decrease in production was due to the idleness of the Empire Copper mine owned by Mackay Metals in Custer County and the Winder Stillman Con and Harmony Mines Co., both in Lemhi County, throughout a large part of the year, and to the decrease in the output of lead, zinc, and silver ores in Shoshone County.

The order of prominence of the principal copper-producing counties was: Shoshone, Custer, Lemhi, and Valley.

The principal copper-producing companies were: Mackay Metals in Custer County; Winder Stillman Con and Harmony Mines Co. in Lemhi County. Except the copper produced by these companies and a few isolated shipments, the remainder of the copper produced in the State was associated with lead, zinc, and silver ores and was recovered by the smelters as a by-product.

Statistics

The production statistics for 1930 are based upon the net recovered metal content of all ores or bullion produced and sold from Idaho mines. The tabulation constitutes the production as reported to the inspector's office; reports have been verified in every possible manner; and no estimates have been used in the compilation. If any error exists in the totals, it is due to unreported production, and as production statements were furnished by all the large producers, the margin of error is very small. Any unreported production would cause these figures to be larger than the amounts set forth, so this compilation represents, as nearly as possible, the correct minimum production.

The values have been figured from the average price of metals for the year, based on New York and St. Louis quotations, as published in the Engineering & Mining Journal.
## 1930 METAL PRODUCTION

### 1930 METAL PRODUCTION BY COUNTIES

<table>
<thead>
<tr>
<th>Number of Producers</th>
<th>BLAINE COUNTY</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gold</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Silver</td>
<td>218,765.92 oz.</td>
<td>$83,467.95</td>
</tr>
<tr>
<td>Lead</td>
<td>3,610,237.00 lbs.</td>
<td>$199,176.78</td>
</tr>
<tr>
<td>Zinc</td>
<td>7,108,238.00 lbs.</td>
<td>$323,896.88</td>
</tr>
<tr>
<td>Copper</td>
<td>2,730.00 lbs.</td>
<td>$354.41</td>
</tr>
<tr>
<td>Value</td>
<td></td>
<td>$609,314.40</td>
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</table>

<table>
<thead>
<tr>
<th>BOISE COUNTY</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Gold</td>
<td>27</td>
</tr>
<tr>
<td>Silver</td>
<td>22,209.23 oz.</td>
</tr>
<tr>
<td>Lead</td>
<td>110,621.00 lbs.</td>
</tr>
<tr>
<td>Copper</td>
<td>3,570.00 lbs.</td>
</tr>
<tr>
<td>Value</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BONNER COUNTY</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Gold</td>
<td>4</td>
</tr>
<tr>
<td>Silver</td>
<td>84,357.14 oz.</td>
</tr>
<tr>
<td>Lead</td>
<td>1,887,786.00 lbs.</td>
</tr>
<tr>
<td>Copper</td>
<td>3,008.00 lbs.</td>
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<tr>
<td>Value</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>BUTTE COUNTY</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Gold</td>
<td>4</td>
</tr>
<tr>
<td>Silver</td>
<td>18,889.22 oz.</td>
</tr>
<tr>
<td>Lead</td>
<td>1,677,638.00 lbs.</td>
</tr>
<tr>
<td>Copper</td>
<td>3,008.00 lbs.</td>
</tr>
<tr>
<td>Value</td>
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</table>

<table>
<thead>
<tr>
<th>CAMAS COUNTY</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Gold</td>
<td>3</td>
</tr>
<tr>
<td>Silver</td>
<td>262.72 oz.</td>
</tr>
<tr>
<td>Lead</td>
<td>8,312.00 lbs.</td>
</tr>
<tr>
<td>Copper</td>
<td>338.00 lbs.</td>
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</tr>
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</table>

<table>
<thead>
<tr>
<th>CLARK COUNTY</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Gold</td>
<td>3</td>
</tr>
<tr>
<td>Silver</td>
<td>507.33 oz.</td>
</tr>
<tr>
<td>Lead</td>
<td>56,960.00 lbs.</td>
</tr>
<tr>
<td>Copper</td>
<td>160 lbs.</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>CLEARWATER COUNTY</th>
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</tr>
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<tbody>
<tr>
<td>Gold</td>
<td>3</td>
</tr>
<tr>
<td>Silver</td>
<td>41.69 oz.</td>
</tr>
<tr>
<td>Lead</td>
<td>5.23 oz.</td>
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</table>

<table>
<thead>
<tr>
<th>CUSTER COUNTY</th>
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<tbody>
<tr>
<td>Gold</td>
<td>7</td>
</tr>
<tr>
<td>Silver</td>
<td>847.98 oz.</td>
</tr>
<tr>
<td>Lead</td>
<td>46,915.45 oz.</td>
</tr>
<tr>
<td>Copper</td>
<td>346,938.00 lbs.</td>
</tr>
<tr>
<td>Value</td>
<td></td>
</tr>
<tr>
<td>Value</td>
<td></td>
</tr>
</tbody>
</table>
## MINING INDUSTRY OF IDAHO

<table>
<thead>
<tr>
<th>County</th>
<th>Gold</th>
<th>Silver</th>
<th>Lead</th>
<th>Copper</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ELMORE COUNTY</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Gold</td>
<td>48.38 oz.</td>
<td>16.98 oz.</td>
<td></td>
<td></td>
<td>$ 1,000.15</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6.48</td>
</tr>
<tr>
<td><strong>IDAHO COUNTY</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>25 Gold</td>
<td>3,564.20 oz.</td>
<td></td>
<td></td>
<td></td>
<td>$ 73,672.02</td>
</tr>
<tr>
<td>Silver</td>
<td>9,232.60 oz.</td>
<td></td>
<td></td>
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<td>$ 3,522.61</td>
</tr>
<tr>
<td>Lead</td>
<td>796.00 lbs.</td>
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<td></td>
<td>43.92</td>
</tr>
<tr>
<td>Copper</td>
<td>1,140.00 lbs.</td>
<td></td>
<td></td>
<td></td>
<td>147.99</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$ 1,006.63</td>
</tr>
<tr>
<td><strong>LEMIHI COUNTY</strong></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>17 Gold</td>
<td>644.44 oz.</td>
<td></td>
<td></td>
<td></td>
<td>$ 13,320.57</td>
</tr>
<tr>
<td>Silver</td>
<td>4,219.12 oz.</td>
<td></td>
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<td></td>
<td>1,609.76</td>
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<tr>
<td>Lead</td>
<td>259,076.00 lbs.</td>
<td></td>
<td></td>
<td></td>
<td>14,293.22</td>
</tr>
<tr>
<td>Copper</td>
<td>248,600.00 lbs.</td>
<td></td>
<td></td>
<td></td>
<td>32,273.25</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$ 77,386.54</td>
</tr>
<tr>
<td><strong>OWYHEE COUNTY</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 Gold</td>
<td>910.78 oz.</td>
<td></td>
<td></td>
<td></td>
<td>$ 18,825.82</td>
</tr>
<tr>
<td>Silver</td>
<td>6,260.07 oz.</td>
<td></td>
<td></td>
<td></td>
<td>2,388.47</td>
</tr>
<tr>
<td>Lead</td>
<td>204.00 lbs.</td>
<td></td>
<td></td>
<td></td>
<td>11.25</td>
</tr>
<tr>
<td>Copper</td>
<td>60.00 lbs.</td>
<td></td>
<td></td>
<td></td>
<td>7.79</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$ 21,233.33</td>
</tr>
<tr>
<td><strong>SHOSHONE COUNTY</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>41 Gold</td>
<td>810.66 oz.</td>
<td></td>
<td></td>
<td></td>
<td>$ 16,756.34</td>
</tr>
<tr>
<td>Silver</td>
<td>8,438,208.56 oz.</td>
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<td></td>
<td></td>
<td>3,219,514.11</td>
</tr>
<tr>
<td>Lead</td>
<td>254,178,645.00 lbs.</td>
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<td></td>
<td></td>
<td>14,023,035.28</td>
</tr>
<tr>
<td>Zinc</td>
<td>65,055,890.00 lbs.</td>
<td></td>
<td></td>
<td></td>
<td>2,963,946.35</td>
</tr>
<tr>
<td>Copper</td>
<td>1,654,847.00 lbs.</td>
<td></td>
<td></td>
<td></td>
<td>214,832.24</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$20,438,084.32</td>
</tr>
<tr>
<td><strong>VALLEY COUNTY</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>5 Gold</td>
<td>990.07 oz.</td>
<td></td>
<td></td>
<td></td>
<td>$ 20,464.75</td>
</tr>
<tr>
<td>Silver</td>
<td>181,154.05 oz.</td>
<td></td>
<td></td>
<td></td>
<td>69,117.52</td>
</tr>
<tr>
<td>Lead</td>
<td>1,442,689.00 lbs.</td>
<td></td>
<td></td>
<td></td>
<td>79,593.15</td>
</tr>
<tr>
<td>Zinc</td>
<td>2,971,411.00 lbs.</td>
<td></td>
<td></td>
<td></td>
<td>135,378.28</td>
</tr>
<tr>
<td>Copper</td>
<td>125,315.00 lbs.</td>
<td></td>
<td></td>
<td></td>
<td>16,268.39</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$ 320,821.30</td>
</tr>
<tr>
<td><strong>WASHINGTON COUNTY</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Gold</td>
<td>74.80 oz.</td>
<td></td>
<td></td>
<td></td>
<td>$ 1,546.12</td>
</tr>
<tr>
<td>Silver</td>
<td>1,874.20 oz.</td>
<td></td>
<td></td>
<td></td>
<td>715.08</td>
</tr>
<tr>
<td>Lead</td>
<td>19,210.00 lbs.</td>
<td></td>
<td></td>
<td></td>
<td>1,059.82</td>
</tr>
<tr>
<td>Copper</td>
<td>2,400.00 lbs.</td>
<td></td>
<td></td>
<td></td>
<td>311.57</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$ 3,632.59</td>
</tr>
<tr>
<td><strong>MISCELLANEOUS COUNTIES</strong></td>
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</tr>
<tr>
<td>4 Gold</td>
<td>21.62 oz.</td>
<td></td>
<td></td>
<td></td>
<td>$ 446.89</td>
</tr>
<tr>
<td>Silver</td>
<td>10.75 oz.</td>
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<td></td>
<td></td>
<td>4.10</td>
</tr>
<tr>
<td>Lead</td>
<td>190.00 lbs.</td>
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<td></td>
<td></td>
<td>10.48</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$ 461.47</td>
</tr>
<tr>
<td>Number of Producers</td>
<td>STATE TOTALS</td>
<td>Value</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------</td>
<td>--------------</td>
<td>-------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>164</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gold</td>
<td>21,137.52 oz</td>
<td>$436,912.54</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Silver</td>
<td>9,032,888.57 oz</td>
<td>3,446,408.32</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lead</td>
<td>263,599,300.00 lbs</td>
<td>14,542,773.34</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zinc</td>
<td>75,136,539.00 lbs</td>
<td>3,423,220.72</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Copper</td>
<td>3,151,814.00 lbs</td>
<td>409,168.49</td>
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<td></td>
</tr>
</tbody>
</table>

**ANNUAL METAL OUTPUT FOR IDAHO SINCE 1903**

(Statistics for 1903 to 1920, inclusive, from U. S. Geol. Survey Mineral Resources. Statistics for subsequent years from Annual Reports, Mining Industry of Idaho.)

**1903**

<table>
<thead>
<tr>
<th>Metal</th>
<th>Quantity</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gold</td>
<td>65,850 oz</td>
<td>$1,361,119</td>
</tr>
<tr>
<td>Silver</td>
<td>7,398,970 oz</td>
<td>3,951,790</td>
</tr>
<tr>
<td>Lead</td>
<td>213,143,618 lbs</td>
<td>9,135,336</td>
</tr>
<tr>
<td>Copper</td>
<td>569,484 lbs</td>
<td>78,589</td>
</tr>
</tbody>
</table>

Total value $14,526,833

**1904**

<table>
<thead>
<tr>
<th>Metal</th>
<th>Quantity</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gold</td>
<td>82,739 oz</td>
<td>$1,710,365</td>
</tr>
<tr>
<td>Silver</td>
<td>7,666,382 oz</td>
<td>4,389,004</td>
</tr>
<tr>
<td>Lead</td>
<td>233,096,375 lbs</td>
<td>10,197,966</td>
</tr>
<tr>
<td>Zinc</td>
<td>2,500 lbs</td>
<td>130</td>
</tr>
<tr>
<td>Copper</td>
<td>5,087,518 lbs</td>
<td>635,940</td>
</tr>
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</table>

Total value $16,933,405

**1905**

<table>
<thead>
<tr>
<th>Metal</th>
<th>Quantity</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gold</td>
<td>52,033 oz</td>
<td>$1,075,618</td>
</tr>
<tr>
<td>Silver</td>
<td>8,679,093 oz</td>
<td>5,242,172</td>
</tr>
<tr>
<td>Lead</td>
<td>259,812,428 lbs</td>
<td>12,211,184</td>
</tr>
<tr>
<td>Zinc</td>
<td>1,228,449 lbs</td>
<td>72,479</td>
</tr>
<tr>
<td>Copper</td>
<td>7,321,585 lbs</td>
<td>1,142,167</td>
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</table>

Total value $19,743,620

**1906**

<table>
<thead>
<tr>
<th>Metal</th>
<th>Quantity</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gold</td>
<td>55,588 oz</td>
<td>$1,149,100</td>
</tr>
<tr>
<td>Silver</td>
<td>9,018,815 oz</td>
<td>6,042,606</td>
</tr>
<tr>
<td>Lead</td>
<td>255,014,446 lbs</td>
<td>14,535,823</td>
</tr>
<tr>
<td>Zinc</td>
<td>2,065,597 lbs</td>
<td>126,001</td>
</tr>
<tr>
<td>Copper</td>
<td>9,558,913 lbs</td>
<td>1,844,870</td>
</tr>
</tbody>
</table>

Total value $23,698,400
<table>
<thead>
<tr>
<th>Year</th>
<th>Gold (oz.)</th>
<th>Silver (oz.)</th>
<th>Lead (lbs.)</th>
<th>Zinc (lbs.)</th>
<th>Copper (lbs.)</th>
<th>Total Value ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1907</td>
<td>60,755</td>
<td>8,415,431</td>
<td>233,823,854</td>
<td>6,085,732</td>
<td>10,890,731</td>
<td>21,793,064</td>
</tr>
<tr>
<td>1908</td>
<td>69,827</td>
<td>7,469,981</td>
<td>206,827,816</td>
<td>37,410</td>
<td>10,041,850</td>
<td>15,416,599</td>
</tr>
<tr>
<td>1909</td>
<td>70,329</td>
<td>7,041,633</td>
<td>215,986,285</td>
<td>1,351,010</td>
<td>9,115,489</td>
<td>16,316,196</td>
</tr>
<tr>
<td>1910</td>
<td>53,060</td>
<td>7,369,742</td>
<td>228,258,839</td>
<td>5,603,114</td>
<td>7,037,292</td>
<td>19,100,894</td>
</tr>
<tr>
<td>1911</td>
<td>66,389</td>
<td>8,196,136</td>
<td>272,556,525</td>
<td>8,340,249</td>
<td>5,152,937</td>
<td>19,100,894</td>
</tr>
<tr>
<td>1912</td>
<td>66,816</td>
<td>8,294,745</td>
<td>284,185,657</td>
<td>13,905,502</td>
<td>7,492,152</td>
<td>21,466,521</td>
</tr>
<tr>
<td>1913</td>
<td>65,043</td>
<td>9,889,193</td>
<td>317,871,945</td>
<td>23,173,953</td>
<td>9,592,966</td>
<td>24,149,049</td>
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</tbody>
</table>
### Annual Metal Production Since 1903

<table>
<thead>
<tr>
<th>Year</th>
<th>Gold</th>
<th>Silver</th>
<th>Lead</th>
<th>Zinc</th>
<th>Copper</th>
<th>Total Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1914</td>
<td>55,743 oz.</td>
<td>12,479,516 oz.</td>
<td>348,526,069 lbs.</td>
<td>42,012,435 lbs.</td>
<td>6,445,187 lbs.</td>
<td>$1,152,315</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$24,645,848</td>
</tr>
<tr>
<td>1915</td>
<td>57,069 oz.</td>
<td>11,769,128 oz.</td>
<td>345,999,466 lbs.</td>
<td>70,153,234 lbs.</td>
<td>6,978,713 lbs.</td>
<td>$1,179,731</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$33,328,930</td>
</tr>
<tr>
<td>1916</td>
<td>53,977 oz.</td>
<td>12,300,873 oz.</td>
<td>375,081,781 lbs.</td>
<td>86,505,219 lbs.</td>
<td>8,478,281 lbs.</td>
<td>$1,115,810</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$48,767,783</td>
</tr>
<tr>
<td>1917</td>
<td>38,933 oz.</td>
<td>12,029,338 oz.</td>
<td>393,559,521 lbs.</td>
<td>79,854,136 lbs.</td>
<td>7,827,574 lbs.</td>
<td>$804,809</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$54,845,153</td>
</tr>
<tr>
<td>1918</td>
<td>33,999 oz.</td>
<td>9,172,340 oz.</td>
<td>294,695,993 lbs.</td>
<td>45,161,712 lbs.</td>
<td>6,533,888 lbs.</td>
<td>$702,816</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$36,522,158</td>
</tr>
<tr>
<td>1919</td>
<td>34,503 oz.</td>
<td>5,579,056 oz.</td>
<td>182,341,898 lbs.</td>
<td>15,994,229 lbs.</td>
<td>3,122,763 lbs.</td>
<td>$713,238</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$18,374,315</td>
</tr>
<tr>
<td>1920</td>
<td>23,490 oz.</td>
<td>7,326,794 oz.</td>
<td>249,609,976 lbs.</td>
<td>27,932,326 lbs.</td>
<td>2,538,396 lbs.</td>
<td>$485,890</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td>$31,170,176</td>
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</tbody>
</table>
## MINING INDUSTRY OF IDAHO

### 1921

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<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Gold</td>
<td>26,750.76 oz.</td>
<td>$ 552,938</td>
</tr>
<tr>
<td>Silver</td>
<td>6,184,989.73 oz.</td>
<td>6,184,989</td>
</tr>
<tr>
<td>Lead</td>
<td>210,100,194.00 lbs.</td>
<td>9,559,558</td>
</tr>
<tr>
<td>Copper</td>
<td>1,380,168.00 lbs.</td>
<td>172,521</td>
</tr>
<tr>
<td>Zinc</td>
<td>1,818,313.00 lbs.</td>
<td>94,006</td>
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</tbody>
</table>

**Total value** $16,564,014

### 1922

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<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Gold</td>
<td>22,178.39 oz.</td>
<td>$ 458,427.32</td>
</tr>
<tr>
<td>Silver</td>
<td>6,149,336.15 oz.</td>
<td>6,149,336.15</td>
</tr>
<tr>
<td>Lead</td>
<td>205,132,588.00 lbs.</td>
<td>11,762,302.60</td>
</tr>
<tr>
<td>Zinc</td>
<td>5,596,514.00 lbs.</td>
<td>394,666.17</td>
</tr>
<tr>
<td>Copper</td>
<td>3,225,762.00 lbs.</td>
<td>431,671.47</td>
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</tbody>
</table>

**Total value** $19,196,403.71

### 1923

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<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Gold</td>
<td>35,506.23 oz.</td>
<td>$ 733,913.78</td>
</tr>
<tr>
<td>Silver</td>
<td>7,669,393.43 oz.</td>
<td>6,158,099.48</td>
</tr>
<tr>
<td>Lead</td>
<td>255,266,476.00 lbs.</td>
<td>18,550,214.82</td>
</tr>
<tr>
<td>Zinc</td>
<td>34,690,620.00 lbs.</td>
<td>2,292,009.26</td>
</tr>
<tr>
<td>Copper</td>
<td>4,183,495.00 lbs.</td>
<td>603,303.12</td>
</tr>
</tbody>
</table>

**Total value** $28,337,540.46

### 1924

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<tr>
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<tbody>
<tr>
<td>Gold</td>
<td>26,237.21 oz.</td>
<td>$ 542,323.12</td>
</tr>
<tr>
<td>Silver</td>
<td>7,774,747.00 oz.</td>
<td>5,192,053.79</td>
</tr>
<tr>
<td>Lead</td>
<td>260,356,490.00 lbs.</td>
<td>21,081,065.00</td>
</tr>
<tr>
<td>Zinc</td>
<td>21,310,559.00 lbs.</td>
<td>1,361,941.86</td>
</tr>
<tr>
<td>Copper</td>
<td>3,146,997.00 lbs.</td>
<td>409,864.89</td>
</tr>
</tbody>
</table>

**Total value** $28,577,248.66

### 1925

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<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Gold</td>
<td>20,108.41 oz.</td>
<td>$ 415,640.82</td>
</tr>
<tr>
<td>Silver</td>
<td>7,708,938.55 oz.</td>
<td>5,324,178.41</td>
</tr>
<tr>
<td>Lead</td>
<td>265,302,880.00 lbs.</td>
<td>23,930,319.78</td>
</tr>
<tr>
<td>Zinc</td>
<td>37,110,647.00 lbs.</td>
<td>2,828,573.51</td>
</tr>
<tr>
<td>Copper</td>
<td>3,370,016.00 lbs.</td>
<td>473,217.65</td>
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</tbody>
</table>

**Total value** $32,971,930.17

### 1926

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<thead>
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</thead>
<tbody>
<tr>
<td>Gold</td>
<td>14,754.64 oz.</td>
<td>$ 304,978.39</td>
</tr>
<tr>
<td>Silver</td>
<td>7,522,881.88 oz.</td>
<td>4,672,236.26</td>
</tr>
<tr>
<td>Lead</td>
<td>283,305,553.00 lbs.</td>
<td>23,845,828.39</td>
</tr>
<tr>
<td>Zinc</td>
<td>53,922,120.00 lbs.</td>
<td>3,956,265.95</td>
</tr>
<tr>
<td>Copper</td>
<td>1,381,334.00 lbs.</td>
<td>190,555.03</td>
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</tbody>
</table>

**Total value** $32,969,864.02

### 1927

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</thead>
<tbody>
<tr>
<td>Gold</td>
<td>15,592.01 oz.</td>
<td>$ 322,286.86</td>
</tr>
<tr>
<td>Silver</td>
<td>8,896,293.08 oz.</td>
<td>5,014,840.42</td>
</tr>
<tr>
<td>Lead</td>
<td>312,770,885.00 lbs.</td>
<td>21,127,673.28</td>
</tr>
<tr>
<td>Zinc</td>
<td>64,479,833.00 lbs.</td>
<td>4,024,831.18</td>
</tr>
<tr>
<td>Copper</td>
<td>2,362,863.00 lbs.</td>
<td>306,281.90</td>
</tr>
</tbody>
</table>

**Total value** $30,794,913.64
### ANNUAL METAL PRODUCTION SINCE 1903

#### 1928

<table>
<thead>
<tr>
<th>Metal</th>
<th>Production</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gold</td>
<td>20,739.95 oz.</td>
<td>$428,694.77</td>
</tr>
<tr>
<td>Silver</td>
<td>8,987,484.00 oz.</td>
<td>5,228,558.70</td>
</tr>
<tr>
<td>Lead</td>
<td>302,590,871.00 lbs.</td>
<td>19,078,354.41</td>
</tr>
<tr>
<td>Zinc</td>
<td>74,334,543.00 lbs.</td>
<td>4,480,142.90</td>
</tr>
<tr>
<td>Copper</td>
<td>2,644,301.00 lbs.</td>
<td>385,274.66</td>
</tr>
</tbody>
</table>

Total value: $29,601,025.44

#### 1929

<table>
<thead>
<tr>
<th>Metal</th>
<th>Production</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gold</td>
<td>20,741.62 oz.</td>
<td>$428,729.29</td>
</tr>
<tr>
<td>Silver</td>
<td>9,446,654.44 oz.</td>
<td>5,006,065.59</td>
</tr>
<tr>
<td>Lead</td>
<td>312,151,644.00 lbs.</td>
<td>21,329,321.83</td>
</tr>
<tr>
<td>Zinc</td>
<td>110,767,523.00 lbs.</td>
<td>7,212,181.10</td>
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<tr>
<td>Copper</td>
<td>5,736,497.00 lbs.</td>
<td>1,038,707.51</td>
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</table>

Total value: $35,016,005.32

#### 1930

<table>
<thead>
<tr>
<th>Metal</th>
<th>Production</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Gold</td>
<td>21,137.52 oz.</td>
<td>$436,912.54</td>
</tr>
<tr>
<td>Silver</td>
<td>9,032,888.57 oz.</td>
<td>3,446,408.32</td>
</tr>
<tr>
<td>Lead</td>
<td>263,599,300.00 lbs.</td>
<td>14,542,773.34</td>
</tr>
<tr>
<td>Zinc</td>
<td>75,136,538.00 lbs.</td>
<td>3,423,220.72</td>
</tr>
<tr>
<td>Copper</td>
<td>3,151,814.00 lbs.</td>
<td>459,168.49</td>
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</table>

Total value: $22,258,433.41
<table>
<thead>
<tr>
<th>INDEX</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Abba Corporation</strong></td>
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<tr>
<td><strong>Abbreviations</strong></td>
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<tr>
<td><strong>Accidents</strong></td>
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<tr>
<td><strong>Accidents, Classification of</strong></td>
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<tr>
<td><strong>Ace Min. Co.</strong></td>
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<tr>
<td><strong>Acme Gold Mines, Inc.</strong></td>
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<td><strong>Activities, 1830</strong></td>
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<tr>
<td><strong>Ada County</strong></td>
</tr>
<tr>
<td><strong>Adams County</strong></td>
</tr>
<tr>
<td><strong>A. D. &amp; M. mine</strong></td>
</tr>
<tr>
<td><strong>Aetna M. &amp; Inv. Co.</strong></td>
</tr>
<tr>
<td><strong>Aetna M. &amp; M. Co.</strong></td>
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<tr>
<td><strong>Afterthought Min. Co.</strong></td>
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<tr>
<td><strong>Agatha marble</strong></td>
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<tr>
<td><strong>Agency Creek.</strong></td>
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<td><strong>Agricultural Potassium-Phosphate Co.</strong></td>
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<td><strong>Ajax Min. Co.</strong></td>
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<tr>
<td><strong>Alameda Min. Co.</strong></td>
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<td><strong>Alder Creek Min. Co.</strong></td>
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<td><strong>Alhambra Min. Co.</strong></td>
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<td><strong>Alice Min. Co.</strong></td>
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<tr>
<td><strong>Allie mine</strong></td>
</tr>
<tr>
<td><strong>Allison Creek.</strong></td>
</tr>
<tr>
<td><strong>Alma Ray Min. Co.</strong></td>
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<tr>
<td><strong>Alpena Copper Min. Co.</strong></td>
</tr>
<tr>
<td><strong>Alta-Idaho G. &amp; C. M. Co.</strong></td>
</tr>
<tr>
<td><strong>Alto district</strong></td>
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<tr>
<td><strong>Aluminum</strong></td>
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<td><strong>Alva Red Metals Mines Co.</strong></td>
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<tr>
<td><strong>Amazon Manhattan Min. Co.</strong></td>
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<td><strong>Amazon Mines, Inc.</strong></td>
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<td><strong>Ambergris Cons. Min. Co.</strong></td>
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<td><strong>American Eagle Min. Co.</strong></td>
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<td><strong>American Gold Dredging Corp.</strong></td>
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<td><strong>American Lead Mines, Ltd.</strong></td>
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<tr>
<td><strong>American Metals Corp.</strong></td>
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<td><strong>American Mines Dev. Co.</strong></td>
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<tr>
<td><strong>American Min. Co. (Adams)</strong></td>
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<tr>
<td><strong>American Min. Co. (Shoshone)</strong></td>
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<td><strong>American Placer Min. Co.</strong></td>
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<td><strong>Anaconda Copper Mining Co.</strong></td>
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<td><strong>Anchor Min. Co.</strong></td>
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<tr>
<td><strong>Anderson, A. L.</strong></td>
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<td><strong>Andrews group</strong></td>
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<tr>
<td><strong>Annual Metal Output</strong></td>
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<tr>
<td><strong>Arlon Valley Oil Co.</strong></td>
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<td><strong>Arctic M. &amp; M. Co.</strong></td>
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<td><strong>Argenta Min. Co.</strong></td>
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<td><strong>Argo Min. Corporation</strong></td>
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<td><strong>Argosy M. &amp; M. Co.</strong></td>
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<td><strong>Argus Min. Co.</strong></td>
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<td><strong>Arsenic</strong></td>
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<td><strong>Associated Mines Corp.</strong></td>
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<td><strong>Atlantic Min. Co.</strong></td>
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<td><strong>Atlas Min. Co.</strong></td>
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<td><strong>Atlas X Co.</strong></td>
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<td><strong>Aulbach group</strong></td>
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<tr>
<td><strong>Aulbach M. &amp; M. Co.</strong></td>
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<td><strong>Avon district</strong></td>
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<td><strong>Aztec M. &amp; M. Co.</strong></td>
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<td><strong>Badger group</strong></td>
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<td><strong>Badger Mines Co.</strong></td>
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<td><strong>Baltimore &amp; Victoria Min. Co.</strong></td>
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<td><strong>Banner mine</strong></td>
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<td><strong>Banner M. &amp; M. Co.</strong></td>
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<td><strong>Barytes</strong></td>
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<td><strong>Bayview district</strong></td>
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<tr>
<td><strong>B. M. &amp; O. Oil &amp; Gas Co.</strong></td>
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<td><strong>Bear Lake County</strong></td>
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<td><strong>Bear Placer Min. Co.</strong></td>
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<td><strong>Beaverhead Lead Mines Co.</strong></td>
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<td><strong>Beaverhead mountain</strong></td>
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<td><strong>Bell Min. Co.</strong></td>
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<td><strong>Belshazzar mine.</strong></td>
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<td><strong>Beryl and beryllium</strong></td>
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<td><strong>Big Creek Gold Mines, Inc.</strong></td>
</tr>
<tr>
<td><strong>Big Creek group</strong></td>
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<tr>
<td><strong>Big Creek section</strong></td>
</tr>
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<td><strong>Big Divide Min. Co.</strong></td>
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<td><strong>Big Elk Min. Co.</strong></td>
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<td><strong>Big Five Min. Co.</strong></td>
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<td><strong>Big Four Dev. Co.</strong></td>
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<td><strong>Big It M. &amp; M. Co.</strong></td>
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<td><strong>Big Smoky section</strong></td>
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<td><strong>Big Three Min. Co.</strong></td>
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<td><strong>Binarch Creek Min. Co.</strong></td>
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<td><strong>Bingham County</strong></td>
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<td><strong>Birch Creek district.</strong></td>
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<td><strong>Birch Creek Min. Co.</strong></td>
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<td><strong>Bismarck Min. Co.</strong></td>
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<td><strong>Bitter Root Mt. M. Co.</strong></td>
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<td><strong>Black Bear group</strong></td>
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<td><strong>Black Bear Mines Co.</strong></td>
</tr>
<tr>
<td><strong>Black Cloud group</strong></td>
</tr>
<tr>
<td><strong>Blackfoot district</strong></td>
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<tr>
<td><strong>Blackhawk group</strong></td>
</tr>
<tr>
<td><strong>Black Hawk Min. Co., Inc.</strong></td>
</tr>
<tr>
<td><strong>Blackhawk M. &amp; D. Co.</strong></td>
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<td><strong>Blackhorse group</strong></td>
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<td><strong>Blackjack Mines Corp.</strong></td>
</tr>
<tr>
<td><strong>Black Pine district</strong></td>
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<tr>
<td>County</td>
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<tr>
<td>Boundary County</td>
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