Thirty-ninth Annual Report
of the
Mining Industry
of Idaho
For the Year
1937

ARTHUR CAMPBELL
Inspector of Mines
Boise, Idaho
THIRTY-NINTH ANNUAL REPORT
OF THE
Mining Industry
of Idaho
FOR THE YEAR
1937

ARTHUR CAMPBELL
Inspector of Mines

MARIE P. CARROLL
Secretary
GEOLOGICAL DIAGRAM.
ILLUSTRATING THE GENERALIZED DISTRIBUTION
OF THE
PRINCIPAL IDAHO FORMATIONS

LEGEND
○-County Seals
Custer-Etc. Names of counties
---County Boundary Lines.

Recent Lake Bed Sediments Tertiary
Tertiary Lavae Largely Soil Covered
Cretaceous Coal Bearing Series
Triassic Jurassic and Carboniferous
Carboniferous Series
Quartzite Slates and Graywackes.
Granite Gneiss and Schist.
LETTER OF TRANSMITTAL

To His Excellency,

THE HONORABLE BARZILLA W. CLARK,
Governor of Idaho.

SIR:

In compliance with the provisions of Section 46-111, Idaho Code Annotated, I have the honor to transmit herewith the annual report of the Inspector of Mines for the year ended December 31, 1937.

Respectfully submitted,

ARTHUR CAMPELL,
Inspector of Mines.
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FOREWORD

This is a report of the mining industry for the year ending December 31, 1937, as well as information on the mineral resources of the state and the capital structure of companies doing business in Idaho. The form and general arrangement of the former reports are retained as they have proven to be very satisfactory in the past. The mailing list is growing from year to year and the demand for copies is furnished on request, without charge, until the supply is exhausted.

It is the only publication dealing with general mining activities issued for distribution by the department. In fact, it is more of a handbook than a formal report and serves as an advertising medium for the industry in the state. In the past these reports have proven exceedingly valuable, not only to operators and engineers, but to prospective investors, and every effort should be made to continue their publication and to make them as complete as possible. This book has a wide distribution in each county of the state, all states in the union and many foreign countries.

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

Mining is the second largest industry in Idaho. The sustained price of gold and silver together with the increased price of base metals had a stimulating effect on mining during the past year. Production figures show a decided increase during 1936 and 1937, which resulted in more employment, better wages, new machinery and equipment, larger orders for supplies with greater tonnage on incoming and outgoing freight. At the present rate of development and production the mining industry will be on a par with and may even surpass the peak years of 1928 and 1929 in the very near future.

Safety conditions throughout the state are showing steady improvement due to the Safety First program of the mining department. This program has been greatly facilitated by the able assistance of the U. S. Bureau of Mines and the Director of the Central Mines Rescue Station, located in the Coeur d'Alene mining district. These agencies give first-aid instruction, including mine rescue and helmet training, to the employees of the larger producers.

At the smaller operations the department appreciated the untiring efforts and cooperation of the Safety Inspector of the State Insurance Fund, Mr. Paul V. Black, in reducing the number of accidents.

This department is also indebted to the Department of Public Welfare, Division of Public Health, under the direction of Dr. James W. Hawkins, for making a preliminary study of the causes and prevention of occupational diseases.

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

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

The American Mining Congress, 309 Munsey Bldg., Washington, D. C.;

Mr. A. I. Altshuler, Manager, Bunker Hill and Sullivan Mining and Concentrating Company;

Mr. Edward M. Bryan, Director, Aeronautics Division, Department of Public Works;

Mr. Paul V. Black, Safety Inspector, State Insurance Fund;

Dr. John Wellington Finch, Director, United States Bureau of Mines, Washington, D. C.;

Mr. James W. Gwinn, E.M., Secretary, Idaho Mining Association;

Dr. James W. Hawkins, Department of Public Welfare, Division of Public Health;
FOREWORD

The Honorable William H. King, United States Senator from Utah;
Mr. Paul Luft, U. S. Bureau of Mines staff, Mineral Production and Economics Division, Salt Lake City, Utah;
Mr. Rene Leon, Munds, Winslow and Potter, New York, N. Y.;
The Honorable Key Pittman, United States Senator from Nevada;
Mr. George Otis Smith;
Dr. Francis A. Thomson, President, Montana School of Mines, Butte, Montana;
The Wallace Miner, Wallace, Idaho;
The Honorable Compton I. White, Congressman from the First District of Idaho;
Mr. W. L. Zeigler, Mill Superintendent, Hecla Mining Company, Wallace, Idaho.

PROSPECT LISTS

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

It has been the aim of this department to bring these prospect lists up to date as we feel they are a very essential part of the report. Owing to the continued curtailment of funds this much needed improvement has not been carried out. We are hopeful, however, that the next session of the legislature will provide adequately for this work.

BIBLIOGRAPHIES

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

NEWSPAPERS

The visits which the Inspector has made to the numerous counties are necessarily so short that they were inadequate to enable him to keep directly in touch with all mining activities, so that it was necessary to supplement his personal information by that gleaned from the press. Some of the publishers located in mining communities furnished gratuitous subscriptions of their newspapers to the office of the Inspector. This courtesy was greatly appreciated and was of much assistance in enabling the Inspector to keep abreast of the mining news. Accordingly, the State of Idaho, through the Inspector of Mines, extends its thanks to the following: Arco Advertiser, The Mining Journal, Mining Truth, The Mining and Contracting Review, Wallace Miner, and Wallace Press-Times.
MINERAL MARKET INFORMATION

As there has continued to be a demand for possible markets for uncommon minerals and metals, the list prepared, which includes the names and addresses of the purchasers or users, were revised and kept up to date as nearly as it was possible to do so. The Division of Mineral Statistics, U. S. Bureau of Mines, kindly cooperated by furnishing many names and addresses.

Another source of valuable information on this subject may be found in the Engineering and Mining Journal, which is published monthly and placed on file in the department library.

LIBRARY

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

The following magazines are regularly received: Congressional Record; Engineering and Mining Journal; Mining Review; Mining Truth; The Mining Congress Journal; Mining and Metallurgy; The Mining Journal; The Explosives Engineer; Economic Geology; The Du Pont Magazine; The Mineralogist; and Seeing Idaho. Complete files of these magazines have been preserved for reference use.

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

MINING LAWS

A special appropriation was passed by the Twenty-fourth Session of the State Legislature for the purpose of compiling, annotating, printing and distributing in pamphlet form, the mining laws of the State of Idaho.

The Inspector's office has generally published and distributed the laws since the department was established. This issue was compiled in pamphlet form by Mr. Leo Bresnahan of the Idaho Bar. It contains mining laws of the State of Idaho, including extracts from the United States mining laws, citations of court decisions pertaining to mining litigation and general interpretations of the law.

This new edition is now available at the Inspector of Mines office for free distribution.

MINERAL EXHIBIT

In memory of her uncle, the late R. J. Hyde, Mrs. W. C. Bingham of Nampa, presented the mining department with a splendid life-time collection of mineral specimens. This is a worth while contribution to our mineral exhibit in the rotunda of the Capitol Building.

The State Division of Public Health is making a study of the cause and prevention of occupational disease. In cooperation with this work and through the courtesy of the Sanderson Safety Supply Company a space has been reserved in the mining exhibit for the display of safety devices and preventative apparatus.
THE MONEY SYSTEM OF THE FUTURE

By RENE LEON

I first desire to express to you my sincere thanks for your kind invitation. The fact that my first visit to Salt Lake City coincides with a gathering such as this, affording me the opportunity to meet and to address as representative a group of useful citizens as that constituted by the American Mining Congress, is a privilege which I deeply appreciate.

In asking me to come to your convention, your secretary wrote me that you were particularly interested in the future status of gold. Right here let me say that your concern is shared by a majority of the thinking people of the earth in and out of the mining industry.

As you know my sole interest in the so-called precious metals arises from their usage in the money systems so that, as a money and exchange man, I could not fail to include gold in any consideration of the money problem. There can be no doubt as to how I stand on fundamental monetary principles; my opinions, right or wrong, have been uniformly consistent and freely spread upon the record over a period of years. Yet, for some reason best known to them, certain persons, in and out of public life, have on occasions been sufficiently uninformed, or sufficiently uncharitable, to suggest that my opinions were not wholly disinterested. Here and now is as good a place and as good a time as I can think of publicly to set at rest, once and for all, any such silly surmises. The members of the American Mining Congress here assembled are in the best position to know whether or not I have any affiliation with their industry, so I shall take them to witness. I am a money changer, and I offer no apology for my profession which needs none because money changing is an integral part of the system of distribution and exchange. Money changing and short-changing should not be confused. I have hired out my services in the past, but my opinions never. So much for that, and now as to gold.

Last May I made an address in my home town of Princeton on the subject of gold. In my introductory remarks I spoke as follows: "The popular approach to the gold problem is whether we shall maintain, reduce or increase the price of gold. While opinions differ and counsels divide on the desirability and degree of action or inaction in this particular, belief prevails that it is the status of gold that will determine the trend of prices and the future of our economy. To approach the problem from any such angle is to flout reason and logic, both of which deny that the prosperity of a great nation could endure if it were solely predicated on the vagaries of any metal, however precious. The future of our economy does not depend on a given number of grains or penny weights of metal, but on the natural and human resources of the nation; and to attempt to lend magic and power to dead weight, whatever its substance, is to practice fetishism in the twentieth century. This does not signify that gold can have no usefulness, because history proves that it can; but that depends upon whether or not we can agree on some system which, by utilizing gold, will endow it with a usefulness which it does not otherwise possess."

This, gentlemen, is in my estimation the crux of our present problem; can we agree on some money system which, by utilizing gold, will endow it with a usefulness which it does not otherwise possess. I, for one, am convinced that we can agree, and I believe that the time is not far distant when those two nations which represent a substantial numerical element of the earth's population and which, combined, constitute an overwhelming proportion of the world's economic power, will finally come together and agree on a money system which will definitely fix the status of the precious metals in the economic scheme.

Because their very existence depends upon it, England and America must come to an agreement. The question is what will this agreement be? What-

NOTE: Presented at Annual Metal Mining Convention, Western Division, The American Mining Congress, Salt Lake City, Utah, September 7, 1937, by Rene Leon, c-o Munds, Winslow and Potter, 40 Wall St., New York City.
ever it may turn out to be, if it is sound it will endure and if it is unsound it will not endure. Hence it behooves every citizen to subordinate his own immediate interests to the broader significance of the problem, that enlightened public opinion may support, and even guide, eventual action when agreements are discussed. What is to be the money system of the future? If you will bear with me a few moments I will give you my conception of it.

Any money system, to be workable, must inspire the confidence and satisfy the needs of those it would serve. Therefore, if the present day means of communications and transportation make of the world we live in an economic unit, we must reject as unworkable any money system which aims at national self-containment. If we accept the principle that money is essentially the auxiliary of trade, we must reject as unsound any money system which subordinates trade to the needs of money management. And finally, to borrow the apt phrase of an eminent student of the subject, “If we are to develop an economy of abundance, we must reject any scarcity system of money.”

Provided the foregoing reasoning is sound, it remains for us to unite by international agreement on the choice of a common denominator which shall serve as an adequate means of exchange, as a stable measure of value, and, at the same time, by enabling a majority of nations to link their units of currency thereto, serve the needs and promote the expansion of trade at home and abroad. To be adequate the instrument of exchange must be free to function. If it is to be a relatively stable and accurate measure of value, its volume must bear a reasonable relation to the volume of wealth it would measure. And, finally, if a majority of nations are to link their units of currency to a common denominator, its substance must be such as to be acceptable to a majority of the peoples concerned.

The metallic system of money has endured throughout the ages because, despite their purely theoretical value, the so-called precious metals partly represent the value of the labor of those who produce them. As distinct from the product of the printing press which, by whomsoever utilized, none the less remains an instrument of larcency, because the values it creates are fictitious, the precious metals so-called are universally regarded and accepted as “sound money” because they possess a labor value.

Because the breakdown of the Gold Standard was chiefly due to its quantitative deficiency is no reason to abandon the metallic system altogether, particularly in the absence of a better one. The very recognition of a deficiency suggests the means for correcting it on the principal that accurate diagnosis is half the cure. While precious metals are non-essentials, it does not follow that in coining them into money a purely arbitrary price may be fixed upon them, because all the products of man’s labor, essentials or non-essentials, are supposed to bear a reasonable relation to the value of the labor involved in producing them. This principal applies to that commodity which is chosen as the very cornerstone of the price structure more than to any other, because that cornerstone will impart its soundness or its lack of soundness to the entire price structure, and thus either firmly support it or inevitably undermine it.

When, in 1816, Great Britain first adopted the gold standard and fixed a price of 84½ shillings ($20.97) for a fine ounce of gold, that price was not arbitrary. It was arrived at by figuring the cost of gold production plus a fair profit to the producer. When, in 1696, exactly two centuries before William Jennings Bryan’s advocacy of bimetallism, Sir Isaac Newton, then Master of the Mint, recommended to his queen a price ratio of 16/1 silver to gold, he did not arbitrarily fix that figure; on the contrary, he determined it by recognizing that 16/1 was the natural production ratio of the two metals over a long period of years. Today’s price of $35 per ounce of gold bears no reasonable relation to the cost of its production; it is arbitrary in the extreme and constitutes an unwarranted enrichment of a special class at the expense of the community. It is a fictitious value temporarily created by the wholesale hoarding of available metal which accompanied the post-war collapse of world economy. As de-hoarding and production increase we shall inevitably be forced to lower the price of gold or continue to sterilize it in increas-
ing amounts and at public expense, under penalty of witnessing the skyrocketing of our general price level. If the latter ensues we shall find ourselves exactly where we started, with the same inadequate quantitative relation of gold to other forms of wealth, so that the scarcity system of money will have prevailed despite currency devaluation.

The devaluation of currencies in terms of gold in no wise affects the status of the yellow metal itself except in its relation to currencies. Gold's quantitative relation to all other commodities remains unaltered, and whether we fix a price of $20.67, $35, or $50 to an ounce of gold, it still remains one ounce of gold. The quantity principle will ultimately assert itself by the readjustment of the price structure to existing quantities, and we shall suffer from precisely the same evils of quantitative deficiency regardless of the difference in the level of prices. Without the necessary food a man can starve just as completely on the top floor of a building as on the ground floor. If it is followed by a doubling of prices, the doubling of the volume of currency returns us all to our point of departure with this important difference, however, that all holders of fixed income securities will have been mulcted in the process.

What we seek is a reasonable stable money system; one which will free us from recurring inflation and deflation of prices due to purely monetary causes; yet in a world which is not static absolute stability is impossible of achievement. However, it does not follow that we cannot achieve comparative stability if we devise a system which will provide an adequate quantitative relation between the volume of money and the volume of wealth that money would measure. Why acknowledge the immutability of the quantity principle and then fail to apply it to our direct need? The fact is that counsels divide the agreements fall on the very question of the kind of money which shall go to make up the missing though indispensable volume of real money needed in the system if it is to function. As a measure of value and as a medium of exchange, metallic money is but a counter—but it is something else as well; for were it only a counter, then one kind of counter would do as well as another, and a small factory could turn out counters in sufficient quantities to wreck any price system we chose to predicate upon them. Obviously we need the type of counter which cannot be turned out at will; the kind upon which we can fix a value closely approximating the cost of its production; the kind which, in short, has a labor or real value. Gold provides us with an ideal substance for the coining of money, but its volume is inadequate as evidenced by the breakdown of the Gold Standard. How then shall we improve the gold standard? What commodity shall we choose to complement it? What commodity can we choose that possesses a labor or real value and to which we could safely impart legal gold equivalences? If it isn't silver—what is it?

Those who oppose bimetallism must supply us with the answer to this riddle. Of course they will contend that bimetallism has been tried and has failed; but the fact is that bimetallism has never been tried. Bimetallism essentially implies a fixed ratio, not different ratios, between silver and gold, and the chief trading nations never fixed a single ratio. When England and the United States adopted a ratio of 16 to 1, the European continent fixed one of 15½ to 1 with the result that the system naturally broke down. Were the ratio of shillings to the pound to be fixed at 21 shillings in Scotland and 20 shillings in Wales the British system would inevitably collapse. Were the United States to fix a ratio of 105 cents to the dollar in New England and 100 cents to the dollar in the Middle West, the American money system would also break down. That is precisely what happened to so-called bimetallism in the nineteenth century. Owing to the disparity of ratios it became advantageous to ship silver from Great Britain to the continent for the payment of debts and, conversely, it was equally profitable to send gold in the opposite direction. This resulted in the concentration of gold in Britain and in its scarcity on the continent of Europe so that Britain, then the most important creditor nation, sensing her advantage, adopted the single gold standard and, by extending credits abroad in terms of a metal abundant at home but scarce elsewhere, she commanded foreign goods and services at exceedingly low prices when expressed in terms of British currency. In due course the con-
tinent strove to correct this condition by also adopting the single gold standard. While the disparity was thus corrected, the scarcity system was also established. The great blunder was committed of demonetizing silver with the result that the world was ultimately plunged into cruel depression because the price system was since made to depend upon the vagaries of a single metal. Instead of correcting the blunder, the world attempted to meet gold's deficiency either with worthless paper or with coin so debased as to be practically worthless. Under the gulse of seignorage governments everywhere proceeded to levy an unjust tax upon the people, but all to no avail. Because the money system was basically deficient it eventually collapsed. Once again we have a chance to restore it, and restore it we shall if we but use the very instruments which nature has provided.

The Gold Standard will not do because it is a scarcity system. Managed currency will not do because it is a nationalistic system. Therefore, proceeding by elimination, guided by the experience which the test of time alone provides and never losing sight of our real objective which is the development of an economy of abundance based on a free system of sound money, I say to you that bimetallism will be the money system of the future for the following reasons: First, because as distinguished from printing press money, silver, like gold, has a real or labor value which makes it "sound." Second, because silver, is as time tested a money metal as is gold. Third, because silver is peculiarly suited to the needs of masses of individuals of low estate and modest needs throughout the world. Fourth, because silver is already in the possession of countless peoples in many countries so that its remonetization at a fixed ratio to gold will automatically effect the redistribution of gold now rendered difficult by its concentration. Fifth, because by diffusing the sources of the production of basic money it will render monopoly impossible, and put an end to the manipulation of prices by the manipulation of money. And sixth, because if utilized in the money system alongside of gold, the white metal will provide a volume of real money whose quantitative relation to the wealth that money measures will be more adequate than is the ratio of gold alone to all other forms of wealth. Whereas the gold standard is admittedly a scarcity system, bimetallism, by its greater quantitative adequacy, is the logical system wherewith to develop and sustain the economy of abundance which is the goal of our civilization, and which, today, is brought within reach thanks to numerous other human achievements throughout the structure of the economy.

As to the future of gold: On the principle that the laborer is worthy of his hire, the gold miner, like any other producer, is entitled to a fair profit. If he is wise he will not expect indefinitely to receive for his product a price which has no economic justification whatsoever, nor will he expect to be set apart from other producers to enjoy special treatment at the expense of the community. For if he does, he will see the price structure, unsound at its base, ultimately collapse and go the way of all artificialities.

This, gentlemen, is one man's opinion; it is his considered opinion, whether it is right or whether it is wrong, time alone will tell.
THE MINING INDUSTRY

By SENATOR WILLIAM H. KING

The phenomenal growth of our country is largely due to the utilization of its mineral products. Agriculture, alone, would not have advanced our country to the proud position which it now occupies among the nations of the world. Courage, genius, skill, and capital are required to develop our mineral resources. It is asserted that more than one-half of the total wealth of the United States, directly or indirectly, has resulted from the production and utilization of our mineral resources. Agriculture, perhaps, is the most important industry, but it will be conceded that the second largest industry is that of mining. Statistics show that more than two-thirds of the counties in all states produce minerals, valuable and important for the economic and industrial development of our country.

Though agriculture is the most important industry, during the five years 1924 to 1928, inclusive, the taxes paid by the producers of minerals were six times as great as those paid by agriculturists; and it is worthy of note, in passing, that the federal contributions to the mining industry in all of its ramifications were but a small fraction of the subsidies and benefits derived by agricultural producers from the federal government.

I think it is conceded that more than 25,000,000 people are directly or indirectly dependent for their livelihood upon the extraction and processing of mineral products. It is impossible to estimate the multitudinous uses to which the mineral produces of Mother Earth have been put, but it is certain that they enter into almost every field of human activity and are indispensable to modern day civilization. The slightest reflection will convince the most dubious of the magnitude of mineral production, and the hundreds of minerals which are utilized in nearly every field of manufacture in the production of most of the commodities resulting from the genius and ability of man.

The capital investment in the mineral industries of our country exceeds $20,000,000,000, and the annual value of mineral products is between $5,000,000,000 and $6,000,000,000. It has been stated that the products of mines, including crude oil, amount to more than 56 percent of the tonnage of revenue freight handled by class one railroads during recent years. These figures do not include the freight resulting from smelters, refineries, and the various building products, such as lime, bricks, etc. The mineral industries are important contributors to the federal revenues, the taxes paid by them amounting to several hundred millions of dollars annually.

The address of Governor Blood and Mayor Erwin and others at this Congress indicate the importance of the mining industry not only to Utah and the intermountain states, but to the entire country.

NOTE: Introductory remarks of paper presented to Annual Metal Mining Convention, Western Division, The American Mining Congress, Salt Lake City, Utah, September 9, 1937, by the Hon. William H. King, Senator from Utah.
SILVER

By SENATOR KEY PITTMAN

Mining has had a fascination for me since the early days when I read in romances of the wide open spaces of the West, and so too I have been at home with those who are intrigued also through the production of minerals and who go down into the bowels of the earth and toil and fight against great odds for the exhilaration of occasional successes. Lest there be suspicion that this is flattery, let me assure you that I have actually mined with my hands as most of you have done. I fear if this question were contested in a court that we would be poor exhibits with our urbane clothes, soft hands, and luxurious figures. I have had the pleasure of meeting at previous conventions of The Mining Congress many of the delegates who are here today. It seems, however, that this is the first time that I have realized how many of our able and distinguished mine operators reside in cities where their associations are naturally more apt to be with bankers than with the fellows whose duty it is to dig the ore out of the ground and to extract the minerals therefrom at a profit. Mine operators are like cowboys—they are found everywhere except on their range.

REFERENCE TO GOLD PRICE

Mr. Rene Leon who has just preceded me has spoken very interestingly and ably upon the monetary system of the future. I agree with him so fully that I hesitate to seem to take any issue with him whatsoever. I feel impelled, however, to briefly touch upon the subject of the price of gold before proceeding to my discussion of the silver problem, as bimetallism requires a fixed ratio between gold and silver not only as to weights but as to values.

It has been contended by some of the ablest and most experienced monetary experts of England that the mistake in our monetary system was that we fixed the dollar as so many grains of gold or so many grains of silver without adopting any method to control the price of the metals; while on the other hand the British, when they established a gold standard system, fixed a value for gold. The pound sterling existed before Great Britain went on the gold standard. The pound sterling was a pound of silver; a pound sterling of silver was 20 silver shillings. When Great Britain went on the gold standard it did not dispense with the 20 shillings nor with the pound sterling. What it prescribed was that 20 shillings should buy 113 grains plus of gold, and that 113 grains plus of gold should buy 20 shillings or a pound sterling; and so the pound sterling became approximately $4.87 in our money because we established our dollar as 37.1/4 grains of silver or 23.22 grains of pure gold.

I do not wish to discuss the question of $35 gold; however, if our dollar would buy 23.22 grains of pure gold, that made gold worth $20.67 an ounce; and as it will now buy only 13.714 grains of gold, gold is certainly worth $35 an ounce in our money, whether you want it to be worth that or not. I take it that our government in buying gold at $35 an ounce made gold worth $20.67 an ounce for gold because their dollar will buy only 13.714 grains of pure gold. Great Britain fixed gold at $20.67 an ounce in our money by buying all gold at that price and selling above such price.

I don't know what would have been the results when Great Britain fixed the value of gold at $20.67 an ounce if no other country had joined in that ratio and that program. But, as a matter of fact, the British government at that time was so powerful financially that the United States adopted the same program and, as I recollect, practically every other country did. And as gold really has no value, or very little intrinsic value except for monetary uses, if great governments would not pay any more than $20.67 an ounce, then that was all that it was worth. If you should demonetize gold, or par-

NOTE—Presented to the Annual Metal Mining Convention, Western Division, The American Mining Congress, Salt Lake City, Utah, September 7, 1937, by the Hon. Key Pittman, Senator from Nevada.
tially demonetize it, as has happened to silver throughout the world, I venture to say that gold would not be as valuable a metal as iron. I doubt if the price would be anywhere near the price of copper. The remnant of its value would be for rings, and platinum has taken its place for that. There are a great many teeth to fill, but I doubt if that would consume much gold. And so I say that governments have fixed the value of gold because when they refused to pay more than so much for gold for monetary purposes they fixed the value.

It is true, undoubtedly, as Mr. Leon says, that we can never have a sound international monetary exchange except by agreement of at least the powerful commercial governments of the world. He has already illustrated that so clearly by showing what happened when France fixed the ratio of silver at $15\frac{1}{2}$ to 1 and Great Britain fixed it at 16 to 1. Silver was more valuable in France and the same thing happened in the United States because our country was denuded of silver until about 1835 by reason of that same difference of ratios.

**SILVER QUESTION PRIMARILY MONETARY**

The silver question, like the gold question, is primarily a monetary problem. I emphasize that because we are constantly faced with the charge by intelligent people that we are simply attempting to aid the miners of this country and nothing else. I have been charged with being interested in silver mines. Well, of course, that isn't true. I hope I am interested in copper mines. The only difference in the two questions is that gold is universally recognized as a monetary problem while the silver question is too generally looked upon as a commodity problem. There is no reason for drawing such a distinction. It is true that both metals are commodities. It is equally true, however, that the primary value attached to each metal is its use for monetary purposes. 65 percent of all gold produced has been used for monetary purposes, while only 35 percent has been used in the arts and sciences. 70 percent of all the silver ever produced has been used for monetary purposes while only 30 percent of such production has been used in the arts and sciences. Deprive gold of its monetary use and the metal would not be as valuable as iron. Deprive silver of all monetary use and it will not be as valuable as copper. It is true that both gold and silver are commodities, but why have they been selected from all commodities from the beginning of history to be used as money? Because both have all of the necessary characteristics of universal money. They are both rare minerals. They never have been, and in the nature of things never will be, found in large quantities. Their production occurs generally throughout the world. The average annual production of each metal over average periods of time is remarkably uniform and the ratio of the production of such metals to each other has been equally uniform over average periods down through the ages. Both of the metals provide compact, handy, substantially indestructible coins. But above and beyond all of these peculiar qualities and characteristics, the fact that such qualities and characteristics have been recognized by all peoples for ages and have been used by them as money is the strongest reason for the continuance of the use of such metals as money.

There are today a few theorists who argue that metallic money or metallic monetary reserves are absolutely unnecessary to sound monetary systems. Practical statesman, experienced businessmen, and even the poor unfortunate who lost his savings through the failure of a bank have no faith in the managed currency theory of these idealists.

**SOUNDNESS OF CURRENCIES STILL MEASURED BY GOLD RESERVE**

There is no gold standard today, nor is there a silver standard. And yet every government and all of its financiers and monetary experts are gold conscious. They measure the value and soundness of a currency issue by the amount of gold the government has in its reserves or has the power to obtain through loans, commerce, or trade. Through a gentlemen's agreement between the United States, Great Britain and France, France was permitted to depreciate her currency an additional 30 percent, while the United States and Great Britain would not further depreciate. How depreciate? Depreciate
with regard to what? Gold, of course. The currencies of the United States, Great Britain, France, Italy, Holland, Belgium, Switzerland and other countries are managed currencies. But their issue is not unrestricted and subject solely to the intelligence or honesty of a manager and the capacity of printing presses. These currencies are managed so that issues may be restricted within limits of potential redemption in gold.

At the London Conference in 1933, I had the honor to present a resolution on behalf of the United States which had been approved by the President, declaring that it was the sense of the 66 governments represented at the conference that each of the governments should return to the gold standard measure of international exchange as soon as practicable, each government determining for itself when it should become practicable and the gold ratio. It must appear conclusively evident that great commercial governments intend to return to the gold standard measure of international exchange.

I wish to call your attention to the fact that we did not use, in that resolution, "return to gold standard," because the term "gold standard" is quite indefinite; in fact, there were a number of different kinds of gold standards, but this meeting of nations—66 governments—was interested in the establishment of a gold standard measure of exchange as between themselves. It is even possible for a government to have two standards of currency. It is very unfortunate when they do. It is much better that all the currencies of a government be tied to the international exchange base. So we used the words "gold standard measure of exchange." And that resolution was unanimously adopted.

This can only be accomplished by establishing a fixed value for the currency in relation to gold; that is, that such currency will purchase a fixed amount of gold for the purpose of settling international trade balances, and that the value of gold be stabilized.

SETTLEMENT OF INTERNATIONAL BALANCES

I call attention again to the limitation upon gold for the settlement of international trade balances. There may be a question as to whether there is sufficient gold in the world to safely constitute reserves against issues and at the same time settle international balances. It is far better, if it cannot be used for both purposes, that it be used as a stabilizer of exchanges in the settlement of international balances. Silver exchange can be used in the settlement of international trade balances with many countries and is the best currency.

If this sentiment be the sentiment of the world, we may safely discontinue consideration of the so-called nonmetallic managed currencies.

But I am here, at your invitation, to discuss the silver problem. I again assert that the silver problem, like the gold problem, is a monetary problem. I have asserted that the same characteristics and qualities which apply to gold as an ideal money and base apply equally to silver. Many people have been taught to fear silver on the theory that there are unlimited quantities of it and that if we use it as money it will flood our country, debase, cheapen and destroy the integrity of our monetary system. Well, what are the facts? The estimate of the Bureau of the Mint of the total production of gold in the world is 1,189,324,181 ounces. According to the same statistics, the production of silver in the world since the beginning of time has been approximately 15,913,880,715 ounces. According to the same statistics, the production of silver in the world since the beginning of time has been approximately 15,913,880,715 ounces.

RELATIVELY STABLE RATIO OF RARITY OF GOLD AND SILVER

It will be understood, of course, that there has been a tremendous loss of both of those metals during the centuries: Lost at sea, lost in the ground, hidden and never found, lost in fires—so there isn't that much gold or that much silver in existence today. I am attempting to show you that silver is comparatively as scarce as gold; that there is a ratio of rarity in these two metals that has come down through the ages. I do this to refute the unfounded propaganda and ignorant impressions which lead people to believe that there is an unlimited quantity of silver somewhere.
But let us get down to more recent records taken from the statistics of the Bureau of the Mint, Treasury Department of the United States:

SILVER AND GOLD PRODUCTION OF THE UNITED STATES FOR 1935

<table>
<thead>
<tr>
<th>Metal</th>
<th>Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silver</td>
<td>45,924,454 ounces</td>
</tr>
<tr>
<td>Gold</td>
<td>3,609,283 ounces</td>
</tr>
</tbody>
</table>

It will be observed that the ratio of production of silver as to gold is about 13 to 1; that is, in 1935 in the United States. Now let us compare the production of silver and gold throughout the whole world for the year 1935. These are world statistics that I am giving you now and they, again, come from reports which are very accurate:

<table>
<thead>
<tr>
<th>Metal</th>
<th>Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silver</td>
<td>215,949,585 ounces</td>
</tr>
<tr>
<td>Gold</td>
<td>30,001,209 ounces</td>
</tr>
</tbody>
</table>

so the ratio of production throughout the world for that year (1935) was 7.19 to 1—7.19 ounces of silver to an ounce of gold. Now let us see if there is any particular change in the following year of 1936—the last year for which we have complete records. According to the records, the production in the United States for that year was as follows:

<table>
<thead>
<tr>
<th>Metal</th>
<th>Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silver</td>
<td>63,812,176 ounces</td>
</tr>
<tr>
<td>Gold</td>
<td>4,357,394 ounces</td>
</tr>
</tbody>
</table>

The ratio of production is 14.65 to 1. The records for that year as to the world's production in silver and gold are:

<table>
<thead>
<tr>
<th>Metal</th>
<th>Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silver</td>
<td>247,576,000 ounces</td>
</tr>
<tr>
<td>Gold</td>
<td>34,910,000 ounces</td>
</tr>
</tbody>
</table>

The ratio of production of silver to gold throughout the world for 1936 was 7.09 to 1. It is obvious that in spite of the ratio of production of silver to gold throughout the Nation increasing, throughout the world it is decreasing. If there is any fear of overproduction in metal it is gold, and I think after hearing Mr. Leon talking about it we have no fear of overproduction of gold to meet the demands of today.

Although the production of both gold and silver has been greatly stimulated throughout the world by the increase in the price of gold and the purchase of silver by the United States Government, the comparatively small production of both metals is remarkable. For instance, the total value of the world production of gold for 1936, even at the price of $35 an ounce, amounts to only $1,221,556,000. The total value of the silver produced in the world in 1936 was only $132,552,830. If you will compare that annual production in value with national debts of today and see how long it would take to pay them off if national debts continue to draw interest almost indefinitely—and then if you add state and municipal debts you realize that there is not sufficient gold alone to constitute sound metallic reserves and that it is essential that gold reserves be supplemented with silver. I think it is admitted that it is a monetary fact that when the reserve goes below 10 percent a danger point has been reached, fear commences, panic follows and there is a crash. I think it is fairly safe to say that economists today agree that a safe reserve should not go below 10 percent.

RATIO OF SILVER TO GOLD PRODUCED IN U. S. DECREASING

Now let us take in the United States, the production of gold and silver, as indicated, was about 14.65 to 1 in 1936; it was about 13 to 1 in 1935. As a matter of fact, the proportion of silver is decreasing.

Furthermore, the latest records we have of the world's production of gold and silver show a ratio of 7.09 to 1. I used to think, and called attention to the fact, of the total value of gold and silver produced annually. Now it has been estimated that 1,159,324,181 ounces of gold have been produced in the world and that 15 times that amount of silver has been produced. The depletion of that supply has been very large. It is conservatively estimated that at the present time there is in existence 619,494,657 ounces of monetary gold which, at $35 an ounce, would have the value of $21,682,313,000. From these statistics and computations there are several facts evident. There is not sufficient monetary gold in existence to serve safely as a monetary basis.
for all of the governments engaged in foreign commerce. It is also evident that there is no danger of an over-supply of silver in the world; that silver possessed all of the characteristics and qualities essential to money that are possessed by gold; that if currencies are to be managed on a metallic base, it is essential that silver be fully remonetized and its natural ratio with gold restored; and that silver be used to the fullest extent in support of the gold standard base and for domestic currencies.

I may pause there for the purpose of stating that while I agree with Mr. Leon on bimetallism, that as a legislator who for 24 years in the Senate has met many discouraging votes, who realizes how small is the representation of the western country in Congress and that we had better move in all these matters modestly, slowly, and step by step, I am willing that there be established throughout the world a gold standard measure of international exchange. I am willing, for the time being, that the relationship of silver to gold be established also for the purpose of coinage and for the purpose of reserves. However, before we start considering an international ratio for gold and silver, if present prices of the metals is to be a factor, we must do something to overcome discriminations that are and long have been destroying the monetary value of silver in relation to gold. While today the world's production of silver as related to gold is less than 16 to 1, the price ratio today is about 70 to 1.

PRESENT WORLD PRICE RATIO UNJUST DISCRIMINATION AGAINST SILVER

I am urging that governments cease by discrimination and legislation the destruction of the monetary value of silver. I am asking the United States Government, who unwittingly followed Great Britain in the destruction of the monetary value of silver, to continue with its efforts to restore confidence in silver and aid in its restoration to its rightful position as a monetary metal. I do not ask that our government or any other government at the present time go to the free and unlimited coinage of silver at the ratio of 16 to 1, or any other ratio to gold. I have explained my reasons for not asking this at the present time. I know that it is a conservative ratio based upon production, but I also realize that today by the discrimination against silver the ratio of value of an ounce of gold to an ounce of silver is over 70 to 1. This unjust discrimination in value cannot be remedied at once. It can never be remedied by any action of the United States Government alone. It will, however, in my opinion, come about through the initiative and leadership of the United States and the gradual restoration of the use of silver to its natural function in all countries. The demand created by this use will take care of the price of silver.

FACE FIGHT FOR REPEAL OF SILVER PURCHASE ACT

But we are faced with a fight in the next session of the Congress of the United States by those who are opposed to the use of silver in any form or in any manner as money. They seek to repeal the Silver Purchase Act and to induce the President to abandon the purchase of American silver at 77.57 cents an ounce, which latter purchases he is now making because of the London Agreement. These proponents of the repeal of the legislation contend that the Silver Purchase Act has been a complete failure, that the Government has been buying something that is worthless, that it will lose money on the transaction, that it has accomplished no good, that the miners are being paid a bonus, and that the Act should be repealed and purchase under the London Agreement discontinued. Let us see what the results are under the Silver Purchase Act. As Chairman of the Special Committee of the United States Senate upon the Investigation of the Administration of the Silver Purchase Act, I have just received the following report from the Secretary of the Treasury:

“(1)—The additional amount of silver needed on June 19, 1934, and June 30, 1937, to make the proportion of silver in the stocks of gold and silver of the United States equal to one-fourth of the monetary value of such stocks is estimated to have been as follows:
It would seem strange that it requires as much silver to be purchased now as it did when the Act started. That is caused by reason of the fact that we have accumulated so much additional gold in our reserves of the United States.

Now I will give you a few other figures here and show you how it came about. This is silver:

"(2)—Silver acquisitions through June 30, 1937:

<table>
<thead>
<tr>
<th>Thousand ounces</th>
<th>Thousand dollars</th>
<th>Cost per ounce (cents)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newly-mined domestic</td>
<td>151,834</td>
<td>112,705</td>
</tr>
<tr>
<td>Nationalized silver</td>
<td>113,015</td>
<td>56,520</td>
</tr>
<tr>
<td>Purchase Act silver</td>
<td>1,015,828</td>
<td>589,773</td>
</tr>
</tbody>
</table>

| 1,280,677 | 758,998 | 59.3 |

"(3)—Silver certificates in circulation:

<table>
<thead>
<tr>
<th>Thousand dollars</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>June 30, 1934</td>
<td>$401,456,000</td>
</tr>
<tr>
<td>June 30, 1937</td>
<td>$1,078,071,000</td>
</tr>
</tbody>
</table>

In other words, there has been very little increase in the circulation of silver dollars but the silver certificates that have been issued have practically doubled our circulation of silver.

"Increase in silver dollars and silver certificates from June 30, 1934, to June 30, 1937—$684,648,000.

"The cost value of silver yet to be monetized, which was held by the Treasury on June 30, 1937, amounted to $373,978,297.

"(4)—Newly-mined domestic silver was purchased until April 10, 1935, at 64.64 cents per ounce, from April 10, 1935, to April 24, 1935, at 71.11 cents, and since that time at 77.57 cents per ounce.

"Nationalized silver has been purchased at 50 cents per fine ounce.

"The New York market price of silver during the period since the passage of the Silver Purchase Act ranged from a low of 44 cents to a high of 81 cents per ounce. During the period from February 1, 1937, to June 30, 1937, the New York market price of silver was approximately 45 cents per ounce.

I will state that the price of 81 cents per ounce only lasted a very short time; in fact, it dropped below 77 cents an ounce in one week's time, but during the period when it was rising to 81 cents an ounce the President of the United States very graciously continued to raise the American price and raised it to 77.57 cents an ounce, where it now stands. The Government purchased 1,280,677,000 ounces of silver at an average price of 59.3 cents an ounce. It has sold, or has the power to sell all such silver so purchased in the form of currency at $1.29 an ounce. When we say that the Government circulated silver currency at the value of $1.29 an ounce, it means that it pays its debt with the silver dollar and it has only .77 ounce of silver in it. The Government, therefore, in circulating silver currency, is settling its debts with silver at a value of $1.29 an ounce. The Government so far has made a profit of $896,473,500 under the Silver Purchase Act.
The Government has made more money out of the American miner's silver than the American miners have, and has taken none of the risks that generally result in losses. It has permitted an expansion of our currency to the extent of $684,648,000 with a power to further extend it by the issuance of an additional $373,978,297. This constitutes an increase of approximately 20 percent in our circulating currency. Now it is charged that this is inflation. Certainly it is not a dangerous inflation.

It is admitted that 90 percent of our circulating media consists of checks and drafts and so forth based upon deposits. An increase of 20 percent of the 10 percent of our circulating media is not a dangerous inflation. As a matter of fact, at the time that this was done the credits were frozen and even later when it was tight it was the duty of our Government to temporarily, at least, expand its circulating currency. This new currency is sound. It is not only secured by a silver dollar against every silver certificate issued and has at the present world price an intrinsic value of 34.6 cents, but the certificate is further secured by the seigniorage—being the silver going to the Government as a profit. The circulating value of this silver reserve at the present world price of silver amounts to approximately 85 cents an ounce. It is by reason of the fact that silver has some intrinsic value—that a lump of it, like a lump of gold, can be taken anywhere in the world and without the stamp of any government upon it purchase food, clothes, and shelter—that it constitutes an ideal currency and monetary reserve.

But the opponents state that if the price of silver falls below what the Government paid for it the Government will lose money. In the first place, the Government needs the silver for currency purposes and does not want to sell it. In the next place, the price of silver is not going down if our Government continues to recognize it as full legal tender money, but, on the contrary, the price is going up by reason of the natural demand for it.

The average price paid by the Government for all the silver that it purchased prior to the passage of the Silver Act of 1934 was 99 and a fraction cents an ounce. The average price paid since the enactment of the Silver Purchase Act, including purchase of American silver, has been 59.3 cents an ounce. The world price of silver for over 20 years prior to the panic of '29 averaged around 60 cents an ounce.

The Silver Purchase Act has enabled the Government of the United States to stabilize the currency of China and to permit her to open up her mints and again circulate silver coin by furnishing China a dollar reserve in the United States through the purchase of Chinese silver. This accomplishment alone would have justified the Act. The Treasury Department has also, through the power of the Silver Purchase Act, stabilized the currency of Mexico, opened up its mints for the coinage of silver and its circulation through Mexico. This same opportunity is open with regard to all the Latin American Republics.

Of course, Great Britain and other countries as well, who have not a supply of silver nor the credit with which to purchase silver, are opposed to our silver policy and have been doing everything to discredit it. The British Government closed the mints of India for the purpose of demonetizing and depressing the silver coins of India. The British Government through its control of India, was continuing her sale of hundreds of millions of ounces of silver coins without regard to quantity or price until the adoption of the London Agreement. All these steps were taken by Great Britain for the purpose of controlling the finances of India. I am not criticizing Great Britain, but I am making statements to show how natural is her antagonism to our silver policy, intended for the restoration of the monetary character of silver throughout the world. Many of us in this country are still prone to worship at the altar of the Bank of England. Well, maybe it is better that our bankers should. They certainly made a mess of our monetary and financial system during a period of time when they were in complete control of the monetary policy of our Government.

I am satisfied that the Silver Purchase Act should be sustained and that any attempt to repeal it at the next session of Congress will meet with de-
feat. The London Agreement under which the President is now paying 77.57 cents an ounce for American-produced silver expires on December 31, 1937. The President will, of course, continue to purchase American silver under the Silver Purchase Act if he has not the power to purchase it further at 77.57 cents an ounce by reason of the London Agreement. There has been grave doubt expressed as to whether the President's authority to purchase American-produced silver at such price as he may fix and above the world price does not terminate with the London Agreement on December 31, 1937. That, of course, presents a grave situation. The American producers of silver for nearly four years have enjoyed the price of 77.57 cents an ounce, which is almost necessary in the production in most mines. It will be quite unfortunate if that should terminate on the first of the coming January and the American miners should be relegated to the foreign price which at the present time is around 45 cents an ounce. It would very seriously affect employment in the West.

IMPORTANT OF PRESENT SILVER PRICE TO WEST

I have recently read statements in the press purported to have been made by a distinguished United States Senator for whom I hold great admiration and friendship to the effect that silver could be produced for 16 cents an ounce. As a friend, I wish to assure him that he could raise the greatest presidential campaign fund ever obtained by furnishing the formula for those whose duty it is to make mines pay dividends. This subject was carefully considered in 1922 by a special committee of the United States Senate called the Gold and Silver Investigation Committee, of which ex-Senator T. L. Oddie, of Nevada, was chairman and of which I was a member. Special experts of the committee, after study of the costs of every mine producing silver in the United States, gave their opinion that the average cost of production of an ounce of silver was 60 cents. It is, of course, difficult to estimate the exact cost of production of an ounce of silver because there are very few mines in the United States, or for that matter in the world, that produce silver metal exclusively. Over 50 percent of all the silver produced in the world is as a by-product of the production of other metals such as gold, lead, copper, and zinc. In the United States two-thirds of the silver produced is as a by-product of the production of other metals. In estimating the cost of the production of silver as a by-product, the total production of all the metals involved is taken and the proportionate cost of the silver production is charged. The Senator does not realize that many copper mines, many lead mines, many zinc mines, in fact, many gold mines could not operate except for the value of the silver content of the ore. The great Anaconda Copper Mines at Butte, Mont., are affected materially in their capacity of production by the price of silver, although the silver content of the ore is small. Take the Nevada Consolidated Copper Mines in Nevada as an example. The company's copper deposits are as cheaply worked as any in the world and yet the copper content of the ore is very small. That company could not make a profit on copper below 7 cents a pound. Such was the price of copper during the depression. These copper ores, however, so I am informed by the company's manager, contain about 8 ounces of silver a ton. The silver at 25 cents an ounce, which was the price during the depression, added only $2 a ton to the value of the ore. With silver at 77.57 cents an ounce, which is now being paid for American-produced silver, the value of the silver alone would be approximately $6 a ton. These mines could continue to run with copper at 7 cents if silver was retained at 77.57 cents per ounce. If silver returns to 25 cents an ounce and copper to 7 cents a pound, which is possible, the mines would then again return to a 15 percent capacity operation.

Take the great silver-lead-zinc deposits at Pioche in southeast Nevada. These great deposits would not pay to operate with lead and zinc below 5 cents a pound and silver below 50 cents an ounce. The Government has just assisted in transmitting cheap power to this mining district from Boulder Dam for the operation of these deposits. The Government will probably lose what it has put into this project if lead and zinc return to their former price of below 5 cents a pound and American-produced silver is allowed to go down to the world price of 45 cents an ounce.
The wisdom of the President in holding American-produced silver at 77.57 cents an ounce has taken off the relief rolls and placed in the highest class of normal employment over 400,000 people. He can't afford to take the risk of putting them back on the relief rolls.

The ignorant and prejudiced opponents of silver contend that the President by paying the American producer of silver 32 cents an ounce more than the foreign producer receives is paying a bonus to the American miner. That, of course, is absurd as the President is only allowing the American miner 77.57 cents an ounce out of the $1.29 the Government receives for circulating this silver as money. Even if it were a bonus, it would not exceed $15,000,000 annually. Fifteen million dollars annually takes 400,000 people off the relief rolls. Does anyone know of any cheaper or more effective relief work that has been done by our Government? How does it compare with the billions of dollars in bonuses that have been granted to the manufacturers under the policy of keeping men and women employed in factories? How does it compare with the billions of dollars bonus that have been granted to the agriculturists for the purpose of raising the price of their commodities? How does it compare with the bonus granted to the producers of sugar and cotton? How does it compare with the relief work done by the WPA? I am not complaining about relief work. It was necessary. But I am comparing the high character and high standard and permanent benefits to the whole country of the relief work accomplished in employing miners. Unemployment is even now increasing in the West by reason of the fear that the President is going to reduce the price of American-produced silver after December 31.

PREDICTS CONTINUANCE OF PRESENT PRICE

I wish to assure you that the President of the United States has no desire to decrease the price of American-produced silver. I think now that he understands the silver problem quite well. I had the pleasure of talking with him on his train during both of his campaigns. I possibly was of some assistance to him in advising him in regard to mining. In his speech at Denver during the last campaign he stated that he was entirely satisfied with the effects of both the gold and silver policies. He has gone further than that. He has in his press statements held that there must be a reasonable price, not only for agricultural products, but for our mineral products.

On May 12 there was pending the Emergency Farm Mortgage Act. That was May 12, 1933. That was the first credit act we passed. There was offered an amendment authorizing the President of the United States to fix the gold content of the gold dollar, but he could not reduce the gold content below 50 percent. He has acted under that Act. At the same time, in that Act it is provided that the President of the United States may fix for coinage purpose the ratio of gold and silver. We have a subsequent act which I offered myself, in which it stated emphatically that the President may charge a difference or a higher seigniorage for the minting of foreign silver than domestic silver. The question I submit to you is whether or not, irrespective of the London Agreement, the President has not the power to coin American silver and to fix the seigniorage price for such coinage. I believe that he has. I don't believe that the London Agreement gave him the power to coin American silver and fix the seigniorage for such coinage. He had to find the authority in existing law. He found it and acted. If that be true, then the termination of the London Agreement only releases the President from the moral obligation with those other governments to purchase our silver. There will still be the moral obligation to the people of this country to maintain adequate currency and an adequate monetary system, and to so arrange the seigniorage that the Government will not get all of the silver or get so much of it that it will destroy the mining industry of this country.

I am satisfied that the President has in mind this moral obligation. I am confident that he has the legal authority to act. I believe he will tell the ignorant and prejudiced and selfish on both sides that the American price of silver has worked satisfactorily without injury to anyone; that he does not intend to take up the discussions for the raising and lowering of the
price; and that he intends to maintain it indefinitely at 77.57 cents an ounce or until the world price of silver reaches such price, at which time he intends to raise the price of American-produced silver above the world price. I hope he will realize that the sooner he makes this announcement, the sooner the depression in mining which is now under way by reason of fear caused by adverse propaganda will cease. I do not think that those who risk their money in mining industries and those who toil under the ground and in the mills and smelters need have fear.

IDAHO STATE CAPITOL

Erected 1906; cost $2,290,000. Outside walls faced with Boise sandstone. Corridors, floors, wainscoting, and base throughout the building are of Vermont marble. Covers an area of 50,646 square feet.
PRESENT STATUS OF SILVER

By CONGRESSMAN COMPTON I. WHITE

Before proceeding to discuss the status of silver today, let us review briefly the history of our Nation's monetary system since silver was demonetized in 1873. I find that the effect of discarding silver as a basic money has been to force the Government to adopt one substitute after another for silver in our currency system, and that these substitutes have failed to meet the requirement of the American people for a stable monetary system, a failure that has resulted in price declines and depressions and which has caused the people of the United States incalculable losses and business recessions.

Let us turn to the record of the substitute measure for silver as a basic money. To relieve the financial depression following the demonetization of silver in 1873, Congress passed the Bland-Allison Act in 1878, which provided for the purchase of a limited amount of silver at a dollar an ounce. The Bland bill, as it was passed by the House, remonetized silver at the ratio of 16 to 1, which was increased in the Senate by Allison to a Silver Purchase Act. This law was later changed by the Sherman Purchase Act by increasing the amount of silver to be purchased at a dollar an ounce from 4,000,000 to 4,500,000 ounces per month, to be paid for with Treasury notes.

Had this act provided that the silver purchased would be paid for with silver certificates, redeemable in silver dollars as the Government does today, the bankers who were opposed to silver would not have been able to embarrass the Government and discredit silver by demanding and securing the redemption of the Treasury notes paid out for silver in gold which drained the Treasury's gold reserve on hand to pay the interest and principal on outstanding Government bonds which were payable in gold. The long struggle that followed over silver and the success of the bankers and financiers in having the Purchasing Act repealed, followed by a period of business prosperity resulting from boom period in the production of gold, has served to fix in the public mind the illusions that silver is unnecessary in our monetary system, and its use as money is a form of subsidy to the silver miners.

After the repeal of the much debated Sherman Silver Purchase Act, unprecedented developments in the gold producing industry seemed for a time to provide the necessary volume of basic money to stabilize our currency system as a foundation for the business prosperity for a brief period following the monetary struggle of 1896. I refer to the discovery of gold in the Klondike, the perfection of cyanide process for working low-grade gold ores, and the discovery and production of the gold mines of the Rand in South Africa when world's gold stock were more than doubled in the short period following—I believe statistics show that the world's gold stock increased from five and one-half billion to twelve billion between 1896 and 1910, during this period when the flow of new gold into the channels of trade and business provided for the steady increase in the volume of basic money to meet the fundamental requirement of economic law, that the volume of money must increase and keep pace with the growth of population and expansion of business. At the close of this period in our financial history when the demand for money again outran the production of gold, with the resultant fall in price levels, our Government found it necessary to devise and adopt another substitute for silver.

The Federal Reserve Banking System and the Federal Reserve bank note—in short, a managed currency supported by interest-bearing obligations classified as "eligible paper" modeled very closely after the English system of bills of exchange. This substitute was proclaimed as the final solution of our monetary problem by establishing a system in which we were enabled to conduct our business with money based on the natural wealth of our country. But in 1929 we awoke to the fact that like all other substitutes for silver, the Federal Reserve System had failed most disastrously; and when it seemed

NOTE: Remarks of Honorable Compton I. White, Congressman from the First District, Idaho, presented to the House of Representatives, Seventy-Fifth Congress, Second Session, Monday, November 22, 1937. Taken from the Congressional Record.
that at last, in the light of reason backed by experience, our Government would establish a stable monetary system based on the age-old and proven automatically controlled metallic money system using the precious metals, gold and silver, at the ratio fixed by nature—16 to 1—was to be established as the foundation on which business would be reconstructed. The bankers and financiers intervened to successfully protect their interest-yielding monetary system by drawing on the collective credit of the people of our Nation and established the Reconstruction Finance Corporation, another substitute for silver money, and here we find the greatest reservoir ever built for the storage of accumulated wealth out of reach of taxation. Remember the lending of the R. F. C. is financed by the sale of tax-exempt Government bonds. Instead of remonetizing silver to provide an adequate workable monetary system and release us in part from the tribute we were paying in good American products to the producers and manipulators of gold, we devalued our dollar and increased the price of the commodity, gold, 70 percent of which is produced in the British Empire, by $14.33 an ounce, overlooking the fact that by remonetizing silver we would have effectively devalued gold and enhanced the value of the commodity, silver, produced principally in our hemisphere and largely as a by-product of our mining industry, so much for the substitutes for silver.

Now we find our Nation is $36,000,000,000 in debt, which in a large measure can be charged to the failure of our Government to provide our people with a stable and adequate money system, and on which we must raise over a billion dollars annually to pay what is glibly called by financiers “the service charge on the national debt.” Do not forget, it is interest on tax-exempt Government bonds. We are still floundering in the morass of financial uncertainty with our money problems still unsolved. Can anyone even begin to compute the loss sustained by the American people due to the failure of our Government to establish an adequate workable monetary system based on a stable monetary unit so aptly described by President Roosevelt when he said:

“The United States seeks the kind of a dollar which in a generation hence will have the same purchasing and debt-paying power as the dollar value we hope to attain in the near future.”

In other words, a stable dollar.

In coming to the present status of silver in our monetary system and keeping in mind the effect of the money shortage in recent years and the loss that has been sustained by the American people due to the failure of the Government to provide the necessary volume of money to meet the requirements of business, the fundamental principle involved and the facts concerning the administration’s silver-purchase program, with the benefits that have been derived from this program by the American people, it is disconcerting to find that many newspapers which I feel must be interested in the continued prosperity of our people and a development of our mining industry are publishing misleading statements contained in the propagandized syndicated articles on silver emanating from eastern sources.

It is apparent that this is a part of an insidious propaganda waged by selfish interest against the Federal Government’s silver policy, a money program that has made the greatest contribution in history to the rehabilitation and stability of our monetary system. The propagandist writes:

“Most everyone will agree that silver is useless, because we have no need for it in our currency structure.”

What are the facts with reference to the Government’s silver policy, how does it operate, and what effect has it on business and the welfare of the American people? Every ounce of silver the Government has is in use as money, the great bulk of it circulating in the hands of the American people in the form of silver certificates, in bills of smaller denominations. The dollar bills so popular in the East are exclusively silver certificates, and when we consider the velocity with which these small bills circulate, it is apparent that a much larger proportion of business is handled by these silver certificates than by the larger Federal Reserve notes.
Surely this propagandist had access to the daily balance sheet of the Treasurer and must know the facts about silver. Let us turn to the Treasury Statement of August 12th (the date on which one of these articles appeared). On the credit side of the Treasury Statement we find that the silver on hand in dollar value is a billion and a third. To give the exact item:

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silver</td>
<td>$864,674,680.31</td>
</tr>
<tr>
<td>Silver dollars</td>
<td>505,222,611.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,369,897,291.31</strong></td>
</tr>
</tbody>
</table>

On the debit side we find that almost a billion and a third of this silver is out in circulation in the form of silver certificates; to be exact:

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silver certificates outstanding</td>
<td>$1,325,539,111.00</td>
</tr>
<tr>
<td>Treasury notes of 1890 outstanding</td>
<td>1,171,922.00</td>
</tr>
<tr>
<td>Silver in the general fund</td>
<td>43,186,258.31</td>
</tr>
</tbody>
</table>

With the exception of the money derived from the devaluation of gold which is in a stabilization fund and is not in circulation we must remember that this money (silver certificates) in circulation is the only money-issue of the Treasury in which the American people is making a profit, and most important of all this money circulates in the hands of the people without yielding interest to any issuing bank.

There is carried in the Treasury balance sheet of this date the item of $369,882,927.45 silver seigniorage, representing the Government’s profit on silver. Disregarding these facts, the propagandist has the nerve to tell us that “the program is actually a tax upon the American people.”

Now what is wrong with the Government’s silver policy as these bankers see it and the real reason for the opposition of the big bankers and money changers expressed through their paid propagandist?

It is a simple fact that they, the bankers, are losing the interest on this money that is in circulation, which can be conservatively estimated at $30,000,000 a year, calculated at 3 percent on an even billion dollars, which would flow to the bankers if the silver certificates were retired and replaced by Federal Reserve notes.

If we can obtain the exact figures on the amount of interest that would be collected on the “eligible paper” required by the bank to support a billion dollars worth of Federal Reserve notes to be issued into circulation, to replace the outstanding silver certificates, doubtless we would find that the interest would be considerably in excess of the estimated $30,000,000.

When we take these facts into consideration is there any wonder that there is an organized propaganda to discredit the Government’s silver program?

The propagandist says, “We must realize and recognize that a silver certificate occupies exactly the same place in our currency structure as does a bill that is backed by gold or one that is issued by the Federal Reserve banks.”

But let me call attention to the vast difference between a dollar circulating as a silver certificate based on seven-eights of an ounce of silver valued at $1.29 1/2 an ounce with a profit to the Government of 52 cents an ounce, circulating in the channels of trade interest free, and a dollar circulating as a Federal Reserve note loaned into circulation by a bank at a current rate of interest based on interest-bearing, eligible (commercial) paper, which in turn is based on fluctuating commodity prices, with a 40-percent gold coverage or Government bonds—a dollar which must be supported during the entire time that it is in circulation by interest-bearing obligations—a dollar which under the rules of the Federal Reserve Banking System will be automatically retired from circulation when unfavorable business conditions restrict business borrowing, with a resultant contraction of the volume of the money in circulation and consequent fall in price levels with such disastrous effect on business and employment as we have seen.
Let us compare the difference between money that circulates interest free and money that must yield current rates of interest to bankers for every day it remains in circulation, and decide if we will be among "the voters who will wake up to the necessity for the repeal of the Silver Act."

After the bitter experience of the American people during the period of the low price for silver and the irretrievable losses that have been inflicted on many of us, I doubt that the majority of the American people will again be fooled into cutting off this important source of basic money on which our credit structure rests, or upset price stability by dumping our silver on the world market, thereby contracting our money volume by withdrawing our interest-free silver certificates from circulation.

Let us hope that, for the good of our Nation, the security of our investment, the relief of unemployment, and the continuation of business prosperity throughout the country, the American people are informed on money and will not be misled by vicious propaganda, and that the schemes of the money changers to discredit silver and increase the interest load on the American people will fail.
ECONOMICS OF SMALL MILLING PLANTS

By W. L. ZEIGLER

Mill Superintendent, Hecla Mining Company, Wallace, Idaho

The place of small mills or oredressing plants was definitely established early in mining history. First, there was the beneficiation of gold-bearing gravels by screening, sizing and washing. Later, metallic ores too low grade to be smelted were screened and washed in crude devices in order to make them profitable or even workable for metals. The whole process of milling has been a tedious evolution, from the small batches of ore handled by hand to the large mills of today, treating enormous tonnages, which require no actual human labor in their flow systems.

Milling plants located in many parts of the country vary widely in type suited to a very large variation in the types of ore which they are designed to treat. Of the simplest type, there is the jig mill, with perhaps a crusher and hand jig for concentrating heavy particles of minerals from a lighter gangue and also a small stamp mill containing a crusher, stamps and amalgamation plate to recover precious metals. Both types have served the mining industry well. Later, with the discovery of hydrometallurgical processes for recovery of metals and the flotation process for concentration, a wide variety of milling plants has been developed which uses a combination of processes best adapted to treat the individual ore.

In this discussion, plants of any kind less than 250 tons capacity per 24 hour day will be considered small mills. Mills of this capacity are usually installed in the development stage of a mining property. They lead to larger, but perhaps not better, operations, or eventually fail on account of unfavorable development of the mine. In the Coeur d'Alene mining district, the mills of the large producers were preceded by small concentrators which were either expanded later as the mines were developed, or were replaced by larger and improved plants. The same is more or less true for all mining districts with the exception of a few very large low grade mines recently developed and placed in operation.

The installation of small mills is often justified by the fact that proceeds from ore extracted in development work in a property can often furnish sufficient revenue without the expenditure of additional capital. Also, they may determine and prove the process of milling best adapted to the ore if it be complex in character.

If a mine has a definite reserve of commercial ore blocked out, without chance for additional tonnage, a small mill, with economical capacity for this particular instance, would be justified. In this case, the cost of the plant would be kept at a minimum and salvage value would be a consideration.

CUSTOM MILLS

In recent years, a number of large mills have been designed and equipped to treat custom ores in many districts. These mills have had a definite effect on the installation of small plants at mines which are moderate producers and are located within an economical transportation distance. There are many reasons in favor of a small producer shipping milling ore to a well regulated custom mill. Some of these are, that the investment for a small plant is not required. Then too, the larger mills have complete equipment and a well trained staff. On the other hand, custom milling rates are usually high, ($2.00 to $3.00 for selecting flotation concentration) and together with transportation costs on large tonnages, the costs for low-grade ore are prohibitive. The extraction of metals by milling on small lots is usually determined by small batch flotation tests, and the custom mill is not going to take the worst of it on this score.

Large central or custom mills, however, have proven to be successful as evidenced by the Bird Dog and Central Mills in the Tristate District; the

NOTE: Presented to the Annual Metal Mining Convention, Western Division, American Mining Congress, Salt Lake City, Utah, September 9, 1937, by W. L. Zeigler, Mill Superintendent, Hecla Mining Company.
<table>
<thead>
<tr>
<th>Name and Location of Mill</th>
<th>Capacity-Tons Per 24 Hours</th>
<th>Process</th>
<th>Mill Feed</th>
<th>Date of Report</th>
<th>Crushing and Grinding</th>
<th>Concentration and Dewatering</th>
<th>Disposal of Tailings</th>
<th>Assaying and Miscellaneous</th>
<th>Total Cost</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Molybdenum Corp. of America, Questa, N. Mex.</td>
<td>40</td>
<td>Flot</td>
<td>5% MoS-3</td>
<td>1932</td>
<td>$0.21</td>
<td>$2.03</td>
<td>—</td>
<td>$0.46</td>
<td>$2.69</td>
<td>Owns Power Plant</td>
</tr>
<tr>
<td>Harmony Mines, Baker, Idaho</td>
<td>200</td>
<td>Flot</td>
<td>3.84% Cu</td>
<td>1930</td>
<td>.36</td>
<td>.142</td>
<td>$0.010</td>
<td>.09</td>
<td>.651</td>
<td></td>
</tr>
<tr>
<td>Spring Hill Constr., Helena, Mont.</td>
<td>160</td>
<td>Flot</td>
<td>$6.46 Au.</td>
<td>1931</td>
<td>.452</td>
<td>.258</td>
<td>.052</td>
<td>.245</td>
<td>1.007</td>
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<tr>
<td>Hog Mountain Gold M. &amp; M., Alexander City, Ala.</td>
<td>75</td>
<td>Flot</td>
<td>.220 oz. Au.</td>
<td>1936</td>
<td>1.011</td>
<td>.262</td>
<td>.001</td>
<td>.209</td>
<td>1.483</td>
<td></td>
</tr>
<tr>
<td>Golden Messenger Mine, York, Mont.</td>
<td>125</td>
<td>Cyanide</td>
<td>.20 oz. Au.</td>
<td>1937</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>1.225</td>
<td></td>
</tr>
<tr>
<td>Silver Dike Mill, Mineral County, Nev.</td>
<td>25</td>
<td>Gravity</td>
<td>8% WO-3</td>
<td>1932</td>
<td>2.651</td>
<td>.854</td>
<td>—</td>
<td>.144</td>
<td>2.649</td>
<td>Labor $1.00 to $2.75 per shift</td>
</tr>
<tr>
<td>Big Jim Mine, Oatman, Ariz.</td>
<td>50</td>
<td>Cyanide</td>
<td>Au. Ag.</td>
<td>1935</td>
<td>.790</td>
<td>.838</td>
<td>—</td>
<td>.309</td>
<td>2.437</td>
<td></td>
</tr>
<tr>
<td>Doyle Mine, Shullsburg, Wis.</td>
<td>80</td>
<td>Gravity</td>
<td>Zn. Pb.</td>
<td>1936</td>
<td>—</td>
<td>.2438</td>
<td>—</td>
<td>.1478</td>
<td>.4916</td>
<td></td>
</tr>
<tr>
<td>Pilgrim Mine, Chloride, Ariz.</td>
<td>100</td>
<td>Flot</td>
<td>.26 oz. Ag. 138 oz.</td>
<td>1937</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>1.049</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Davis-Dunkirk Constr., Prescott, Ariz.</td>
<td>75</td>
<td>Flot</td>
<td>Au. Cu. Ag.</td>
<td>1933</td>
<td>—</td>
<td>—</td>
<td>1.12</td>
<td>1.11</td>
<td>1.23</td>
<td></td>
</tr>
<tr>
<td>St. Joseph Lead Co., Atlanta, Idaho</td>
<td>220</td>
<td>Flot</td>
<td>467 oz. Ag. 1,541 oz.</td>
<td>1935</td>
<td>.674</td>
<td>.331</td>
<td>.057</td>
<td>.10</td>
<td>1.162</td>
<td>Owns Power Plant</td>
</tr>
<tr>
<td>Chief Consolidated Co. Eureka, Utah</td>
<td>300</td>
<td>Flot</td>
<td>Pb. 11.36% Ag. 13 oz. Au. 0.087 oz.</td>
<td>1930</td>
<td>.5853</td>
<td>1.3254</td>
<td>.0621</td>
<td>.7441</td>
<td>3.2169</td>
<td></td>
</tr>
<tr>
<td>St. Joseph Lead Co., Hughesville, Mont.</td>
<td>400</td>
<td>Flot</td>
<td>Pb. 6.21% Zn. 5.01% Ag. 9.09 oz.</td>
<td>1931</td>
<td>.2219</td>
<td>*.2530</td>
<td>.0320</td>
<td>.4597</td>
<td>.9666</td>
<td>* Cost of reagents not included</td>
</tr>
<tr>
<td>Black Hawk Constr., Hanover, N. Mex.</td>
<td>180</td>
<td>Flot</td>
<td>Ag. 2 oz. Pb. 2.5% Zn. 15% Cu. 14%</td>
<td>1930</td>
<td>.5135</td>
<td>.6079</td>
<td>—</td>
<td>.4292</td>
<td>1.5506</td>
<td></td>
</tr>
<tr>
<td>Montana Mine Constr., Ruby, Ariz.</td>
<td>250</td>
<td>Flot</td>
<td>0.071 oz. Ag. 8.17 oz. Pb. 5.19% Zn. 5.86% Cu. 39%</td>
<td>1931</td>
<td>.5732</td>
<td>.6484</td>
<td>.0623</td>
<td>.9181</td>
<td>2.2020</td>
<td>Owns Power Plant</td>
</tr>
</tbody>
</table>
International Mill at Tooele, Utah; as well as the U. S. Smelting Company Mill at Midvale; the Timber Butte Mill at Butte, Montana; the Hercules Mill in the Coeur d'Alene District; and the Golden Cycle Mill at Colorado Springs.

COSTS OF SMALL MILL

The cost of small mills varies greatly with the type, location with reference to transportation, climatic conditions, and a larger number of other factors too numerous to mention. Each mill is more or less of an individual problem, as ore from mines seldom has similar characteristics or conditions, even in the same district. The development of the flotation process has done much to standardize concentration mills, but has not by any means made a single type universal. Recently, some manufacturers have designed and made small mills complete with steel framework cut and ready to assemble. The flow sheet of these is made flexible enough so that a variety of ores may be concentrated without altering the assembly to a large extent.

Single product flotation concentrators up to 200 tons daily capacity (24 hours) cost from $300 to $600 per ton of rating, exclusive of power or any extensive cost of water supply development. Smaller units naturally cost more in proportion than those of larger capacity. Mills designed to produce two concentrate products cost about 30 per cent more than those producing one concentrate.

Small cyanide plants are very inexpensive when coarse crushing and leaching is sufficient, but the cost may rise to well over $1,000 per ton of rating if all sliming, leaching with vacuum process zinc dust precipitation is used.

Another type of small, low cost mill, where free gold is present, is a simple flotation type using ball mills for grinding, with a pulsating jig between the ball mill discharge and the classifier. Recent developments in this type of jig have made it a very efficient concentration machine, which will, in most cases, recover more free gold in a high grade concentrate than is possible to amalgamate. The resulting high grade jig concentrate can then be amalgamated in a barrel with the danger of amalgam theft practically eliminated. The jig in this position will catch free gold as it is liberated by grinding, and prevent the circuit from becoming enriched with coarse gold particles.

MILLING COSTS

It is very difficult to make a comparison of milling costs in small mills situated in different parts of the country. The following tabulation compiled from recent Information Circulars published by the U. S. Bureau of Mines shows milling costs of a variety of small mills with a great variation in milling costs.

Information relative to costs in small mills is rather meager as most operations of this size do not keep detailed costs as in larger plants. It is possible, however, with a well designed mill of small capacity, to obtain operating costs that are comparable with large operations—overhead costs spread over a small tonnage are necessarily higher.

STANDARD SILVER LEAD COMPANY MILL

A few mining operations, demonstrating the practicability of small mills, will be described briefly. Notably successful among these is the mill of the Standard Silver Lead Company at the Gould Mine near Marysville, Montana. Early in 1930, a development program was started, and enough ore discovered in the mine to justify a small development mill. The ore consists of quartz containing very fine free gold, with a small quantity of argentiferous pyrite. While some machinery was on the ground, a small flotation mill of 35-40 tons capacity per 24-hour day was constructed at a cost of about $12,000. Electric power was already available at the site. The mill was operated mostly on development ore until early in 1935, at which time sufficient ore was blocked out to justify a larger and more efficient plant. During this period, the production from the small mill not only carried the expense
of development, and paid in royalties a good proportion of the purchase price of the mine, but also put enough money in the treasury to construct the larger mill. The price of gold was raised during this operation, and while the extraction by the flotation process was economical at the old price, it was decided to use the cyanide process for increased efficiency of the larger mill. During the summer of 1935, a cyanide plant of about 100 tons capacity was added at a cost of $35,000, and the extraction of gold was raised from about 90 to over 97 per cent. The flow sheet of the cyanide plant does not vary much from ordinary practice. The ore is crushed in two stages by jaw and gyratory crushers. Fine grinding equipment consists of a 7' x 36' Hardinge Ball Mill in closed circuit with a 6' x 20' Rake type classifier, cyanide solution being added to the circuit. The classifier overflow flows to two 30' Thickener's, the overflow solution going through clarification boxes to zinc dust precipitation unit. The underflow of thickeners passes through four 12' x 10' Devereaux type agitators to a 30" thickener at which point barren solution is added. The underflow solids are filtered by a 14" x 10' drum-type filter, the filtered cake is repulped and treated by flotation for silver minerals not dissolved. This concentrate is then sent to the grinding circuit and passes through the cyanide system for extra time of contact. No building up of this material in the circuit is apparent.

This operation is running steadily and paying regular dividends to stockholders at the present time.

**MILL AT MAMMOTH MINE**

In the later part of 1929, a concentrator of 150 tons per day capacity was erected on the shore of Slocan Lake in British Columbia to treat the ores of the Mammoth Mine, which is located about two and one-half miles in distance and 3000 feet in elevation above the mill site. It was necessary in the construction program to install an aerial tramway over a very precipitous profile, as well as a hydro-electric plant to furnish power for the operation.

The proven ore in the mine assayed about 18 oz. silver per ton, 4.5% lead and 6.0% zinc. The crushing end of the mill consists of a jaw crusher, screens, and two sets of rolls for secondary crushing, as the ore is wet and sticky. The grinding end has a 6' x 4' Conical type ball mill in closed circuit with a 6' x 20' Rake type classifier. The overflow of the classifier flows to a 10-cell line of 18'' M. S. Sub A cells where a lead concentrate is produced. The tailings from the lead end flow to a similar line of flotation cells which produce zinc concentrate. Both concentrates are thickened and filtered by a leaf-type filter and are stored in large bins, as barge service on the lake is irregular. The principal problem in the concentration of this ore was to get as much silver into the lead concentrate as possible, because of more favorable smelter settlements. A system of flotation reagents was worked out, which, in actual practice, gave much better results than laboratory tests had shown. During the depression the plant was closed, but started operation in 1936 and is giving a good account of itself.

While isolated from the mine, the power plant and mill are close together. Two men operate the plants on night shifts without difficulty. The tramway completed, cost about $100,000; the mill, $75,000; and the hydro-electric plant of 350 horsepower, about $75,000. Milling costs for this selective separation are about $1.00 per ton.

**GNOME MILL**

An example of a small cyanide plant is well illustrated by the Gnome Mill located on the South Fork of the Clearwater River in central Idaho. Development work in the mine previous to the installation of the mill had shown a fair-sized orebody assaying about 1.5 ounces of gold per ton. The mine is located about 65 miles from a branch line railroad and the road through the canyon was not passable for heavy loads.

A cyanide plant of 25 tons per day capacity was constructed in 1932 to treat the high grade gold ore. The crushing and grinding end of the mill consists of a fine jaw crusher, a 4' x 5' ball mill in closed circuit with a 2'6"
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x 15' rake-type classifier. Grinding is done in cyanide solution and the overflow of the classifier is pumped to a 20' x 8' thickener; overflow solution from which is clarified in wood excelsior beds and flows through zinc shav­ing precipitation boxes. The thickened pulp is pumped by diaphram pump to three Devereaux agitators in series and is then pumped with barren solution dilution to another 20' x 8' thickener. The overflow solution from this tank is pumped to the grinding circuit or to the clarifier as the value warrants. The pulp from the thickener is pumped to a 6' x 6' Oliver filter, the tailing cake from which is repulped and washed to tailing impounds.

The power for the plant is furnished by two 50 horsepower, medium speed Diesel engines belted to lineshafts—one engine drives the crushing and grinding end, and the other, the cyanide treatment installation. A small electric generator furnishes lights and power for several small motors. The cyanide plant installation cost about $23,000 including the Diesel engines. Operating costs average $2.50 per ton.

Unfortunately, the high grade ore was milled while the price of gold was $20.67 per ounce. Deeper development in the mine did not show any appreciable tonnage of high grade ore, so the operation of this small capacity mill is barely profitable.

POLARIS MILL

The new Polaris Mill in the Coeur d’Alene District is an example of a small initial mill designed so that the capacity may be doubled or tripled with low cost if future development of the mine warrants the expansion. In this plant, construction and equipment are of the best type suited to the location.

Ore is transported by one and one-half ton ore cars drawn by a trolley locomotive through the tunnel 12,000 feet in length to the ore bin at the top of the mill. This bin is of reinforced concrete construction, circular in form and has a capacity of about 700 tons of mine run ore.

The crushing plant and mill are of the steep, hillside type, progressing from the track at tunnel level down the hill to the flat below, a slope of about 300 feet. A railroad spur serves the plant from the mainline of the Union Pacific railroad to the bottom of the mill for the purpose of delivering timbers and mine supplies to the storage yard on the flat, as well as receiving concentrates from the storage bin at the bottom of the mill.

Ore drawn from the air-operated gate in the mine-run ore storage bin passes over a grizzly with 2" openings before falling into a 18" x 30' Traylor jaw-type crusher set at 3" spacing. The crushed ore falls to a 24" belt conveyor below where it joins the undersize ore from the grizzly already on the belt. The conveyor delivers the coarsely crushed ore to an Allis-Chalmers vibrating screen with 1" square mesh. Oversize ore from the screen falls directly into a 3-foot Traylor reduction crusher set at one-half-inch opening. The crushed ore joins the undersized from the screen on a 20-inch belt conveyor and is delivered to a point above the crushed ore bin of 400 tons capacity. At this location, there will be installed later a 48" x 72" vibrating screen with one-half inch mesh. The undersize will fall directly into the bin and the oversize will be conveyed to a 16" x 48" set of crushing rolls operating in closed circuit with the screen.

The crushing plant when completed will have a capacity of 80 tons of ore per hour, and will crush sufficient ore on one shift to supply the contemplated enlarged mill for 24 hours per day operation.

Grinding, concentration, and filtering equipment is contained in the lower or main part of the building. Under the crushed ore bin are located two sliding pan ore feeders which regulate the flow of 200 tons of ore per day to one 8' x 22' conical type ball mill in closed circuit with a 4' x 21' Dorr type "F" classifier. The overflow from this classifier is regulated so that a relatively coarse grind is obtained and flows directly to a 4' rotor type cell from which a high grade silver concentrate is produced. Tailings from this cell are pumped to a regrinding units consisting of an 8' x 22' conical type ball mill in closed circuit with a 6' x 21' Dorr type "F" classifier. The overflow from the classifier, regulated so that a fine grind is obtained, flows to a line
of five flotation cells operated as roughers. Froth from these cells is pumped
to one cleaner cell producing finished concentrates which flow together with
concentrates from the coarse flotation cell to a 20' x 10' thickener tank. Thickened concentrates are filtered by a 4' x 4' drum type filter and drop
into a 100-ton concentrate storage bin.

Water for the plant is obtained from Rosebud Gulch and from a drilled
well located on the flat near the main line of the railroad. Electric power is
furnished from the lines of the Washington Water Power Company which
serve the district.

In the operation of the mill at present capacity, a crusherman and helper
 crush the ore for the day in about three hours and are used for other general
work the remainder of the shift. The concentrator end is operated by a head
 flotation man and helper on each shift. As there is little attention required
in the mill, the helper takes care of the heating plant and miners' dry room
located in a building nearby.

The mill installation cost about $100,000, and surface plant buildings,
roads, pipe lines, an additional $42,000. Mill operating costs are 72c per ton
with the present high labor wage scale.

All the mills that have been briefly described are well designed and con­
structed plants. While they do not represent a complete cross-section of all
the various types of small mills, it is hoped that at least some idea may be
 gained of the problems involved in installing small, economical plants.

**DETAILED CONSIDERATIONS IMPORTANT**

Many things must be taken into consideration in designing small mills,
and all are equally important as they are in large plants. The economic
metallurgical process to be used should be determined thoroughly by test­
ing average milling ore. Location with reference to ore sources for econ­
omical transportation, water and power supply, tailings disposal and mini­
imum requirements for labor are important.

Most small mills use single stage crushing in order to avoid the cost of
secondary crushers along with the necessary conveyors or elevator and bins.
When the ore to be treated is soft, this is feasible, but it must be taken into
consideration that small diameter ball mills are very poor and inefficient
crushing machines. Some new designs of jaw crushers have lately appeared
on the market which will make a large reduction in crushing in one stage
and will deliver a product as small as one-half inch where the ore is dry.
The capacity of this type decreases very rapidly where the ore is wet
or gummy.

Coarsely crushed ore when stored in bins ahead of the ball mill grinding
unit will invariably feed out of the bin either mostly fine or entirely coarse.
There is nothing which will upset the grinding circuit as much as this condi­
tion because of variation in capacity of the ball mill on fine or coarse ore
particles. The finer that ore is crushed before grinding, the less liable this
condition is apt to happen. Ore feeders which regulate the flow of ore to a
grinding circuit are very important, and the best equipment for this purpose
is a necessity. There are a number of successful machines which will do
the work properly, but some are better than others operating under differ­
ent conditions.

For grinding in small plants, ball mills are used universally. Gravity
stamps are still used in some plants where free gold is present in the ore,
and they are probably the best amalgamating machine in use. It is very
important to have proper classification in connection with ball mills to pro­
cure efficient grinding. If possible, the classifier should be placed in rela­
tion to the ball mill so that gravity flow into and out of it can be obtained.

Whether or not flotation, cyanidation or other processes be used in treat­
ment of the ore, much care in design should be taken so that a minimum
of labor in operation will be required. One operator, at least, in the plant
is necessary as the fully automatic mill has not yet been designed. Whether
the mill is 15 or 200 tons capacity per day, at least one attendant must be
present. If the plant is isolated, some states have laws that two men must
be on the job. It is true, however, that the men can do other work and attend the mine air compressor, power plant or various other jobs if the location is suitable.

POWER INSTALLATIONS

Many years ago, small isolated mills used either steam or water, if available, to generate power. On account of high labor costs, steam power has almost entirely disappeared. If a sufficient volume of water, having fallen enough to generate power, is available within close distance of the mill, it will be economical to invest at least $150 per horsepower to install it. Small waterpower plants usually are susceptible to very low periods of flow at seasons and also freezing if in a cold country. Invariably, they have to be supplemented with other sources of power during the low water periods.

The use of Diesel engines for power sources has developed very rapidly and filled a very important place in power generation at isolated locations. There is now available in almost every section of the country a supply of standardized Diesel fuel oil at reasonable cost. Twenty-five years ago engines of this type were bulky, expensive, and troublesome machines. During the last five years, a number of very dependable, light, medium-speed Diesels have been developed which are ideal power units for small mining operations. These engines are made into complete power units, ready to belt or attach to generators, and the installation cost is very low. In addition, some manufacturers have a very complete service for the engines and experienced Diesel service men may be obtained on short notice in case of engine trouble.

Whether or not Diesel engines or water wheels should be belted to the various machines instead of generating electric current for power is an economic matter, as well as a practical one. Well designed transmission will be more economical in cost and operation and should be considered where oil prices are high. This system is, however, inflexible and is very seldom adaptable to expansion. In some mills, the heavy loads could be belted from the engine and a small electric generator be used to furnish power for necessary lights and small motors around the plant, thus saving in both installation cost and losses due to generation and transmission of electric current.

SMALL MILLS AVERAGE ABOUT $0.75 PER TON

As already stated, it is difficult to obtain records of costs on small milling operations as few detailed reports are made or recorded. Costs in mills using the simplest metallurgical processes will be at least $0.50 per ton and when conditions are extremely complicated, will be as high as $3.00 per ton. At the present time it is safe to estimate simple flotation concentration, under average conditions at 100 to 200 tons daily capacity, will cost about $0.75 per ton.

Mining districts are dotted with properties which failed and were equipped with small milling plants. This is due to a greater extent in overestimated or failure of orebodies rather than metallurgical or economic failure of the operation of the mills. In such cases, the machinery from the mills is usually taken to other mines or sold to used machinery dealers furnishing a never ending supply of used equipment which may be used in other similar installations.
AIR TRANSPORTATION AND MINING

By EDWARD M. BRYAN

Perhaps nowhere within the territorial limits of the United States has aviation played the prominent part in the mining industry as in our own State of Idaho. Sections of the country, which, before the advent of air transportation, could only be classed as seasonal operations owing to the complete blocking of existing roads by snow, are now year around operations.

Early in 1927, the first airport was established to serve a mine during the winter months, while at the present time there are approximately ten communities which receive all their freight, mail, express, food and medical supplies via air route for approximately six months out of the year.

Several communities were skeptical as to the reliability of the airplane in the extreme mountainous terrain of central Idaho during the winter months, but the airplane was given a trial and found to give such excellent service that it was substituted in most communities formerly served by dog team. It also made it possible to open up new properties.

The advantage of the time saved by using airplanes can be easily shown from the fact that from Cascade to Yellow Pine, Stibnite and on to Deadwood, it was formerly a four-day trip while now it is only twenty-five minutes by air and the convenience of the two modes of transportation cannot be compared.

Mining activities continue throughout the winter in Atlanta, Stibnite, Deadwood, Warren, Yellow Pine, Mackay Bar, Crooked Creek and others. Each of these communities is separated from the railroad by high mountain ranges eight or nine thousand feet above sea level. Owing to the early snows, winter supplies had to be laid in early as the camps were snowed in except for intermittent service by dog team or men on snow shoes or skis. Today not only the sick or injured are served by air transportation but passengers and mail are carried on scheduled trips.

Supplies and freight constitute most of the business. Now snow bound communities can receive fresh vegetables, meat and eggs at regular intervals via airplane. Since April, 1937, the Johnson Flying Service has transported by air 150,000 pounds of equipment from McCall to Mackay Bar. Included in this equipment were one hydro-electric plant capable of developing 500 horse power, one air compressor, eight gas engine power plants (two of these plants weighed 1,500 lbs. each), two donkey engines weighing six and nine tons, respectively, several thousand feet of ½ to 3-inch pipe in 22-foot lengths, several hundred feet of 6 to 10-inch pipe, 50 barrels of gas, and all supplies necessary for establishing and operating a mining camp. The largest single piece transported weighed 2,300 pounds.

In addition to the above equipment, there was also 50,000 pounds of supplies flown into Mackay Bar by the Johnson Flying Service since April, 1937. They also transported 20 tons of supplies into Big Creek headquarters for the Pierce Metal Company. The tri-motor Ford was used to transport all of the heavy equipment and the Travelair biplane was used for their scheduled flights. The average weight per trip for the Ford tri-motor was 4,100 pounds.

The Sunny Side Mine at Thunder Mountain is located on a ridge 8,000 feet above sea level. There being no landing field within a reasonable distance of this mine, commodities are put up in a special pack and dropped from the plane right at the mine. Eggs and fragile goods are dropped by parachute.

While several of the mining companies have constructed and maintained their own landing fields, valuable aid has been given in some sections by the Civilian Conservation Corps, State Department of Aeronautics and various Federal Relief Agencies.

At the present time not only is the airplane being used by the mining industry during the winter months, but operators have been quick to realize the tremendous saving of time which this mode of transportation affords.
The Sunshine Mining Company in northern Idaho has an airplane which is used not only for light freighting work, but for the transportation of executives.

During the winter months a schedule was maintained from Cascade into the mining district adjacent to Yellow Pine, Stibnite, Mackay Bar, Big Creek and Warren. From Boise, scheduled trips are made into Atlanta, carrying mail, passengers, express and freight. In the northern Idaho district, many trips have been made from both Spokane and Lewiston into the remote sections of the Selway National Forests, which comprises eight major districts.

The development of air transportation in the state presents a very interesting story. Fields either located at or adjacent to mining operations are located at the following points: Atlanta, Cascade, Challis, Cayuse Creek, Chamberlain Basin, Dixie, Elk City, Moose Shell, McCall, Salmon, Stibnite, Warren, Cold Meadows, Big Creek, Soldier Bar, Bernard Creek, Cameron Ranch, Cape Horn, Yellow Pine, Land Mark, Bonanza Bar, Mackay Bar, and Hood field.

LANDING FIELDS

The Forest Department and State Aeronautics Division have cooperated in establishing an airport adjacent to Yellow Pine on the south. At Deadwood, the airplanes land on the frozen waters of the reservoir impounded by the Deadwood Dam. At McCall and Warren, cooperative construction by those interested made possible the landing fields. The Idaho Gold Dredging Company contributed in a large measure to the construction of the landing field at Warren and the hangar at McCall. The National Forest Department and the management of the mining companies at Atlanta are cooperating in constructing a landing field at this time in order to obtain airplane service. The field formerly used at Atlanta was plowed up and is now being used for agricultural purposes. The mine officials at Mountain City, Nevada, have constructed a landing field in order to obtain airplane service.

The terms of the Star Route mail contract between McCall and Warren do not permit transferring the winter mail to airplane for delivery, and, as the airplane operator does not hold the mail contract, flying trips are made on request, the ships being maintained at McCall and Cascade. Secesh summit between McCall and Warren receives as much as 25 to 30 feet of snow during the winter. When it is considered that the traveler can ride along the road in summer and see blazes on the trees 30 feet above the ground, the difficulties encountered in ground transportation over this route during the winter can be readily appreciated.

During the winter airplanes made trips twice a week on this route carrying passengers and express. A large amount of heavy freight, such as dredge buckets and other dredging equipment, was hauled in. The airplanes on call this winter have a gross weight of 4,200 to 14,000 pounds and a useful load of from 1,600 to 5,500 pounds. Six passengers and their baggage may be carried comfortably in heated cabins.

CASCADE TO DEADWOOD, STIBNITE AND YELLOW PINE

Mail trips are scheduled twice a week on this route and additional trips are made on call. The round trip is made in approximately one and one-half hours flying time.

An average of 30 passengers, 2,500 pounds of mail and 4,000 pounds of express and freight are carried each month on this run.

In January, 1932, when the break occurred in the oil line from the storage tank to the mill of the Yellow Pine Company at Stibnite, and the stored oil ran to waste, in order to continue operating the mill it was necessary to procure additional fuel oil. Three airplanes in approximately 10 days transported 20,000 gallons of oil from Cascade to Stibnite, and the company was enabled to continue operations.

BOISE TO ATLANTA

Mail trips are scheduled twice each week on the run between Boise and Atlanta, and additional trips are made on call or when loads demand it.
Approximate air time required for the trip is between 35 and 45 minutes, depending upon the wind.

It must be remembered that the Boise airport is free of snow, while at the other end of this run there is usually from 3 to 5 feet of snow on the field. It is therefore necessary to use wheels on the plane instead of skis. A combination wheel-ski arrangement might be used, but this equipment is heavy and cuts down the useful load of the ship. Therefore, it is evident that the Atlanta field must be maintained in a condition to receive winter traffic on wheels instead of skis. When the method of keeping the Atlanta field in condition was being considered, the suggested practice of clearing runways with snow plows was discarded as impractical. Pusher plows were not feasible, because of the immense amount of snow to be moved to clear the runway to the desired width, from 150 to 200 feet. Rotary plows were not available. Apprehension as to the additional hazard of these piles of snow to aircraft operations, as well as damage to the field during spring thaws, definitely ruled out this method. Compacting by rolling appeared to be the most feasible plan, as it was believed that such a compact runway would not drift full of snow. A roller with varying weights, which would work equally well when the snow was dry and heavy (like sand), light and fluffy, or wet was necessary. One with a light drum or cylinder was constructed, part of the weight being built into the framework, and bags filled with sand being added when more weight was desired. To secure compactness the field was rolled twice and again rolled after each snowfall of 3 or 4 inches. When the rolling did not produce exactly the desired results with the cylinder running free, it was blocked and dragged up and down the field. From the air, the rolled portion presented a dazzling whiteness in decided contrast to the unrolled portion of the field. To permit a better judging of distance when approach to the field was made, red flags were placed along the edges of the rolled area.

**SUMMARY**

Is the service worthwhile?

Let us consider the intangible economic results, those factors which bear on the general welfare of a community, but which are hard to measure by monetary standards. Living conditions in the camps have improved, now that fresh fruits, eggs, vegetables, and meats are available, mail and express are frequent, and in case of accident or sickness all medical and hospital facilities of the city are within an hour's distance. The peace of mind these facts afford the workers is making them more satisfied and is increasing their efficiency.

There are also tangible economic results. The facility with which the injured or ill can be rushed to Boise makes the maintenance of a hospital or physician at the camps unnecessary, thus effecting a considerable saving; meat delivered by airplane is cheaper than stock driven in, fed, and butchered during the winter, and this practice was entirely discontinued during the winter of 1932-33; and third, suspension of operations can be and has been frequently prevented by timely use of the airplane.

In the winter of 1931-32, when the Yellow Pine Company at Stibnite suffered the loss of its fuel oil, either more oil had to be procured or the mill could not be started. The oil was brought in by airplane without any delay, and the mill was put in operation. The same winter at the same mine, the ability to procure a large shafting prevented suspension of operations.

An important gear driving the dredge stacker belt on the dredge at Warren was broken. A new gear was ordered and delivered at the dredge an hour and a half after it was received at the flying field at McCall. Had air transportation not been possible, the dredge would have been shut down at least four days longer.

The hoist at the mine of the St. Joseph Lead Company at Atlanta was irreparably damaged. A drum containing a new clutch was ordered by telephone from the factory. When it arrived in Boise in April, 1932, its assembled weight was 1,400 pounds, and it was too large to go through the door of the airplane. It could not be taken over the mountains except by airplane,
as travel by horse and sleigh was not possible, and it was too heavy for dog team and sled. The drum was stripped of all detachable parts; this reduced the weight to slightly more than 800 pounds, but even then it would not go through the door of the airplane. A method was finally devised. The drum was slung under the ship and so transported to the mine without any difficulty. Complete closing until June, 1932, was thus avoided.

CONCLUSION

Great credit is due the hardy pioneers of the air trails of Idaho which lead to the isolated mining camps. Through their courage and foresight there has been established a network of air lines into the mountains of Idaho. Not only are regular schedules maintained to the communities already mentioned, but trips are made to many small camps in other isolated sections, and errands of mercy to prospectors with frozen feet or illness have many times been made without remuneration. Thus another epoch in transportation history is being made as the citizens of Idaho sit in their warm offices and homes and hear the roar of the airplane as it flies overhead toward the snow-bound mountain fastnesses.
ROADS TO MINING AREAS

By DR. FRANCIS A. THOMSON
President, Montana School of Mines, Butte, Montana

The development and general utilization of the motor-truck has nowhere made a greater change in transportation methods than in the mineral industry. Twenty years ago, wagons hauled by four to twenty horses had to serve for small mines; whereas wire-rope tramways and narrow-gauge railroads with steep grades, sharp curves, and "shay" locomotives, served for operations of intermediate tonnage.

Today, the motor-truck has replaced these modes of transport in all but a few special cases.

But the motor-truck for efficient and economical operation demands a fairly good road. In my salad days any kind of wide trail on the mountainside over which four horses, by dint of struggle stimulated by a blasphemous and obscene skinner, could haul an empty wagon up the hill was considered a "road." Brakes, rough-locks, or a good sized log chained on behind, served to help the breeching resist the load as the wagon careened down the hill loaded with ore or concentrate.

I have often thought of the terrific cost in horse flesh of such methods, and have wondered whether the type of roads now needed for motor-trucks would not have paid for themselves even before the advent of the internal combustion engine horse.

However, that may be, the motor-truck is now the standard accepted means of transporting ore, machinery, and supplies for practically all mining operations not served by a standard-gauge railroad, or in a few fortunate instances by water transport.

Much of the distance from mine to town, to sampler, custom mill or custom smelter, is provided for by oiled surface federal aid highways along which the truck spins merrily at the speed of a passenger train. But there is usually a gap of five to twenty miles which separates the mining camp from the main "drag" and it is with this part of the trip that the miners of the West are primarily concerned.

The rapidly developed and remarkable federal aid highway system which stretches over the entire nation like a gigantic cobweb, has been supplemented by "feeder" roads built sometimes with federal money exclusively, sometimes with state money exclusively, and sometimes on a matching basis by state and federal money jointly. However, the assumption—politically made and probably politically justified—seems always to be that these "market" roads or feeder roads were built for the benefit of the farmer and the miner in most states has been given practically no consideration whatever in the expenditure of moneys for feeder roads.

Also militating against the miner in this matter, is the fact that naturally most western metal mines are in the mountainous areas, and equally naturally the mountainous areas are more or less forested and have hence been included within the boundaries of the National Forests. Now the U. S. Forest Service has advanced since it was established under the aegis of Gifford Pinchot in 1907, from a position of active hostility to the mineral industry, to a position of benevolent tolerance and in many instances of actual friendliness. Nevertheless, it is to be expected that the considerable sums of money which have been made available for construction of roads in the National Forests, should be spent by the Forest Service—and well spent too in my observation—in the building of roads primarily for the purposes of the service itself, and not for the convenience of prospectors and mine operators within the National Forests. As I have indicated and desire to emphasize, no criticism can legitimately be levelled at the Forest Service for following this procedure. The net result of all these factors has been

NOTE: Presented to the Annual Metal Mining Convention, Western Division, The American Mining Congress, Salt Lake City, Utah, September 7, 1937, by Dr. Francis A. Thomson, President, Montana School of Mines, Butte, Montana.
that literally billions of dollars have been available for building roads for almost every conceivable purpose except for the assistance and development of outlying mining camps.

When C. W. A., F. E. R. A., and W. P. A. came along in due succession we thought the solution of this problem was at hand, but alas! In spite of the best will in the world on the part of state and federal administrators, these agencies offered no solution. The reason is simple and obvious, the remote areas in which these roads are needed, are naturally the areas in which no relief labor is available. The few inhabitants are still, thank God, of sturdy, individualistic American stock, who prefer to pack their beans and bacon on burro, or horse-back, or on their own stout shoulders, rather than to go on relief. The federal relief agencies have no provision for establishing road-camps, or for transporting relief "clients" (what a beautiful euphemism!) to remote localities, and if they had, the men would be apart from their families and the per capita earnings are not sufficient to support a man and his family in separate establishments.

Thus the only solution, therefore, would appear to be specific appropriation by Congress of money to be spent solely and exclusively for the building of roads to those mining areas, whose development or potentialities appear to competent authority to justify such expenditure.

The first of a series of such bills was H. R. 6098 introduced in the 74th Congress by Hon. Compton I. White of Idaho. This bill and its successor, H. R. 115 in the 75th Congress, also by Mr. White, included an appropriation of $1,500,000 for each of two years for mining camp roads. Section 1 of each of the bills provides:

"That when an application is made to the Secretary of the Interior by any owner and/or operator of any mineral or placer claim, or group of mineral or placer claims, located within a national forest of the United States, for the construction of a road and bridges necessary for the transportation of mineral products of, or supplies for, such mineral or placer claims, it shall be the duty of the Secretary of the Interior to cause an examination of said mineral or placer claims by a qualified representative of the United States Geological Survey, and when it is shown to the satisfaction of the Secretary of the Interior that development on a mineral or placer claim or group of claims situated within any national forest of the United States has proved the existence of mineral or ore-bodies in quantity and commercial value sufficient to warrant the expenditure of public moneys for the construction of roads and bridges to facilitate the operation and development of such mineral or placer claims, the Secretary of Agriculture is authorized to provide the construction, reconstruction, or repair of roads, trails, and bridges within the boundaries of any national forest in aid of the development and operation of such mineral claims."

On its first introduction as H. B. 6098 this bill was referred to the Committee on Public Lands and by this committee to the Department of Agriculture. In the Department's reply it was stated that the Acting Director of the Budget had advised that the proposed expenditure would be in conflict with the financial program of the President, and the bill died in committee.

An almost identical fate appears to have overtaken Congressman White's proposal re-introduced in the present Congress as H. B. 115.

In a letter, dated February 24, 1937, the Acting Secretary of the Interior, Mr. Charles West, wrote to the chairman of the Committee on Public Lands stating the objection of the Department to the enactment of the bill, as follows:

"In the language of the bill, there is the plain implication that the proven presence of mineral or ore-bodies in quantity and of commercial value is sufficient in itself to warrant the expenditure of public money to provide ways for their transportation, and upon the disclosure of such conditions alone, the applicant is entitled to the grant of his application.

"In a broad sense, if ores are of commercial value, they can be mined, transported and marketed at a profit, and if they can be so mined, transport-
ed, and marketed, no reason is seen for the use of public funds to increase the profits of the owner of the mine.

“But assuming that what is meant is if minerals exist in quantity and commercial grade they can be produced at a profit, provided that the Government constructs and maintains roads and bridges to transport them within the forest, still I do not see the warrant for the expenditure of public money for such purpose unless a satisfactory showing is made that there is a public demand for the mineral from the mine to which the road is to be built, and like assurance that the road would be used for the transportation of minerals and supplies for a sufficient length of time to justify the cost of construction thereof.

“Many factors, besides mere mineralogical conditions, would have to be considered as a basis for intelligent decision. Among these may be mentioned an inquiry whether the operator of the mine has the capital, the capacity, the mining facilities and the bonafide purpose to mine and market the deposit; whether the existing market conditions would probably justify the throwing on the market of the additional product, or stated differently, whether it is in the interest of sound conservation of mineral resources and economic policy to promote the mining of the particular resource at public expense, for it is not believed that any good purpose would be subserved in dumping unneeded mineral on a glutted or depressed market. An inquiry would also be pertinent, whether the contemplated scale of operations at the mine justified the cost of the building of the roads and bridges, which would entail the formulation and comparison of estimates of cost of the road and probable production of the mine.

“It may be doubted whether the bill confers upon the Secretary the latitude of discretion above indicated and thought necessary for its proper administration. But unless such discretion can be exercised, there is a high probability in many instances that roads and bridges would be built for mines that would not be found economically practicable to work and the use for the purpose for which the roads were built would not be commenced or would be shortly abandoned, and that deposits that might be mineable in a different situation or under different market conditions, would be used as a pretext for obtaining contracts to building roads.

“Even if the bill confers authority upon the Secretary to consider all the factors necessary to justify the expenditure of public funds, the bill, if it becomes a law, is difficult of administration, requiring the determination of facts not easy to ascertain certainly, that are subject to controversy and change, and required the Secretary to speculate upon the success of a proposed mining venture, and may result in the expenditure of public funds in private interest, without any compensatory benefits to the public interest.

“The bill further operates to give undue advantage to those having mineral deposits in the forests over others having like deposits similarly situated outside the forests.

“For the reason stated, I do not look with favor on the bill.

“For the reasons set forth in my former report, I am of the opinion that the bill should not be enacted.”

Much of this is, of course, the kind of rationalization in which all of us engage when our minds have been made up in advance and we then drag in all possible objections to support our position. Nevertheless, some of the objections would be cogent ones, but do they not apply with equal force to the construction of “farm-to-market” roads, and could one not argue with equal force that unless the farmer’s wheat is really needed or unless he can build his own road, then the federal government should give him no assistance. But the farmers have more votes than the miners and they squeal with a louder voice!

In my opinion, the most valid objection to Congressman White’s proposal is not mentioned at all by Mr. West. This is that one single operator could apply for a road, whereas, roads should be built only to assist a camp or a district in which ten or a dozen operators are actually at work and in position where a passable road is a vital necessity. The introduction by Senator
B. K. Wheeler of S. 2450 on May 13 of this year meets, it seems to me, every legitimate objection which the Department of the Interior might properly raise. It is identical in many respects with the White bills, but makes the provision applicable to "mineralized areas" instead of to individual claims.

Nevertheless, Assistant Secretary West, in a letter to Senator Adams, again recites the objections above quoted from his earlier letter.

Thus the matter rests at present.

The need is obvious, legislation to meet this need, in part, has been introduced; western senators and congressmen have urged favorable consideration, but until the attitude of the Interior Department can be modified probably nothing will be done. It is to be hoped the Western Division of the American Mining Congress will see fit to urge a more enlightened and constructive attitude by the Federal Government towards this real need of the western miner.
IS USE WASTE?

By GEORGE OTIS SMITH

For a generation or so now, the call has gone out to Americans who love their country to cease all wasteful practices.

These appeals in the name of conservation have expressed varying content of fact, fancy and emotion. Subtract the emotion, and conservation becomes largely a test of how far we can see rather than a measure of morals.

The current fashion in conservation alarums is land waste. This is not altogether new, because forty years ago government foresters and geologists, prosaically seeking scientific remedies rather than political issues, were studying soil erosion in the older South and newer West.

And soil erosion, now termed the "rape of nature", is literally as old as the hills; for erosion, which obviously has to attack the topsoil first, has been nature's own favorite levelling method through countless geologic ages.

Man's brief three centuries of pushing America's frontier westward seem insignificant as compared with nature's ceaseless removal of soil by running water.

Similarly, the Dust Bowl, so intensively publicized in these latter days, had long experienced dust storms, for the wind brings the fine soil as well as takes it away.

Admittedly, unwise cultivation of arid lands has resulted in unforeseen soil waste on a scale involving many millions of acres, but the West is not all dust bowls or regions of vanished grass. Man has conserved and reclaimed as well as wasted.

No one can cross this continent through recent decades without observing year by year new fields of grain or alfalfa pushing back the sagebrush and fruitful orchards occupying once barren valleys. That movie script of the conquest of the desert by irrigation is as much romance as the news-reel of eroded grasslands is tragedy. A panorama that omits either is defective.

If our judgment is to be just and our remedial action sound because predicated upon truth, it is essential that the whole case of national conservation be fairly stated and shown in true perspective. Not only the vanishing grasslands of the dust bowl region but the far larger stretches of pasture lands on the high plains of Texas and other states are items to be entered in the balance sheets of land economy.

Though conservation may be described as avoidance of waste, it is far from a simple matter to plot the true course for nation or individual. "Thrift" and "waste" are not exact terms and the most frugal motives sometimes lead to wasteful practices.

There appears in the verb "lay waste" a shade of inference that change from the natural state commonly involves waste. Similarly, some degree of sanctity seems to attach to the adjective "primeval" and so fervent have become the followers of this particular conservationist cult that they make preservation of untouched forest lands and protection of wildlife the chief concern of conservation.

The picture sometimes developed of the American continent after these three centuries of occupation by the white invaders is that of a land well nigh laid waste or, at least, mercilessly robbed of its natural beauty.

In effect, this looking backward phase of conservation resolves itself into the question whether the progress made in utilizing America's natural wealth could not have been brought about with more economy of human effort and less waste of resources, had the colonists started their development program under the guidance of a National Planning Commission.

To be more specific, have the boundless areas of fertile land and splendid forests, the uncounted power streams, and the secret vaults of mineral

treasure, surpassing in variety and abundance those of any other land, been utilized to good advantage or has the effort of the American pioneers and their successors resulted in waste of resource outweighing all visible benefits to mankind?

Undeniably, the rich resources of our land have been put to use. Has that development, then, carried in its wake widespread waste so disastrous as to mean that we who are now entering upon the fourth century of occupation of America are existing on the surface of a despoiled, depleted, and essentially worn-out continent? Must America be saved, lest it become merely the site of a lost civilization? Such questions are thought-provoking.

An easier approach to the nature lovers' diagnosis of our country's ills is to consider first that phase which seems most to arouse emotional reactions:

Are esthetic and economic values wholly incompatible? Does use for material ends generally mean waste of the beautiful?

Or, getting down to cases, is the forest primeval necessarily superior to the tracts of second growth or even third growth timber?

"Superior in what?" may be asked. Superior in its three-fold life-giving value, as the continuing source of raw material for industry, as the great reservoir supplying streams and rivers, and as the home of wildlife and the playground of a busy people.

The lost beauty of nature is taken as the basis of the indictment so often laid against man, the user, that it is time to point out that an over-ripe forest encumbered with fallen, rotting timber and tangled undergrowth can be considered a joy forever only by employing considerable poetic license. The sylvan beauty of a second growth forest is often much more easily enjoyable, and the attraction of the younger forest is greater to the hunter and fisherman. On a strictly factual basis, these "primitive" and "primeval" concepts need to be deflated of their sentimental content.

True it is that mineral resources are non-replaceable and must be accounted as expendible—once mined they are written off the account. Moreover, many mining operations admittedly leave "repulsive scars and blemishes upon the fair face of Mother Earth". Yet, searches for the sites of abandoned mines are sometimes surprised with the speed with which nature covers up old wounds.

Consider, first, the most extensive and numerous surface excavations in this country, the open-cut iron mines of northern Minnesota—it takes little imagination to see these mines, when worked out, has hundreds of additional sheets of blue water—fish reserves, if you please.

The most notable instance of engineering faith moving a mountain is Utah Copper's open-cut mine at Bingham Canyon and here two general disclaimers of spoliation may be offered:

First, that the terraced slopes, 1,600 feet high and representing thirty years' continuous efforts of power-shovels slashing at the mountainsides, are no more lacking in beauty than nature's own sculpture in the same mountains.

Second, as offsetting this change from the natural condition, must be credited to utilization not only the 4,000,000,000 pounds of copper made available for use by the whole world, but the local advantage of a third of a billion dollars spent in Utah for wages, supplies and taxes.

The fear, entertained by some more materially minded conservationists, that our mineral wealth will eventually vanish leaving men poverty-stricken is based on misconception. "Lost minerals" expresses the idea of complete consumption and hence eventual exhaustion, but practically only the mineral fuels, coal, oil and gas, are consumed with the using and of these we are blessed with the largest supply, nearly ninety-nine per cent of the original deposit, in the form of coal, from which the other two may be manufactured.

Conservation should be looked upon as providing an engineering problem, not a political slogan. Efficiency by wise use with avoidance of waste is the engineer's thought as he looks out over the wide expanse of America's re-
sources. He seeks to save both material and energy; and energy saving, expressed in its highest terms, is making the best use of human energy. The emphasis being put upon "natural" in "natural resources" is more an emotional than a logical phase of conservation.

Ruskin, who sought to get away from terms that smacked of the market place, defined value as "the life-giving power of anything." While most of us would not yield one iota in our esthetic appreciation of nature as possessing life-giving power, none should assert that the efficient use of natural resources as the basis of industry and commerce is a wasteful procedure.
MEN EMPLOYED AND WAGES

Better metal prices during the year 1937 and the program of the Federal Government in the purchase of newly mined domestic silver, at a figure above the world market, had a stimulating effect on mining in Idaho, and proved an incentive for new development work, the reopening of properties long idle and a renewal of the search for new mines. As a result more men were employed in the mining industry than for many years and those operating, maintained a scale of wages equal to, and in many instances better than those paid in mining districts of other states.

It is practically impossible to obtain complete and accurate statistics of the number of men employed in the mines or of their nationality. A great many men are employed by prospectors and small companies which do not maintain continuous work and do not make a report to the Inspector of Mines. The reports that are filed by mining companies vary as to the number of working days, while no mention is made of the nationality of the employees. However, Americans are greatly in the majority and every encouragement, including schooling facilities is given to those individuals who wish to become useful and law abiding citizens. A conservative estimate covering all mining operations in Idaho for the past year would total approximately 7,000 men. This figure includes men getting out timber for use in mines.

The Coeur d'Alene district, where the deep-seated lead-silver-zinc mines and the leading silver producers are located, accounted for an estimated 4,500 employees in the big mines and an additional 500 employed in smaller properties and prospects.

Wages in the state are not uniform. Placer and hydraulic miners are classed as surface workers and receive less remuneration. The several gold mines and other employers of mining labor have their own individual scale of wages to fit their particular operation.

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 5½ cents per pound; the bonus to graduate upward for each additional half-cent added to the purchase price.

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

Although the market price of lead has fluctuated during the past fifteen months and during the late business recession has dropped to an all year low of 4.75, the wages in the Coeur d'Alene district were raised 50 cents effective November 16, 1936, and another 50 cents effective March 16, 1937. The following table is the rate for the district from March 16, 1937, and the prevailing scale as we enter the new year.

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Wage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miners</td>
<td>$6.25</td>
</tr>
<tr>
<td>Shovelers</td>
<td>5.75</td>
</tr>
<tr>
<td>Timbermen</td>
<td>6.75</td>
</tr>
<tr>
<td>Timber helpers</td>
<td>6.00</td>
</tr>
<tr>
<td>Machinists</td>
<td>7.00</td>
</tr>
<tr>
<td>Machinist helpers</td>
<td>6.00</td>
</tr>
<tr>
<td>Carmen, Trammers</td>
<td>5.75</td>
</tr>
<tr>
<td>Motormen</td>
<td>6.50</td>
</tr>
<tr>
<td>Trainmen</td>
<td>6.00</td>
</tr>
<tr>
<td>Main hoistmen</td>
<td>7.50</td>
</tr>
<tr>
<td>Small hoistmen</td>
<td>7.00</td>
</tr>
<tr>
<td>Nippers</td>
<td>6.00</td>
</tr>
<tr>
<td>Shaft men</td>
<td>7.25</td>
</tr>
</tbody>
</table>

(Proprietary to the low price of metals, wages were lowered 50c, effective January 1, 1938.)
Other employees are generally on monthly salary—master mechanics, superintendents, foremen, engineers and office help.

The Sunshine Mining Company pay above the Coeur d'Alene district scale and in addition distributed $43,000 as a 5 per cent bonus to over 500 employees based on their earnings for the past year.

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.

Some small operators and promoters have continued to take advantage of the laxity in the laws governing the protection of labor and materialmen in Idaho and failed to make proper reimbursement for services rendered. This condition must be remedied and facts relative thereto will again be presented to members of the 25th session of the State Legislature for consideration.

UNDERGROUND HAULAGE
ACCIDENTS

The safety of men employed in the mining industry in Idaho is of paramount importance to this department. In line of duty, the Inspector of Mines made many suggestions and recommendations to men and their employers with a sincere hope that working conditions could be improved and the unavoidable accidents cut to a minimum. In this program the Inspector has been greatly assisted by representatives of the U. S. Bureau of Mines and the Safety Inspector of the State Insurance Fund.

Most of the larger companies have, for many years, maintained their own safety organizations. These organizations, in cooperation with the U. S. Bureau of Mines, give first-aid training with instruction in mine rescue to the men and in general watch the workings for dangerous conditions which are remedied as soon as possible. However, there is still room for improvement and before our program can meet with success, the inspector suggests that each individual be a safety-first man and assist in bringing about better working conditions as they pertain to health and safety.

In the medium size or smaller properties, particularly where partnerships and lessears are working, or where old mines are being reopened, there is a definite need for closer supervision and instruction in first-aid and safety work. In this connection, through the efforts of Paul V. Black, Safety Inspector for the State Insurance Fund, this department has had the cooperation and assistance of a man well schooled in this kind of a program.

It is impossible for any one man to carry out a successful safety campaign all over the state and at the same time give the proper attention to other duties of the office. To carry on this work in an intensive manner, the personnel of the department should be enlarged so that closer supervision and a continual check could be made, instead of a brief visit once a year, which is all that is possible under present arrangements. This is provided for by the law but an appropriation has never been made adequate for this purpose.

The minor accidents, listed in the accompanying table, "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, yet we believe the record is as complete as it is possible to obtain. Although the U. S. Bureau of Mines and agencies of state government are listing these minor injuries of less than seven days in their reports, they have all been omitted in the accompanying table.

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".

Out of a total 704 accidents reported during the year, 22 were fatal. The number of fatal accidents occurring in connection with underground mining was 15 as compared with 24 during a like period in the year 1936. There were three milling and refinery fatal accidents; one resulted from spotted fever after a bite of an infected tick and three fatalities were caused by a snowslide.

A comparison of the total number of accidents during the year 1937 with those during a like period in the year 1936 show a decrease in accidents of 191. In 1937 there were 22 fatal accidents compared with 30 during the previous year.

DESCRIPTION OF FATAL ACCIDENTS

December 28, 1936; Ima Mines Consolidated; May, Lemhi County, Idaho. Pete Bassick, married, miner, age 56.

On December 28, 1936, Pete Bassick, while lifting a heavy rock, felt a strain in his stomach and complained that the exertion made him sick.
The injured man was attended by Dr. C. A. B. Jensen, Mackay, Idaho, whose diagnosis revealed a left inguinal hernia (very large). After being removed to St. Anthony's Hospital, Pocatello, mild peritonitis and appendicitis resulted in death on January 4, 1937.

Bassick is survived by a widow and six minor children.

January 1; American Smelting and Refining Company; Jack Waite mine, Duthie, Shoshone County, Idaho. Joseph W. Harvey, married, miner, age 38.

Joseph W. Harvey was preparing to bar down some loose ground from the hanging wall of a stope above the 1700 level. He bent over to place some lagging so he could stand on it in order to reach the loose ground. When in this bent position he was struck on the back by falling ground which fractured his spine with compression of the spinal cord.

The injured man was removed to the Wallace Hospital, where he died January 6. During the time that elapsed from the time of injury and moment of death, Harvey was too sick to make a statement.

The accident was witnessed by C. H. Blackwell, timberman, and Earl Schwabenland, shoveler, both of Duthie, Idaho.

January 7; Federal Mining & Smelting Company; Morning mine, Mullan, Shoshone County, Idaho. Andrew Chambers, single, shoveler, age 23.

A miner on the fifth floor, 25 ft. west of the number two raise on the 3650 level, had prepared some shots for blasting to make room for timber when the crew went off shift. The men in this particular working place were equipped with electric head lamps and had no matches. Chambers was asked to assist with his carbide light to spit the ground. Deceased took carbide lamp from his hat and was carrying it in his hand. Instead of going up one floor where the timber slide was lagged over solid the man took a short cut to the manway on the fifth floor. The timber slide on this floor was partly lagged over with 50 inches of lagging leaving an opening approximately 3x4 ft. wide. While walking in a stooping position, Chambers struck his head on an intermediate timber cap, stumbled, and fell into the timber slide head first. He fell about 40 feet and landed on the trap door above the sill drift of the 3650 level. Death was due to a fractured skull.

The following affidavits on file, signed by W. L. Hart, timberman, and Roy Turk, timber helper, substantiate the foregoing statements:

AFFIDAVIT

"On January 7, 1937, I, the undersigned, W. L. Hart, was working 25 ft. west of No. 2 Raise East, 5 floors above the 3650 level, as a timberman, together with my partner, Roy Turk, a timberman helper.

"In going off shift, we were to blast two plugs in a boulder to make room for a set of timbers. Both of us were wearing electric lamps and were without matches. Turk went up to Andrew Chambers who was tramming on the 11th floor, and asked him to come down with his carbide lamp to spit the fuses. After the fuses were spit, I told Chambers and Turk to go down to the sill and I lingered awhile looking around as I had plenty of time. Suddenly Turk cried, "He went down the slide,"—meaning Chambers. I rushed over and together we went down the manway and found Chambers on the 1st floor above the sill on lagging completely covering timber slide at this point.

"The regular route in leaving the 5th floor is up one ladder West of No. 2 Raise to the 6th floor, or the working floor, then going east on the 6th floor to the manway passing over the timber slide which is completely covered at all times except when timbers are hoisted.

"In leaving the face this time, when blasting, the short route directly to the manway on the 5th floor was taken. In going over East to manway on the 5th floor, stooping low is required to pass under two intermediate caps about four feet from the floor, one on each side of the timber slide. The timber slide between the above-mentioned caps was covered tightly on the foot wall side with two pieces of 12" lagging, two pieces of 8" lagging and one piece of 10" lagging, making a walk or platform 50 inches wide, leaving an
opening of $3\frac{1}{2}$ ft. to 4 ft. on the hanging wall between the above-mentioned platform and the slideboards.

"W. L. HART,

"Sworn to and subscribed before me this 11th day of January, 1937.

"B. N. OUMETTE,

"Notary Public in and for Shoshone County, State of Idaho."

**AFFIDAVIT**

"On January 7th, 1937, I the undersigned, Roy Turk, was working as a timberhelper, 25 ft. West of No. 2 Raise East, 5 floors above the 3650 level of the Morning mine, together with my partner, W. L. Hart, a timberman.

"In going off shift we were to blast two plugs to make room for a set of timbers. We were without matches and were both wearing electric lamps. I went up to Andrew Chambers who was tramming on the 11th floor, and asked him to come down with his carbide light to spit the fuses. After the fuses were spit Chambers and I were told to go down to the sill. I was leading the way, but about 10 feet from No. 2 timberslide Chambers passed by me carrying his carbide lamp in one hand, seemingly in great haste. We had to stoop low to pass under two intermediate caps about four feet from the floor. Chambers passed the first cap but bumped his head against the second which knocked his hard-boiled hat off and he went head first down the timberslide. The timberslide between the two intermediate caps was covered with two pieces of 12" lagging, two pieces of 8" lagging and one piece of 10" lagging, making a walk or platform 50 inches wide, leaving an opening of $3\frac{1}{2}$ to 4 feet. Through this opening Chambers fell to the first floor, landing on lagging completely covering timberslide at this point. The regular route in leaving the 5th floor is up one floor West of No. 2 Raise to the 6th floor or working floor, then going East on the 6th floor to the manway, passing over timberslide which is completely covered at all times, except when timbers are hoisted.

"ROY TURK

"Sworn to and subscribed before me this 11th day of January, 1937.

"B. N. OUMETTE,

"Notary Public in and for Shoshone County, State of Idaho."

(Note: A pocket knife and a water-proof container well filled with matches is a very necessary part of any underground worker's equipment.)

January 21; Equities, Inc., Mining Division; Ranger Mine, Salmon City, Lemhi County, Idaho. E. L. Hooper, married, miner, age 32.

E. L. Hooper and Andrew Johnson had just finished spitting a round of 12 holes in the bottom of a 35 degree, 11x5 two compartment winze, 6 ft. triple tape fuses were used. Hooper had split the fuses and Johnson spit them. They realized that delays in splitting had consumed considerable time and were hurrying out, Hooper above and Johnson just behind him. When they were about 30 ft. up the incline the first shot went off. Hooper was thrown against the foot wall with his feet caught in the ladder. The men managed to get some protection behind timbers while the rest of the shots exploded. Johnson was only somewhat bruised and skinned up.

Both of E. L. Hooper's legs were broken near the ankles with a large wound in the left ankle. The deceased was moved to the Salmon General Hospital where he died at 8 A. M. the following day. General shock and loss of blood was a contributing factor.

Hooper made the following statement to R. D. Simer and Edward Fitzhugh, Jr., at the Ranger Mine. "Nobody's fault. We shouldn't have stayed so long. Don't grease those fuses again, it makes them slippery and hard to split."

No inquest was held on decision of the County Attorney.
February 3; Polaris Development and Mining Company; Polaris Mine, Osburn, Shoshone County, Idaho. Ivar Paulson, married, "pusher" or shaft boss, age 42.

Ivar Paulson, who was in charge of the afternoon shift, engaged in cutting the 1500 level skip pocket disobeyed the safety rules of the company and ignored all rules of safety covering a like situation known to mining which resulted in death for two men that might have been easily avoided.

Paulson, A. L. Beckstrom and Leonard Anderson were riding in cage with steel can loaded with steel. This steel and other material was to be unloaded on the 900 level so the men could return to the skip pocket and blast the round. Near the 1000 level one of the longer steel caught in a wall plate (shaft timber) and Paulson was knocked out of the cage and fell down the shaft. His body was badly mangled from the passing cage and fall down the shaft.

February 3; Polaris Development and Mining Company; Polaris Mine, Osburn, Shoshone County, Idaho. A. L. Beckstrom, single, shaft miner, age 36.

Beckstrom took a long chance with Ivar Paulson, the boss in charge, and Leonard Anderson in riding on a cage with material and steel can loaded with steel. When the steel caught in the shaft timber Beckstrom was knocked out of the cage and after the cage passed fell head first into a sinking bucket that was suspended below the cage—his neck was broken and skull fractured.

"STATEMENT OF LEONARD ANDERSON
Re: Ivar Paulson
A. L. Beckstrom

"We (Ivar Paulson, A. L. Beckstrom and myself) were working on the 1500 skip pocket and the round was in and ready to fire about 9:10 P. M.

"The cage was on the station, waiting and Paulson was the first man to enter, followed by Beckstrom and then myself. I did not know that steel was in the steel can which was hooked to the side of the cage and in the corner, as Beckstrom was standing in such a position that he obstructed my view. Paulson was slightly to one side and back of Beckstrom. As I was the last man into the cage, I bellowed the hoist man to the 900 level. I figure that we were at about the 1000 level when I felt the cage shake and heard some rattling noises. At this time my light went out and because of the noise and shaking of the cage, I grabbed hold of the cage side to support myself. The cage did not stop in the shaft. I did not realize that I was alone on the cage after the shaking and noises until reaching the 900 station. Upon reaching the 900 station I noticed that Paulson and Beckstrom were not on the cage, the steel can was lying upon its side on the floor of the cage with a part of it hanging over the edge of the cage floor. I removed the can and bellowed the hoistman for the top station, where I reported the missing of Paulson and Beckstrom after the noises and shaking of the cage in the shaft.

"LEONARD ANDERSON."
### CLASSIFICATION OF ACCIDENTS

<table>
<thead>
<tr>
<th>MINE</th>
<th>Fatal</th>
<th>Seriously Injured Time lost more than 14 days</th>
<th>Slightly Injured</th>
<th>Time lost over 7 to 14 days</th>
<th>Time lost less than 7 days</th>
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<td><strong>UNDERGROUND</strong></td>
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<td>1. Fall of rock or ore from roof or wall</td>
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<tr>
<td>2. Rock or ore while loading at working face or chute</td>
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<td>3. Timber</td>
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<tr>
<td>4. Explosives</td>
<td>3</td>
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<td>13</td>
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<td>5. Haulage, Cars or Motors</td>
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<td>2</td>
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<td>19</td>
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<td>6. Persons falling down chute, winze, raise or stope</td>
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<td>7. Drilling (by machine or hand drills)</td>
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<td>9. Machinery (other than motors or drills)</td>
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<td>10. Flying or falling objects</td>
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<td>11. Fall of persons</td>
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<td>12. Lifting</td>
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<td>13. Nails and splinters</td>
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<td>14. Electricity</td>
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<td>15. Other causes</td>
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<tr>
<td><strong>Total</strong></td>
<td>9</td>
<td>18</td>
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</tbody>
</table>

<p>| <strong>MILL</strong>               |       |                                               |                  |                            |                           |
| 1. Haulage (cars and locomotives) |       |                                               |                  |                            |                           |
| 2. Railway cars or motors |       |                                               |                  |                            |                           |
| 3. Crushers, rolls or stamps |       |                                               |                  |                            |                           |
| 4. Tables, jigs, etc |       |                                               |                  |                            |                           |
| 5. Other machinery      | 1     | 1                                            | 3                |                            |                           |
| 6. Falls of persons     |       |                                               |                  |                            |                           |
| 7. Falls in ore bins    |       |                                               |                  |                            |                           |
| 8. Falling objects (rocks, timbers) |       |                                               |                  |                            |                           |
| 9. Scalding (steam, water or acid) |       |                                               |                  |                            |                           |
| 10. Lifting             |       |                                               |                  |                            |                           |
| 11. Hand tools, axes, bars, etc |       |                                               |                  |                            |                           |
| 12. Nails, splinters, etc |       |                                               |                  |                            |                           |
| 13. Electricity         | 1     | 3                                            | 2                |                            |                           |
| 14. Other causes        |       |                                               |                  |                            |                           |
| 15. Drowning            |       |                                               |                  |                            |                           |
| <strong>Total</strong>              | 3     | 1                                            | 16               | 17                         |                           |</p>
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<tr>
<th>SHAFT ACCIDENTS</th>
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<td>16. Falling down shaft</td>
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<td>18. Breaking of cables</td>
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<td>18. Cranes</td>
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<td>19. Overwinding</td>
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<td>19. Falls of persons</td>
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<td>20. Cage, skip or bucket</td>
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<td>7</td>
<td>20. Lead fumes</td>
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<tr>
<td>21. Falling ground, nails, splinters, explosives,</td>
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<td>21. Flying or falling objects (rocks, timbers, etc.)</td>
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<tr>
<td>pumps and other causes</td>
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<td>22. Hand tools, axes, bars, etc.</td>
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<td>23. Burns from matte, slag or molten metal</td>
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<tr>
<td>27. Hand tools, bars, axes, etc.</td>
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<td>28. Hand tools, axes, bars, etc.</td>
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<tr>
<td>28. Falls or run of ore in or from bin</td>
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<td>2</td>
<td>29. Lifting</td>
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<tr>
<td>30. Timber, open pits, snow slides and other</td>
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<td>17</td>
<td>31. Handling hot materials</td>
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<tr>
<td>causes</td>
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<td>32. Electricity and other causes</td>
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<tr>
<td>Total</td>
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<td>Grand Total</td>
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</table>
“STATEMENT OF EARL CASTLEBERRY, HOISTMAN

“There were no unusual circumstances accompanying the accident at the Polaris on the evening of February 3, 1937. The lights were momentarily dimmed, but as this happens many times each shift it did not seem to me an important thing.

“There was no jar on the cable.

“At the time of the accident I was hoisting the cage from the 1500 level to the 900 level, and had no way of knowing whether I was hoisting one man or the crew. When the cage reached the 900 level, I stopped, and a minute or two later, upon receiving the signal for the top station, raised the cage to that level. When the cage reached the top station, the sole occupant, Leonard Anderson, informed me that his two partners, Paulson and Beckstrom, had fallen from the cage. On learning this I sent the top station man, Jake Grismer, out to the surface for help, as I knew then that there had been a serious accident. When the top man left the station for the outside it was approximately 9:20 P. M.

“EARL CASTLEBERRY,
“Hoistman.”

“J. F. McCARTHY,
“Witness.”

(Note: Accidents of this kind are decidedly avoidable and can be eliminated with just a little cooperation and common judgment on the part of the men themselves. Carelessness and disobedience to rules does not pay.)

March 11; Federal Mining & Smelting Company; Morning Mine, Mullan, Shoshone County, Idaho. Elmer Jacobson, married, shaft repairman, age 33.

Jacobson was sent to work in the jacket sets above the 2050 level. When he started up, he took his axe in one hand, swung a water canteen over his shoulder, and proceeded up the manway headed for the working place ahead of his partners. It was thought that his reason for doing this was because he wanted to get to the dry side of the jacket set before the others. He was wearing an electric cap lamp.

His working partners (John J. Jutila, Frank Ollila and Hugo Nyberg) were still on the 2050 station when they heard a scream and saw someone going down the shaft.

According to the position in which the axe was found that he was carrying, it is believed that Jacobson attempted to cross the chippy compartment of the shaft and was either hit by moving cable, slipped, lost his balance, or bumped his head on a wall plate (shaft timber) and fell down the shaft. The proper way to enter or leave the jacket set from the manway or pipe compartment was to go away from the chippy compartment and enter the working place from the north end of the shaft.

The day shift was being lowered at the time of the accident and Jacobson's body landed on the bonnet of the chippy cage which was spotted on the 3050 level to unload men on that horizon. Death resulted before or the instant Jacobson's body hit the cage bonnet.

March 20; Sullivan Mining Company; Electrolytic Zinc Plant, Kellogg, Shoshone County, Idaho. Willie Harrison Weaver, married, laborer, age 50.

In an attempt to crawl into an insulator box to clean dust from the insulators, Weaver cut the power off on two section but did not take the precaution to use “shorting” chains on any of the units. The deceased was electrocuted with marks showing upon his chin, knee and foot. No one witnessed the accident.

William Harrison Weaver was a trusted employee of the Sullivan Mining Company and thought by the men in charge to be dependable but it was evident Weaver did not use safety devices at hand and the result was death.

(Note: This accident may be classified as another that could have been avoided by the worker keeping his mind on the particular work he was doing at the time and going through the same routine and safety practice he had followed for years.)
June 13; Texas Owyhee Mining & Development Company; Mayflower Mine, Quartzburg, Boise County, Idaho. Judas Steel, married, shaft miner, age 66.

Judas Steel was bitten in the pit of his right arm by an infected tick. He was removed from camp to the Veterans' Hospital in Boise where he died of spotted fever on June 26.

(Note: This accident and those of a similar nature could be prevented by inoculation of serum provided and distributed free of charge by the State Bacteriologist.)

July 9; Federal Mining & Smelting Company, Morning Mine, Mullan, Shoshone County, Idaho. Peter Arona Wisner, married, shoveler, age 41.

The night shift had been lowered down No. 11 Raise from the 32 floor intermediate to the No. 5 Tunnel Level and all the crew, including the shift boss and hoistman, had left to catch the train on the 800 level to leave the mine. Shift Boss Dalby found after reaching the 800 level that Peter Wisner was missing from the crew and upon his return to No. 11 Raise on the No. 5 Tunnel Level he found Wisner lying dead at the foot of the raise.

The evidence indicates that Wisner had missed the last trip of the skip and was climbing down the raise when he must have lost his balance or in some unknown manner fell an undetermined distance to the bottom of the raise where his body was found.

Wisner received a fractured skull and broken neck as a result of the fall. The deceased is survived by his widow and three minor children.


Cecil Ball was tramming on the No. 4 Level from the East Stope. When the chute lip became empty he climbed up one manway and attempted to cross over to the lip he was drawing from, presumably to scrape in some more muck.

The miner in the stope did not see Ball in time to warn him that the ore was ready to be barred down. Being a new man the deceased was not familiar with the stripping method employed in this particular mining operation and in passing under the loose ground it sluffed and crushed his head and body against a post. Ball was killed instantly.

(Note: This accident could have been avoided if the injured man had been properly instructed in his duties, the duty of other employees, and the precautions necessary to guard the new employee against preventable illness and injury. When a new man begins work he should be made to feel that the employer is anxious to make him a loyal and efficient member of the organization with the assurance that he need not hesitate to ask for information when required.)

July 16; Golden Reward Mining Company; Gibbonsville, Lemhi County, Idaho. Chas. V. Harbour, single, mill operator, age 23.

Harbour apparently slipped while attempting to put a belt on a line shaft pulley and fell on the moving pulley about 8:30 A.M. on July 16.

The deceased was first attended by physicians from Salmon City and admitted to the Salmon City Hospital. Later he was removed by plane to the Sacred Heart Hospital, Spokane, Washington, under the care of Dr. Richard Flaherty.

Harbour's penis, scrotum, and groin were terribly mangled in the accident which resulted in his death on July 17 at 2:30 P.M.

August 30; Goldstone Mine, Baker, Lemhi County, Idaho. R. F. Howe, widowed, mill foreman, age 54.

This accident occurred on the crusher floor where an electric motor was bolted down and which drove an overhead line shaft.

The deceased attempted to put a drive belt on the rotating pulley of motor and was jerked against the motor with such force that several ribs were
broken and severe internal injuries resulted. Death occurred about two hours after the injury.

Howe was a mill man of many years experience and understood his job thoroughly which is proven by the position he held with this company. If another man had done the same thing which caused this accident he would have been subjected to a severe reprimand and possibly discharged immediately.

(Note: There is no excuse for carelessness or a lapse of memory where life and limb are in danger. Experience, although an excellent teacher, does not make an individual immune from injury when the individual himself ignores the safe method of working. This accident could have been avoided.)

September 2; Golconda Lead Mines; Golconda Mine, Wallace, Shoshone County, Idaho. Hobart Gregory, single, miner's helper, age (unknown) about 46.

TELEGRAM

"Mr. Dan Murphy,
"Wallace, Idaho.

"With the consent and approval of the Governor and the authority invested in me as Inspector of Mines, I hereby appoint you Deputy Inspector to cover and investigate fatal accident to Hobart Gregory drowned at the Golconda Mine. Please attend any inquest and make a report to this office.

"ARTHUR CAMPBELL,
"Inspector of Mines."

"Mr. Arthur Campbell,
"State Mine Inspector,
"Boise, Idaho.

"Sir:

"In pursuance of my appointment as Deputy State Mine Inspector and the duties invested in me to investigate the death of Hobart Gregory at the Golconda Mine, September 2, 1937, I have made an investigation and beg to report as follows:

"At 3:30 P. M., September 2, 1937, Hobart Gregory and two other men were quitting work at the Golconda Mine. Gregory went down the shaft to oil and start the pump while one of the other men climbed to the main level to run the hoist in bringing them to the top. When Gregory did not return and the man waiting heard the air blowing he went down and found the pump had fallen into the shaft and Gregory had disappeared. The pump was hung on wall plates with hangers only. From my inspection I believe that when the pump started the bolts sheared off from the hangers, the discharge hose broke, hit Gregory and knocked him into the shaft. He was found on top of the pump on September 9th at three o'clock, thirty feet below the former level of the water, where the pump had stuck in the shaft. There was a three-inch gash in the back of his head.

"The body was taken out at three o'clock, September 9th to the portal of the tunnel and remained there until five o'clock when the ambulance arrived. The body was decomposing rapidly and the Coroner, Dr. Mowery, ordered it removed.

"Respectfully,

"DAN MURPHY,
"Deputy State Mine Inspector."

(Note: Common practice in handling sinker pumps is to have the pump slung on chain blocks or when stationary to hang or snub them with a chain to the shaft timber or hang the pump from a bulhead or cross segment. This is done to facilitate the lowering or hoisting of the pump and acts as a precautionary measure in preventing an occurrence of this type of accident. This proves the careless manner and chances taken by workmen in the performance of their duties and also proves the lack of proper supervision and
the need of an adequate safety-first program. This accident could have been avoided and has all the earmarks of the kind of work that would be done by an employee that was unfamiliar with shaft and pumpman duties and with no knowledge of safety in shaft work.)

September 29; Liberal King Mining Company; Liberal King Mine, Pine Creek, Shoshone County, Idaho. H. C. Reatherford, married, miner, age 49.

Reatherford and partner, Jake Thorson, had drilled and prepared a short round for blasting. This round was to be the first one to collar a shaft about 3000 feet distant from the portal of the tunnel. The round had been loaded and the fuse lighted. Presumably the men had trouble spitting the fuses and did not get out of the way in time and were killed by the blast.

Reatherford's face and the upper portion of his body was badly mutilated.

September 29; Liberal King Mining Company; Liberal King Mine, Pine Creek, Shoshone County, Idaho. Jake Thorson, widowed, miner, age 47.

Jake Thorson and H. C. Reatherford were attempting to ignite the fuses of a 22 hole round to collar a shaft at the Liberal King Mine on Pine Creek about 11:30 P. M. the night of September 29, 1937. The men were using double primers and the fuses were 5 ft. long. They may have had trouble spitting the round and it is evident the men did not leave in time to escape the blast. The lower portion of Thorson's body was badly mutilated and one leg and one arm nearly severed.

The two men were the only ones working in the mine at the time of the accident. Chris Smith, the compressor man, outside the mine smelled smoke and powder fumes coming from the ventilating system. When the men did not show up after a reasonable length of time he went in to find the bodies of the two men lying on top of the muck badly mutilated. On his return from the mine the accident was reported to company officials, who in turn notified the County Coroner and Inspector of Mines.

An investigation disclosed that the working place was dry. The men had 22 holes primed double with 5 ft. triple tape fuse of standard make. Tests made of the fuse on the mine dump were satisfactory and dispelled the idea of a quick or running fuse. Some miners claim to have had experience with running fuse that would cause premature explosions and although I doubt the existence of one in this case, I do not claim the impossible. In 24 years experience with explosives I have never encountered a running fuse or had its existence proven. Rather, the Inspector is led to assume that 5 ft. fuse is not long enough when more than twenty fuses are used in any particular round.

(Note: These men could have used primers of any length desired. However, the department urges the use of delays to be set off by battery or electric switch at a safe distance from all sinking operations and in wet places.)

There were no witnesses to this accident and what caused the blast before two experienced miners could get a safe distance away will probably never be known. To come to any conclusion, and to fix any blame, would only be to hazard a guess—which is neither satisfactory nor conclusive.

October 4; Sunshine Mining Company; Sunshine Mine, Kellogg, Shoshone County, Idaho. Thomas W. Grey, married, machinist, age 34.

Thomas W. Grey, with Dick Crittendin, was working in a runway between the boiler room and a concrete retaining wall. A pile of iron, presumably for mill repairs was stacked on the ground adjacent to the retaining wall.

The men had removed the walk or runway and knocked out braces in order to reach and take out a valve that was underneath. Without warning the concrete wall, which was about 5 or 6 ft. high, 20 ft. long and 8 inches thick, collapsed. Dick Crittendin, a fellow worker, saw the wall move, shouted a warning and dove head first through the boiler room window receiving a broken wrist, broken arm and numerous bruises. Grey, who was in a stooping position, raised up to see what was the trouble and to seek an avenue of escape. A portion of the retaining wall pinned his head against the side of
the boiler room causing a skull fracture and broken neck which resulted in instant death. The entire office force was first to see the accident which was later investigated by the County Coroner and Inspector of Mines.

October 16; Hecla Mining Company; Hecla Mine, Burke, Shoshone County, Idaho. James Bolton, married, shoveler, age 54.

Bolton was cleaning down the manway in No. 68 Raise on the No. 3 Tunnel Level and was found in the chute covered with muck, excepting his back and shoulders, apparently suffocated.

"STATEMENT"

"On October 16, 1937, and for three days prior to that date James Bolton was working under my direction in 68 Raise cleaning the floors of the manway.

"While eating lunch I was notified by J. D. Fenix that Bolton was missing; I told Jack Caruso and Louis Getty to start from the bottom of the raise and Fenix and I went to the 30th floor and started from the 30th floor down, looking for him. I found his pick on the 22nd floor where there is an offset in the chute, and the safety guard out of place. I went down the manway to the 17th floor where there is another offset in the chute, where I found him covered with muck except his back and shoulders.

"I sent Getty and Fenix for help from the stapes and Caruso for the mine foreman. I examined him and he was apparently dead: I then helped get him out and bring him to the surface. I know nothing about how the accident happened. It was Bolton's duty to clean off the floors of the manway and he had been warned to be careful while cleaning around the offsets. He knew that muck was being regularly pulled from this chute—on this day the chute was full.

"W. A. CLARK,
"Shift Boss on No. 3 Tunnel Level."

"STATEMENT"

"At noon time I usually signaled to Bolton when it was time to eat; this day when I signaled for him he failed to appear. After waiting for some time for him to come up, I went down the manway to see why he had not come up to eat. I found his pick where he had been working; but when I could not locate him I went and notified Bill Clark, the shift boss. Clark and I returned to the manway and looked again for him. Clark located him in the chute and sent me for more help to get him out. I know nothing about how the accident happened.

"JOE DEE FENIX,
"Trammer on the 30th floor, No. 3 Tunnel."

"STATEMENT"

"I was present when J. D. Fenix came to notify Bill Clark that James Bolton was missing; Clark and Fenix went to the 30th floor to come down the raise while Louis Getty and I started up from the bottom of the raise looking for him. While looking for him Clark came down and told me that he had located Bolton in the chute and for me to go and get the foreman. I returned with the foreman to the place where they had located Bolton and helped to take him out. I know nothing about how the accident happened.

"JACK CARUSO,
"Nipper in No. 3 Tunnel Stopes."

"STATEMENT"

"At about 25 minutes to 12:00 o'clock A. M. I was called from my stope by Louis Getty to go and help get James Bolton out of a chute. When we
arrived at the place where he had been found he was completely covered with muck excepting his head and arms. I examined him to see if I could determine whether or not he was dead; after which I helped get him out. I know nothing about how the accident happened.

"RALPH H. DAY,
"Timberman in 64 W.
Stope, No. 3 Tunnel."

December 11; Garfield Lead-Silver Mining Company; Garfield Mine, Muldoon, Blaine County, Idaho. Francis Ward Daggett, married, tractor operator, age 42.

F. W. Daggett, with Leonard Gravit and Harold Brown, was preparing to operate tractor and grader to clear the road of snow, or were in actual operation at the time when a snowslide occurred. The machinery and bodies of the men were swept down the mountainside a distance of nearly 2000 ft.

The snow on the mountainside, which rises several hundred feet above the road, was about a foot deep. It snowed heavily during the afternoon and the men had orders to leave the upper camp at the end of the road and return to the lower camp with the equipment.

Men were recruited from the surrounding towns and started digging for the bodies under the direction of Sheriff Howes, Blaine County.

Daggett had multiple injuries including a skull fracture above the right ear, which could have caused death, but it is generally believed the man was suffocated in the slide.

December 11; Garfield Lead-Silver Mining Company; Garfield Mine, Muldoon, Blaine County, Idaho. Leonard Gravit, married, tractor helper-miner-laborer, age 26.

Gravit was working on a power grader in Garfield Gulch about 10 miles north of Muldoon with two other men when a snowslide and avalanche carried men and equipment down the mountainside.

Death was caused by injuries, suffocation and freezing.

December 11; Garfield Lead-Silver Mining Company; Garfield Mine, Muldoon, Blaine County, Idaho. Harold Brown, single, tractor helper-miner-laborer, age 24.

Harold Brown was another snowslide victim. His body was not found until the morning of December 14 after continuous searching by a crew of nearly 100 men, split into three shifts.

The deceased received many injuries including a fractured skull which may have caused instant death. Suffocation and freezing may also have been contributing factors.


Glen Pock, miner, and his assistant, Virgil Bruington, were attempting to cut and spit a round of 13 holes in the face of a drift on the 700 Level of the Gold Hill Mine at Quartzburg. Before the last fuse was lighted, one of the shots went off followed by others. Virgil Bruington was instantly killed while Glen Pock suffered shock, punctured wounds, with head and body lacerations.

W. Hutchinson, miner, on the 700 Level, heard several shots and when the men failed to appear investigated to find Glen Pock still on his feet about fifty feet from the face and Bruington dead after Pock had carried and dragged him away from the blast.

Steve Mackin, foreman, stated that Bruington had been employed by the company for several months and at underground work for about 2½ months; that Glen Pock was an experienced miner and very particular in any work that he did. Also that no restriction was maintained (within reason) as to the length of fuse to be used in blasting operations.

The fuse used was triple tape black fuse of a standard make. Tests made of lengths 1 foot long took 43 to 45 second to burn and lengths 5 feet long
took 220 seconds from the time the fuse was spit until the fire would reach the cap or detonator and set off a blast.

Glen Pock, who was convalescing at St. Alphonsus Hospital, Boise, told the following facts concerning the accident, to the Inspector of Mines on December 29, 1937:

"My partner and I had a round of 13 holes in a drift on the 700 level of the Gold Hill Mine. The round was 3½ ft. deep. The primers were brought down to us from the surface at about 4 P.M. and were 5 ft. in length. We loaded the round with three and four sticks of powder to the hole and used single primers in all of the holes but the four lifters which were double primed. This made 17 fuses in all.

"Nothing was cut off from any of the primers and my partner was splitting the fuses and I was lighting them. The first shot went off as I was spitting the fuses in the last hole, which was a lifter. We had a little trouble with some of the fuse but thought we had plenty of time to get safely away."

(Note: The right way is the safe way. Any round to be shot should be prepared before starting to spit. The fuse should be timed to go in rotation and the fuses split before the lighting process actually begins. Then if any trouble develops it may be overcome in a very few seconds. An extra precaution is the use of snuffs or an extra light near the face and at an exit or safe distance from the ground to be blasted.)
MINE SAFETY

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

In Idaho requirements for all operators, pertaining to operation and equipment of mines, are covered by statute. The Inspector of Mines, elected by the people, has among other duties the policing of mines. It is the Inspector's duty, at least once each year, to visit in person each mining county in the state of Idaho and examine all such mines therein as, in his judgment, may require examination for the purpose of determining the condition of such mines as to safety, and to promulgate reasonable regulations for safety and health of employees in such mines.

Safety organization is essential to sound business policy as well as on humanitarian grounds. Industry should give Safety-First detailed study, and make the prevention of accidents and occupational diseases of paramount importance. Some authorities believe this kind of an organization should be maintained parallel to, but independent of, the operating department. I am of the opinion, that safety organization and efficiency in production go hand in hand and that industry should be required to take care of its cripples. Also, it should make provision to care for widows and orphans as well as the sick and injured employees, incapacitated while in the company's employ, instead of forcing those unfortunates to depend, as in the past, on public charity or meager returns from the Workmen's Compensation Law.

Avoidable accidents, especially in mines can be lessened by adequate inspection, education, discipline, and use of safety appliances, combined with proper organization. To arrive at the ultimate goal—to cut the avoidable accidents to a minimum—it is essential to have the cooperation of each and every member of an industrial organization, regardless of station. If a safety-first program is to be crowned with success this cooperation is imperative. With a background of twenty-five years' practical experience in mines, I believe team work the most important factor in a program of this kind.

To emphasize safety devices and prevention of safety accidents and occupational diseases, we must have an organization under the direct supervision of competent inspectors. These inspectors, however, should have open minds, and readily accept suggestions and recommendations along safety lines.

Checking men in and out of mines by number, or by metal tag bearing his number, is important in case of mine fires or explosion. With this system in force examination of the board at any time shows how many men are underground, and by reference to the book, in which each man's working place is recorded, indicates where the men are. It provides a valuable source of information in case of emergency.

Classes in safety-first, first-aid, prevention of accidents and occupational diseases, prevention and fighting of mine fires should be organized to educate and stimulate the minds of employees and to suggest ways and means to correct hazards and foster alert action in case of emergency. Reasonable rules and regulations should be promulgated, by an authority, to bring about uniformity and adherence to statutes and readily be adaptable to all classes of mining operations. Copies should be printed and distributed to all employees by the employer, who would require the employees to read carefully, familiarize themselves with them and cooperate in their enforcement. Infraction of rules should be met with disciplinary measures. In the case of habitual offenders, willful infraction would be considered sufficient cause for immediate discharge. A good workman is a careful workman and one who will guard himself and the safety of his fellow employees.

Bulletin boards with posters that show how certain accidents happen, and can be avoided, many times convey the message to those who cannot read. Danger signs, arrows pointing in the direction of exits, bell signal codes,
block signals for haulage, stench warnings in case of fire or emergency, all have their place in the safety set-up.

In many mines a bonus system has been adopted with good results. The system is based on a contest. The foreman, shift-bosses and crews who have the least number of accidents are rewarded with prizes or bonuses.

Prevention of accidents is much better than the cure of injuries. Man is given only one life; when that is snuffed out he is through. He is given but one body; when he loses any part of it, it is gone for good; there are no spare parts. The loss cannot be compensated with money.

In the last analysis each worker should learn to think safely and work safely so as to acquire the safety habit and cooperate in bringing success to any Safety-First program.

STENCH WARNING SYSTEM

Note Injector and valve arrangement. Cabinet in center contains stench material known as "Ethyl Mercapton" which gives a strong odor resembling garlic.
THE STATE INSURANCE FUND IN THE SAFETY FIELD

By PAUL V. BLACK

In keeping with the importance of Idaho's mining industry, the State Insurance Fund is prepared to launch a vigorous Mining Safety Campaign in 1938, and is stressing the need of a full time application of common sense mining safety rules by both the employer and employee. The large number of claims of minor injury, together with the disability and death claims, show the source of enormous losses each year to both the employer and employee of the mining industry in Idaho. The State Insurance Fund paid out the sum of $135,283.60 on accidents suffered by the employees of its mine policyholders during the year of 1936. Many of these accidents could and should have been avoided. Statistics compiled by the fund on their mining (underground) risks, covering a period of ten months in 1937, show some very interesting facts not only on the cause of injury, but also on the part of the body most subject to injury. 20% of all mining injuries were to the hands and fingers; 14% to the feet; 12½% to the eyes; 10% to the back; and 10% to the legs. Under the cause of injury, falling objects led the list by being responsible for 22% of the total; 12% were caused by the crushing or pinching of the hands and feet; 10% were caused by falls; 10% were from flying fragments of rock striking the eyes; and 8% were caused by lifting. A study of these figures will show that closer supervision is needed before any noteworthy improvement will be shown in the reduction of accidents and the consequent losses to the mining industry. The practice of Safety First is the only way these accidents can be prevented, and only through the prevention of them can the losses be checked. The mine owner and operator must awaken to his own responsibility for the success of safety. The power of direction is in his hands and he can through personal supervision or that of competent shift bosses demand that safe work and practices be carried on at all times. We cannot hope to prevent all accidents, but we can by proper supervision and instruction prevent the ones caused by carelessness and lack of knowledge of the work being done. No workman purposely invites or wants injury. The ones sustaining the majority of injuries can usually be placed in two groups—the new man or beginner, and the old-timer. The beginners' injuries are more apt to be caused by lack of experience and knowledge of the work being done and the safe ways of working, the accident that befalls the old-timer on the other hand can often be traced to a let down of his natural vigilance due to the long familiarity of his work that causes him to minimize the natural hazards that surround him. The carpenter might shrink from going underground to work, yet because of his everyday use of scaffolds do things high in the air that would bring a protest of unsafe from the miner who would laugh at his fear of the underground. Familiarity in many cases causes carelessness. To teach the new and inexperienced man the ways of safe working, to continuously caution the old-timer, that he may not lax his vigilance for personal safety, and to make every provision to provide safe working conditions, should be a part of the program of every supervisor. It is far cheaper to prevent accidents than to pay for them. The importance of the FIRST AID KIT and the ability to render First Aid when occasion demands cannot be too strongly stressed. Serious and permanent injury, or often death can be averted by the knowledge of first aid. Every mine has what we might call its natural hazards, and it should be the duty of every employer to not only know them and how best to safeguard against them, but to see that every employee knows them and does safeguard against them. A SAFETY PROGRAM by every policy holder is the aim of the State Insurance Fund for 1938 and no effort will be spared to make the movement a success. Safety poster service and inspections are a part of the program, its real success however rests largely on the mine owner and operator. He, as employer hires, designates the hours to be worked, the location of the work to be done, the tools to be used, the amount to be paid—then why should he not state how the work is to be done—IN A SAFE MANNER. No employer in the best interests of economy and efficiency can afford to be without a real Safety First program. Safety has no substitute and leaves no regrets.
INDUSTRIAL HYGIENE IN IDAHO

By DR. JAMES W. HAWKINS

In the early part of 1937, the twenty-fourth legislature passed House Bill No. 433, authorizing the appropriation of $5,000 for an occupational disease study in the state. The State Division of Public Health was directed, as a fact-finding body to conduct this survey. The report to the legislature calls for, among other data, the following required information:

1. A compilation of statistics as to the nature and extent of the occupational diseases in the state.

2. Recommendations as to the best standard practices of industrial hygiene for the prevention of such diseases.

3. A study of the economic effect on the industries of the state of the increased cost of securing occupational disease compensation.

In addition to the answers to the specific questions asked above, the legislature impliedly asked answers to the following questions:

1. What are the occupational diseases prevalent in Idaho?

2. To what extent does each of them prevail in the state?

3. What are the best standard practices of industrial hygiene for the prevention of such diseases?

4. What measures can the legislature promulgate to facilitate the adoption of such preventive practices?

5. What measures can the legislature promulgate to compensate workmen disabled by occupational diseases?

6. Or, since Idaho is a comparatively young state, the usual form of the last question is: What laws have other states adopted with respect to occupational diseases which can be made applicable to Idaho?

7. How much compensation and what benefits should workmen disabled by occupational diseases reasonably receive?

8. How much is it going to cost employers to insure the payment of occupational disease compensation?

9. To what extent will the cost factor affect the continuance and expansion of the industries in which occupational diseases arise?

10. To keep the cost at a reasonable minimum, what limitations and restrictions, particularly as to medical procedure and practice, should be adopted?

To further carry out the provisions of the act, this Division is compiling a bibliography of current literature on the subject; books, journals, periodicals, pamphlets, and digests and reports of the "laws of other jurisdictions, which will aid their committees and draftsmen to outline the necessary bills for presentation."

To date, contacts have been made with representatives of the major industries in Idaho, including self insurers, state insurance carriers, the State Mine Inspector, Industrial Accident Commission, State Chamber of Commerce, the State Medical Society, and labor. These representatives have pledged their support and cooperation in this survey.

Through the cooperation and interest of Surgeon General Thomas Parran of the United States Public Health Service, R. R. Sayers, Senior Surgeon, Chief, Division of Industrial Hygiene, National Institute of Health, and through their representatives, J. J. Bloomfield, Sanitary Engineer, and Richard T. Page, Assistant Engineer, a manual of the Industrial Hygiene Survey of Idaho has been completed. The list of industries has been compiled and a representative group of employees has been chosen for this survey. The field surveyor's manual has been presented to Dr. Sayers for approval. Forms for this survey have also been completed and field work will begin in Idaho on January 5, 1938.

In addition to these activities a relatively complete library is being assem-
bled. Reports are being obtained from physicians on cards designed for this purpose on all cases of industrial diseases coming to their attention.

After completion of this general survey it is hoped that a more detailed survey may be made of the industries showing the greatest need for such.

Upon the completion of this work it is hoped that the department can bring together the responsible representatives of industries, labor and insurance, as well as members of the legal and medical profession, so that adequate recommendations can be made to the legislature.
NOTES ON AIR PURITY AT THE BUNKER HILL & SULLIVAN M. & C. CO.

By H. I. ALTSHULER
General Manager

MINE AND PLANT DUST CONTROL

1. All workings above the main adit tunnel level are abundantly supplied with natural ventilation directed to all working faces. Below the adit tunnel level fans furnish over 60,000 cubic feet of air per minute. Through surveys of all mine workings including anemometer and pittot tube measurements for air velocities and volumes, installation of air doors, and providing mine openings where necessary for proper distribution of air, has resulted in a thorough distribution of uncontaminated air to all of the deep workings of the mine. Mining is conducted solely on one day shift with very few men, mostly on development work, waste disposition, ore hauling and tramming, during the night shift. Blasting is confined, except in cases of rare emergency, to the end of the shift period so that ventilation and other agencies removes dust raised by blasting during all of the sixteen hours which intervenes before men return to working places. For many years past all drilling has been done solely by wet machines. Water hoses are always available, their use is compulsory in wetting down all dry muck piles. Respirators are available for dusty conditions which may occasionally arise in spite of the foregoing precautions.

2. A graduate young mining engineer, with substantial underground mining experience, was sent about one year ago to the Air Hygiene Foundation branch of the Mellon Institute at Pittsburg, Pa., and received a thorough course in air sampling and dust count determinations, followed by practical field experience in air sampling at industrial plants tributary to Pittsburg under the direction of an experienced member of the Mellon Institute staff. The Air Hygiene Institute experts furnished specifications for a laboratory and its equipment to be used for determinations of air samples, including dust determination. A complete laboratory was installed following these specifications, for several months past this young engineer has been engaged in taking air samples in each mine working and about the plant under every working condition. The results of the tests on the whole, have been satisfactory, being well below the established tolerance point for safe working conditions.

3. A similar dust survey has also been made in all departments of concentrator, smelter, refinery, zinc reduction plant and cadmium plant. The dusty conditions in certain departments of these plants have long been recognized and means taken to correct them. Compulsory wearing of respirators is the rule and especially since the survey noted above has taken place installations have been made for the further control of such conditions to perfect and extend present dust disposal facilities.

HYGIENE

1. Every workman in every department has received a complete physical examination, including x-ray photographs of chest, to disclose silicotic or tubercular trouble. All new employees are given a pre-employment examination of like character so that no man is assigned to work for which he is physically or pathologically unfit.

2. Employees who have been found to suffer from advanced stages of lung ailment have been sent to the Edgecliff Sanitarium at Spokane, Wash. There they receive the careful attention of a lung specialist, at the expense of the company. This relative small group is composed almost entirely of employees with many years of underground experience, almost invariably extending back to the days of dry drilling; they are all men of advanced years. Without exception they have greatly benefited by sanitarium treatment and they have received instructions as to the mode of life which they
must hereafter follow. They have returned to such work as does not expose them to the risk of further disability; with few exceptions they are getting along very well. Periodical additional medical examinations are made of this group. With very few exceptions they are reported to be getting along very well with every probability of their surviving for many additional years of health and activity.
Idaho contains an area of 83,888 square miles. The state is divided into 44 counties, 36 of which can be classed as having minerals of commercial importance. In 22 of these counties there are producing mines.

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

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

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

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

See pages 92-93 for publisher's address, meaning of reference marks, and abbreviations.


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**ANTIMONY**

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

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

In all the above-mentioned counties there are many deposits containing a large available tonnage of commercial ore, which can be readily marketed when freight and market conditions will permit it to be produced at a profit. Antimony and quicksilver deposits in the Yellow Pine district, by F. C. Schrader and C. P. Ross: U. S. Geol. Survey Bull. 750, pt. 1, 1925.


**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.


**ASBESTOS**

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

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


**BARYTES**

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


BENTONITE

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

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

BERYLLIUM AND BERYL

Beryllium, or glucinum, 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 aircraft. It is very light, having about the same specific gravity as magnesium, and is almost as hard as quartz.

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


BISMUTH

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

BUILDING STONE

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


CLAY

The different kinds of clay have so many uses that it is probably impossible to list them all, but the following 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. Pottery: Tableware, kitchenware, sanitary ware, etc.
Clay suitable for structural purposes is found in almost every county in the state, the better grades occurring in Benewah, Cassia, Kootenai, Latah, Lewis, Idaho, Power, and Washington Counties.

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


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


COAL

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

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


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


Coal in eastern Idaho, by G. R. Mansfield: U. S. Geol. Survey Bull. 716, 1920. (Fremont, Teton, Madison, and Bonneville counties.)*


COBALT

Cobalt is found in Lemhi County. During the World War, when this metal commanded a high price, the deposits were actively developed; a small mill was constructed, and concentrate with a high cobalt content was produced. This metal is reported to have been found also in Kootenai and Latah counties.
Geology and ore deposits of Lemhi County, by J. B. Umpleby: U. S. Geol. Survey Bull. 528, 1913.*


COPPER

Idaho is an important producer of copper and holds a high position among the ranking states of the Union. The many copper mines which are now under development and the numerous 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 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.


DIATOMACEOUS EARTH

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

The principal uses of diatomaceous earth are: 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 limestone. Deposits of garnet possessing the necessary qualifications for ornamental or industrial use and so situated with regard to transportation and markets that they can be exploited commercially are relatively small and occur in only a few areas throughout the United States.

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

Extensive deposits of garnet adapted to abrasive purposes occur in Adams, Lemhi, Custer, and Cassia counties.

**GOLD**

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

Gold occurs associated with almost all the lead, zinc, copper, and silver ores, and very commonly in a free-milling condition. A large amount of gold is obtained from placer deposits; at one time Idaho was among the principal placer-mining states in the Union. The greater part of the placer ground which could be 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.


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


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


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


Atlanta gold district, by R. N. Bell: Eng. and Min. Jour., vol. 86, pp. 176-177, July 25, 1908.§


Big Creek gold district, Idaho, by R. N. Bell: Eng. and Min. Jour., vol. 94, pp. 891-892, Nov. 9, 1912.§


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


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


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.**


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.*


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


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Geology and mineral resources of the region about Orofino, Idaho, by A. L. Anderson: Idaho Bureau of Mines and Geology Pamphlet 34, 1930.**


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


Geology of the Pearl-Horseshoe Bend gold belt, Idaho, by Alfred L. Anderson: Idaho Bureau of Mines and Geology Pamphlet 41, 1934.**


**SNAKE RIVER GOLD**


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

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


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; stov polish; foundry facings; and various types of electrical appliances.

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

GYPSUM

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

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

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

LEAD

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

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

The principal lead mines in the State are those in Shoshone County, which produces 85 per cent of the State total. Blaine, Boundary, Bonner, Custer, Lemhi, Boise, Butte, Valley, and Camas counties are the other important lead-producing counties.

A bibliography of mining, milling and metallurgical methods will be found under the county in which the plant or mine is located.


Ore deposits of Yreka district, Idaho, by E. McCormick: Eng. and Min. Jour., vol. 69, p. 404, April 7, 1900.§


The Coeur d'Alene in 1905, by S. A. Easton: Eng. and Min. Jour., vol. 81, p. 11, Jan. 6, 1906.§


The geology and ore deposits of the Coeur d'Alene district, by F. L. Ransome and F. C. Calkins, reviewed by E. R. Buckley: Econ. Geology, vol. 4, pp. 178-186, 1909.§

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Some Coeur d'Alene geology, by J. E. Berg: Mining and Metallurgy, vol. 8, July, 1927.§
The Vienna district, Blaine County, Idaho, by C. P. Ross: Idaho Bureau of Mines and Geology Pamphlet 21, 1927.**
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A geologic error regarding the Wood River district, by Stewart Campbell: Eng. and Min. Jour., vol. 126, pp. 287-289, Aug. 25, 1928.§
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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.**
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Sequence of ore deposition in north Idaho, by A. L. Anderson: Econ. Geology, vol. 25, pp. 160-175, March-April, 1930.**
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LIMESTONE

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

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

MANGANESE

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


MARBLE

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

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

MICA

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

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


Mica deposits of Latah County, Idaho, by A. L. Anderson: Idaho Bureaue of Mines and Geology Pamphlet 14, 1925.**

Ground water for municipal supply at Potlatch, Idaho, by V. R. D. Kirkham: Idaho Bureau of Mines and Geology Pamphlet 23, 1927.**

The development of Idaho’s nonmetallic mineral resources, by E. L. Tullis: Pit and Quarry, vol. 23, pp. 22-27, Mar. 23, 1932.**


MINERAL WATERS

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

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

**MOLYBDENUM**

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


**MONAZITE**

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

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


**NICKEL**

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

**NITRATES**

The occurrence of nitrate in Bannock, Bingham, Bonneville, Camas, Caribou, Clark, Custer, Elmore, Fremont, and Owyhee counties has been reported.


**OIL AND GAS**

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


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


Oil shale of the Rocky Mountain region, by D. E. Winchester: U. S. Geol. Survey Bull. 729, 1923.:‡


Possibilities of Petroleum in Power and Oneida counties, Idaho, by A. M. Piper: Idaho Bureau of Mines and Geology Pamphlet 12, 1924.**

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 in southeastern Idaho, by V. R. D. Kirkham: Mining and Metallurgy, vol. 6, No. 218, Feb., 1925.§

PHOSPHATE ROCK

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


Geography, geology, and mineral resources of the Fort Hall Indian Reservation, Idaho, by G. R. Mansfield: U. S. Geol. Survey Bull. 713, 1920.§


Geography, geology, and mineral resources of part of southeastern Idaho, by G. R. Mansfield: U. S. Geol. Survey Prof. Paper 152, 1927.**

The Idaho phosphate field, by G. R. Mansfield: Mining and Metallurgy, vol. 9, No. 253, January, 1928.§


PYRITE

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

QUICKSILVER

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


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


RUTILE

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

SALT

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


IDAHO MINERAL RESOURCES

SILVER

Idaho was again the largest producer of silver in the United States. The output of silver in Idaho in 1937 was about 19,500,000 ounces.

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

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

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


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


The deepest mine in Idaho, the Ramshorn at Bay Horse, by R. N. Bell: Mines and Minerals, vol. 21, pp. 174-176, November, 1900.*


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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.‡


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


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.**

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.*


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


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


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


**SULPHUR**

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


**TALC**

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

**TIN**

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


**TUNGSTEN**

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


**ZINC**

Zinc is found associated with lead in many of the lead mines of Idaho, although there are numerous deposits in Shoshone and Blaine counties in which it is the principal metal. In Shoshone County it occurs as sphalerite (zinc sulphide), and in Blaine County as sphalerite and smithsonite (zinc carbonate).
Selective flotation revolutionized the art of ore-dressing, and it is now possible to treat mixed lead-zinc ores which could not be separated by gravity concentration methods. As a consequence, the zinc content which was formerly lost is recovered, and many mines which at one time could not be profitably operated are now being reopened in Blaine, Camas, and Shoshone counties. As a result of these modern ore-dressing methods, Idaho is one of the largest zinc-producing states in the Union.

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

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


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


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


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BIBLIOGRAPHIES

Am. Geology .................................................................American Geology†
Am. Inst. Min. Eng. Trans...........................American Institute of Mining and
Metallurgical Engineers Transactions, 29 West 39th St., New York City
Am. Jour. Sci..............................................................American Journal of Science
Tuttle, Morehouse & Taylor Co., 123 Temple St., New Haven, Conn.
Am. Mineralogist......................................................American Mineralogist
Princeton, N. J.
California Jour. Tech........................................California Journal of Technology
University of California, Berkeley, Calif.
Ottawa, Canada
Canadian Min. Inst. Jour............................Canadian Mining Institute Journal
Drummond Bldg., Montreal, Quebec, Canada
Columbia School of Mines Quart........Columbia School of Mines Quarterly
Columbia University, New York City
Compressed Air Mag..............................Compressed Air Magazine
Bowling Green Bldg., 11 Broadway, New York City
Econ. Geology.........................................................Economic Geology
University of Illinois, Urbana, Ill.
Eng. and Min. Jour............................................Engineering and Mining Journal
Tenth Ave. & 36th St., New York City
Eng. and Min. Jour.-Press....................Engineering and Mining Journal-Press†
Franklin Inst. Jour..............................................Franklin Institute Journal
15 South 7th St., Philadelphia, Pa.
Geol. Soc. America.................................Geological Society of America
Museum of Natural History, Columbus Ave. & 77th St., New York City
Inspector of Mines, Boise, Idaho
Idaho Bureau of Mines and Geology, Moscow, Idaho
Int. Min. Cong. Proc.........................Proceedings International Mining Congress
International Mining Congress, Washington, D. C.
Jour. Geology....................................................Journal of Geology
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Mines and Minerals.................................Mines and Minerals†
Min. Con. Journal...............................Mining Congress Journal
American Mining Congress, 309 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†
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Washington, D. C.
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No .................................................................Number
Northwest Min. News.................................Northwest Mining News†
Northwest Science, Spokane, Wash.
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p., pp. ...........................................................................page, pages
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pt. ............................................................................part
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Walker Bank Bldg., Salt Lake City, Utah
Sci. Am. Suppl........................................Scientific American Supplement
New York City
ser. ...........................................................................series
sess. ............................................................................session
U. S. Geol. and Geog. Survey...........U. S. Geological and Geographical Survey†
Univ. of Idaho...............................................University of Idaho, Moscow, Idaho
vol. ...........................................................................volume
211 Church St., Easton, Pa.

SYMBOLS

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

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the provision of section 2324 of the Revised Statutes of the United States, which requires on each mining claim located, and until a patent has been issued therefor, not less than $100 worth of labor to be performed or improvements aggregating such amount to be made each year, be, and the same is hereby, suspended as to all mining claims in the United States during the year beginning at 12 o'clock meridian July 1, 1936, and ending at 12 o'clock meridian July 1, 1937: Provided, That the provisions of this Act shall not apply in the case of any claimant not entitled to exemption from the payment of a Federal income tax for the taxable year 1936: Provided further, That every claimant of any such mining claim, in order to obtain the benefits of this Act, shall file, or cause to be filed, in the office where the location notice or certificate is recorded, on or before 12 o'clock meridian July 1, 1937, a notice of his desire to hold said mining claim under this Act, which notice shall state that the claimant, or claimants, were entitled to exemption from the payment of a Federal income tax for the taxable year 1936: Provided further, That such suspension of assessment work shall not apply to more than six lode-mining claims held by the same person, nor to more than twelve lode-mining claims held by the same partnership, association, or corporation: And provided further, That such suspension of assessment work shall not apply to more than six placer-mining claims not to exceed one hundred and twenty acres (in all) held by the same person, nor to more than twelve placer-mining claims not to exceed two hundred and forty acres (in all) held by the same partnership, association, or corporation.

Approved, June 24, 1937.
ADA COUNTY

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

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

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

Review of Year's Operations

Most of the activity in Ada County during the year 1937 was confined to placer operations along the Snake river.

Some prospecting and annual labor was performed on properties north of Boise, especially in the Black Hornet district.

The Boise Dome Development Company is sinking a well for The Boise Dome Gas and Oil Company near the city of Boise.

ASSOCIATED GOLD PRODUCERS, INCORPORATED

BERGDAHL OIL CO.

BOISE DOME GAS & OIL CO.

BOISE MINING, MILLING & SMELTING CO.

NAMPA GOLD DREDGING CORPORATION

RELECES-GOLD MINING CO.
SHIRLEY GOLD MINING CORP.

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

BIBLIOGRAPHY
See pages 92-93 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

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

The ores of the Seven Devils District are principally copper-gold-silver ores. The ores of Indian Creek section are: silver-copper and lead-zinc-silver. In addition to these, deposits of mica, feldspar and garnets of commercial importance occur in this county.

This is a favorable district for the prospector and operator and when the mineral resources are properly exploited, the county will be recognized as one of the principal mining counties of the State.

Review of Year's Operations

Most of the mining in Adams County was confined to activity in Placer Basin, Cuddy Mountain, and on Indian Creek.

The principal operation was in Placer Basin where the Smith Mountain Mill is situated. Custom ore is handled from surrounding properties.

Shipments were made from Homestead and Council.

Properties of merit are located in the Seven Devils district that are worthy of investigation by scouts and field parties. Large deposits of copper ores, with better than a trace of gold in their content, are known to exist and have been diamond drilled to some extent.

This county presents a favorable area for prospecting and the exploitation of its mineral resources. In the past, these districts have been subjected to the wrong kind of promotion. The money collected did not go into development but flowed into other channels. We have hopes that a law will be placed on our statutes that will require a certain percentage of money collected by sale of stock to go into development until such time as the property becomes self-supporting.

BLACK HORSE GROUP


CRACKERJACK GOLD MINING COMPANY


GOLD COIN MINING & DEVELOPMENT CO.

PLACER BASIN COMPANY

RED LEDGE, INC.

TRIAD MINING COMPANY

NAME OF MINE MINING DIST. OWNER P. O. ADDRESS
Alaska et al Seven Devils Mrs. S. J. Stephens Cuprum
Amadore et al Seven Devils Mrs. Anna Dimick San Antonio, Texas
American Flag et al Mountain View Mary Z. Finney Cleveland, Ohio
Andy O'Toole Gr Seven Devils L. A. Aplington Homestead, Ore.
Arkansaw Seven Devils E. C. Westervelt 11 Broadway, New York City, N. Y.
Azurite Gr. Seven Devils John Bottcher Tacoma, Wash.
Bald Eagle Seven Devils Mrs. Mabel Sprouls Cuprum
Big Indian et al Seven Devils Loren Gogochea Ontario, Ore.
Black Garnet Seven Devils Ellen Kleinschmidt Berkeley, Calif.
Black Hawk Gr Seven Devils E. C. Spicer Homestead, Ore.
Blue Bird Gr Seven Devils Mose Fuchs Baker, Ore.
Blue Bucket Seven Devils Irene Imhaus Madison Park Apt., Portland, Ore.
Bryan et al Seven Devils Mose Fuchs Baker, Ore.
Camp Ground et al Seven Devils Martin Bradley Cuprum
Chameleon Gr. Mountain View Thos. G. Potter Pollock
Chiefs tone et al Seven Devils Jas. A. Stewart Indian Valley
Cliff et al. Seven Devils Mrs. P. L. Gaarden Bear
Copper Belt Gr. Seven Devils G. W. McCarty Homestead, Ore.
Copper Bottom Seven Devils Frank Shelton Cuprum
Copper Queen et al Unorganized Lynn Snow Newburg, Ore.
Decorah Seven Devils R. E. Wilson Cambridge
Decorah Seven Devils Mary Steel 1516 S. Negley Ave., Pittsburgh, Pa.
Deep Creek Gr. Seven Devils Frank Lauzon Cuprum
Faye L. Seven Devils Anna Adams Cuprum
Glenn G. Unorganized J. F. Glenn et al. Fruitvale
Gold Coin Gr. Seven Devils Adams County Council
Grandview Gr. Seven Devils Frank Shelton Cuprum
### NAME OF MINE
- Grant Gr.
- Greenhorn Gr.
- Green Horn Gr.
- Hollister Gr.
- Idaho Standard
- Iowa & Josie
- Kinney
- Last Chance Pl.
- Last Chance
- Little Bill et al.
- Lockwood et al.
- Lola Group
- Mammoth Gr.
- Margaret Gr.
- Mayflour Gr.
- Mineral Hill Gr.
- Monarch Mica Gr.
- Moonlight
- Newton Hill Gr.
- North Alaska
- North Hornet Gr.
- North Peacock
- Paducah
- Pres. Wilson et al.
- Rabbit's Foot et al.
- Red Mountain
- River Queen Gr.
- Ruby Bell
- Schley et al.
- Silver 1 & 2
- Star Gr.
- Virginius
- Walker
- Wild Horse Gr.

### MINING DIST. OWNER
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### P. O. ADDRESS
- J. A. Walsh
- Collins Lynes
- R. A. Weddle et al.
- L. A. Darland
- Owen Hill
- E. D. Ford
- Chas. Warner
- Walter James
- I. R. Smith
- Joseph M. Healey
- J. C. Barton
- A. J. Cole
- Chas. Anderson
- Frank E. Smith
- Mrs. F. Hildebrand
- Frank Shelton
- Gillman Rinehart
- J. A. Reynolds
- Chas. R. Sowder
- A. O. Huntley
- W. E. Freehafer
- Mrs. O. H. Martin
- J. M. Dennis
- L. A. Darland
- Chas. A. Theobold
- Collis Lynes
- Bernard Haas
- Mary Z. Finney
- Geo. A. Jones
- F. Aiers
- Thos. G. Potter
- Andrew Wilmot
- Orrill Lewis
- Mrs. C. R. Braasch

### ADAMS COUNTY

#### MINING DIST. OWNER
- Seven Devils
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#### P. O. ADDRESS
- Helena, Mont.
- Cuprum
- Council
- Cuprum
- Homestead, Ore.
- Weiser
- Bear
- Cuprum
- Boise
- Homestead, Ore.
- Weiser
- Oakland, Ky.
- Cuprum
- Weiser
- Council
- Cuprum
- Council
- Weiser
- Homestead, Ore.
- Myrtle Creek, Ore.
- Council
- Council
- Ashland, Ore.
- Cuprum
- Idaho Springs, Colo.
- Cuprum
- Weiser
- Cleveland, Ohio
- Boise
- Cuprum
- Pollock
- Kendrick
- Council
- Homestead, Ore.

### BIBLIOGRAPHY

See pages 92-93 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

County Seat: Pocatello. Area: 1,837 square miles. Population: 31,266. Principal Industries: Distributing center, R. R. division and shops. Highways: Oregon Trail and Yellowstone Park highway; excellent branch roads. Railroads: Union Pacific R. R., shops and central district headquarters in Pocatello. Mineral Resources: Phosphate rock, limestone, manganese, copper, silver, gold and building stone. The limestone is suitable for cement and the phosphate rock for fertilizer. Manganese deposits near Cleveland and Lava Hot Springs were discovered in 1924 and reports indicate that there is a large tonnage of high grade ore available.

Review of Year's Operations

The Idaho Portland Cement Company, located at Inkom, employed an average of 50 men in the manufacture of "Eagle Brand" cement. This product is in demand and it was reported that the company enjoyed a satisfactory business during the year 1937.

CHATTERTON MINING CO.


IDAHO PORTLAND CEMENT CO.


BIBLIOGRAPHY

See pages 92-93 for publisher's address, meaning of reference marks, and abbreviations


Geography, geology, and mineral resources of the Fort Hall Indian Reservation, Idaho, by G. R. Mansfield: U. S. Geol. Survey Bull. 713, 1920.‡
BEAR LAKE COUNTY


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

Geography, geology and mineral resources of part of southeastern Idaho, by G. R. Mansfield: U. S. Geol. Survey Prof. Paper 152, 1927.†


Geography, geology, and mineral resources of the Portneuf quadrangle, Idaho, by G. R. Mansfield: U. S. Geol. Survey Bull. 803, 1929.†


BEAR LAKE COUNTY

County Seat: Paris. Area: 980 sq. miles. Population: 7,872. Principal Industries: Agriculture. Highways: Oregon Trail and excellent branch roads. Railroads: Main line of Oregon Short Line. Mineral resources: Phosphate rock, gypsum, manganese, copper, lead, silver and possibilities of petroleum. Idaho is credited with 85% of the known phosphate resources of the world and the largest and most accessible areas are in Bear Lake County. These deposits are practically untouched and represent one of the greatest potential resources of the state. (See U. S. G. S. Professional Paper No. 152 by G. R. Mansfield.)

Many structures similar to the Wyoming producing oil fields are found in the county and it is reasonable to expect future production on the Idaho side of the State line.

Review of Year's Operations

Mining in Bear Lake county during the year 1937 was practically dormant with the exception of some assessment work and restaking of claims. However, much interest was shown in the future development and exploitation of the vast phosphate deposits in this section of the state with the aid of a Federal project.

PARIS MINING AND MILLING CO., INC.

SAN FRANCISCO CHEMICAL CO.

SOLAR DEVELOPMENT CO., LTD.
STOCKHOLDERS' SYNDICATE

SUNSET MINING CO.

UTAH-IDAHO MINING AND MILLING CO.

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See pages 92-98 for publisher's address, meaning of reference marks, and abbreviations


Lake Bonneville, by G. K. Gilbert: U. S. Geol. Survey Mon. 1, 1890.*


Geol. of the copper deposits near Montpelier, Bear Lake County, Idaho, by H. S. Gale: U. S. Geol. Survey Bull. 430, pp. 112-121, 1909.*


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


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

**BENEWAH COUNTY**

**County Seat:** St. Maries. **Area:** 786 sq. miles. **Population:** 6371. **Principal Industries:** Timbering, agriculture and mining. **Transportation:** Boats on Coeur d'Alene Lake and St. Joe River; a good state highway system; Spokane-Wallace branch of the O. W. R. & N. Co. and main line of Chicago, Milwaukee and St. Paul Railroad. **Rivers and Lakes:** St. Maries River which runs northwest through the eastern part of the county empties into the St. Joe River which flows west through the northern parts of the county and empties into Lake Coeur d'Alene, whose southern end touches the north boundary of the county. **Relief:** The county is rugged and heavily timbered except a small area along the rivers and in the northwest corner of the county. **Mineral Resources:** The principal mineral resources are gold, copper, silver, lead, zinc, iron and clay. These deposits have been given very little attention in the past. The St. Joe district which lies east of St. Maries, and the Hoodoo and Camas Cove Districts in the southeastern corner of the county have received the greatest attention.

**Review of Year's Operations**

Many claim holders took advantage of exemption privileges extended by congress for the past year. Many properties were idle. However, some prospecting and annual labor was performed and this work covered all the mining activity in Benewah County during the year 1937.

**OTHELLO MINING CO.**

**Office:** Coeur d'Alene. **Officers:** Orland A. Scott, Pres.-Mgr., Coeur d'Alene; Ernest Goudge, Sec., Spokane, Wash. **Inc.:** Feb. 7, 1930. **Capital:** 2,000,000 shares; par value 25c; 1,420,000 shares issued. **Property:** Old Ironsides group; 3 patented and 8 unpatented claims, St. Joe dist., and 400 acres under lease from the State of Idaho; St. Maries. **Development:** Approximate total development, 1100 ft. **Remarks:** Idle.

**RAINBOW MINING & MILLING CO., LTD.** (See Shoshone and Kootenai counties).

**Office:** 106 Madison St., Spokane, Wash. **Officers:** Geo. Austin, Pres.-Mgr.; E. H. Polworth, Sec.-Treas., both of Spokane, Wash. **Inc.:** June 20, 1907. **Capital:** 1,200,000 shares; par value 25c; increased July 25, 1913, to 2,000,000 shares; par value 25c; changed Feb. 21, 1931, to 1,103,998 shares preferred divided into 727,769 shares, par value 25c and 381,229 shares,
par value $1; 891,002 shares common; par value 25c. Issued: 813,479 shares preferred, par value 25c and $1; 732,813 shares common. Property: Rainbow No. 3 group; 20 patented and 10 unpatented claims; Medimont dist. Development: 3120 ft. of tunnels; 3000 ft. of diamond drilling. Plant: Modern camp, necessary mine equipment to carry out development program to completion. Ore: Lead-silver. Remarks: 881 ½ ft. of drifting from June 1, 1936, to June 1, 1937. Work done under contract.

ROUND TOP MINING CO.

SILVER STAR MINING & DEVELOPMENT CO.

NAME OF MINE     MINING DIST.     OWNER       P. O. ADDRESS
Mosquito          Unnamed          Rainbow M. & M. Co.  Spokane
Rex, et al.       St. Joe          George Austin     Spokane
Rock Lode, et al. St. Joe          Butte Mining Co.  Spokane
Silver Star Gr.   St. Joe          Silver Star Min. & Development Co. St. Maries
Golden Age        Camas Cove       C. A. McLean     Santa
Lucky Strike      Hoodoo          A. M. Vanderpoel  Emida
Big Boy           Hoodoo          J. Johnston      Emida

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See pages 92-93 for publisher's address, meaning of reference marks, and abbreviations


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

County Seat: Blackfoot. Area: 2184 sq. miles. Population: 18,561. Principal Industries: Agriculture. Transportation: An excellent system of state highways; Aberdeen, Mackay and Pocatello-Butte branches of the Oregon Short Line. Rivers: The Snake River flows from the northeast to the southwest diagonally through the country. Relief: Lies mostly within the Snake River Valley. Mineral Resources: Phosphate and coal beds crop out in the eastern part of the country but have received little attention. Fine gold is known to exist in the sands of Snake River.

Review of Year's Operations

Very little mining of any kind in this county with the exception of some prospecting along the Snake River. No new discovery of importance was reported.

<table>
<thead>
<tr>
<th>NAME OF MINE</th>
<th>MINING DIST.</th>
<th>OWNER</th>
<th>P. O. ADDRESS</th>
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<td>Eagle Bend Pl.</td>
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<td>Alma Clough</td>
<td>Pingree</td>
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<td>Robert Wheeler</td>
<td>Sterling</td>
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<tr>
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<td>Snake River</td>
<td>John Oborn</td>
<td>Blackfoot</td>
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<td>G. W. Parsons</td>
<td>Blackfoot</td>
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<td>Snake River Pl.</td>
<td>Snake River</td>
<td>G. E. Campbell</td>
<td>Blackfoot</td>
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<tr>
<td>Woodruff Bend Pl.</td>
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<td>James G. Walsh</td>
<td>Blackfoot</td>
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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 oil possibilities of Bingham, Bonneville, and Caribou counties, Idaho, by V. R. D. Kirkham: Idaho Bureau of Mines and Geology Bull. 8, 1924.*


BLAINE COUNTY

County Seat: Hailey. Area: 2797 sq. miles. Population: 3768. Principal Industries: Mining, animal raising and agriculture. Transportation: O. S. L. Wood River branch; Sawtooth Park state highway, state highway No. 22 and a fair system of county roads into all mining districts. Main roads kept open all year. Rivers: Big and Little Wood rivers flow southerly through the county. Relief: The county is, in the main, rugged with a few level areas along the rivers and creeks. Elevation from 4500 ft. in the southern part to Hyndman Peak in the Sawtooth Mountains, elevation 12,078 ft., the highest point in Idaho. Mineral Resources: Silver, lead, gold, zinc, copper, arsenic, antimony, bismuth, quicksilver, graphite, barytes and limestone. The first ore was shipped from this district in 1880 and since then the country has been a persistent and prolific producer.

The ores are high grade, making an ideal operation for the small operator. The possibilities for future discoveries are excellent and the district is a favorable one for prospectors, development companies and leasors.

Review of Year's Operations

The Snyder Mines, Inc., with a crew of 175 men, was the largest operation in Blaine County during the year 1937. Activity in the Star and Independence mines was carried on by leasers. The ore is shipped to Utah for treatment. Neil Snyder is manager of local operations.

Stratton & Stratton continued work in solving the faulting problem at the Minnie Moore mine. Crosscutting and diamond drilling were under the direction of Oscar H. Hershey, geologist. E. E. Hughes of Bellevue is superintendent. At one time the Minnie Moore mine was one of the largest silver producers in the State. A crew of 20 men is employed.

M. T. Rowland operated in the Muldoon district. A crew was employed in road construction and development work.

Diamond drilling at the Golden Glow Mine on Boulder Mountain, 20 miles northwest of Ketchum, was reported by J. A. Schultz.

Koontz and Cook made shipments from the Cook property between Hailey and Fairfield.

Activity was noted at many prospects, including the Idaho Silver King, Gold Bottom, Woman's Chance Mining Company, The Lucky Coin Group and others.

A. L. HEINE MINES INC., THE

BALTIMORE & VICTORIA MINING CO.

BOULDER BASIN MINES, INC.
Office: Ketchum. Officers: J. A. Schultz, Pres., Ketchum. Inc.: Jan. 14, 1932. Capital: 2,000,000 shares; par value $1; no shares issued. Property: 20 patented claims, held under lease and option, Warm Springs Creek dist.; Ketchum. Development: By numerous tunnels, No. 1, 625 ft. long; No. 2, 390 ft. long; No. 3, 800 ft. long; No. 4, 1000 ft. long; approximate total development, 5446 ft. Plant: A small gas-driven compressor; complete mining equipment. Ore: Lead-silver. Remarks: 64 ft. of sinking and 40 ft. of drifting during the year.
DIA-SEISMITE CO.

EUREKA DEVELOPMENT CO., LTD.

FEDERAL MINING & SMELTING CO. (See Shoshone County)

FIELDS MUTUAL DEVELOPMENT CO.

HAILEY TRAMWAY CO.

HAILEY TRIUMPH MINES CO.
HOMESTAKE MINES CORPORATION
Office: Ketchum. Officers: H. L. Kaufman, Pres.-Mgr., Ketchum, A. J. Anderson, Sec., Santa Barbara, Calif. Inc.: July 27, 1927. Capital: 1000 shares, par value $100; increased Oct. 30, 1931, to 1,000,000 shares, par value $1; 400,000 shares issued. Property: Homestake group; 1 patented, 12 unpatented claims, Warm Springs Creek dist.; Ketchum. Development: Approximately 6000 cu. ft. of workings, the principal tunnels being: No. 3 tunnel, 500 ft. long; No. 4 tunnel, 800 ft. long; No. 5 tunnel, 1500 ft. long; No. 6 tunnel, 1895 ft. long. Plant: Gas-driven C-P compressor; complete mining equipment and camp. Ore: Lead-silver-zinc. Remarks: Idle.

IDAHO MINERAL PRODUCTS CO.

IVANHOE MINING CO. (See Custer County)

MINNIE MOORE MINE DEVELOPMENT CO.

LIBERTY GEM MINES, INC.

MONEY METALS INCORPORATED

NEW OVERLAND MINING COMPANY
BLAINE COUNTY

RED LARK MINING COMPANY

SILVER KING MINING AND MILLING COMPANY

SILVER SPAR MINING CO.

SILVER STAR-QUEENS MINES, INC.

TANTAMOUNT MINING COMPANY

TRAVERTINE LIME COMPANY INC.

TIP TOP GROUP MINING CO.

TREASUREMONT MINING COMPANY
# MINING INDUSTRY OF IDAHO

## UTAH-BELLEVUE MINES CO.

## WOOD RIVER MINING CO.

## NAME OF MINE | MINING DIST. | OWNER | P. O. ADDRESS
--- | --- | --- | ---
Ajax | Mineral Hill | Leo Barrett | Hailey
Alabama | Little Wood R. | Joe Longono | Muldoon
Alexander | Warm Spgs. Cr. | Oscar Griffith | Ketchum
Alturas & Scotia | Sawtooth | Frank Becker | Hailey
Amazon | Mineral Hill | Chas. R. Walters | Shoshone
Anabelle | Mineral Hill | Sibbie Tandy | Hailey
Anna | Mineral Hill | Mrs. P. McMonigle | Hailey
Anna et al. | Warm Spgs. Cr. | Frank Langell | Hailey
Bald Eagle | Mineral Hill | Cecelia J. Thomas | Hailey
Barbara | Mineral Hill | John Utsch | Hailey
Battling Jack Gr. | Sawtooth | John F. Garrett | Obsidian
Bavarian | Mineral Hill | H. J. Vorberg | Hailey
Beaver Gr. | Sawtooth | Thos. Mizer Est. | Hailey
Belmont Gr. | Mineral Hill | Jos. Siker | Hailey
Big Mint | Mineral Hill | H. R. Plughoff Est. | Hailey
Black Barb | Mineral Hill | E. B. Williams | Boise
Black Diamond | Warm Spgs. Cr. | Magnolia Gutches | Hailey
Black Horse | Mineral Hill | Mrs. Cecelia Roark | Bellevue
Blue Bell | Warm Spgs. Cr. | Augustine Johnson | Hailey
Bob Tail | Mineral Hill | Rodney Brown Est. | 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 Vancel | 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 | Mark Aukema | Hailey
Chloride Point | Warm Spgs. Cr. | Frank H. Morris | San Francisco, Cal
Climax | Mineral Hill | Raymond Guyer | Hailey
Climax Frac. | Mineral Hill | Geo. Choate | Boise
Comet Gr. | Mineral Hill | Davidson Groc. | Boise
Con Virginia | Mineral Hill | Mark Aukema | Hailey
Crown Point | Warm Spgs. Cr. | E. A. Obenchain | Ketchum
Daisy | Warm Spgs. Cr. | Clarence Bonning | Ketchum
Daisy | Mineral Hill | W. J. Oliver | Hailey
Delsie et al. | Unknown | W. H. Uhrig | Gannett
Dewey Gr. | Mineral Hill | Fred W. Smith Est. | Hailey
Double J. Gr. | Mineral Hill | J. J. Conner | Heyburn
Easter | Resurrection | Guy U. Lee | Butte, Mont.
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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.‡
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A lead ore consisting of native lead, leadhillite and lethargite, by E. V. Shannon, Econ. Geology, vol. 22, pp. 826-829, December, 1927.**
A geologic error regarding the Wood River district, by Stewart Campbell: Eng. and Min. Jour., vol. 126, pp. 287-289, Aug. 25, 1928.§
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BOISE COUNTY

County Seat: Idaho City. Area: 1840 sq. miles. Population: 1847. Principal Industries: Mining, stock raising and lumbering. Transportation: Well served by Federal and State highways and a good system of county roads. The Nampa-McCall branch of the O. S. L. serves the western part. Rivers: Included within its area is part of the drainage basin of the Payette River, most of the south fork of the Payette River and all of the drainage basins of Grimes and More’s creek which comprise the area known as the Boise Basin. Relief: The district is one of general ruggedness, high wooded mountains and deep canyons. Mineral Resources: Gold, silver, lead, zinc, copper, bismuth, antimony, monazite, lime and coal are known to occur.

History and Future

The history and future of Boise County dates back to the formation of the State in 1860, when placer gold was first discovered near Pierce City (Clearwater County). The overflow from this stampede resulted in the discoveries at Elk City, Florence, and Boise Basin, in quick succession, and by 1863 Boise Basin was one of the most thriving communities in the western part of the United States. In July, 1864, more than nine thousand 20-acre placer claims had been recorded in the three principal mining districts.

During the first few years after the discovery of gold all mining was confined to the placers which were susceptible to hand methods. After these became less profitable, numerous ditches 5 to 30 miles in length were constructed, and hydraulic mining of the higher bench gravels was started. These operations were conducted for many years, and a few have survived to the present day.

Shortly after the placer rush had subsided, attention was given to quartz mining; many discoveries soon were made, mills were constructed, and deep mining was started. The principal discovery was the Gold Hill mine at Quartzburg. In 1863 the vein was exposed by placer mining, and by 1867 a mill had been built and was in operation. Except at brief periods when it was being repaired, the mill was operated continuously for 12 years. The mine has been in almost continuous operation since the day of discovery and is credited with a production of six to eight million dollars. The record gives it the distinction of being the oldest and largest producing gold mine in the State. The vein has been opened to a vertical depth of 1090 feet below the creek level; at this point the ore is still persistent and has greatly increased both in grade and extent, and there appears to be no reason why it should not continue deeper.

In addition to the Gold Hill, many other gold mines have a large production record. This production, combined with that derived from placer mining, both hydraulic and dredging, held Boise County in first place in gold production in the State until the year 1923, and it regained this position in 1928. The opening of the ore bodies on the 1090-foot level of the Gold Hill mine, the past production from the Belshazzar mine, and the new ore disclosures made during 1932 were instrumental in attracting much attention to the county.

As the early-day miner was interested only in the precious metals, gold and silver, which could be recovered by the methods then in use, he disregarded all veins containing the sulphide or base ores. Before these ores became valuable, prospecting had practically ceased, with the result that this county offers one of the best fields in the State to prospectors or small development companies in search of lead-zinc-silver ores. Deposits of these metals, which contain also high values in gold, are widely distributed throughout the county, and a few have been partly developed. When properly exploited and intelligently managed, they will become an important factor in the future prosperity of Boise County and the City of Boise and will give the State an additional lead-zinc producing district.
Review of Year's Operations

The search for gold has brought a great deal of activity to Boise Basin and other gold bearing districts of Boise County. Almost every stream had a number of placer miners and more prospecting and development work was done on quartz properties.

Doodle Bug units were introduced in this area by California interests to work ground that would prove unprofitable to a floating dredge operation. These units, in addition to the four bucket line dredges and the hydraulic properties, speak well for the production figures from Boise Basin for the year 1937.

The Gold Hill and Iowa mine of the Talache Mines, Inc., Quartzburg, remained the deepest operating gold mine in the state, and the largest employer in the county, with a crew of 65 men.

New machinery was installed by the Texas-Owyhee Company at the Mayflower mine near Quartzburg. During the installation of this machinery, which will bring the capacity of the plant up to 125 tons daily, the main shaft was sunk to a lower horizon and additional development work done on the present levels. Sinking is in progress on the shear zone. An average crew of 40 men is employed.

A crew of 12 men was employed at the Belshazzar mine of the Idawa Gold Mining Company. The work consisted in rehabilitation and development under the direct supervision of E. A. Nordquist of Boise.

Construction was completed on the 25-ton mill of the Clover Leaf Metals Company on Elk Creek near Idaho City. This operation is in charge of William W. Elmer, consulting engineer of Portland, Oregon, assisted by his son, William W. Elmer, Jr.

Sloper and Forbes used a 12-ton Ellis mill in the Summit Flat district where it is reported they were mining a free milling gold vein, reported to be eight feet wide, with values running about $50 a ton.

Jack Dodson developed his holdings on the Haywire group, Sugar Loaf Mountain and the tributaries of More's Creek.

The Grimes Homestake Gold Mines Company unwatered the Coon Dog Shaft, extended the Homestake tunnel; other exploration and development work underway preparatory to putting the property on production.

The Edna mine was put in shape for production. The old tunnel was cleaned out and retimbered. It is reported that the main ore body, formerly productive, has been relocated.

The Red Lode Mining Company, Inc., located in the Summit Flat district, developed the Olympia group of claims. This mine is controlled by Seattle interests.

The Ben Quarles placer property, near Idaho City, was worked for a short time by the Antonson Mining Company of Seattle, Washington.

Twenty men were employed at the Idaho Placer as long as the water held out. This property is the largest hydraulic operation in Idaho and is located at Idaho City. It was formerly operated by the Earl C. Anthony Company.

Hayfork Creek properties were worked by H. R. Jarvis. High gold values in free milling ore are reported. Others interested in this section are: C. P. Howe, Fred Greene, Fred Kuntz, and John Hallstrom of Idaho City.

Modoc Placer Mining Company, owned and operated by Albert S. Holcombe, was active. This property is located below new Centerville on Grimes Creek.

Birthday Consolidated Mines Company, 14 miles up stream from Lowman on the Payette River, extended the lower crosscut tunnel to intersect the vein system traversing the property. Joseph D. Branson, Lowman, is superintendent.

The Golden Cycle Mining Corporation developed their holdings to some extent.

The Boise Basin Development Company had a crew of three men doing general repair work and erecting new buildings.
ALANDOC MINING CO.

BARTON & GORDON, INC.

BLUE ROCK MINES CORPORATION

BOISE BASIN DEVELOPMENT CO., INC.

BOISE BASIN PLACER CORPORATION

BUCK HORN MINING COMPANY

COME-BACK MINING CO.

CONSOLIDATED MINES SYNDICATE
(See Camas, Elmore and Idaho counties.)
ft., the principal part of which is the main crosscut tunnel 3735 ft. long. **Plant:** Modern boarding and bunk houses, change house, blacksmith shop and work shop. **Ore:** Silver-gold. **Men Employed:** Average, 7. **Remarks:** Road was rebuilt for two miles from highway to mine. Buildings repaired, blacksmith shop and work shop constructed. Main working tunnel reopened for an approximate distance of 800 ft. Plan on installing a 50-ton capacity reduction plant in the near future.

**CROESUS GOLD MINING CO.**
Office: 324 Lindelle Blk., Spokane, Wash. Officers: John J. Stanford, Pres.-Mgr., Spokane, Wash.; Roy H. Kingsbury, Sec., Wallace. Inc.: Sept. 12, 1931. **Capital:** 300,000 shares; par value $1; 100,000 shares issued. **Property:** Annex group; 2 unpatented claims, Centerville dist.; Centerville. **Development:** Principally by 1 tunnel, 240 ft. long. **Ore:** Gold. **Remarks:** Report not filed for 1937.

**CURRY DITCH PLACER MINES ASSOCIATION**
Office: 4611 Fairfax Ave., Oakland, Calif. Officers: P. E. Hall, Jr., Pres.-Mgr.; George S. Young, Sec., both of Oakland, Calif. Inc.: An association. **Capital:** 500,000 shares; no par value; 50,000 shares issued. **Property:** 3 patented, 2 unpatented placer claims, Pioneerville dist.; Pioneerville.

**FRANKLIN PLACER CO.**
Office: Idaho City. Officers: W. W. Miller, Pres.; Paul C. Moore, Sec., both of Franklin, Pa.; E. F. Blain, Mgr., Boise. Inc.: July 21, 1925. **Capital:** 300,000 shares; par value $1; 115,000 shares issued. **Property:** Leary and Brogan group, Placerville dist.; Placerville. **Plant:** About 4000 ft. of hydraulic pipe, 18 to 11-inch, and a small amount of 7-inch pipe with 6 hydraulic giants. **Remarks:** Report not filed for 1937.

**GOLDEN AGE MINING PROPERTIES, INC.**
Office: Pioneerville. Officers: Frank H. Thomas, Pres., Lansing, Mich.; Fred’k J. Thoman, Sec., Jackson, Mich. Inc.: Aug. 30, 1934. **Capital:** 10,000 shares; no par value; all shares issued. **Property:** 19 patented claims, Boise Basin; Pioneerville. **Development:** Approximate total development, 1200 ft. **Plant:** Rand compressor. **Ore:** Gold, silver, lead. **Men Employed:** Average, 5. **Remarks:** 250 ft. of development during the year.

**GOLDEN SEAL MINING & MILLING CO.**
Office: 919 Idaho St., Boise. Officers: C. V. Dowlin, Pres., Boise; Wm. B. Davidson, Sec., Meridian. Inc.: Oct. 28, 1924. **Capital:** 1,000,000 shares; par value 25c; 933,000 shares issued. **Property:** 12 unpatented claims, unorganized dist.; Dry Creek; Boise. **Development:** By 3 tunnels: No. 1, 100 ft. long; No. 2, 150 ft. long; No. 3, 800 ft. long. **Ore:** Lead-zinc-silver. **Remarks:** Idle.

**GOLD DREDGING & POWER CORPORATION**
Officers: S. K. Atkinson, Pres.; W. A. Buis, Sec., both of Boise. **Remarks:** This corporation was succeeded by the Idaho Gold Dredging Corporation and the latter in turn by the Mineral Products Company, a trust. This was accomplished by an exchange of shares. The directors and shareholders are practically the same. All the property and equipment formerly belonging to this corporation is now owned by the Idaho Gold Dredging Corp. This corporation is being kept legally alive and may be used at a later date.

**GOLD PRODUCTION CO., A TRUST**
Office: 917 First National Bank Bldg., Boise. Officers: S. K. Atkinson, Pres.; W. A. Buis, Sec., both of Boise. **Date of Filing:** Feb. 16, 1933, Common Law Trust. **Capital:** 1000 shares, no par value; 259 shares issued. **Property:** 12 unpatented claims, Black Warrior dist.; Atlanta. **Ore:** Placer gold. **Remarks:** Property recently acquired and now being examined as prospective dredging ground. Road under construction.
GRANITE CREEK DREDGING COMPANY  
(See Idaho County)  

THE GRIMES COMPANY  

GRIMES HOMESTAKE GOLD MINES CONSOLIDATED  

HALLEY PLACER CO.  

IDAHO GOLD DREDGING CORPORATION  

IDAHO MINING SMELTING & REFINERS INC.  

IDAHO MODOC PLACER MINING CO.  

IDAWA GOLD MINING CO.  
IRON DYKE MINES CO.


K. C. MINES, INC.


MAYFLOWER GOLD MINES, INC.

Office: Noble Bldg., Boise. Officers: J. B. Eldridge, Pres.; G. R. Eldridge, Sec., both of Boise. Inc.: May 20, 1931. Capital: 300,000 shares; par value $1; 158,855 shares issued. Property: Mayflower group; 2 patented, 7 unpatented claims, Quartzburg dist.; Quartzburg. Development: By 3 tunnels: No. 1, 640 ft. long; No. 2, 130 ft. long; No. 3, 100 ft. long; and an inclined shaft 260 ft. deep in which are two intermediate levels. Plant: MINE: Electrically driven hoist; complete mining equipment and camp. MILL: 30-ton fine grinding and flotation concentrator. Ore: Gold. Remarks: Property under lease to Texas-Owyhee Company.

MINERAL PRODUCTS COMPANY, A TRUST

Office: 617 First National Bank Bldg., Boise. Officers: S. K. Atkinson, Pres.; W. A. Buis, Sec., both of Boise. Capital: 4,000,000 non-assessable stock, par value 25c; 500,000 common stock, par value $1; 5000 preferred stock, par value $50; 882,492 shares of non-assessable common issued. Remarks: Property sold under option to Grimes Creek Dredging Company and More's Creek Dredging Company.

MISSOURI MINING CO., LTD.


MOORES CREEK DREDGING COMPANY


NATIONAL MINING & DEVELOPMENT CO.

OLD LIBERTY MINING COMPANY

PENN MINING CO.

PIONEER DEVELOPMENT CO.

PITTSBURGH-IDAHO HYDRAULIC MINING CO.

RED LODE MINING COMPANY, INC.

SEMI-ANTHRACITE COAL MINING CO.

TALACHE MINES, INC.
TEXAS-OWYHEE MINING & DEVELOPMENT COMPANY

WASHOE MINING CO.

NAME OF MINE | MINING DIST. | OWNER | P. O. ADDRESS
--- | --- | --- | ---
Adonis | Unknown | Herman Schultz | Boise
Alameda | Unknown | Wm. S. Bella | Boise
Alpine Gr. | Alpine | J. T. C. Harrington | Nampa
American Girl Gr. | Gambrinus | Louise D. Steward | Boise
Annie Lee | West View | Chas. Smith | Horseshoe Bend
Argonne Forest | Gambrinus | H. Maurenhamer | Boise
Ashcroft Pl. | Placeville | H. Ashcroft, Estate | Placerville
Banner | Banner | V. A. Thorn | Idaho City
Atlast | Unknown | J. F. Thompson | Horseshoe Bend
Beaver Cr. Pl. | Banner | J. D. Demming | Idaho City
Belmont Gr. | Quartzburg | Chas. Driscoll & F. Daly Est. | Quartzburg
Big Ben | Centerville | Frank H. Cooper | Boise
Blackbird | Pioneerville | Extra Lightfoot | Pioneerville
Blackbird et al. | Cold Springs | Anderson & Newbrand, Estate | Idaho City
Black Crook Gr. | West View | Bincord Realty Co. | Denver, Colo.
Black Hawk | Centerville | Homer Granger | Centerville
Black Jack | Summit Flat | Jerry Dowling | Idaho City
Blue Bird et al. | Banner | G. R. Moland | Boise
Blue Jet Pl. | Centerville | Archie R. Koppes | Centerville
Blue Grouse | Unknown | Thos. C. Mayne, Estate | Idaho City
Blue Ribbon Gr. | Dry Buck | Lee Davis | Horseshoe Bend
Blue Rock | Quartzburg | Allen B. Eaton | Boise
Blue Stone | Idaho City | Henry Holsmeier | Idaho City
Boston Girl | Placerville | Wm. W. Thorn | Centerville
Boulder Gr. | Elk Horn | Pat. Moriarty Est. | Idaho City
Boundary | Dry Buck | Lee Davis | Horseshoe Bend
Buffalo Gr. | Elk Creek | Frank Cooper | Boise
Bull Durham Pl. | Boise River | I. I. Youngblood | Boise
Bummer Hill | Quartzburg | H. C. Granger | Horseshoe Bend
Calumet | West View | G. Faull | Centerville
Cash Register | Placerville | Frank H. Cooper | Boise
Catherine | Placerville | Pat H. Quirk | 616 S. 17th St., Boise
Claude Marsh | Summit Flat | Edward Brisbin | Centerville
Glaz Gulch | Placerville | J. T. Blair | Pioneerville
Clear Cr. Pl. | Pioneerville | J. A. Adams | Pioneerville
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<td>Walkover</td>
<td>Hayfork</td>
<td>Fred J. Kurtz</td>
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**BIBLIOGRAPHY**

See pages 92-93 for publisher's address, meaning of reference marks, and abbreviations


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**MINING INDUSTRY OF IDAHO**

**BONNER COUNTY**

**County Seat:** Sandpoint. **Area:** 1748 sq. miles. **Population:** 13,152. **Principal Industries:** Lumbering, mining, agriculture and stock raising. **Transportation:** Boats ply Lake Pend d'Oreille, one of the largest bodies of water in the State. Two State Highways and a system of excellent county roads reach almost every district. Three transcontinental railroads traverse the county.

**Mineral Resources:** Silver, lead, zinc, copper and limestone.

**History and Future**

Mining history started with the discovery of silver ores near Lakeview in 1888. Since that time there has been a small amount of mining but the county did not attract a great deal of attention until the Talache mine on the west shore of the lake proved to be a successful operation.

This was followed by the discoveries in the vicinity of Clark Fork which have added another profitable lead and silver producing district to the State's resources.

This county, particularly the districts around Clark Fork and on the east side of Lake Pend d'Oreille are very favorable for the prospectors, operators and investors.
Review of Year's Operations

Hope Silver-Lead Mines, Inc., Albert M. Nash, Kellogg, Idaho, general manager, shipped from two to three carloads of concentrates monthly to the smelter. The company holds the Elsie K. Group of 14 claims near Clark Fork in the Pend d'Oreille district and is employing 35 men.

Shipments of lead-silver ore were made from the Whitedelf Mining and Development Company, located at Clark Fork. It was reported that this ore netted $81 a ton. Drifting will be continued on the main level horizon and plans are underway to sink the 400 foot shaft to the 1000 ft. level. Compton I. White of Clark Fork is president. A crew of 15 men is employed under Ivor Anderson, superintendent.

The Silver Leaf Mines Corporation centered operations on the Keep Cool property in the Lakeview district, held under lease and bond. Operating on a 24-hour schedule the mill is now handling 60 tons daily. Plans to increase mill capacity and the $4000 monthly payroll are contemplated by the management.

Leasers at the Lawrence Consolidated Mining Co. developed this property to some extent.

Annual labor was performed by the American Eagle Mining Company, Milwaukee Mines, Inc., Nevada Mines and Opportunity Mining Company.

Auxer Gold Mines Co. was optioned to Robert M. Adams, Duluth, Minnesota.

AMALGAMATED GOLD MINING CO.

AMERICAN EAGLE MINING CO.

AUXER GOLD MINES CO.

BIG FIVE MINING CO.

BINARCH CREEK MINING CO.
CAMP BIRD MINING & DEVELOPMENT CO.

CAROLINA CLAIMS, INC.

CENTENNIAL CLAIMS INC.

CLARINDA COPPER MINING CO.

DEL MONTE CLAIMS, INC.

EMPIRE TUNGSTEN MINING CO.

FALLS CREEK MINING CO.

HOPE SILVER-LEAD MINES, INC.
IDAHO LAKEVIEW MINES CO.
Office: Trail, B. C., Canada. Officers: D. M. Drumheller, Jr., Pres., Cutbank, Mont.; E. G. Randall, Sec., Trail, B. C. Inc.: June 28, 1928. Capital: 2,100,000 shares, par value 20c; increased Nov. 23, 1929, to 2,310,000 shares; increased April 3, 1930, to 2,510,000 shares; par value 20c; 2,254,415 shares issued. Property: Hewer group; 4 patented, 7 unpatented claims, Lakeview dist.; Lakeview. Development: Principally by 1 tunnel 2200 ft. long in which is an inclined shaft 1372 ft. long; total development approximately 13,500 ft. Plant: MINE: 500 cu. ft. I-R compressor; electrically driven hoist; 75 kw. generator, driven by 100 h. p. semi-Diesel engine; complete mining equipment. MILL: 100-ton concentrator, fine grinding and flotation; driven by semi-Diesel oil engine. Ore: Silver-lead-zinc. Men Employed: Watchman. Remarks: Idle.

KANIKSU MINING CO.

KEEP COOL MINING CO.

KING SOLOMON'S MINES CO.

LAWRENCE CONSOLIDATED MINING CO.

LUCKY STRIKE MINING CO.
MILWAUKEE MINES, INC.
Office: 501 City Hall Bldg., Spokane, Wash. Officers: Arthur L. Hooper, Pres.-Mgr.; W. W. Greenwood, Sec., both of Spokane, Wash. Inc.: April 6, 1928. Capital: 2,000,000 shares, par value 25c; increased Jan. 22, 1930, to 5,000,000 preferred, par value 10c, and 5000 common, no par value; changed July 30, 1930, to 250,000 preferred, par value $10, and 500,000 common, no par value, changed Feb. 4, 1932, to 3,500,000 shares par value $1; Dec. 12, 1933, reduced capital stock to 1500 shares, no par value; 680 shares issued. Property: Milwaukee group; 12 claims; Priest River. Development: Main cross-cut tunnel 414 ft. with drift of 197 ft. Plant: Equipped for hand mining. Camp buildings, bunk house, boarding house, blacksmith shop and boat house. Remarks: Assessment work and maintenance repairs.

MINERVA SILVER, INC.

NEVADA MINES

OPPORTUNITY MINING CO.

PONDERA MINING & POWER CO.

PRIEST RIVER MINING CO.

SILVER LEAF MINES CORPORATION
**SILVER MOUNTAIN MINING CO.**


**TALACHE MINES, INC. (See Boise County.)**


**WHITEDELF MINING & DEVELOPMENT CO.**


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BONNEVILLE COUNTY


History and Future

The county was the scene of many active mining operations during the early day gold rush when placer gold was discovered on McCoy and Gray creeks in the Mt. Pisgah or Caribou districts. This activity had long since died down until the search for gold in the last few years led placer miners to again explore the creeks.

Review of Year's Operations

The placer operations along McCoy and Gray creeks received more attention than in many years, there was an increase in the amount of placer gold produced.

It was reported that six feet of commercial ore was opened up by Fred Benzinger on the Robinson and Oneida properties.

The Caribou Mining Trust located nine claims on Mt. Pisgah. Camp was established, trails built and other preliminary work was accomplished under
the supervision of Everett S. Sloane, manager. The company plans an extensive development program on their holdings during the year 1938. R. C. Milks is president of the company and V. C. Belknap, secretary.

Assessment and exploratory work was performed by the Idaho Consolidated Placer Company, the Malgre Mining Company and other claim holders throughout the county.

IDAHO CONSOLIDATED PLACER MINING CO.

IDAHO GOLD MINING CO.

MALGRE MINING COMPANY

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 Miles Schneider, Agt. Gray
Pisgah Gr. Mt. Pisgah Fred Brenzinger, Agt. Gray
Silver Bell Gr. Mt. Pisgah Fred Brenzinger, Agt. Gray
Timber Line Mt. Pisgah Leroy Layland Gray
Toway Mt. Pisgah J. C. Beatty Soda Springs
Wolfe Bar Mt. Pisgah Amos S. Clark Unknown

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BOUNDARY COUNTY


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BOUNDARY COUNTY


History and Future

In the past a number of properties have been operated profitably and the many favorable areas make this county a favorable one for the prospector although heavy overburden and dense vegetation makes prospecting expensive.

Review of Year’s Operations

Fire destroyed the compressor building and tramway at the Idaho Continental mine. This held production down to some degree. However, the damage has been repaired and the owners plan to operate during the winter and may increase the capacity of the mill to treat tailings left by former operators in addition to the newly mined ore. Concentrates are shipped to the Bunker Hill Smelter at Kellogg. A. Klockman of Fothill is in charge of the property.

Mark Hay and Hugh Rinquist made shipments of lead-silver ore from the Lead Cliff mine to the American Smelting and Refining Company’s plant at East Helena, Montana.

Idamont Lead-Zinc Mines Company was further developed by 122 ft. of tunnel.

Maintenance and repair work was performed at the Golden Sceptre Mining Company.

The International Molybdenum Company completed 50 feet of development work and constructed a reduction plant.

Annual labor was done at several properties including the American Girl, Montgomery and the Cyanide Gold Mining Company.

Molybdenum Products Company employed three men. Construction was finished on the mill building and 70 ft. of development work in the mine.
CLANCY MINING CO.

GOLDEN SCEPTRE MINING CO.

IDAMONT LEAD-ZINC MINES CO.

INTERNATIONAL MOLYBDENUM CO.

LEAD CONSOLIDATED MINING CO.

LUCKY ABE MINING CO.

MOLYBDENUM PRODUCTS COMPANY

NORTH IDAHO DEVELOPMENT CO.
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Butte County


Review of Year's Operations

The Horn Silver mine, 20 miles southwest of Arco, was worked by leasers. M. M. Dahle operated 5 claims and made several shipments to the smelter. William E. Clark, E. J. and T. H. Collins, Kenneth MacKenzie and Fred Guderjohn operated the other claims under lease and option. A compressor was installed and road improvements made. Ore was shipped to Salt Lake smelters.

Mac Settles acquired the dump and mill tailings at the Wilbert mine, near Howe. New machinery was installed in the mill with the expectation of handling 75 tons daily over a two-year period.

Prospecting and annual labor was done by claim holders in the Lava Creek and Dome districts.

L. P. Dresser, of Emmett, developed the Denver group of 16 claims in the Lava Creek district.
BADGER MINES CO.

HORN SILVER CONSOLIDATED MINES CO.
Office: Arco. Officers: L. M. Capps, Pres., Blackfoot; M. M. Dahle, Sec.-Mgr., Arco. Inc.: Dec. 21, 1925. Capital: 100,000 shares; par value $1; Nov. 8, 1934, increased to 1,000,000 shares; par value $1; 136,044 shares issued. Property: 11 unpatented claims, 5 of which are held under lease and option, Lava Creek dist.; Martin. Development: By 3 tunnels; approximate total development, 3100 ft. Plant: Gas-driven compressor; complete mining equipment and camp. Ore: Lead-silver. Men Employed: Average, 1. Remarks: Maintenance and repair work only.

MAUDE ELLEN OIL CO.

METTA MINING CO., LTD.

WILBERT MINING CO., LTD.
Office: 220 Kearns Bldg., Salt Lake City, Utah. Officers: J. A. Foley, Pres.-Mgr.; T. L. Mitchell, Sec., both of Salt Lake City, Utah. Inc.: April 10, 1907. Capital: 2,000,000 shares; par value 50c; 1,177,180 shares issued. Property: Daisy Black group; 7 patented, 33 unpatented claims, Dome dist.; Howe. R. R. Arco, 42 miles. Development: Approximately 18,000 feet of underground workings, the principal of which is No. 4 tunnel, in which 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 compressors, one electrically driven, one oil-driven; complete mining equipment and camp. MILL: 75-ton concentrator, electrically driven. Ore: Silver-lead. Remarks: Report not filed for 1937.

NAME OF MINE    MINING DIST.     OWNER     P. O. ADDRESS
Apex Gr.        Lava Creek       C. H. Beck  Martin
Apex, Apex 3    Lava Creek       Edward Dahle Martin
Badger, 1, 2, 3, 4 Hamilton William Duesner Howe
Badger Creek    Hamilton         Frank Peete  Clyde
Betty Lou       Lava Creek       C. V. Genoway Boise
Big Butte       Lava Creek       B. A. Smith  Arco
Black Hawk      Hamilton         Chas. W. Johnson Howe
Bluebird et al. Hamilton         Roy Hawley  Howe
Bonanza Gr.     Dome            W. W. Brown  Arco
Bozette Gr.     Lava Creek       J. W. Gamett  Moore
Comstock        Lava Creek       Mrs. E. H. Brim Martin
Copper King Gr. Lava Creek       B. A. Smith  Arco
<table>
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<td>Copper Queen</td>
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<td>W. H. Miller et al.</td>
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</table>
MINING INDUSTRY OF IDAHO

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CAMAS COUNTY


History and Future

The mines of this county have a good production record. With present activity in both lode and placer and with the intelligent application of modern geologic and metallurgical principles, this area presents excellent opportunities for mining in the future.

Review of Year's Operations

The Prospecting Syndicate of Canada, Limited, with a crew of 35 men was the largest operator in Camas County. A camp was constructed, machinery installed and rehabilitation of the Silver Star mine was in progress under the engineering supervision of Stewart Campbell and A. L. Ternan as superintendent. This is a British Columbia corporation, a subsidiary of the Old Colony Company of Vancouver, B. C., one of the largest and most successful mine development organizations in the Pacific Northwest. The Silver Star property is near Carrietown, 25 miles north of Fairfield.

The lower tunnel at the Five Points mine was extended, ore blocked out and several shipments made to Utah smelters. Four men were employed under Dave Strong, manager and superintendent.

The Golden Eagle and Federal groups of placer claims on the South Fork of the Boise River were retested and it was reported that a deal of considerable proportions was pending between the owners and Portland, Oregon, operators.
A crew of 10 men was employed by the El Oro mine in the Skeleton Creek district. The plant consists of a 12"x10" Ingersoll Rand Compressor, 10 stamp mill and camp buildings.

The Bowerman Group, near Hill City, was developed to some extent by J. A. Grosvenor and associates.

Other activity in Camas County was confined mostly to assessment work. Prospecting and testing was carried on in the Skeleton, Big Smoky, Little Smoky and Willow Creek districts.

CARRIE LEONARD MINING CO.

CLIPPER GOLD MINING & MILLING CO.

CONSOLIDATED MINES SYNDICATE
(See Boise, Elmore and Idaho counties.)

EL ORO MINE

FIVE POINTS MINING & MILLING COMPANY, INC.

GLACIER GOLD PLACER MINING CO.

GOLD BLOSSOM MINING & DEVELOPMENT CO., INC.
GOLD MOUNTAIN MINES CO.

HIDDEN TREASURE MINE & MILLING CO.

ISABELLA LEASING AND DEVELOPMENT CO., THE

LITTLE SMOKY DREDGING COMPANY, THE

PARADISE GOLD DREDGING COMPANY, INCORPORATED, THE

PROSPECTING SYNDICATE OF CANADA, LIMITED, THE

RED HILL MINING & MILLING CO.

RICHARD ALLEN MINES CO.
SILVER STAR-QUEENS MINES, INC.

SMOKY MOUNTAIN GOLD MINES, INC.

TAFT MINE

NAME OF MINE  MINING DIST.  OWNER  P. O. ADDRESS
Axlorr  Skeleton Creek  R. M. Angel  Fairfield
Bear Creek  Skeleton Creek  R. S. Mockett  Lincoln, Neb.
Blue Bird  Little Smoky  Robt. Leaper  Fairfield
Climax  Little Smoky  Jas. Williams  Fairfield
Dollardire  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  Fairfield
Hercules  Big Smoky  W. W. Counterman  209 So. 3rd St., Boise
Horn Silver  Little Smoky  P. E. Fletcher  Fairfield
Idaho Chief  Little Smoky  Philip B. Becker  Fairfield
Isabella  Little Smoky  Edw. Somers Est.  Hailey
Gold Bar Placer  Skeleton Creek  Chris L. Giskey  Fairfield
King of the West  Little Smoky  Maylan C. Fox  P. O. Box 774, Salt Lake City, U.
Little Bob  Little Smoky  M. Ryan  Fairfield
Manchuria Placer  Rosetta  H. D. Jones  Hailey
Ohio Placer  Little Smoky  Geo. E. Ball  Bridgeport, Conn.
Princess  Willow Creek  Roy Jones  Fairfield
Silver King  Little Smoky  H. D. Jones, Agt.  Hailey
Smoky Bullion  Little Smoky  Ernest Worswick Est. Reno, Nev.
Square Deal  Little Smoky  Robert Leaper  Fairfield

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


CANYON COUNTY

The only known mineral resources of this county are gold in the Snake river sands, diatomaceous earth, and clays of excellent quality.

A number of companies have been formed to drill for oil and gas, but to date no results have been obtained.

DRY LAKE OIL COMPANY


NEW ERA MINING & DEVELOPMENT CO.


UNITED DEVELOPMENT CORPORATION


UNITED UTILITIES CORPORATION


BIBLIOGRAPHY

See pages 92-93 for publisher's address, meaning of reference marks, and abbreviations.


CARIBOU COUNTY


History and Future

The tremendous resources of this county have only been scratched. A large part of five billion tons of marble phosphate rock estimated to be in Idaho, lies in this county. The Anaconda Mining Co. at Conda has the only development making use of this deposit. They have a modern plant for the production of ground phosphate rock which is shipped to Anaconda, Mont., for treatment. This company has expended more than $6,000,000 in its mine, mill, railroad, power lines and town site.

The salt deposits and mineral springs are other potential resources that are not being utilized.

A number of structures favorable for the accumulation of petroleum are found in the eastern part of the county.

ANACONDA COPPER MINING CO.

Office: Anaconda, Mont. Officers: C. F. Kelley, Pres.; D. B. Hennessy, Sec., both of 25 Broadway, New York City; E. M. Norris, Local Mgr., Conda, Idaho. Inc.: Filed in Idaho, April 10, 1916. Capital: 12,000,000 shares; par value $50; 8,919,086 shares issued. Property: 23 patented claims, 3403 acres, unorganized dist.; Conda. Development: 3 adits, 45 ft. above railroad track level, 9x9 ft. inside of timbers; No. 1, 6650 ft. long; No. 2, 2660 ft. long; No. 3, 5987 ft. long. Approximate total development 53,771 ft. The main operating tunnels are equipped with 25-lb. rail, 36-in. gauge track, two 20-ton storage battery locomotives capable of hauling a 100-ton net load at a speed of 4 to 7 miles per hour, 10-ton side dump ore cars, power loading machines operated by compressed air and No. 4 sirocco fan. Plant: MINE: 1000 cu. ft. compressor; drill sharpeners; machine, blacksmith and carpenter shops with latest type power-driven equipment; switch boards and motor generator charging set; laboratory; electric substation, sawmill and preservation plant for treating mine timbers, all housed in fireproof gunited and steel buildings; 100 h. p. electrically driven hoist. MILL: Crushing and drying plant. The mill feed and storage bins are connected with the main tunnels by large trestles. The storage bins, with a capacity of over 4000 tons, and houses over them are protected with several inches of gunite. The main storage bin is equipped with an Ottumwa boxcar loader and modern railroad scales. The rock drawn from the mill feed bin, which has a capacity of 450 tons, passes over shaking grizzlies, the oversize going to a 12-in. Traylor gyratory crusher, which reduces it to about 2 1/2 in. The product from the crusher and the undersize is elevated and passed over a Mitchell vibrating screen. The rock passing through this screen goes to the dryer feed bin, and the oversize to 22x54-in. Anaconda rolls that reduce it to three-fourths of an inch. The product from the rolls is elevated and again passes over the Mitchell vibrating screen. The crushed rock drawn from the dryer feed bins is conveyed into class A-12 Ruggles-Coles dryers by apron feeders. After leaving the dryer the rock goes over a shaking feeder to a chain bucket elevator. This elevator carries it to the top of the mill where it passes through a Vezin sampler, and it is then conveyed to the storage bins. The present capacity of the mill is 400 tons in 24 hours. This output can be increased to 1000 tons in the same time by adding another dryer. Railroad: 8-mile branch from Soda Springs to mine, with storage tracks that will accommodate 100 fifty-ton railroad cars, spurs to mill and coal bins, and Wyes at each end of the yards. The gradient of the storage tracks is such that the cars are operated by gravity to and from the storage bins. Town: The company has erected a model mine town consisting of modern homes, which are rented to employees at a
nominal figure. Company offices, bunk and boarding houses, superintendent's home, recreation hall, and a number of small homes have been erected. A fully equipped store is maintained by the company, a postoffice has been established, and a modern schoolhouse erected, and a school maintained. A complete water system for the town and plant has been installed; the water is piped a distance of 2 miles to a 100,000-gallon storage tank from which it is distributed. **Ore:** Phosphate rock. **Men Employed:** Average, 54. **Remarks:** 2071 ft. of development during the year.

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Geography, geology and mineral resources of part of southeastern Idaho, by G. R. Mansfield: U. S. Geol. Survey Prof. Paper 152, 1927.‡


CASSIA COUNTY


BIG BERTHA MINING CO., INC.

GOOSE CREEK & DEVELOPING CO.

SILVER HILLS MINING CO.

NAME OF MINE MINING DIST. OWNER P. O. ADDRESS
Alice Albion Gr. Stokes W. E. Langford 229 W. 2nd St. N., Salt Lake City Rupert
Bimetallic Giant Golden Eagle Hazel Pine Ken-Sko Last Chance Last Chance Gr. Walton No. 2 Stokes Stokes Stokes Dolomite Unorganized Grape Creek Stokes Robt. B. Kenner Charles Ransom J. W. Durfee T. C. Walton Salt Lake City Salt Lake City Salt Lake City Burley Malta Burley

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CLARK COUNTY


Review of Year's Operations

More activity in mining in Clark County was noticed than for many years. Thirteen claims were filed with the recorder in one month. This excitement was created in the Camas Meadows section, but activity was widely scattered from Gilmore to the Birch Creek district.

A mill and tramway was constructed by the Blue Ledge Company. The mine was developed to some extent, uncovering considerable ore of commercial value. The company failed to send in its annual report but from information gained on an inspection of the property it appears to be owned and operated by Jack Tont and Jack Sheets.

Frank Worthing opened a 4-foot vein of coal on Cottonwood Creek, 10 miles north of Kilgore which deserves further development.

Shipments were made from properties located on Birch Creek, near Nickola, and from copper holdings in Skull Canyon.

BIRCH CREEK MINING CO., LTD.


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.
Lead Basin	Birch Creek	Frank Worthing	Reno
Lucky Strike No. 1 Unorganized	Birch Creek	C. H. Kaufman	Dubois
Lucky Strike No. 2 Unorganized	Birch Creek	E. M. Kaufman	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. Garrietson et al.

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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


History and Future

The Pierce City district was the scene of the first discovery of gold in Idaho in 1860. The placer diggings were rich and the overflow from the resulting stampede caused the settlement of the State. In common with all of the early gold mining districts, the more easily handled ore was mined and the district became dormant. The present search for gold has caused much new activity in the district.

Dense vegetation and heavy overburden has made prospecting extremely difficult and has prevented a thorough examination of the county in the past. This is one of the most favorable districts in the state for the prospector and small operator.

One of the finest lime deposits in the State is located just outside of Orofino on the railroad. This deposit has received some development and should be an important resource in the future.

Review of Year's Operations

More activity was in evidence around Pierce than for many years. Individuals and companies gave the district the appearance of a mining boom.

A pontoon washing plant was constructed on Orofino Creek at the old American mine by a company known as the Gold Creek Placer Mining Company. The old three-quarter yard shovel, which has been in use, was replaced by a two-yard lima shovel.

Offices of the company are in the Kuhn Building, Spokane, Washington, Buck Brae is in charge of operations.

At the Quartz Creek mine, located between Pierce and Headquarters, activity has been resumed with good results. Modern machinery will be installed.

Near Jaypee a drag line and washing plant was assembled. The plant was moved from Wyoming by Messrs. Ross and Jess. These men are old time operators from Alaska.

E. A. Campbell installed a quartz mill on Silver Creek and the Jake Hubbard property was worked to some extent.

The dredge on Rhodes Creek was operated by Mr. Curren with an average crew of 15 men.

Musselshell Mining Company put down 27 test holes in a testing program on their claims in the Pierce district.

The Washington-Idaho Lime Products Company worked a crew of 40 men in the production of "Orofino Brand Cement". Some of the raw limerock was mined at the property of the Crystal Lime Company.

Some activity was noticeable on Cow Creek where the Crawford Gold Strike and placer ground is located.
ALDER CREEK MINING CO.
Office: 403 Court House, Duluth, Minn. Officers: Thos. Owens, Pres., Two Harbors, Minn.; Lyon H. Fowler, Sec., Duluth, Minn. Inc.: April 4, 1902. 

AMERICAN PLACER MINING CO., LTD.
Capital: 500,000 shares; par value $1; all shares issued. Property: 8 patented claims; Pierce. Ore: Placer gold. Remarks: Property under lease and bond to Gold Creek Placer Mining Co., Spokane, Wash.

COBRA MINING & MILLING CO.

CRAWFORD GOLD STRIKE (not incorporated)

CRYSTAL LIME COMPANY

INDEPENDENCE PLACER MINING CO., LTD.

J. & I. MINING CO.

MUSSELSHELL MINING COMPANY

OXFORD COPPER MINING CO., LTD.

PATTERSON MINES INC.

SEWELL LIME CO.
SILVER CREEK GOLD MINING CO.

WASHINGTON-IDAHO LIME PRODUCTS CO.

WESTERN METALS PRODUCTS CO.

NAME OF MINE  MINING DIST.  OWNER  P. O. ADDRESS
Aurora et al.  Pierce City  Franz Magnus  Orofino
Chloe  Pierce City  A. B. Rhude  Pierce
Collins  Pierce City  J. E. Collins  Pierce
Cow Creek  Pierce City  J. R. Crawford  Orofino
Deep Placer  Moose Creek  E. J. Hughes  Pierce
Dream, The  Pierce City  Fred Forsman  Pierce
Gold Dust Gr.  Pierce City  Chas. Rogers  Pierce
Gold Island  Pierce City  Lewis Pratt  Pierce
Granite et al.  Ruby Creek  P. A. Hughes  Bovill
Jericho  Burnt Creek  F. A. Losekamp  Elk River
K. H. C. et al.  Ruby Creek  K. Barkas  Elk River
Little Joe  Pierce City  Joseph Frank  Orofino
Little Mascot  Pierce City  Earl McHenry  Orofino
Lone Pine et al.  Pierce City  J. R. Crawford  Orofino
Ozark  Pierce City  Chas. Meyer  Greer
Oyama et al.  Pierce City  Agnes M. Kelly  Spokane
Rummel et al.  Pierce City  James Clark  Pierce
Russell Gr.  Pierce City  J. E. Rudersdorf  Pierce
Silver Creek Pl.  Pierce City  Gus Anderson  Pierce
Snake Creek Pl.  Pierce City  G. V. Friedman  Pierce
Trapper et al.  Pierce City  R. E. Willoughby  Pierce
Venus Placer  Burnt Creek  John Pearson  Dent
Vida Pl. et al.  Pierce City  J. H. Wells et al.  Pierce
Wendell Placer  Burnt Creek  Walter Wendell  Dent
Wonder  Pierce City  P. H. Sayles  Lapwai
Yukon et al.  Burnt Creek  Peter Skjarve  Deary

BIBLIOGRAPHY
See pages 92-98 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.†

MINING INDUSTRY OF IDAHO


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 mineral resources of the region about Orofino, Idaho, by A. L. Anderson: Idaho Bureau of Mines and Geology Pamphlet 34, 1930.**


CUSTER COUNTY

County Seat: Challis. Area: 4921 sq. miles. Population: 3162. Principal Industries: Mining, stock raising, particularly sheep and agriculture. Relief: High and mountainous, few level spots except at head waters of Salmon River. The county contains the headwaters of the Salmon River, Big and Little Lost Rivers. Transportation: A system of well kept state and federal highways serve all of the valleys. The only railroad transportation is the Mackay branch of the Union Pacific which terminates at Mackay. Mineral Resources: Silver, copper, gold, zinc, antimony, molybdenum, tungsten, graphite, bentonite and garnet.

History and Future

This county was the scene of much early day activity in both precious and base metal mining. At one time there were several smelters running in the county and the production of high-grade silver-lead and silver-copper ores made the county one of the principal mining districts of the State.

Review of Year's Operations

The American Dollar Mining & Milling Company employed three men in the rehabilitation of camp buildings and mill. 200 ft. of development work was accomplished under the supervision of Walter C. Green, manager.

Clayton Silver Mines Company was the largest producer in the county. With a crew of 30 men many additions were made to the mine and mill plant during the year. The new hydroelectric power plant equipped with pelton water wheel and 310 h.p. generator was completed. Pole and power line with 6,500 feet of pipe line was also constructed. The mill capacity was increased by a Traylor crusher, belt conveyor system, elevator and one additional flotation unit. At the mine a head frame and hoist house were constructed and a new 40 h.p. Junior Coeur d'Alene hoist and pumping equipment installed. The shaft was sunk to a new horizon with sump and skip pockets so the ore reserves could be developed at greater depth. Many thousand tons of ore are broken down in the mine ready to be milled at slight cost. C. A. Fay is in charge of operations.

The Ford Motor Company had a watchman at the Red Bird mine and did some maintenance and repair work only.

Property of the Greyhound Mining and Milling Company was taken over by the Gold Producers, Inc., under lease.
Leasers operated at the Ramshorn mine in the Bayhorse district and shipped some high-grade ore. 15 men were employed during the year.

Wm. A. Dunn employed a crew of men opening up properties held under lease on Custer Mountain. The properties consist of the Custer, Chas. Dickens, Lucky Boy and Continental.

Leasers worked the McFayden mine to some extent and annual labor was performed on other properties in the Yankee Fork district.

In the Loon Creek district considerable placer mining was carried on by CCC boys in their spare time. Reports from these activities nearly started a miniature gold rush.

The Twin Apex mine on Squaw Creek was being rehabilitated and put in shape for future production.

A deal was made on the Dixie Placer group of claims on Shell Creek in the Loon Creek section. Activity is expected on this property in the near future.

The Parker mine on Parker Mountain was inspected and sampled by Rexburg men who are interested in this property.

New York and Portland interests purchased the famous Livingston mine. Mr. Twyman, the owner, announced the deal was a cash sale but did not mention the purchase price. The new owners contemplate an extensive development program and will use diamond drills to determine the depth and quantity of the ore body.

Mackay Metals was worked by leasers who shipped several car loads but activity was stopped due to the pending sale of the property. G. M. Tomle holds an option with the Custer County Commissioners. This property is in the hands of J. Ray Weber, receiver. People living in the vicinity of Mackay are quite anxious to see this property resume operations.

Near Mackay three properties were developed and shipments made. These included the Horse Shoe Copper, by Whitney and Anderson; the Blue Bell, by Crocker and Judd; and Puzzler, by Louis Ausich.

Strunk and Sherry developed a molybdenum property at the head of Lost River on Little Fall Creek. Interested parties were in to look at the property.

Near Stanley experiments have been carried on by Ohio interests in the perfection of a portable suction dredging outfit. Some prospecting and development was also in evidence in this area.

Dr. Kirtley, with a crew of 6 men, worked the Grey Eagle property on Batchelor Mountain.

AETNA MINING & INVESTMENT CO., LTD.
Office: 321 Felt Bldg., Salt Lake City, Utah. Officers: O. J. Salisbury, Pres.; Leo Eaga, Sec., both of Salt Lake City, Utah. Inc.: Feb. 6, 1900. Capital: 10,000 shares; par value $5; all shares issued.

AMERICAN DOLLAR MINING & MILLING CO.
AZTEC MINING & MILLING CO.

CLAYTON SILVER MINES CO.

DORMO SILVER-LEAD MINES, INC.

FORD MOTOR CO.
Office: Dearborn, Mich. Officers: Edsel B. Ford, Pres.; B. J. Craig, Sec., both of Dearborn, Mich. Inc.: Filed in Idaho, Jan. 6, 1925. Capital: 1,000,000 shares; par value $100. Property: Red Bird and Silver Rule groups; 30 patented claims, including 5 millsites, Bay Horse dist.; Clayton; R. R. Mackay, 70 miles. Development: Principal development on Red Bird group consists of 4 tunnels; No. 1, 500 ft. long; No. 2, 1300 ft. long; No. 4, 510 ft. long; No. 9, 1680 ft. long, giving a total depth of 900 ft. on the vein; total development approximately 23,817 ft. Plant: Hand tramming and storage battery motor; shops and mining camp consisting of 11 buildings. Ore: Lead-silver. Men Employed: 1 watchman. Remarks: Maintenance and repair work only.

GEM STATE MINING CO. (not incorporated)

GREYHOUND MINING & MILLING CO., LTD.
Officers: Peter J. Smith, Pres., Comtux Stage, Boise. Inc.: Sept. 2, 1902. Capital: 1,500,000 shares; par value $1; 1,474,145 shares issued. Property: Greyhound group; 7 patented claims, Seafoam dist.; Stanley. Remarks: Contemplate leasing property as soon as the road is open.

HERMIT MINES OF IDAHO, INC.

IDAHO POWER & MINES CO.
IVANHOE MINING CO. (see Blaine County)

LOON CREEK HYDRAULIC PLACER MINING CO., LTD.

MACKAY METALS
Office: Mackay. Officers: A. J. Anderson, Pres., Vancouver, B. C.; F. A. Stacey, Sec.; J. Ray Weber, Mgr., both of Mackay. Inc.: June 4, 1928. Capital: 1,500,000 shares; par value $1; increased April 13, 1929, to 2,000,-000 shares, par value $1; 1,200,000 shares issued. Property: Empire Copper group; 19 patented, 23 unpatented claims, Alder Creek dist.; Mackay. Development: More than 21 miles of underground workings, the principal entries being the Cossack and Alberta tunnels; the Cossack is 1000 ft. below the Alberta tunnel; the principal shaft, which is in the Alberta tunnel, extends 350 ft. vertically to the 1000 ft. level. Plant: MINE: Air-driven hoist; 1500 cu. ft. Laidlaw-Dunn-Gordon and 1200 cu. ft. Nordberg compressor, both steam-driven; and an aerial tramway 16,300 ft. long connecting mine with railroad. MILL: 250-ton concentrator, consisting of fine grinding and flotation. Ore: Copper-silver-gold. Remarks: Report not filed for 1937. “Newspaper reports are to the effect that property is under option.”

McFADDEN MINES CORPORATION

PHEMSPACE MINES CO.

RAMSHORN MINES CO.

ROUGH CREEK PLACER MINING CO.
MINING INDUSTRY OF IDAHO

SALMON RIVER MINING CO.

STANLEY-FIVE BARS MINING CO.

TWIN APEX MINES CO.

WASHINGTON BASIN MINING & MILLING CO.

WESTERN STATES MINING, MILLING & EXPLORATION CO., LTD.

WHITE KNOB MINING CO.

YANKEE FORK PLACER CO., LTD.

NAME OF MINE | MINING DIST. | OWNER | P. O. ADDRESS
---|---|---|---
American et al. | Bay Horse | Ivie Bros. | Mackay
Alto Coppers | Alto | Hannah Donahue | Mackay
Andromeda et al. | Alder Creek | J. S. Taylor | Mackay
Annex et al. | Boulder | A. W. Walker | Mackay
Antler et al. | East Fork | Geo. Z. Blackmon | Obsidian
Apex No. 2 | Alto | N. B. Bauguess | Mackay
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See pages 92-93 for publisher's address, meaning of reference marks, and abbreviations.


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ELMORE COUNTY


History and Future

The county was a noted early day producer of gold and silver, both placer and lode. In common with most of the gold producing districts, interest in gold mining lagged with the extraction of the free gold and the district became dormant. The recent search for gold has given the mining districts new life and a profitable production.

Improved metallurgical methods and more efficient application of geology opens up an excellent future for this district. It is a favorable one for the prospector, operator and investor.
Review of Year's Operations

Cordova Mining Company, an Arizona corporation, operated in the Neil district reopening the Homestake-Hidden Treasure mine. With a crew of seven men the main adit of the Homestake has been opened for 515 ft. and other adits to a depth of 300 ft. The company reports 192 ft. of new development work was accomplished during the past year.

Business was stimulated at Mountain Home by the activity around Mountain City, Nevada. About 150 carloads of ore are loaded at this point for shipment to the smelter at Garfield, Utah. On return trips to the mine, the trucks are loaded with timber and supplies for mining operations.

Bob Mathews installed a three-quarter yard bucket dragline on placer ground near King Hill. Ted Long had charge of erecting the mining machinery.

Daley Consolidated Mines Co., operating in the Dixie district north of Mountain Home, opened up a drain tunnel for 660 ft. The property consists of 50 unpatented claims, owned by Utah interests.

There was very little activity near Pine. According to reports a new company is being perfected to reorganize the Gold King Mining Company and operate the Franklin property during the year 1938.

Activity in the Red Warrior district and around Rocky Bar was confined to assessment work, prospecting, sampling and other minor operations.

Elk Creek Spanish Town Mines Inc., Frank L. Stephan, Twin Falls, president, rehabilitated tunnels, rebuilt and cleaned ditches, tested ground, installed penstock and one hydraulic giant, with other preliminary work for an active production campaign next season. During the fall months a crew of 20 men was employed by this company, but only a few shipments have been made to cover payroll and other expense.

Some work was done on the Yuba River and on properties in other mining districts of Elmore County which the inspector did not have an opportunity to visit. Among these properties are: The Idaho Gold Chief Mining Company, Idaho Mines, Inc., Marsh Creek Mining Co., and many others.

The new road up the Boise River to Atlanta is built on water grade and assures the miners a longer season in which to operate.

Tentative arrangements between the Last Chance Mining Company and eastern interests were reported to have fallen through so the company is operating on its own account. The road up Quartz Creek to the Monarch Mine was widened and put in shape for the transportation of ore to the company's 50-ton mill. The power shovel used in this work will load the dump trucks with ore for the mill instead of transferring the mill feed by tram.

Leasing operations are in progress at the mine under the direction of Matt Hovick, while Marcus White is superintendent of the mill. C. F. Phippen, Atlanta, is president of the company. 200 ft. of new development work was reported at the property during the year.

The Rochester property, formerly operated by the St. Joe Lead Company, was taken over by the Sawtooth Company in the year 1936 and later absorbed by the Talache Mines, Incorporated. During the past year two small compressors were installed to furnish air for drilling machines, pipe lines relaid, and hydroelectric power plant put in operation and the mine rehabilitated for further development and production. An average crew of 18 men on the company payroll and several leasers were employed during the fall and winter months of 1937.

The Winner Group, owned by Earl F. Money, extended the workings a distance of 135 ft., while 50 ft. of new development work was reported by Dollie M. Money, owner of the Good Luck Group.

Activity in the Black Warrior district during the year 1937 indicates profitable operations for the future.

Gold Production Company, 617 First National Bank Building, Boise, had a crew of 18 men sinking test pits on their property. New equipment added during the year includes a truck, derrick, pumps and a gold separation machine.
At the Overlook Mine a cyanide plant was installed to work over about 1000 tons of dump tailings. Results obtained in this operation were very satisfactory.

Floyd Bailey operated a 3-stamp mill where Wilson Creek flows into the Black Warrior.

The Woodland brothers operated a Chilean Ball Mill at the Rico property on West Warrior. The mine is opened up by two tunnels, 150 ft. and 350 ft. respectively.

John and Joe May developed some claims on Eagle Creek.

Walter Denton and Max Magnussen had a 1-stamp mill, run by a gas engine, in operation on Grouse Creek.

Hi-Bar Mining Company, located in the Middle Boise district, was operated by C. C. Schorzman, president, Boise, with a crew of 5 men.

Sheep Creek Mining Corporation, John J. Kinsella, president and manager, cleaned out ditches and rebuilt about 2½ miles of flume. The property consists of 3 unpatented placer mining claims near Twin Springs.

Prospecting, testing and annual labor was performed by miners in the Roaring River country and on the bars of the South Fork of the Boise River.

By a ruling of years standing of the Reclamation Department, all land above Arrow Rock Dam on the Middle Fork of the Boise river to a point above Alexander Flats, has been withdrawn from entry. This ruling does not effect locations made prior to the Arrow Rock reclamation project.

APEX GOLD MINING CO.

ATLANTA GOLD MINE CORPORATION

BLACKSTONE MINING CO., LTD.

BLACK WARRIOR MINES, INC.

CANADA GOLD MINES, INC.
ELMORE COUNTY 161

CONSOLIDATED MINES SYNDICATE

CORDOVA MINING CO.

DALEY CONSOLIDATED MINES CO.

ELK CREEK SPANISH TOWN MINES, INC.

FIRST SECURITY MINING CO. (commonlaw trust)

FRANKLIN CONSOLIDATED GOLD MINES CO.

GOOD LUCK GROUP
Dollie M. Money, owner. Property: 3 unpatented claims; Middle Boise dist.; Atlanta. Development: Approximate total development, 200 ft. Remarks: 50 ft. of development work during the year.

HI-BAR MINING COMPANY

HYDRO MINING & EXPLORATION CORPORATION
IDAHO GOLD CHIEF MINING CO.

IDAHO MINES, INC.

IDAHO PACIFIC MINES, INC.

LAST CHANCE MINING CO.

MARSH CREEK MINING CO.
Officers: Roy Y. Bogard, Pres.-Mgr.; Curtis F. Pike, Sec., both of Boise. Inc.: July 9, 1921. Capital: 1,000,000 shares; par value $1; 39,625 shares issued. Property: 2 unpatented claims on Marsh Creek, Bear Creek dist.; Featherville. Remarks: Assessment work only.

PHELPS BROS. MINING CO.

MINERALS EXPLORATION COMPANY

GEORGE F. ROTH CO.
Office: 30 N. Plymouth Ave., Rochester, N. Y. Officers: Walter J. Duffy, Sec., 30 N. Plymouth Ave., Rochester, N. Y.; George E. Amos, Agt., Mayfield. Inc.: June 17, 1909. Capital: 2500 shares; par value $100; 2102 shares issued. Property: Homestake group; 9 patented, 3 unpatented claims, Neal dist. Ore: Gold. Remarks: There have been no changes in the workings of the mine, except as to exploration and development work done by the Cordova Mining Company under option agreement, which expired June 1, 1937.

SHEEP CREEK MINING CORPORATION
ELMORE COUNTY

STANLEY-FIVE BARS MINING CO.
Office: Boise. Officers: O. O. Haga, Pres.; M. Hinchy, 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.

ST. JOSEPH LEAD CO.
Office: 250 Park Ave., New York City. Officers: Clinton H. Crane, Pres.; H. B. McGown, Sec., both of New York City; Frank H. Skeels, Mgr., Atlanta. Inc.: Filed in Idaho, April 3, 1929. Capital: 2,000,000 shares; par value $10; June 8, 1931, increased to 2,500,000 shares; 1,955,713.85 shares issued. Property: Boise, Rochester and Atlanta groups; 10 patented, 19 unpatented claims, 3 of which are held partly under lease and option, Middle Boise dist.; Atlanta. Development: By 9 tunnels, the principal ones being No. 6 and No. 9; total development 27,350 ft. Plant: MINE: 987 cu. ft. electrically driven I-R compressor; 2 Mancha storage-battery locomotives; complete mining equipment. MILL: 200-ton amalgamation and flotation. POWER: 125 h. p. hydroelectric plant; 360 h. p. Diesel engine driving a 375 kva generator. Ore: Gold-silver. Remarks: Geo. O. Brigden, assistant secretary, reports, "Atlanta property sold to the Sawtooth Company, Boise, May 31, 1936."

WINNER GROUP

YAQUI JACK MINING COMPANY

NAME OF MINE | MINING DIST. | OWNER | P. O. ADDRESS
--- | --- | --- | ---
Ada Elmore Gr. | Bear Creek | Grant McCargo | Pittsburgh, Pa.
Alice et al. | Bear Creek | R. Y. Bogard | Burns, Oregon
Alma Placer Gr. | Bear Creek | R. A. Peck | Rocky Bar
April Fool | Middle Boise | J. C. Birdwell | Atlanta
Alladon et al. | Middle Boise | E. C. Gladieux | Boise
Badger No. 1 | Neal | Chas. Fell | R. D. 5 Boise
Badger et al. | Neal | John T. Hammad | R. D. 5 Boise
Benton Gr. | Middle Boise | G. L. Bixby Est. | Atlanta
Big Five et al. | Bear Creek | Frank Bayhouse | Boise
Big Four et al. | Bear Creek | R. Winters Est. | Boise
Big Lode | Middle Boise | E. B. Smith | Boise
Black Ribbon | Bear Creek | John Howard | Pine, Idaho
Black Warrior | Bear Creek | C. H. Allison | Beverly Hills, Calif.
Boise Bar | Middle Boise | Thomas Walker | Atlanta
Bonnie Annis Gr. | Pine Grove | B. F. Skelton | Pine
Brooklin et al. | Bear Creek | Louise S. Allen | Rocky Bar
Bear Creek Pl. | Bear Creek | Wm. Nixon | Rocky Bar
Cabin Claim | Middle Boise | Chester W. Rose | Glenns Ferry
Capital et al. | Middle Boise | John Bell | Atlanta
Chiefban Con. | Bear Creek | W. M. Caldwell | Mountain Home
Edna et al. | Bear Creek | E. C. Helfrich | Mountain Home
Forest King et al. | Bear Creek | Mrs. E. Tregonning | Boise
Fourth of July | Middle Boise | Grant Wilson | Atlanta
Gold King Gr. | Middle Boise | Harry Teskey | Atlanta
Granby et al. | Middle Boise | G. L. Bixby Est. | Atlanta
Gray Warrior | Middle Boise | Austin Lynch | Atlanta
### TABLE OF MINES AND OWNERS IN IDAHO

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<td>C. H. Shepherd et al.</td>
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<td>May Larson</td>
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<td>Bear Creek</td>
<td>Mrs. McPhearson</td>
<td>Los Angeles, Calif.</td>
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<td>Carl Boppart</td>
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<td>Wide West Gr.</td>
<td>Bear Creek</td>
<td>John J. Allen</td>
<td>109 Montague St., Brooklyn, N. Y.</td>
</tr>
</tbody>
</table>

### BIBLIOGRAPHY

See pages 92-93 for publisher's address, meaning of reference marks, and abbreviations.


Atlanta gold district, by R. N. Bell: Eng. and Min. Jour., vol. 86, pp. 176-177, July 25, 1908.§
GEM COUNTY


Mineralogy of some black sands from Idaho, with a description of the methods used for their study, by E. V. Shannon: U. S. Nat. Mus. Proc., vol. 60, art. 3, pp. 1-33, 1921.‡


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 92-93 for publisher's address, meaning of reference marks, and abbreviations.


GEM COUNTY


History and Future

The Pearl district was once a famous gold producer; this and a few outlying sections have seen considerable activity in the past. Much base ore amenable to modern methods of concentration is reported in the old properties.

This section should be given more attention by the present day operators.
Review of Year's Operations

Considerable prospecting was done in the Pearl district during the year and several very likely showings were uncovered. Annual labor was performed on several claims, which rehabilitation of old producers and development work resulted in a few small shipments being made to the smelters.

The famous Lincoln mine, a large producer for many years, has been in litigation for some time.

Some coal was mined on the surface near Montour and delivered by truck to local consumers. Henry Reims of Payette is owner. Joe Silkett is in charge at the mine.

Merton Smith extended the working tunnel at the Checkmate. This property was a former producer and should merit the expenditure of capital in its examination and further development.

The King Tut group was developed to some extent by Babcock and Murphy of Boise. It is planned to employ a crew of 6 men during the winter at this property.

K. H. Swanholm, with a crew of 3 men, extended the crosscut tunnel on the Gold Digger Group, a distance of 20 feet.

H. S. Honstead did considerable work on his holdings in this area.

Old Liberty Mining Company developed the property by driving a raise during the year. The mine is near Sweet.

A dry land dredge was moved from Baker, Oregon, to the property of Harve A. Gatfield, near Montour.

FELIX MINING CO.

GRANITE STATE CONSOLIDATED MINES CO.

THE INTERNATIONAL ENGINEERS & MFG., LTD.

THE INTERNATIONAL ORE MILLING & MINING CO.

LINCOLN MINE OPERATING CO.
NEW LIBERTY MINING CO.

OJUS MINING CO.

OLD LIBERTY MINING CO.

YELLOW GOLD PLACER CO.

NAME OF MINE MINING DIST. OWNER P. O. ADDRESS
Apache West View Jas. H. Hawley Boise
Black Jack West Mountain Edgar McPadden Nampa
Black Pearl West View H. W. Dorman Est. Meridian
Burton Bell West View John Ackley Boise
Checkmate West View E. K. Hayes Emmett
Dark Horse West View Ed H. Peasley Boise
Dewey West View E. H. Dewey Nampa
Gem West View H. W. Dorman Est. Meridian
Golden Age West View Lot Feilham Emmett
IXL West View H. W. Dorman Est. Meridian
Kentuck West View H. W. Dorman Est. Meridian
King Gr. West View J. G. H. Graveley Boise
King Tut Gr. West View Warren L. Mace Boise
McCarty West View Scott Anderson Boise
Middleman West View J. C. Johnson Boise
Morning Glory West View E. J. Thorpe Pearl
Oxford West View J. C. Dunbar Pearl
Silver Wreath West View Fremont Wood Boise
Virginia Mines West View G. L. Loope Seattle, Wash.
Wolverine West View H. B. Williams Portland, Ore.

BIBLIOGRAPHY
See pages 92-93 for publisher's address, meaning of reference marks, and abbreviations.


GOODING COUNTY

Placer gold, which is found in the gravel bars and sand along the Snake River, constitutes the only mineral resources of this county. These deposits are worked in a limited manner, and generally return the operator a fair profit on his labor.

NAME OF MINE  MINING DIST.  OWNER  P. O. ADDRESS
Big Body Placer     Snake River  John Criswell  Clear Lake
Black Butte Placer  Snake River  A. S. Madalena  Clear Lake
Boulder Hill Placer Snake River  Charles N. Ingersoll  Bliss
Brown Placer       Snake River  C. E. Jenkins  Hagerman
Zeolyte Gr.         Unorganized  Geo. H. Chaffin  Gooding

BIBLIOGRAPHY
See Snake River Gold under General Biography

IDAHO COUNTY

County Seat: Grangeville. Area: 8539 sq. miles. Population: 10,107. Principal Industries: Agriculture, stockraising and mining. Relief: With the exception of the high table land known as Camas Prairie, the county is of rugged mountains extending from the Snake River on the west to the Continental divide on the east. Rivers: South fork of the Clearwater, Salmon and Snake. Transportation: The western part of the county is served by a system of well maintained state and county roads. A highway up the south fork of the Clearwater River serves the Elk City district. That portion south of the Salmon River is served by the McCall-Edwardsburg forest highway. The balance of the county has very little transportation facilities but is being developed fast.

The Stites and Grangeville branches owned jointly by the Northern Pacific and Union Pacific railroads are the only railroads. These serve the northern and Camas Prairie portion of the county. Mineral Resources: Gold, silver, copper, lead, zinc, antimony, tungsten, asbestos, talc, mica and molybdenum.

History and Future

During the early days of gold mining this county was one of the most productive in the State. Due to the inability of the early operators to handle base ore and the terrific handicap of lack of transportation facilities, mining became dormant throughout the county. Modern metallurgical process, new highways and truck transportation has given new life to these mining communities.

This county contains one of the largest and most favorable undeveloped mining districts in the United States.

One of the greatest opportunities presented today to the prospector, operator and investor is in the tremendous development which is due to take place in this region.

More than 1000 men were actively engaged in mining within the confines of Idaho County during the past year.
Salmon River District

The American Rand Mines Co., located at Pollock, carried on an extensive sampling campaign during the year. A pilot mill was constructed and machinery installed for a special process of recovery. The operation is of interest and may prove conclusively the dyke material of this region can be exploited at a margin of profit. Other claims have been taken up, organizations perfected and we look forward to a great deal of activity in this area if present operations meet with success.

The Salmon River, from the mouth of French Creek to Box Canyon below Whitebird, had the usual quota of placer miners in search of the yellow metal. Every kind of contraption was in use from modern power shovel and washing plants to the crude rocker and screens used by individuals in skim digging.

The B. R. & R. Co., and the McKinley Gold Mining Company, located at Lucile, took advantage of the moratorium on assessment work, and as a result of this moratorium very little work was done on lode properties in this area.

The Liberty mine, also known as the "Big 3", was worked to some extent by Bisbee and Thornton. The property is located about three miles up the river from the mouth of French Creek.

Butcher Bar was worked by Lewiston interests.

Placer mining in the vicinity of Slate Creek was performed by the Automotive Placer Company with a power shovel and mobile washing plant.

The Triangle Construction Company had some equipment in this locality for a time. They moved in from a placer operation on the Snake River, near Grandview, and from there to a road construction job.

The Gold Eagle Dredging Company operated the Horseshoe Bar, eight miles from Whitebird. It is reported that this company has leased the Taylor Bar in the same vicinity for a period of six years. Albert Manning of Spokane, Washington, is president, and L. L. Ruthruff, Orofino, Idaho, is secretary.

Ten Mile District

The Lone Pine Group, at Golden, owned and operated by F. O. Miller of Clarkston, Washington, was operated at capacity with a crew of 25 men. 200 ft. of development work was reported in addition to production activity.

A crew of four men, under the management of L. L. Wartea, Grangeville, opened up the old workings of the Winstrom Group. $400.00 was spent in this way and in addition the road was considerably improved.

The Clearwater Mining Company finished construction of a modern camp, 20-ton pilot mill, power plant and with a crew of 5 men accomplished 340 ft. of development work during the year.

The Idaho Corporation holdings were opened up on several horizons and worthy of further development. Frederick E. Snook, Golden, is president and manager.

A shaft was sunk at the Black Bird mine. This work was done by lesers.

S. D. Alexander and associates of Tacoma, Washington, and San Francisco, California, are operating on the South Fork of the Clearwater river. The plant consists of a two-yard drag line with washing plant mounted on a barge and operated by Diesel power. The initial expenditure is said to have been about $75,000.

The New York property was reported to have made a rich strike and to have worked the property at a fair margin of profit.

The Una mine carried on an extensive development program under the supervision of Ralston McCaig, manager.

The Newsome Creek Mining Company of California installed a dredge on Newsome Creek at a cost of $80,000. L. N. Ellis is superintendent of the new enterprise.
Other activity was noticed at the Key, Tippie and Moose Creek placers, and at several lode properties including the Buffalo, Imogene, Montana, Center Star, Four Mile and others.

**Elk River District**

It has been a good many years since there has been as much activity in the mining districts of Idaho County, and the Elk River area was no exception. Not only was work carried on throughout the past winter, but it was early in the spring that mining equipment was on the move and engineers arrived at Elk City to gain entrance to the hills for mining exploits.

Mt. Vernon Gold Mining Company, who have operated a two-foot all-steel pontoon dredge on placer ground in Deadwood Gulch the past few years, finished up and moved the outfit to the Little Slate Creek country. Twelve men were employed under the supervision of Irving White. The boat is owned by D. E. Henderson, Mt. Vernon, Washington, and J. M. Perry, Yakima, Washington.

The Cal-Idaho, a hydraulic placer, was worked by James Green and son of Spokane, Washington.

The “Black Lady”, formerly owned by the Pilot Knob Gold Corporation, was reorganized and an extensive development program was carried on under the supervision of Frank Wills. The property is equipped with a mill, cyanide plant and mine machinery for all present needs.

The Bender Engineering Company, Seattle, Washington, is setting up a custom mill at Elk City which will provide service for numerous smaller mines of the district. An opportunity of this kind will, no doubt, be seized upon by the producers and bring added prosperity to this region.

C. Phillips and Associates of Portland, Oregon, moved in placer equipment to operate the Scuyler Simmons property on Red Horse Creek. The machinery consists of a dragline, dipper shovel, bulldozer and washing plant.

The Massam Group on American River was taken over by Portland interests and developed to some extent.

Considerable development work was done at the Sunnyside Group of claims on Providence Creek. Road building and a sinking program was carried on during the year.

The Gold Point on Red River finished construction of a mill at the mouth of Relief Creek, built roads, extended tunnels and operated during the summer months.

The Mineral Zone, inactive for many years, was reported to have opened up again. This property was operated a good many years ago by G. L. Baskett, formerly a druggist of Elk City. The new company is known as the Best Chance Gold Mines Corporation.

The Dixie Placer, located near Dixie, enjoyed another successful season. This is a power shovel and mobile washing plant.

The Madre d’Oro was developed by a small crew.

Elk City Gold Mines had a crew of men at their property six miles northwest of Elk City. The property is well equipped and a development program was carried out.

The Mary K., (Black Pine) Mother Lode, Mountain Boy and Almance were other properties that saw some activity during the year.

**Florence District**

Granite Creek Dredging Company operated on the Egloff property with a crew of 16 men on a two-shift basis. The company has a complete camp and report a successful season with the shovel and washing plant they moved in from the Boise Basin.

Otto Egloff put considerable yardage through a small mill with good results.

Hinkson & Bishop restaked some claims and performed annual labor on their holdings.
The Gold Cross Mining Company was developed to some extent by Ed Heintz, Archie Adley and associates.

A small pilot mill was erected on the W. A. Paul property and annual assessment work was performed.

Many promising properties in this area are worthy of attention by scouts and engineers. These holdings are dormant due to the lack of finance for their development.

**Dixie District**

The Idaho Newsome Mining and Milling Co., Inc., operated with a crew of 12 men. A mill was erected in '37, machinery installed and three miles of truck road completed. Considerable other work was done in the building of trails, three miles of caterpillar road, open cuts, clearing of land, gardening, 2000 ft. of flume and lighting plants for camp and mill.

The Dixie Comstock Gold Mining Company, employed a crew of six men improving roads, building cabins and erecting two fire tanks.

The Bunker Hill & Sullivan finished construction of a 25-ton pilot mill and developed the Mammoth property with a crew of 35 men. Ed Kavern is in direct charge. It is reported that this company is taking over the Dixie Dyke Group, owned and operated by the Robinson Brothers. If development warrants new machinery will be added and the capacity of all holdings in this county enlarged.

Gold Master Consolidated Mining Company carried on an extensive development program under the supervision of Roy C. Crocker. 762 ft. of tunnel and raise work was completed. It was reported that 22,000 tons of $16 ore has been blocked out. Plans for the future are for the further development of the mine and the construction of a mill. The property is located near Dixie Meadows, about seven miles from Dixie Ranger Station.

Loyalty Mines, Inc., report 68 ft. of development work during the year.

The American Gold Mining Company scheduled an active development program with enough ore on hand to run the 15-ton mill at capacity for some time.

The "L & L", or Louis Larson property, was active according to E. G. Wagner. Seven men were employed under direction of Prof. Schotts of Pullman, Washington, installing machinery and in the development work.

The War Eagle worked at intervals and annual labor was performed at several other properties in this area.

**Burgdorf-Marshall Lake District**

This district was the scene of extensive activity this year and is considered as one of the best gold camps in the state. With the completion of the Salmon River road this area will be more accessible during the winter months and encourage continuous operations.

The Golden Anchor, operated by the United Verde, an Arizona corporation, with a crew of 41 men was second in the production of gold by lode mines in the state. 2310 ft. of development work was accomplished during the year.

The Gold Run Mining Company established camps, built roads and accomplished considerable development work. The company plans to use the Sherman Howe mill. Sixteen men were employed under supervision of Daniel Flotre, manager.

The Goodenough property, idle for 20 years, was leased to Cornelius Meyers and E. M. Burns of Portland, Oregon. An extensive rehabilitation program was carried on including road building and development. This property has merit and should join the producers of this area during the year 1938.

Hinkson & Bishop developed their holdings and report ore of milling grade has been blocked out with 100 ft. of drift on vein and raises.

Idaho Klondike Mining Co., an underground placer which taps an old river channel, was worked by Mark Evans with a crew of three men. The property is located on California Creek.
The War Eagle was developed to some extent. Assessment work was performed at many properties in this area and the outlook for added production from the Burgdorf-Marshall Lake district during the year 1938 is very encouraging.

Dixie Placer enjoyed a very successful season in the recovery of gold from the property near Dixie.

Warren District

The Warren Dredging Company, operating in Warren Meadows with a crew of 10 men, enjoyed a very successful year.

The Baumhoff, Fisher and McDowell boat, which was formerly known as the Anderson dredge, worked its way down stream to be in position for high bar operations during the year 1938.

There is enough available yardage to guarantee the profitable operation of these two boats for several years.

The Unity, with a crew of 15 men, was the largest lode property in this district. Under the supervision of G. T. Eyman a production and development program was carried on. This company furnishes electric power to the community.

W. R. McDowell erected a custom mill at the Rescue and reported a rich strike of gold ore as a result of development on some newly acquired property. Five men were employed.

The Bear Track, owned by George Ippes, was the scene of considerable activity.

"Red" Fiske and Bob Newcomb made several shipments from their holdings on Warren summit to the Rescue mill.

Orogrande District

Orogrande-Frisco Gold Mines, Inc., J. R. Moore, president, 728 Sprague Ave., Spokane, Washington, is the largest open pit mine in Idaho. A mineralized dyke extends across the property and the company reports same to be 5000 ft. long, 900 ft. wide and developed to a depth of 500 ft., carrying good values in gold. The plant is equipped with crushers, jigs, filter tanks and a complete slime circuit with agitators and tanks. Zinc dust and solutions are used in the recovery with satisfactory returns. Approximately 7000 ft. of diamond drilling was completed during the year 1937 to determine the value and depth of the mineralization. The company claims to have made satisfactory discoveries at depth. An average crew of 50 men is employed.

The Lucky Five Mining Company, operating on Relief Creek, installed machinery and power unit. A crew of six men to a shift handle approximately 100 cubic yards of material an hour.

Una Mine Company carried on an extensive development program.

Gnome Gold Mining Company operated their property with a crew of 25 men through the first half of the year.

The Penman was idle due to some problem not known to this department. With further development this mine should become a substantial producer.

Some activity was reported at the Pasadena on Ditch Creek and at the Jack Montgomery mine on Elk Summit.

Grangeville Gold Corporation, in Deadwood Gulch, moved machinery from the Imogene mine on Newsome Creek, installed a mill and carried on a rehabilitation and development program at the mine. E. M. Spedden of Elk City is superintendent.

The tailings of the Jumbo mine at Buffalo Hump were worked over. Road construction and improvements may prove an incentive in bringing some of these old properties into production.

Edwardsburg District

Many claim holders in this district took advantage of the moratorium on assessment work and filed intentions to hold mining property.
Golden Hand Inc., developed the mine with a crew of six men. It is planned to increase the capacity of the mill. C. W. Mason, Warren, is president and Harry M. Smith, Tacoma, Washington, secretary.

The Snowshoe mine, located on Crooked Creek, is owned by the Pierce Metals Development Company. The mine was on a production basis with supplies and concentrates packed over a trail by mule trains. Much credit is due the men in charge for developing a promising property under adverse conditions.

Metalore mine on Profile Gap made several shipments of high-grade galena. Four men were employed at this property by Dr. Adix and Gamble. Placer miners worked claims on Smith and Big Creeks. Other activity was widely scattered from Yellow Pine to Ramey Ridge, Sheep Eater Mountain, Thunder Mountain and the Chamberlain Basin.

This section has wonderful possibilities of becoming a permanent gold producing area as soon as the development stage is passed and better transportation facilities are had from Big Creek headquarters. This distributing center is reached by roads and airplane.

**BEST CHANCE GOLD MINES CORPORATION**

**Office:** Elk City. **Officers:** Charles Harr, Pres.; Walter Harr, Sec., both of Lewiston. **Inc.:** May 12, 1936. **Capital:** 3,000,000 shares; par value 1c; 94,000 shares issued. **Property:** Lease and bond on Mineral Zone group. **Development:** Approximate total development, 3000 ft. **Ore:** Gold. **Men Employed:** Average, 3. **Remarks:** General preparation for a 20-ton mill to be constructed.

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

**Office:** 311 Hyde Bldg., Spokane, Wash. **Officers:** S. S. Durant, Pres.; S. S. Bassett, Sec., both of Spokane, Wash. **Inc.:** June 25, 1930. **Capital:** 100,000 shares; par value $1; 52,668 shares issued. **Property:** 2 unpatented claims, Simpson dist.; Lucile. **Ore:** Gold. **Remarks:** Idle.

**BUFFALO-IDAHO MINING COMPANY**

**Office:** Buffalo, N. Y. **Officers:** Ray R. Becker, Pres., 185 N. Forest Road, Williamsonville, N. Y.; Donald K. Templeton, Sec., 1303 Liberty Bank Bldg., Buffalo, N. Y.; J. A. Fields, Mgr., Golden. **Inc.:** Nov. 7, 1927. Charter forfeited Nov. 30, 1937. **Capital:** 250,000 shares; par value $1; Apr. 5, 1937, increased to 375,000 shares; 202,895 shares issued. **Property:** 11 unpatented claims, Ten Mile dist.; Golden. **Development:** Approximate total development, 1000 ft. **Plant:** Complete mining equipment. **MILL:** 10-ton stamp, simple amalgamation. **Ore:** Gold. **Men Employed:** 1 watchman. **Remarks:** Constructed 64 ft. 3"x3' flume during the year.

**CAL-IDAHO MINING CO.**

**Office:** 403 Seventh St., Huntington Beach, Calif. **Officers:** Edward H. Cookingham, Pres., Bremerton, Wash.; M. G. Jones, Sec., Huntington Beach, Calif.; Thomas Berry, Mgr.; Elk City. **Inc.:** Not filed in Idaho. **Capital:** 250,000 shares; par value $1; all shares issued. **Property:** Gold Hill placer; 7 patented claims, 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, 4. **Remarks:** Constructed 64 ft. 3"x3' flume during the year.

**CENTRAL IDAHO MINING & MILLING CO.**

**Office:** P. O. Box 318, Seattle, Wash. **Officers:** C. G. Smith, Pres.; S. F. Chadwick, Sec., both of Seattle; B. Augur, Grangeville. **Inc.:** Nov. 12, 1929. **Capital:** 1,000,000 shares; par value $1; Aug. 15, 1933, increased to 1,250,000 shares; Sept. 17, 1934, increased to 1,000,000 shares; 831,506 shares issued. **Plant:** MINE: Gas-driven 250 cu. ft. Sullivan compressor; sawmill, complete mining equipment and camp. **MILL:** 25-ton flotation concentrator. **POWER:** 150 kva hydroelectric. **Ore:** Gold-silver-copper. **Remarks:** Operations taken over by Central Idaho Syndicate.
MINING INDUSTRY OF IDAHO

CENTRAL IDAHO SYNDICATE

CHANNEL GOLD CORPORATION

CLEARWATER MINING CO.

CONSOLIDATED MINES SYNDICATE
(See Boise, Camas and Elmore counties)
Property: Blue Jacket group; 7 patented claims, Crooks Corral dist.; Lucile. Development: By 3 tunnels, the principal one being 868 ft. long; approximate total development, 3234 ft. Remarks: Idle.

CONSOLIDATED RAPID RIVER MINING & MILLING CO., LTD.

COPPER QUEEN MINING CO., INC.

CORNER STONE MINING & MILLING CO.

CROOKS CORRAL MINES, LTD.

DAVIS MINING CO.
IDAHO COUNTY

DIATOM PRODUCTS CO.

DIXIE COMSTOCK GOLD MINING CO.

EMPIRE METALS CO.

ESPERANZA GOLD DIKES MINING CORPORATION

FRENCH CREEK GOLD MINING & MILLING CO.

GNEOME GOLD MINING CO.

GOLD Bug MINING CO.

GOLD CROSS MINING CO.
GOLD MASTER CONSOLIDATED MINING CO., INC.

GOLD POINT MINES, INC.

GOLDEN ANCHOR MINING CO.

GOLDEN HAND, INC.

THE GOLDEN HAND EXTENSION MINING CO.

GOODENOUGH UNITED MINING & MILLING CO., LTD.
GRANGEVILLE GOLD CORPORATION

GRANITE CREEK DREDGING COMPANY (See Boise County)

GREEN-HILL MINING CORPORATION
Officers: Roy Green, Pres.; L. C. Jackson, Sec.; Walter Hovey Hill, Mgr., all of Grangeville. Inc.: Nov. 18, 1936. Capital: 2,000,000 shares; par value 1c; 1,060,000 shares issued. Property: 6 unpatented claims. Ore: Gold. Remarks: Exploration on surface and cleaning out old tunnel.

HOPE GROUP

THE IDAHO CORPORATION

IDAHO GOLD DREDGING CO.

IDAHO GOLDFIELDS, INC.

IDAHO KLONDIKE MINING CO.
IDAHO NEWSTONE MINING & MILLING CO., INC.
Office: 504 Title Insurance Bldg., Seattle, Wash. Officers: J. S. Devenny, Pres.; Paul S. Bubuar, Sec.; Chas. J. Durrwachter, Mgr., all of Seattle, Wash. Inc.: March 23, 1936. Capital: 100,000 shares; par value 50c; increased capital stock March 22, 1937, to 500,000 shares; shares issued, 465,421. Property: 26 unpatented claims and 40 acres patented placer ground. Development: Principal tunnels: No. 1, 150 ft. long; No. 2, 40 ft. long; No. 3, 180 ft. long; No. 5, 100 ft. long. Ore: Gold. Men Employed: Average, 12. Plant: MINE: 1 Sullivan 8x10 compressor; 1 span tram-line across Salmon 1150 ft.; 1 45 h. p. caterpillar engine; 1 125 h. p. full diesel engine, 1 portable compressor. MILL: 40-ton Lane Chili, 1 set Faust rolls, 1 Gates Gyratory, 1 jaw crusher, 1 Faust concentrating table, 1 Wilfley table. Remarks: Mill erected in 1937, and machinery installed. Built 3 miles of truck road and 3 miles of caterpillar road which is intended to be finished into a truck road.

JUMBO MINING & MILLING CO., LTD.

KEY PLACERS CORPORATION

LONE PINE GROUP

LOYALTY MINES, INC.

LUCKY DAY & BEMIS LOOKOUT GROUPS

LUCKY FIVE MINING CO.

MAMMOTH MINE CORPORATION
MAMMOTH MINING & DEVELOPMENT CO.

THE MARY K. MINES, INC.

NORTH HILL MINING CO.

OROGRAmDE-FRISCO GOLD MINES, INC.

OROGRAmDE GOLD MINING CO.

PACIFIC CONSOLIDATED MINES, INC.

PIERCE METALS DEVELOPMENT CO.
PLANT OF OROGRANDE-FRISCO GOLD MINES, INC.,
Orogrande, Idaho

At great expense due to a complicated flow-sheet this company is pioneering the field in the exploitation of the low-grade dykes of central Idaho. With continued success, it is our opinion that this operation is the forerunner of many similar mining ventures that may assume large proportions.
RED FIR MINING CORPORATION

REEDS CREEK GOLD MINES CO.

ROBINSON MINING & MILLING COMPANY

SALMON RIVER EXPLORATION CO.

SALMON RIVER MINERS, INC.

SALMON RIVER MINING & MILLING CO.

SALMON RIVER PLACER COMPANY
Office: 604 Eastman Bldg., Boise. Officers: J. J. Oberbillig, Pres.-Mgr.; Howard Day, Sec., both of Boise. Inc.: October 17, 1935. Capital: 3,000,000 shares; par value 5c; all shares issued. Property: 12 claims, 641 acres; 61 acres patented, 580 acres unpatented, Warren dist.; Warren. Ore: Placer gold. Men Employed: Average, 14. Remarks: This property is located where the South Fork of the Salmon joins the main Salmon River. During the year this company put in over 100 tons of freight, in 4,250-pound loads, carried by a tri-motored plane of the Johnson Flying Service. This is more freight transported by airplane than to any other mining operation in the United States. One drag-line donkey, driven by a Ford V-8 engine is in operation with pumps and washing plant, handling 400 yards daily. When a 300 k. w. generator, driven by a low pressure power wheel is installed, three other donkey drag-line units (which are on the ground) will be put into operation.

SECESH DREDGING MINING & MILLING CO.
SENTINEL MINES CORPORATION
Officers: E. G. Braddock, Pres.; W. Melvin Jensen, Sec., both of Lewiston.

SHERMAN HOWE MINING CO.

SLATE CREEK GOLD MINING CO.

SPRING BARR PLACER CO.

SULTAN GOLD MINING CO., INC.

TIAWAKA MINES, INC.

UNA MINE CO.

UNITY GOLD PRODUCTION CO.

WAR EAGLE GOLD MINING & MILLING CO.
WINSTROM GROUP

<table>
<thead>
<tr>
<th>NAME OF MINE</th>
<th>MINING DIST.</th>
<th>OWNER</th>
<th>P. O. ADDRESS</th>
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<td>Alligator Gr.</td>
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NAME OF MINE | MINING DIST. | OWNER | P. O. ADDRESS
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Wonder Gr. | Ten Mile | Dr. W. D. Cowan | Grangeville
Yale | Robbins | J. M. Shissler | Grangeville
Yankee Boy | Robbins | D. A. Sasenbery | Grangeville
Yankee Girl | Robbins | P. Klinkhammer | Orogrande

**BIBLIOGRAPHY**

See pages 92-93 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.‡


KOOTENAI COUNTY

Mineralogy of some black sands from Idaho, with a description of the methods used for their study, by E. V. Shannon: U. S. Nat. Mus. Proc., vol. 60, art. 3, pp. 1-33, 1921.‡

KOOTENAI COUNTY

Principal Industries: Lumbering, dairying, farming, mining. Transportation: Three state highways, a well maintained system of county roads, six railroads and by boat on Lakes Coeur d'Alene and Pend d'Oreille. Mineral Resources: Zinc, lead-silver, copper, gold, arsenic and high-grade clays.

History and Future

Very little development work has been done on these mineral resources but some very encouraging results have been obtained. They are worthy of further attention.

Review of Year's Operations

Promising mineral discoveries including silver, lead, zinc and some gold, have been made at several properties in Kootenai county. The ore bodies probably lie deep, requiring the sinking of shafts below the lake level.

In the Beauty Bay district are several promising properties, viz, Radio, Silver Tip, Gray Wolf, Caribou and Royal, along with some others.

In the Mica district the Idaho Diamond & Sulphide mine has carried on considerable development work. Equipment was installed and a shaft sunk the past year.

The Rainbow property at Medimont was developed the past year and some promising ore has been uncovered.
Most active, perhaps, of all mines in the past few years was the Palisade on Mount Weissner in the Pine Creek district. Ore carrying exceptional values in silver, gold, lead, and copper have been discovered. Equipment is now being installed for a busy year of development in 1938.

The Burnt Cabin and Shamrock properties in the Hayden Lake region have been the scene of much development in recent years and much optimism has been expressed by their officers as to their production possibilities in future years.

That some day in the not far distant future Coeur d'Alene will become the center of a great mining district is reasonably certain.

BEAUTY BAY MINING CO.

BLUE BIRD MINING CO.

CARIBOU MINING CO., LTD.

COEUR D'ALENE-SPOKANE MINING CO.
Office: Helena, Mont. Officers: C. A. Spaulding, Pres.; Bessie B. Bryte, Sec., both of Helena, Mont. Inc.: Sept. 6, 1918. Capital: 1,000,000 shares; par value $1; 500,000 shares issued. Property: Commonwealth group; 7 unpatented claims, Medimont dist.; Lane. Development: By 1 tunnel 200 ft. long and a 100-ft. vertical shaft. Remarks: Idle.

COMMONWEALTH METALS CO.

CONNIE MINING & MILLING CO.

CRYSTAL SPRING MINING CO.
GRAY WOLF MINING CO.

GREAT WESTERN COPPER CO., INC.

HAMBURG AMERICAN COPPER MINING & MILLING CO.

HIGH CROPPING SILVER-LEAD MINING CO.

IDAHO DIAMOND SULPHIDE MINING COMPANY, INC.

KING SOLOMON MINING & MILLING COMPANY

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

PALISADE MINING & MILLING CO.

RADIO MINING CO.
RAINBOW MINING & MILLING CO., LTD. (See Shoshone & Benewah Counties)  
(See Benewah County for capital structure.)

RAINBOW NO. 2

RAINBOW NO. 4

RIVERSIDE COPPER MINING CO., LTD.

THE ROYAL BASIN MINING CO.
Office: Coeur d'Alene. Officers: A. H. Moe, Pres.-Mgr.; Vina Moe, Sec., both of Coeur d'Alene. Inc.: Dec. 24, 1910, as Royal Mining Company; name changed June 8, 1934. Capital: 1,500,000 shares; par value $1; June 8, 1934, capital reduced to $150,000, divided into 1,500,000 non-assessable shares; par value 10c; 518,102 shares issued. Property: 9 unpatented claims, Wolf Lodge dist.; Coeur d'Alene. Development: By 3 tunnels, the principal one being 500 ft. long. Ore: Gold-silver. Remarks: Idle.

SHAMROCK SILVER MINING COMPANY, INCORPORATED

NAME OF MINE     MINING DIST.     OWNER     P. O. ADDRESS
Adams            Hayden Lake       Burnt Cabin Mng. Co. Coeur d'Alene
Big Vein Gr.     Hayden Lake       C. Wm. Gralapp et al. Medicine Lake
Blue Bell        Unorganized        C. W. Williams et al. Coeur d'Alene
Bonnie           Hayden Lake       Burnt Cabin Mng. Co. Coeur d'Alene
Chilco Group     Medimont          C. Wm. Gralapp et al. Medicine Lake
Commander et al. Unorganized        Albert T. Allen Medimont
Copper Queen     Unorganized        C. W. Williams et al. Coeur d'Alene
Daisy Bee        Cela-Kellogg      F. W. Bubb Athol
Deer Ridge       Coeur d'Alene      Mable Ruth O'Keefe Coeur d'Alene
Edith            Medimont          Edith McMahon
Fortune          Hayden Lake       Anna M. Blessing Medimont
Franklin         Unorganized        Burnt Cabin Mng. Co. Coeur d'Alene
Galena Group     Hayden Lake       E. Cook et al.
Garnet et al.    Unorganized        D. R. Frost et al.
Gem              Medimont          Albert T. Allen
Gen'l Fairchild  Unorganized        Albert T. Allen
Gen'l Grant et al. Medimont        Jno. W. Booth et al. Coeur d'Alene
Gertrude Lode    Unorganized        E. McManmon et al.
Happy Day        Coeur d'Alene      Wilson Mutual
Harvey et al.    Wolf Lodge        M. & M. Co.
### Kootenai County

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### Bibliography

See pages 92-98 for publisher's address, meaning of reference marks and abbreviations.


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


History and Future

Very little has been done to develop the metallic resources of the county, however, the non-metallic resources, particularly the fire clay deposits near Troy have been actively exploited.

Many opportunities for profitable development are available in this district. Near Elk City is a district of merit that should receive more attention in future.

On the North Fork of the Palouse River, about 12 miles from Harvard, the International Engineering and Construction Company of Newport, Washington, have a shovel and washing plant in operation. Reports on this section were favorable for the year and optimistic for more activity for the year 1938.

Spokane interests are mining beryl near Deary for shipment. Camp was established at the old Munroe mill. It was reported that orders on hand cover carload shipments to Luxembourg, Europe, via Seattle, Washington.

The Carrico Gold Mining Company installed a 25-ton flotation mill, power plant, constructed road, laid 400 ft. of track, put down 700 ft. of water pipe and drove 110 ft. of tunnel during the year.

The Moscow Queen Mining Company had a crew of 3 men on development work.

ACE MINING CO.


CARRICO GOLD MINING COMPANY


CASSIDY GOLD MINING & MILLING CO., LTD.


COLUMBIA MINES CORPORATION


MIZPAH GROUP

RIVERSIDE GROUP


ENGINEERS GOLD MINING COMPANY


GOLD HILL MINING & MILLING CO.


IDAHO BERYLLIUM CORPORATION


IDAHO CERAMIC MATERIALS CO.


IDAHO FIRE BRICK & CLAY CO.


MOSCOW QUEEN MINING CO.


SPOKANE-IDAHO COPPER CO.

TROY GOLD & COPPER MINING CO., LTD.


NAME OF MINE     MINING DIST.     OWNER     P. O. ADDRESS
Anny Gr.         Hoodoo          P. Doffner  Harvard
Avon             Hoodoo          J. H. Nesbit  Deary
Bonanza Gold Pl. Gold Creek    Wm. J. Schmidt  Potlatch
Clara Lester Gr. Gold Creek    James C. Throop  Palouse
Eureksa 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 92-93 for publisher’s address, meaning of reference marks and abbreviations.

Ground water for municipal supply at Potlatch, Idaho, by V. R. D. Kirkham: Idaho Bureau of Mines and Geology Pamphlet 23, 1927.**
The development of Idaho’s non-metallic mineral resources, by E. L. Tullis: Pit and Quarry, vol. 23, pp. 22-27, Mar. 23, 1932.**
Composition and origin of certain commercial clays of northern Idaho, by Edward L. Tullis and F. B. Laney, vol. 28, No. 5, Econ. Geol., 1933.
LEMHI COUNTY

County Seat: Salmon City. Area: 4597 sq. miles. Population: 4643. Principal Industries: Agriculture, stock raising and mining. Relief: This county contains the broad valleys of the Salmon, Lemhi and Pahsimeroi rivers but otherwise is high and mountainous. Transportation: The main valleys are served by a well maintained system of state highways and the back country can be reached over a system of Forest Service roads. The only railroad into the county is the Pittsburgh and Gilmore from Armstead, Montana, into the Lemhi Valley. Mineral Resources: Lead, copper, silver, gold, zinc, tungsten, manganese, molybdenum, nickel, cobalt, gypsum, tin and lignite.

History and Future

This county has had a very productive and profitable mining career in the past, both of base and precious metals. In common with most gold producing districts, with diversified resources, the trend was toward base metal until the present activity in gold mining.

During the last few years, a tremendous activity in the gold fields has taken place and the district is rapidly assuming importance in this respect. The people are alive to their opportunities and have formed the "Lemhi County Mining Ass'n" for the express purpose of presenting these opportunities to investors and operators.

This district has a prosperous future in prospect and is an ideal territory for the prospector, operator and investor.

Review of Year's Operations

The Ima Mines Corporation carried on an extensive construction and development program. With a crew of 40 men employed, this property is fast becoming one of the leading tungsten producers in the United States. New machinery was installed and the company intends to increase the capacity of the mill. At present about 1000 pounds of tungsten concentrate is being produced daily. W. P. Barton, manager, is at the mine in direct charge of operations.

Fred Brough, with a crew of 4 men, made shipments of copper ore from the Pope-Shenon mine at Salmon City and developed the Ring Bone Cayuse to some extent. It was reported that deals were pending to lease both properties to be worked on a royalty basis.

Equities Inc., operated the Ranger mine with a crew of 32 men. Edward F. Fitzhugh, Jr., Box 246, Salmon City, is in charge. Conditions at the mine look favorable for continued operations.

The Goldstone finished construction of a bunk house and rehabilitated the mill and power plant. A crew of 20 men was employed at the property which bids fair to become an important producer in the near future.

The Copper Queen, owned by Tom Lynch of Digby, N. F., and under bond to a group of Cleveland investors with J. E. Dye in charge, has been operating this summer and is now installing additional mining and milling machinery and a 100-horsepower Caterpillar Diesel engine for a 50-ton concentrator. This property produces high grade copper ore with a substantial gold content. A peculiar occurrence of native gold in bornite.

The Mahogany, owned and operated by A. C. Amonson, was developed to some extent and has merit as a potential producer of silver and manganese with further development.

Regular shipments were made from the Latest Out mine at Gilmore, by Milo Zook, who has worked the property the past few years.

Activity was noticed on Mineral mountain. Paris O'Neil performed assessment work and located some additional claims. The property is near Leadore.

The South Gilmore Mining Company moved in a compressor and other mining equipment to the old Red Warrior mine in the Spring Mountain district. This property is owned by the Martin family. Present development will be centered on a crosscut tunnel.
A rich strike was made at the Silver Moon Gulch mine by Joe M. Denton and Benson Evans which caused a great deal of interest in the Gilmore district. The ore runs high in silver and nets the operators a good profit on every ton mined. As a result of this strike, other properties are being developed and a new camp is rapidly being built.

Howard Sims leased his property, which adjoins the Silver Moon, to Spokane interests who plan an extensive development program with Sims in direct charge.

Gypsum that is reported to be 97 percent pure is mined near Leadore for transit to the Portland Cement Company's plant at Inkom.

Sawtell Mining Corporation employed a crew of 14 men at the Parker Mountain mine, located 30 miles west of Challis. The company drove a 200 ft. tunnel and sent test shipments to the Midvale smelter in Utah.

Buckhorn Gold Corporation did some work at the old Yellow Jacket mine near Forney but not on as large a scale as their operations during the previous year.

West States Mines, Inc., Robert E. Strahorn, president, acquired the Union Pacific and Burlington mine in addition to the Lang property. Considerable development work was accomplished with an average crew of 9 men.

Placer ground was tested on several creeks including Geertson, Moose and Boulder.

Properties in the vicinity of Leesburg were active and the usual production was evident in this locality. Some of the highest grade gold found in the state comes from the Leesburg Basin.

The Ring Bone Cayuse, owned by Fred and Burrell Brough of Salmon, was leased to F. Ellars and John S. Crandall of Shoup. The property in the Mackinaw district was developed by these leasers.

The Shoo Fly, in the Eureka district, owned by James G. Sims of Salmon, was idle with the exception of annual labor.

Twin Peaks Copper project on Rattlesnake Creek was operated by W. C. Miller. Shipments were made to the Anaconda smelter. The company drifted on ore, built an ore bin and constructed a road to the property.

Richards and Truax built a road, constructed a camp, opened up the Nabob property and plan an extensive development program for 1938.

Gibbonsville Mining and Exploration Company operated on Boyle Creek with a power shovel and trucked the ore to the custom mill at Gibbonsville. The work is under the supervision of Philo Seelye. Headquarters of the company are at Kellogg.

Twin Bros. mine was operated by the McLean brothers with a crew of seven men.

H. M. Vasey had a crew of four men at the Premier.

The Golden Reward was operated under lease and bond by Spokane, Washington, interests. An extensive development program was carried out with good results. The operators report very rich ore was uncovered in a 16-inch vein. The mill is equipped with a jaw crusher, 10 stamps, plates, Gibson amalgamator and tables. Mill run will average $15 a ton.

Gold Producers, Inc., operated the 50-ton custom mill located at Gibbonsville with good results.

A large placer operation at Gibbonsville was reported to have enjoyed a successful season.

Many smaller properties were active in Lemhi County which the Inspector did not have an opportunity to visit.

ARNEWT GOLD, INC.

LEMMHI COUNTY 197

BUCKHORN GOLD CORPORATION

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 600 ft. long. Plant: Gas-driven Rix compressor; complete mining equipment and camp. Ore: Copper-gold-silver.

DELAWARE—IDAHO GOLD MINING CO.

DOUBLE EAGLE GOLD MINING CO., INC.

GIBBONSVILLE PREMIER GOLD MINE, LTD., INC.

GILMORE MERCANTILE COMPANY

GOLD FLOTATION DEVELOPMENT CO.

GOLD HILL MINES, INC.

GOLD PRODUCERS, INC.
IDAHO FALLS GOLD MINING COMPANY

IMA MINES CORPORATION
Office: May. Officers: Dr. E. L. Berry, Pres., Buhl; W. P. Barton, Sec., May. Inc.: Mar. 12, 1930. Capital: 1,000,000 shares; par value $1, 750,000 shares issued. Property: 21 patented and 4 unpatented claims, Blue Wing dist.; May, held under lease and bond from Lemhi Metals Company, Salt Lake City, Utah. Development: Approximate total development 9000 ft. Ore: Silver, copper, gold and tungsten. Plant: Complete mining equipment and camp; 100-ton concentrator. Men Employed: Average, 40. Remarks: Installed diesel compressor unit, Mancha Trammer, 14 cars, 4 machines, new rails and pipeline throughout. Diesel power unit for mill. Denver sub-a flotation cells, Denver Mineral Jig, Dorr Classifier, 6 platt-o tables, motor driven; Rounds Wetherill Magnetic Separator and all auxiliary equipment, including laboratory equipment. 500 ft. of development work during the year.

LANG MINES, INC.

LATEST OUT MINING & SMELTING CO.

LEAD MOUNTAIN MINING CO.

LEESBURG BONANZA PLACER CO.

LEESBURG LODE & PLACER MINING CO.
LEMHU UNION COMPANY

MEADOW MINES, INC.

NAPIAS PLACERS, INC.

NORTHWESTERN DEVELOPMENT CO., LTD.

OWL MINING CO., INC.

POCATELLO-LEMHU MINING & EXPLORATION CO.

RESCUE GOLD MINES CO.

SOUTH GILMORE MINING CO.

TRI-STATE GOLD MINING COMPANY
UNITED IDAHO MINING CO.
Office: No. 1, State St., c/o U. S. Smelting, Refining & Mining Co., Boston, Mass. Officers: C. A. Hight, Pres.; F. W. Batchelder, Sec., D. D. Muir, Jr., Mgr., all of Boston, Mass. Inc.: Oct. 18, 1924. Capital: 10,000 shares common, no par value; 10,000 shares preferred, par value $10; June 20, 1930, preferred shares decreased to 7504; 7053 shares common, 7267 shares preferred issued. Property: Pittsburgh-Idaho group; 5 patented claims, Texas dist.; Gilmore. Development: By 4 tunnels; No. 1, 600 ft. long; No. 2, 1000 ft. long; No. 3, 1600 ft. long; No. 4, 1300 ft. long, in which is an inclined shaft 1200 ft. long, which gives a vertical depth of 988 ft. on the vein. Ore: Lead-silver. Remarks: Idle.

VIRGINIA GOLD MINING & MILLING COMPANY
Officers: Orville M. Norton, Pres.; Chas. E. Norton, Sec., both of Salt Lake City, Utah. Inc.: Aug. 21, 1925. Capital: 2,500,000 shares; par value 1c; 1,700,000 shares issued. Property: 13 patented and 9 unpatented claims, Pratt dist.; Baker. Development: By 7 tunnels, the principal one being 400 ft. Remarks: Report not filed for 1937.

WEST STATES MINES INC.

WINDER-STILLMAN CON.
Office: Salmon. Officers: R. H. Winder, Pres., Salt Lake City, Utah; J. W. Jones, Sec.-Mgr., Salmon. Inc.: Form of organization unknown. Capital: 1,000,000 shares; par value 1c; 446,118 shares issued. Property: Pope-Shenon group; 12 patented claims, Eureka dist.; Salmon. Development: 6 tunnels: No. 1, 70 ft. long; No. 2, 80 ft. long; No. 3, 400 ft. long; No. 4, 450 ft. long; No. 5, 800 ft. long; No. 6, 1000 ft. long. Total development approximately 3000 ft. of underground workings. Plant: MINE: 2 12x10 I-R electrically driven compressors; Sullivan steel sharpener; complete mining equipment and camp. MILL: 60-ton electrically driven concentrator, including fine grinding and flotation. Ore: Copper. Remarks: Report not filed for 1937.

NAME OF MINE    MINING DIST.    OWNER    P. O. ADDRESS
Alex Stevens    Texas    Wm. H. Howard    Gilmore
Anaconda Gr.    Eldorado    J. H. Adams Est.    Gilmore
Anaconda et al. Blackbird    A. C. Ludwig    Salmon
Andy Lee        Gravel Range    F. M. Pollard    Los Angeles, Calif.
Arnett Cr. 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 Juneau      Leesburg    F. A. Butschke    Leeeburg
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     Silverton    W. J. Shoup    Salmon
Buckhorn        Junction    Sellers Bros.    Salmon
Burlington      Eureka    Paul Rossier    Salmon
Cabin           Unorganized    Frank G. Worthing    Reno, Idaho
California Pl. Mackinaw    A. C. Ludwig    Salmon
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**BIBLIOGRAPHY**

See pages 92-93 for publisher's address, meaning of reference marks and abbreviations.


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The copper deposits near Salmon, Idaho, by C. P. Ross: U. S. Geol. Survey Bull. 774, 1925.‡


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LEWIS COUNTY


WINCHESTER COPPER MINING & SMELTING CO.

BIBLIOGRAPHY
See pages 92-93 for publisher's address, meaning of reference marks and abbreviations.


NEZ PERCE COUNTY

County Seat: Lewiston. Area: 851 sq. miles. Population: 17,591. Principal Industries: The county is primarily an agricultural community and Lewiston is the commercial and civic center for this section of the state. Transportation: Lewiston is at the junction of the Clearwater and Snake rivers and will eventually be an important shipping point by water to the Pacific Coast. Good highways and two railroads serve the county. Mineral Resources: Copper, silver, gold, marble and limestone. Very little attention has been given these resources. The marble and limestone deposits particularly should be developed.

INDEPENDENT MARBLE & LIME CO.

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BIBLIOGRAPHY

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ONEIDA COUNTY

The only known mineral resources of this county are: Bentonite; various clays of excellent quality; and the reported occurrence of copper-lead ores carrying gold and silver.

BLUE JAY MINING CO.


OWYHEE COUNTY

County Seat: Murphy. Area: 7596 sq. miles. Population: 4103. Principal Industries: Agriculture, stock raising and mining. Transportation: The roads of Owyhee County are very poorly maintained on account of its vast area and small taxation. One railroad, the Murphy branch of the Union Pacific, serves the county. Mineral Resources: Silver, gold, copper, lead, zinc, antimony, diatomaceous earth, opals, manganese and nitrates.

History and Future

After the discovery of the rich silver veins of the Silver City district in 1863, the county was the chief producer in the state. The ores were some of the richest ever discovered and made the operators fabulous profits. The tremendous cost of the early day operations and poor milling methods caused a decline in the operations until the district became almost deserted. Greater geological knowledge, more efficient transportation and modern metallurgical methods will once again give this district the prominence it once had. It is extremely favorable as a field for operators and investors.

Review of Year's Operations

Triangle Construction Company worked some placer ground near Grandview with a crew of 13 men. Under the supervision of Fred Bower the operation was moving around 350 yards daily. Equipment consisted of ¾-yard speeder shovel, three trucks, washing plant with diesel power.

Castle Creek was inactive with the exception of assessment work on a few properties.
Idaho Exploration Incorporated, W. H. Simons, president, operated the Ida Bell property with a crew of 18 men. 175 ft. of development work was reported during the year with a new cyanide plant, compressor and drill added to equipment. Fire destroyed the compressor during the summer and caused the mine to close down. A watchman is now stationed at the property.

Interstate Gold Mining Company had 2 men opening up old workings and blocking out ore.

Orogrande Gold Incorporated reported 130 ft. of development work during the year.

Seven men were employed in building a road on War Eagle Mountain that will serve many properties in that section.

Shipments of diatomaceous earth and bentonite were made from Owyhee County during the past year.

Placer operations were working along the Snake River from Grandview to Homedale. However, the recovery of flour gold still presents a major problem.

The metallic property on Florida Mountain was tested pending a deal with northern mining interests.

News reports to the effect the Carson Divide Mining Company have purchased the Rich Gulch property outright is of interest. The item also states a 50-ton mill unit will be put in operation soon. The property consists of 17 patented claims lying between the Trade Dollar and DeLamar mines.

Mother Lode Gold Mining and Milling Company, operating the Wannensten group, unwatered and cleaned up the old Gold Rock workings. The plant consists of complete mining equipment. A crew of 5 men was employed.

De Lamar Placers, with a crew of 15 men, operated a 2-yard drag line and dredge on Jordan Creek in the Carson district. Production is said to be 150 yards an hour with recovery running around 25 cents a yard. Frank A. Kennedy, 710 North Nineteenth Street, Boise, is manager and engineer in charge. F. A. Day, Idaho City, is dredgemaster.

Jordan Creek Placers operated a Yuba Dredge on Jordan Creek, about five miles from De Lamar with good results. Capacity of the boat is 2500 yards. Ten men are employed under Frank B. Thornburg, manager. It is estimated there is enough available yardage for a full year's operation during the year 1938.

The Nevada Lucky Tiger Mining Company operated the property of the Golconda Group Mining Company under option. These holdings comprise 15 patented claims in the South Mountain district, near Jordan Valley. A substantial ore body is said to have been proven and opened up to a depth of 510 ft. During the early days of mining in Idaho, this property was worked and the smelted ore freighted to Winnemucca, Nevada. James E. Moore, Box 100, Winnemucca, Nevada, is manager of Lucky Tiger interests and G. A. Sonneman, North 610 Washington Street, Spokane, Washington, is president and manager of the Golconda Group Company.

BANNER MINING & MILLING CO.

COSMOPOLITAN MINING CO., LTD.
DE LAMAR PLACERS

EMPIRE MINES CO.

GOLCONDA GROUP MINING CO.

GOLDSIL MINES, INC.

THE GOLDEN REWARD MINING & MILLING COMPANY

IDA BELL GOLD MINES, INC.

IDAHO EXPLORATION INCORPORATED

INTERSTATE GOLD MINING COMPANY

WALTER J. LONG PLACERS, INC.
MOTHER LODE GOLD MINING & MILLING CO.

OROGRANDE GOLD, INCORPORATED

OWYHEE DEVELOPMENT CO., INC.

OWYHEE EXPLORATION COMPANY

OWYHEE GOLD BUG MINES, INC.

OWYHEE GOLD MINING CO.

OWYHEE SILVER MINES CO.

POORMAN MINES CORPORATION

SILVER CITY GOLD MINES, INC.
OWYHEE COUNTY 209

THE SNAKE RIVER EXPLORATION COMPANY

VILLAGE BLACKSMITH, INC.

WAR EAGLE CONSOLIDATED MINING CO.

WAR EAGLE MINING & MILLING CO.

WESTERN MINING & EXPLORATION CORPORATION

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Geology and metalliferous resources of the region about Silver City, Idaho, by A. M. Piper and F. B. Laney: Idaho Bureau of Mines and Geology Bull. 11, 1926.*


**PAYETTE COUNTY**

The only known mineral resources of this county are diatomaceous earth, various clays of excellent quality, and natural gas, which has been developed at Payette.

**BLUE MOUNTAIN MINING & DEVELOPMENT CO.**


**BOISE PETROLEUM CORPORATION**


**VOLTUFF PRODUCTS COMPANY**


**BIBLIOGRAPHY**

See pages 92-93 for publisher's address, meaning of reference marks and abbreviations.


POWER COUNTY

BANNOCK APEX MINES, INC.

IDAHO RESEARCH AND DEVELOPMENT CO.

BIBLIOGRAPHY
See pages 92-93 for publisher's address, meaning of reference marks and abbreviations.

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SHOSHONE COUNTY

County Seat: Wallace. Area: 2597 sq. miles. Population: 19,060. Principal Industries: Mining and lumbering. Transportation: Coeur d'Alene branch of the Union Pacific, Northern Pacific Railway, and the Chicago, Milwaukee, St. Paul & Pacific Railroad serve the county. Yellowstone Trail, a paved highway, and a well maintained system of county roads reach into all mining districts. Rivers: St. Joe River, North and South Fork of the Coeur d'Alene River are the principal streams. Relief: The county lies on the west side of the Continental Divide and is mountainous with deep valleys and few level spots. Mineral Resources: The famous Coeur d'Alene Mining District is in the central part of the county. This district is a famous producer of lead-silver-zinc and copper. Other ores found are gold, antimony and tungsten.

History and Future
Mining in Shoshone County started with the discovery of gold on Prichard Creek in 1879. Although the chief excitement at this time centered in the gold placers near Murray, which proved very profitable, the major activity was transferred to the lead-silver mines on the South Fork after their discovery in 1885.

The gold district has continued to produce in a small way even to this day, but has been far overshadowed by the base metal mines which have developed until they produce approximately one-fourth of the lead and one-eighth of the silver of the United States.

The district contains the first, third and fifth largest lead producing mines in the United States, viz: The Bunker Hill & Sullivan, Morning and Hecla mines respectively. The largest silver producer in the United States is the Sunshine Mine, also located in this district.

The introduction of flotation, making possible the separation of the complex lead-zinc ores, opened up a vast new field of operations and today the district ranks as one of the important zinc producers of the country.
The continued development of new properties and the large ore reserves of some of the present operations assure a future comparable only to the past fifty years of large scale production, which in the five years prior to the depression averaged approximately 30 million dollars annually.

**Review of Year's Operations**

Records of the more notable events of 1937 in chronological order pertaining to the mining industry in the Coeur d'Alene district. (Courtesy The Wallace Miner, Wallace, Idaho.)

**January**

The year 1937 witnessed a general expansion of mining operations throughout the Coeur d'Alene district. Spurred by rising metal markets in the early part of the year with an increasing demand for lead and zinc from the various industries using these metals, operations were not only enlarged in the principal producing mines of the district but a number of the smaller properties responded and carried on development operations throughout a greater portion of the year. Shipments were made from several new producers. The price paid for domestic silver was an incentive for increasing output in the silver belt and caused a considerable amount of development work to be carried on in that area.

The Sunshine mine maintained its position as the greatest silver producer in the United States, output averaging approximately one million ounces of silver per month.

Stockholders of the Polaris Development and Mining Company organized a new corporation known as the Polaris Mining company capitalized at $750,000 with 3,000,000 shares of 25 cents par value.

Diamond drill operations at the property of the King Solomon mine in the Fourth of July canyon district disclosed a vein 10 feet wide at a depth of 150 feet below the surface. Plans for deeper operations are under way.

Frank F. Johnson, pioneer banker and business man of the Coeur d'Alenes died at his home in Boise at the age of 74.

The Crystal Spring Mining company announces plans to develop a group of claims near Wall peak in the Fourth of July canyon area.

The old mill of the Tamarack & Custer was destroyed by fire.

Construction work at the Star mill in Burke progressing rapidly, the work being well up to the schedule set by the officials.

Directors of the Mineral Mountain Mining and Milling company announce plans under way to sink a vertical shaft 200 feet to explore a vein disclosed in the tunnel workings.

A gold nugget weighing more than five ounces was found at the Vincent placer workings in Potosi gulch, a tributary of Trail gulch.

Idaho produced 14,400,000 ounces of silver during 1936 taking first place among all the states in silver output.

Mrs. Katherine Mason of Kellogg was awarded 15,299 shares of Sunshine Mining company stock after prolonged litigation against her step-father, John Pelkes. The case went to the supreme court of the United States before final decision was rendered.

Idaho legislature meets with a number of mining bills under consideration.

Output of silver from the Sunshine mine for 1936 reported by Manager R. D. Leisk as 9,106,859 ounces.

**February**

Lead property at Gibbonsville taken over by a group of Coeur d'Alene mining men headed by Philo Seeleye of Kellogg.

The management of the Clayton Silver Mines reports one car of concentrates yielded $5310.60 gross and $4968.61 net at the smelter. The shipment consisted of 49 tons, averaging $110.53 to the ton.

Announcement was made that Frank Eichelberger and associates had taken up an option for the control of the Callahan Zinc-Lead company. An
extensive development program in the holdings of the company will be car­
ried out during the year.

The Idaho state senate refused to enact a "portal to portal" law.

Officials of the Hecla Mining company declared a dividend of $200,000 payable March 15. The disbursement is at the rate of 20 cents per share on the issued capital of 1,000,000 shares.

The state legislature refused to increase the pay of the state mine inspec­
tor from $3000 to $3600 per year.

The price of zinc advanced on February 18 to $6.60 per hundred and lead was quoted at $6.25. Copper was 13 cents per pound.

The Silver Dollar management announces plans for a new main working shaft on the Polaris vein from the Silver Dollar main tunnel.

Manager R. D. Leisk of the Sunshine Mining company reports the total costs of producing an ounce of silver at the mine to be 31.45 cents, of which taxes account for 12.34 cents.

Snowslides have caused some damage in the district, particularly to power lines serving remote properties. No loss of life occurred in any of the slides.

On February 25 lead advanced to $7.00 per hundred and zinc moved ahead to $6.80 per hundred. Copper was quoted at 15 cents per pound.

The management of the Liberal King mine on Pine creek reports uncovering 18 inches of clean shipping galena in a raise 90 feet from the deep cross-cut tunnel level.

Bunker Hill stock was quoted in New York at $121.00 per share and Hecla was marked up to $21.00 per share. Sunshine was quoted at $20.50.

March

The Dayrock Mining company acquired by purchase a group of 10 claims adjoining the Dayrock holdings on the north and owned by the Coeur d'Alene Mining and Smelting company, Ltd. The basis of the deal was an exchange of Coeur d'Alene Mining and Smelting stock for Dayrock Mining company stock at a ratio of practically 15 shares of the former for one share of the Dayrock.

Edgar L. Wood, Hecla Mining company construction foreman, died fol­
lowing an attack of pneumonia. In addition to many years with the Hecla company, he had served the county as commissioner for a long period. His last work was in connection with the building of the Star mill at Burke, where he had charge of construction operations.

The price of zinc advanced to $7.00 per hundred reaching a par with lead.

Directors of the Sunshine Mining company declared the first quarterly dividend of 1937 at 75 cents per share, totaling $1,116,615.

The Bunker Hill & Sullivan paid stockholders the regular $1 quarterly dividend.

Stockholders of the Douglas Mining company elected S. A. Easton, presi­
dent and manager; James F. McCarthy, vice president; and Leo Hoban, secre­
try-treasurer. Other directors named were George Edmiston, James E. Gyde, Herman J. Rossi and Henry Adami.

The price of lead advanced to $7.75 per hundred and zinc moved to $7.50. Copper was quoted at 16½ cents per pound.

Sunshine Consolidated stockholders elected Frank Eichelberger president and manager; W. W. Marshall, vice president; Charles Finucane, secre­
try-treasurer; Irving Atwater and Joseph Hall, directors. The company is carry­
ing on deep development operations from the 1700 level of the Sunshine shaft.

Mining companies of the district announce an increase in wages of 50 cents per shift effective March 16. This marks the highest wage scale ever paid in the district. Under the new scale miners receive $6.25; timbermen, $6.75; shoveler, $5.75; common labor, $5.50. At the Sunshine the wages are 50 cents higher.
Angus Sutherland, pioneer of the Coeur d'Alenes, and an early day sheriff of the county in the strike period of 1899 died at his home in this city at the age of 86.

The management of the Metropolitan Mines corporation reports a good showing in the vein cut on the 400-foot shaft level. Drifting is under way.

Directors of the Sullivan Mining company announce enlargement of the electrolytic zinc plant at Kellogg by 50 per cent, at a cost of approximately $1,000,000.

The mill at the Silver Crescent property on Moon gulch will go into operation on ore taken from the workings of the Dickens property, the Silver Crescent and Dickens having merged into one corporation.

Herman J. Rossi, 67, well known in mining and business circles throughout the northwest, died at his home in this city. He was interested in a number of mining properties in the Coeur d'Alene district and for many years had been a civic leader in Wallace.

Announcement was made of the sale of the Delaware mine for $75,000 to the Callahan Consolidated Mines, Inc., of which Donald A. Callahan is president.

The price of lead after reaching $7.75 dropped to $6.95. Zinc remained at $7.50.

The Federal Mining and Smelting company declared a dividend of $29.75 per share on the preferred stock.

Stanly A. Easton was reelected president of the Bunker Hill & Sullivan Mining & Concentrating company at a meeting of the stockholders in San Francisco.

Fred Cushing Moore, well known mining engineer of the district and former state mine inspector, died at his home in Spokane.

April

Shaft sinking operations at the Crescent mine of the Bunker Hill & Sullivan in the silver belt started on a larger scale following installation of heavy duty equipment capable of handling the shaft to a depth of 3000 feet.

Federal Mining & Smelting company installed a new type of mine cage safety device at the Morning mine.

The price of lead was reduced to $6.60 per hundred and zinc was quoted at $7.00 following a break in the London market.

Directors of the Coeur d'Alene Mines corporation levied an assessment of 2 cents per share.

The mill at the Polaris property is nearing completion. It has a capacity of 200 tons daily.

Directors of the Hecla Mining company declared a quarterly dividend of 25 cents per share, totaling $250,000. At a meeting of the stockholders James F. McCarthy was reelected president; L. E. Hanley, vice president and Leo J. Hoban, secretary. Other directors are Clarence F. Kipp, George P. Mayer, Arthur J. Pellette, Fred Searls, Jr., and A. W. Witherspoon.

Renewal of operations was planned at the property of the Silver Cable Mining company.

Announcement has made of the purchase of the holdings of the Little Pittsburgh Mining company in the Keystone district by the Nancy Lee Mines, Inc.

Work started at the Coeur d'Alene Mines property where it is proposed to sink a shaft 1000 feet.

Management of the Blue Eagle Mining company announces plans for the resumption of work at the property on Pine creek.

Bunker Hill and Sullivan reports approval of plans to split the common stock into four shares for each one share outstanding. This will make the total number of shares 1,308,000, par value $2.50 in place of the present 327,000 shares of $10 par value.
May

Mines of the Coeur d'Alene district made net profits totaling $8,280,663 during 1936, according to the sworn statements filed with the county assessor, as required under the Idaho statutes. This compares with $5,048,121 reported for the 1935 net profit.

The St. Elmo Mines corporation have let a contract to drive the lower tunnel to cut a vein exposed in the upper workings, R. E. Weniger is president of the corporation.

Petitions from various organizations forwarded to congress asking for exemption of annual assessment work on unpatented mining claims.

Coeur d'Alene Mines corporation makes final payment of $22,277.17 to Mineral Point Mining company in full settlement of the bond and interest against the property.

"Labor holiday" at the Page and Morning mine, property of the Federal Mining and Smelting company, called by the miners' union halts production at both properties.

The John George mill at Wardner resumed full operations following a shut-down of several years. Ore is treated from leases under operation in upper sections of the Bunker Hill mine.

Shares of the Sunshine Mining company approved for listing on the New York stock exchange.

Galena mill of the Callahan Zinc-Lead company now in operation handling upwards of 200 tons daily received from the Interstate mine owned by the Callahan company in the Nine Mile district.

The Polaris mill went into commission on May 13 and production from the Polaris is now under way.

Shares of the Sunshine Consolidated listed on the Spokane Standard stock exchange.

June

Directors of the Sunshine Mining company declare quarterly dividend of 75 cents per share.

Frank M. Smith, 71, for 16 years Bunker Hill smelter director, died at his home in Spokane.

Control of the Chester Mining company is now held by the Hecla Mining company. The property is operated in connection with the Polaris.

The strike at the Morning and Page mines, which continued for 27 days, ended on June 10 following agreements reached between the company and the employees.

The Rainbow Mining & Milling company reports active operations at its property south of Medimont.

Management at the Liberal King mine on Pine creek states plans are underway to sink a 500-foot shaft from the main lower tunnel level.

Owners of unpatented mining claims were exempted from doing the annual assessment work of $100 per claim by action of congress. The president later signed the act. It was intimated no further exemptions might be expected.

Miners of the Hecla and Star properties in the Burke district by vote of 435 to 61 went on record as demanding a secret ballot before a strike or "labor holiday" can be ordered by anyone.

The $2,000,000 suit of Harold Purdy, as administrator of the late W. E. Crane against the Sunshine Mining company taken under advisement by Judge C. C. Cavanah following arguments in the federal court.

July

More than 2000 claims in this district given protection by the exemption act of congress, according to H. A. Rogers, county auditor. There were 367 individuals and corporations who filed notice of intention to hold.

Rush J. White, 60, prominent throughout the northwest as a mining engineer and geologist, died at his home in Osburn.
The Sherwood group of claims on Pine creek will be developed by a new corporation known as the Sherwood Mining company.

The North Idaho Chamber of Commerce caravan with Governor Barzillia Clark as a special guest of honor, visited the mines in the Coeur d'Alene district. Walter C. Clark, president of the organization, was the official host.

Signed by R. D. Leisk, general manager, and J. B. Cox, director and agent, acting by order of the company president, R. M. Hardy, of Yakima, Wash., the Sunshine Mining company posted at its Big creek workings a signed agreement to cover Sunshine operations and policies for the future.

Mines of the district observed the 4th of July by closing down for two and three-day periods.

The Federal Mining and Smelting company plans to take over the development operations at the Silver Cable property, located a short distance east of Mullan.

The Sunshine Mining company was declared the legal owner of the "Almo fraction" claim by a decree entered by Judge C. C. Cavanah of the federal court. This ended litigation brought by Harold Purdy, administrator of the estate of W. E. Crane.

Articles of incorporation for the Midland Mining company filed with the county recorder. The new company will succeed the Pontiac Mining company in the development of holdings in the Murray district.

Metropolitan company plans to sink 200-feet additional shaft from the 400 level.

Operations resumed at the Silver Summit mine where an extensive diamond drill campaign is announced by the management.

The price of zinc was advanced to 7 cents while lead remained at the 6 cent level.

Operations resumed at the Linfor copper mine by leasers.

Bunker Hill & Sullivan declared its third quarterly dividend at the rate of 37½ cents per share, totaling $490,000.

A referendum strike vote called at the Sunshine mine by officers of the Wallace and Kellogg locals of the International Union of Mine, Mill & Smelter Workers, an affiliate of the C. I. O.

August

C. I. O. groups of employees at the Sunshine mine declared a strike and remained away from their jobs. Picket lines were formed around the mine. Operations at the mine were carried on as usual. A strike vote called a week previous was reported to have had 214 ballots out of 535 men employed at the property.

First car of zinc concentrates from the new Star mill at Burke shipped to the electrolytic zinc plant at Kellogg on August 4. The mill has a capacity of 750 tons daily.

Directors of the Hecla Mining company declared a quarterly dividend of 25 cents per share, totaling $250,000.

The price of lead was advanced to 6½ cents per pound. Zinc was quoted at 7 cents.

Shaft work starts at the Silver Dollar mine in the silver belt.

Manager Joe Grismer reports opening the No. 2 ledge in the Superior Silver company's property at Keystone.

The Bear Top mine in the Murray district is under active operations under the direction of Morris Pearson. The Bear Top is owned by the Merger Mines corporation.

The Liberal King Mining company has levied an assessment of 1 cent per share.

The price of zinc was advanced to 7½ cents per pound.

The strike at the Sunshine mine ended following a stay of several days in the district of J. L. Balderston, commissioner of law enforcement, who notified the picket lines to disperse as the strike was over.
The 33rd annual miners and smeltermen’s picnic, sponsored by the industrial union, was held at Kellogg, attended by many visitors from over the northwest.

The 4th annual meeting of the Shoshone County Pioneer association was held at Kellogg and attended by more than 100 of the old-timers of the district, some of whom came in with the gold rush in the early ’80s.

The Highland-Surprise Consolidated Mining company levied an assessment of 2 cents per share.

Callahan Consolidated Mines, Inc., filed registration statement with SEC covering 2,200,000 shares of which 166,300 will be issued to underwriter to be reissued share for share in exchange for stock of Delaware Mines corporation, and 2,033,334 will be offered by underwriters at 25 cents each.

Deep tunnel operations started at the King Solomon property in the Fourth of July canyon.

Nancy Lee Mines, Inc., files registration statement with SEC covering 2,593,250 shares of 25 cent par common stock of which 743,000 shares will be offered at 25 cents each to stockholders.

September

Active shaft operations started at the Mineral Mountain M. & M. company in the silver belt.

Directors of the Sunshine declare a quarterly dividend of 75 cents per share, totaling $1,116,615.

Good progress is reported in the work at the property of the Sunshine Silver Queen in the Big creek district.

Surface plant at the Anchor mine, near Murray, was destroyed by fire involving a loss of $5000. The plant will be restored at once, according to John George, manager.

With 225 members on the charter roll the Big Creek Industrial union becomes the third organization of its kind in the Coeur d’Alenes, two others, the Wardner Industrial union at Kellogg and the Burke Industrial union preceding it.

Litigation involving a number of claims in the Big creek district was settled out of court and title cleared after long delay. In the settlement the Sunshine Consolidated acquired control of a considerable area in addition to its present large holdings.

President Stanly A. Easton of the Bunker Hill & Sullivan announced the appointment of H. L. Altshuler as resident manager of the property. Manager Altshuler comes to the district from a wide experience in mining operations in Mexico.

Federal Mining & Smelting company declared regular quarterly dividend of $1.75 per share on the preferred stock.

A hearing on the complaints issued out of the office of Charles W. Hope, Seattle, director of the national labor relations board against the Sunshine Mining company, pertaining to C. I. O. disturbances at the mine during the summer will be held in Wallace starting September 13, it was announced by Mr. Hope.

The Palisades property on Pine creek is under development. A road is under construction to the property and machinery will be installed.

Under a decision rendered by Federal Judge C. C. Cavanah, title to the Gullickson group of claims in the Big creek area was quieted in favor of the Sunshine Consolidated after the court had found no evidence to substantiate allegations of fraud against the administrators of the estate.

A 1900-foot crosscut south from the Dickens shaft has encountered the Silver Crescent vein, which is reported 20 feet in width carrying considerable ore.

Frederick Burbidge, former manager of the Federal Mining & Smelting company, was honored by the Columbia section of the American Institute of Mining and Metallurgical Engineers at a meeting held in Wallace where he was presented with a 50-year jewel.
Hearings of the NLRB in which the Sunshine Mining company is a defendant, are under way in Wallace. Testimony showed that in the strike vote 124 voted in favor of the strike and 94 against it. There were approximately 600 men employed in the mine at the time.

Gold Hunter Mines, Inc., files suit in district court to recover 510,000 shares of stock from the Atlas Mining company.

R. E. Weniger, 58, Wallace postmaster and interested in a number of mining properties in the district, died from a heart attack. He was president of the St. Elmo Mining company.

October

Bunker Hill & Sullivan declares a dividend of 37½ cents per share, totaling $490,500.

Two miners, Jake Thorson and Henry Reatherton, lost their lives when caught by a blast when firing 22 holes in the Liberal King mine on Pine creek. Thomas Gray, employed at the Sunshine mine, was killed when caught beneath a falling wall of concrete.

W. Earl Greenough, president-manager of the Atlas Mining company, announces resumption of operations at the property located in the Mullan district.

President Frank Eichelberger announces comprehensive development program at the property of the Sunshine Consolidated in the silver belt.

Stockholders of the Bobby Anderson Group Mining company called to consider change in capital stock structure.

Silver Bowl, Inc., starts development program in a large group of claims in the Big creek district.

NLRB inquiry into the CIO strike at the Sunshine mine ended after 29 days of hearings in which 255 witnesses were on the stand and 444 exhibits introduced by the two sides. A transcript of the case contains 4500 pages of typewritten matter.

Earl Bowen, president of Sierra Gaston Gold Mining company, reports plans under way to effect the consolidation of several groups of claims in the Sunset district.

The Idaho Mother Lode mill, near Murray, has begun treatment of ore from the Golden Chest mine.

Plans to develop the Lombardy mine near Kellogg under consideration by the board of directors.

Management of the Nancy Lee Mines, Inc., announces plans under way for an extensive development program. Henry H. Ray, well known mining engineer of California and former superintendent of the Benguet Consolidated in the Philippine islands has been named as general manager of the property.

The price of lead was reduced to 5½ cents per pound and zinc is quoted at 5½ cents.

November

The Polaris Mining company, the district's newest producer, declares its first dividend of $60,000.

Congressman Compton I White, manager of the Whitedelf mine at Clark Fork, visited the district this week inspecting local properties and consulting with mine officials about metal prices and the silver situation.

The price of lead was reduced to 5 cents per pound.

Concern over the future price for silver and the decline in the price for lead and zinc is shown among the operating companies in the district.

A compressor and other power equipment installed at the Palisades mine on Pine creek following completion of a road to the property.

James E. Gyde, 73, pioneer attorney of the Coeur d'Alenes, died at his home in this city.

Shipments inaugurated by the Gibbonsville Mining company.

Idaho Mining association, through its secretary, J. W. Gwinn, issued interesting study of mining operations in Idaho during the year 1936.
Sunshine Mining company declares fourth quarterly dividend of 75 cents per share. This makes $4,466,066 paid stockholders during the 12-month period.

Gem State mine officials report disclosure of ore in the No. 4 tunnel.

Shaft sinking equipment is installed at the Liberal King mine on Pine creek where it is proposed to sink 500 feet.

December

Federal Mining & Smelting company declares a dividend of $5 per share on the common stock. This is the first dividend paid on common stock since 1927. The disbursement totals $246,640.

The Sidney mine on Pine creek has discontinued ore production owing to low price of lead and zinc. Development work will continue.

Hecla Mining company directors declare dividend of 25 cents per share as final payment of the year. Total disbursements for 1937 amount to $950,000.

Mining men of the district plan to attend the 43rd annual convention of the Northwest Mining association in Spokane.

Three Day properties, Dayrock, Tamarack and Sherman, will pay dividends totaling $81,573 during December.

The shaft at the Coeur d'Alene Mines corporation property has passed the 200-foot mark, according to Joe Grismer, contractor.

The crosscut at the Aurora mine on Deer creek, scene of active development work, has reached the ledge and exposed a favorable showing of ore. Drifting is under way.

Directors of the Silver Crescent company levy an assessment of one cent per share.

C. Y. Garber, assistant Bunker Hill mill superintendent, elected president of the Moonlight Mining company, operating a property near Phillipsburg, Mont.

Sale of the holdings of the Aetna Mining & Milling company for 3 cents per share will be presented to the stockholders on January 10. The offer is from the Hercules Mining company.

Five thousand miners in the Coeur d'Alenes receive pay checks, bonuses and turkeys from their employers during Christmas week.

The price of lead reduced to 43½ cents per pound. This is 3 cents lower than the price paid for the metal in March. Zinc is quoted at 5 cents per pound. Copper is selling at 101½ cents.

Plans for future operations at the Nevada-Stewart property on Pine creek discussed at a meeting of the stockholders.

George W. Austin, president of the Rainbow Mining company, announces the sale of the company's holdings in the silver belt to Stanley A. Easton, James F. McCarthy, Frank Eichelberger, Fred Searls, Jr., and others for a consideration of $250,000. The property embraces 411 acres adjoining the Galena mine on the west.

AETNA MINING & MILLING CO., LTD.

ALHAMBRA MINING CO., LTD.
SHOSHONE COUNTY

ALICE MINING CO.

ALAMEDA MINING CO.

ALMA RAY MINING CO.

ALPENA COPPER MINING CO., LTD.

ALTURA MINING CO.

AMAZON MANHATTAN MINING CO.

AMBERGRIS CONSOLIDATED MINING CO.

AMERICAN LEAD MINES, LTD.
AMERICAN MINING CO., LTD.

AMERICAN SILVER MINING COMPANY
Office: 223 Symons Blk., Spokane, Wash. Officers: E. W. Conrad, Pres.-Mgr.; J. M. Henneck, Sec., both of Spokane, Wash. Inc.: Sept. 22, 1924, as Fort Wayne Mining Co.; name changed July 8, 1930, to Idaho Montana Mining & Oil Co.; name changed Jan. 27, 1936. Capital: 1,500,000 shares; par value 33 1/3 cents; July 8, 1930, increased to 2,000,000 shares; par value 50c; Jan. 27, 1936, reduced from $1,000,000 to $200,000 by reducing par value from 50c to 10c; Aug. 19, 1936, increased capital stock to $225,000 divided into 2,250,000 shares; par value 10c; 1,639,361 shares issued. Property: Eclipse group; 18 unpatented claims, Evolution dist.; Osburn. Development: Principally by 1 tunnel which is 2950 ft. long. Plant: 100 h. p. electric compressor. Ore: Lead-silver. Men Employed: Average, 3. Remarks: 150 ft. of development work during the year.

AMERICAN SMELTING AND REFINING CO.
Office: 120 Broadway, New York. Officers: Simon Guggenheim, Pres.; G. A. Brockington, Sec., both of New York; H. G. Washburn, Mgr., 516 Bank St., Wallace. Inc.: New Jersey, filed in Idaho May 15, 1934. Capital: 500,000 shares 7% preferred; par value $100; 200,000 shares 6% second preferred; par value $100; 4,000,000 shares common; no par value; all 7% preferred issued; 184,000 shares 6% second preferred issued; 1,829,940 shares common issued. Property: Property of Jack Waite Mining Co., 31 patented claims and 126 unpatented claims, Eagle dist.; Duthie, held under operating agreement. Development: Approximate total development, 27,403 ft. Plant: MINE: 2 Cda. hoists, one 35 h. p. and one 75 h. p.; all necessary mine buildings and equipment for a 500-ton per day operation. MILL: 500-ton, fine grinding, flotation concentrators. Ore: Lead, zinc and silver. Men Employed: Average, 78. Remarks: 878 ft. of development work during the year. New boarding house and bunk house constructed during 1936 at a cost of $12,000.00.

ANACONDA COPPER MINING CO.

ASSOCIATED MINES CORPORATION, LTD.

ATLANTIC MINING CO.

ATLANTIC MINING CO.
ATLAS X CO.

AURORA MINING CO.

BASIN MINING CO.

BEAVER CREEK MINING CO.

BELL MINING CO.

BELL OF THE WEST MINING CO.

BELMONT MINING CO., LTD.

BENTON MINING CO., LTD.

BETTY LOU MINING COMPANY
BIG CREEK MINING CO., LTD.

BIG DIVIDE MINING CO., LTD.

BIG ELK MINING CO., LTD.

BIG IT MINING & MILLING CO.

BISMARCK MINING CO.

BITTER ROOT MOUNTAIN MINING CO.

BLACK BEAR MINING CO.

BLACK HAWK MINING & DEVELOPING CO., LTD.

BLAINE & EMMETT MINING CO., LTD.
BLUE EAGLE MINING CO.

BLUE RIBBON MINING CO.

BLUE STAR MINING & MILLING CO., LTD.

BLUE WING MINING CO., LTD.

BOBBY ANDERSON GROUP MINING CO.

BRANDON GOLD FIELDS, INC.

BULLFROG SILVER LEAD MINING CO.

BULLION MINING CO., LTD.

BUNKER CHANCE MINING CO.
BUNKER HILL & SULLIVAN MINING & CONCENTRATING CO.
Office: Kellogg. Officers: Stanly A. Easton, Pres.; A. L. Altschuler, Mgr., both of Kellogg; J. W. Crosby, Sec., 1022 Crocker Bldg., San Francisco, Calif. Inc.: Originally incorporated in Oregon and filed in Idaho, Aug. 20, 1903; changed to a Delaware corporation and filed in Idaho, Apr. 16, 1924. Capital: 327,000 shares common; par value $10; May 4, 1937, reclassified common stock by decreasing par value to $2.50, and increasing number of shares to 1,308,000; 20,000 shares preferred; par value $100; 6889 shares preferred, and all common shares issued. Property: Bunker Hill; 373 patented, 31 unpatented claims, Yreka dist.; Kellogg. Development: the principal adit is the Kellogg tunnel, which is 13,300 ft. long, in which are the two principal inclined shafts, one of which is known as the White Raise, and the other the main shaft, which is approximately 2785 ft. long, giving a vertical depth of 2000 ft. below the Kellogg tunnel level, and a 560 ft. winze-shaft on the 1900 ft. level, which open the ore bodies an additional depth of 400 ft. In the main shaft are 13 intermediate levels. Total development, approximately 66 miles. Plant: MINE: 2 electrically driven hoists; 2 electrically driven I-R compressors; 1 steam-driven Nordberg compressor. Trolley locomotive haulage in Kellogg tunnel; storage-battery locomotive haulage in intermediate levels. Complete and modern machine shop, blacksmith shop, and change house. MILL: 4 complete and modern concentrators, including flotation: Sweeny mill, capacity 300 tons, accommodates custom ores, particularly those from Pine Creek; West mill, capacity 1200 tons, treats output from the Bunker Hill Mine; South mill, capacity 600 tons, treats output from Star Mine of Sullivan Mining Co.; Crescent mill on Big Creek, capacity 100 tons, treats output from Crescent and Alhambra mines. Ore: Lead-silver. Men Employed: In mines, mills, and smelter, 1800.

BUNKER HILL SMELTER

BURKE MINING CO., LTD.

BUTTE & COEUR D'ALENE DEVELOPMENT CO.

CALABRIA MINING CO.

CALEDONIA MINING CO.

CALIFORNIA MINING CO.
CALEDONIA SILVER-LEAD MINING CO.

CALLAHAN ZINC-LEAD CO.
Office: Wallace. Officers: Frank Eichelberger, Mgr., Wallace. Inc.: July 18, 1912, as Consolidated Interstate Mining Co.; name changed Mar. 25, 1921. Capital: 1,000,000 shares; par value $10; Oct. 2, 1935, reduced capital stock to 2,000,000 shares; par value $1; 1,495,239 shares issued. Remarks: Operations resumed at properties Sept. 1, 1936, and confined chiefly to rehabilitation. Production on a small scale was started in May, 1937, with an average crew of 50 men. Later in the year the crew was increased.

CALLAHAN MINE
Property: Interstate-Callahan group; 81 patented, 2 unpatented claims, Beaver dist.; Interstate. Development: Principal development is main transportation tunnel, which is 5500 ft. long, and a three-compartment vertical shaft 2000 ft. deep; total development, approximately 10 miles. Plant: MINE: Two single-drum air-driven hoists and one 250 h. p. electrically driven double-drum hoist; three large I-R electrically driven compressors; trolley locomotive haulage in main tunnel; complete and modern blacksmith shop, machine shop, sawmill, mine equipment, camp and company buildings. Ore: Zinc-lead-silver.

GALENA MINE

CARBONATE MINING & MILLING CO.
Remarks: Idle.

CENTRAL MINING CO.

CHESTER MINING CO., LTD.
Office: Wallace. Officers: Jas. E. Gyde, Pres., Wallace; C. W. Simmons, Sec., Kellogg. Inc.: July 31, 1900. Capital: 1,000,000 shares; par value $1; 914,145 shares issued. Property: Chester group; 6 patented claims, Evolution dist.; Osburn. Development: By 1 tunnel 1500 ft. long. Remarks: Polaris Mining Company is developing the property through the Silver Summit tunnel.

CINCINNATI MINING CO.
CLEAR GRIT MINING CO., LTD.

THE CLEARWATER GOLD & COPPER MINING CO., LTD.

CLIMAX SILVER MINING CO.

COEUR D'ALENE BIG CREEK MINING CO.

COEUR D'ALENE MINING CO.

COEUR D'ALENE CRESCENT MINING CO.

COEUR D'ALENE LEAD CO.

COEUR D'ALENE METALS CO.

COEUR D'ALENE MINES CORPORATION

COEUR D'ALENE MINING CO.
COEUR D'ALENE MINING & SMELTING CO.

COEUR D'ALENE SYNDICATE MINING CO.

CONSOLIDATED INDEPENDENT CALUMET MINING CO.

CONSOLIDATED MINING CORPORATION

COPPER CHIEF MINING CO.

COPPER KING MINING & SMELTING CO.

C. & R. MINING CO.

CRYSTAL LEAD MINES CO.

CUBA MINING CO.
CUSTER GULCH MINES, INC.
Office: Spokane, Wash. Officers: H. O. Ferring, Pres.; N. P. Ferring, Sec., both of Spokane, Wash. Inc.: April 1, 1936, as Pine Creek Queen, Inc.; name changed Feb. 22, 1937. Capital: 3,000,000 shares; par value 25c; Feb. 22, 1937, reduced capital stock from $750,000 to $500,000, divided into 300,000 shares pref. non-assessable and 200,000 shares common non-assessable; par value $1; shares issued, none. Property: Lynch group; 18 unpatented claims, Yreka dist.; Kellogg, held under lease and bond. Ore: Lead, silver and zinc. Remarks: Assessment work only.

DAY DEVELOPMENT CO.

DAYROCK MINING CO.
Office: Wallace. Officers: F. M. Rothrock, Pres., Spokane, Wash.; S. F. Heitfeld, Sec.; Henry L. Day, Mgr., both of Wallace. Inc.: Nov. 30, 1923, as Strattons Mines Co.; name changed Nov. 19, 1928. Capital: 2,000,000 shares; par value 10c; 1,747,355 shares issued. Property: Dayrock, Panhandle, and Monarch-Bonanza groups; 39 patented, 22 unpatented claims, Placer Center dist.; Wallace. Development: Dayrock group; principally by 1 tunnel 1612 ft. long, in which is an inclined shaft 460 ft. long, with 4 intermediate levels, which opens the vein to a vertical depth of 400 ft. Panhandle group: Principally by 1 tunnel 1562 ft. long, and an inclined shaft 360 ft. long, with 3 intermediate levels, which opens the vein to a vertical depth of 253 ft. Total development in both groups, more than 38,717 ft. Plant: Electrically driven hoist and 2 electrically driven compressors; complete mining equipment; storage-battery locomotive and haulage. Ore: Lead-silver. Remarks: 94 ft. of development work by lesiors.

DECKER DEVELOPMENT CO.

DEEP WONDER MINE

DELAWARE MINES CORPORATION

DICKENS-EAST MINING CO.

DOBSON PASS LEAD AND SILVER MINES CORP.
DOUGLAS MINING CO., LTD.

DULUTH MINING CO.

EAST ALAMEDA MINING CO., LTD.

EAST CALEDONIA MINES CO.

EASTERN STAR MINING CO., LTD.

EAST HECLA MINING CO., LTD.

EAST STANDARD MINING CO.

ECHO MINING CO., LTD.

ELDORADO MINING & SMELTING CO., LTD.

ENTERPRISE MINING CO.
EQUITABLE MINING & MILLING CO.

EVOLUTION MINING CO.

FANNIE GRIMM MINING CO.

FAR WEST GOLD SILVER MINING CO.

FEDERAL MINING & SMELTING CO.
Office: Wallace. Officers: F. H. Brownell, Pres.; J. L. Martin, Sec., both of New York City; H. G. Washburn, Mgr., Wallace. Inc.: Filed in Idaho, Sept. 24, 1903. Capital: 200,000 shares preferred, 100,000 shares common; par value of each $100; June 6, 1934, decreased preferred to 30,000 shares, and common to 50,000 shares, par value of each $100; May 25, 1936, decreased par value on common to $10, 30,000 preferred, par value $100 and 50,000 shares common, par value $10; June 22, 1937, reduced capital from $3,500,000 to $2,203,200, divided into 17,032 shares preferred, par value $100 and 50,000 shares common, par value $10; 21,932 shares preferred and 49,328 shares common issued. FRISCO GROUP
Property: 15 patented claims, Lelande dist.; Gem. Development: Principally by 4 tunnels; No. 1, 1000 ft. long; No. 2, 1500 ft. long; No. 3, 550 ft. long; No. 4, 1000 ft. long; and a vertical 4-compartment shaft 1650 ft. deep; total development, approximately 31,680 ft. Ore: Lead-zinc-silver. Remarks: A small amount of work by lessees during the year.

GLAMORGAN GROUP

GOVERNMENT GULCH GROUP
Property: Five-sixteenths interest in 1 patented claim, Yreka dist.; Kellogg. Development: Principally by 1 tunnel, which is 500 ft. long; total development, approximately 1700 ft. Ore: Lead-silver.

CON. BIEDERMAN GROUP
MACE GROUP

Property: 35 patented claims, Lelande dist.; Mace. Development: Principal development consists of No. 6 tunnel, 3600 ft. long; No. 3, Campbell, 3000 ft. long; and a 3-compartment vertical shaft 2400 ft. deep, with 22 intermediate levels; total development, approximately 18,000 ft. Plant: MILL: Almost entirely dismantled. Ore: Silver-lead. Men Employed: 1 watchman. Remarks: A small amount of work by lessees during the year.

BURKE GROUP


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, 2500 ft. long. The principal shaft, which is located in No. 6 tunnel, is a vertical, 4-compartment shaft, 3200 ft. deep, with 14 intermediate levels below No. 6 tunnel, which opens the vein to a depth of approximately 5220 ft. Total development, approximately 37½ miles. Plant: MINE: 1 double-reel hoist, arranged for electric drive by means of direct-current hoist motor 600 h. p. 450 r. p. m., through single reduction herringbone gear, driven by synchronous motor generator (motor 700 h. p.; generator 500 kw. direct current) 1200 r. p. m. 265 volts; one 600 h. p. electrically driven double-drum Nordberg hoist; one Nordberg single-drum geared hoist, driven by 300 h. p. electric motor; one water-driven 5200 cu. ft. Rix compressor; one Laidlaw-Dunn-Gordon 3200 cu. ft. compressor, two Ingersoll-Rand 2500 cu. ft. compressors, and one Prescott pump, 400 gal. capacity, on 2450 level, all electrically driven; complete mining equipment, machine shops, sawmill, company buildings and hotel. HAULAGE: 500-volt electric in main, or No. 6 tunnel; 250-volt electric and 10 storage-battery locomotives on intermediate levels. MILL: 1200-ton concentrator, fine grinding flotation; two ore-sorting plants; and complete modern change house. Ore: Lead-silver-zinc. Men Employed: Average, 500. Remarks: Installed hoisting equipment on 3850 level and completed 681 ft. of development work during the year.

PAGE GROUP

Property: 86 patented claims, Yreka dist.; Kellogg. Development: By 10 tunnels, the principal one of which is the Curlew, 650 ft. long; and an inclined shaft 1582 ft. long, giving a vertical depth of 1446 ft., with 5 intermediate levels; total development, approximately 28,262 ft. Plant: MINE: A 100 h. p. hoist and a 75 h. p. double-drum hoist, both electrically driven; a 400 cu. ft., an 800 cu. ft. and a 2550 cu. ft. electrically driven compressor; 1 trolley locomotive and 3 storage-battery locomotives; complete and modern mine camp, equipment and buildings. MILL: 300-ton flotation concentrator. Ore: Lead-silver-zinc. Men Employed: Average, 79. Remarks: 360 ft. of development work during the year.

FLORENCE MINING & MILLING CO., LTD.

FLYNN GROUP MINING CO.
FORMOSA LEAD MINING CO., LTD.

FOUR SQUARE GOLD SYNDICATE

GALENA MINING CO.

GEM STATE MINING CO.

GENERAL MINES CORPORATION

GERTIE MINING CO.

GIANT MINING & DEVELOPMENT CO.

GOLCONDA LEAD MINES
GOLD HUNTER MINES, INC.
Office: Mullan. Officers: Olive G. Keeley, Pres.; James W. Grogan, Sec., both of Chicago, Ill.; C. K. Cartwright, Mgr., Mullan. Inc.: Apr. 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 backsmith shop; electric haulage. MILL: 500-ton concentrator, including flotation. Ore: Lead-silver. Men Employed: Average, 2. Remarks: Leased to 3 men doing business under the name of "Hunter Lease."

GOODENOUGH MINING CO.

GOVERNMENT GULCH MINING CO.

GRANADA LEAD MINES, INC.

GREAT EASTERN MINING CO., LTD.

GREAT HELENA MINING & MILLING CO.

GREEN HILL CLEVELAND MINING CO.

HAPPY DAY MINING CO., LTD.
HAYDEN HILL CONSOLIDATED MINING CO.
Office: 317 Symons Bldg., Spokane, Wash. Officers: W. J. Stratton, Pres.; W. W. Smith, Sec., both of Spokane, Wash. Inc.: Mar. 27, 1931, as Strattons Mines Cons.; name changed, Apr. 6, 1934. Capital: 10,000,000 shares non-assessable common; par value 5c; 20,000,000 shares class “A” common stock; par value 5c; 7,541,740 shares non-assessable and 17,723,340 shares class “A” stock issued. Property: Purim group; 5 unpatented claims, Evolution dist. Remarks: Principal active operation is Hayden Hill Gold Corp. in Lassen County, California.

HECLA MINING CO.
Office: Wallace. Officers: James F. McCarthy, Pres.-Mgr.; Leo J. Hoban, Sec., both of Wallace. Inc.: Sept. 26, 1898. Capital: 1,000,000 shares; par value 25c; all shares issued. Property: 48 patented claims, 10 unpatented, Lelande dist.; Burke. Development: Principally by a 4-compartment vertical shaft, which is 2800 ft. deep, and a 3-compartment vertical shaft from the 2000 ft. level, which is 800 ft. deep. Plant: MINE: 2 electrically driven I-R compressors, totaling 7500 cu. ft., housed in steel and concrete buildings; one of the largest, most complete and modern mine plants in the United States; 2 electrically driven hoists, the main one being driven by a 2100 h. p. motor. MILL: 900-ton concentrator, including flotation. Ore: Lead-silver. Men Employed: Average, 423. Remarks: Development work during the year, raising 713 ft., drifting 2157 ft., crosscutting 876 ft.

HELMER SILVER MINES COMPANY

HERCULES MINING CO.

HERCULES GROUP
Property: Hercules group, 41 claims, Lelande and Placer Center dists.; Burke. Development: Principally by 5 tunnels: No. 1, 280 ft. long; No. 2, 4450 ft. long; No. 3, 4910 ft. long; No. 4, 10,250 ft. long; No. 5, 16,200 ft. long; and a 4-compartment vertical shaft 1300 ft. deep, with 8 intermediate levels; approximate total development, 85,831 ft. Plant: MINE: Special first motion double-reel Nordberg electric hoist, direct connected to 700 h. p. motor; one 22x16 I-R and one 29x21 I-R compressor, both electrically driven; electric trolley locomotive in main transportation tunnel and storage battery locomotives in intermediate levels; complete and modern mine equipment and shops. MILL: 600-ton concentrator, including flotation. See Idaho Thirty-first Ann. Rept. Min. Industry, 1929, pp. 23-27, for complete description. Ore: Lead-silver. Men Employed: Average, 23. Remarks: Work during the year: Tunnels, 470 ft.; drifting, 65 ft.; crosscutting, 405 ft.

HUMMING BIRD GROUP
Property: 19 patented claims, Lelande dist.; Burke. Development: Total development, approximately 16,106 ft. of tunnels, the principal of which are No. 4, 1253 ft. long, and No. 5, Hercules, 12,086 ft. long.

MAHER-HEARN GROUP
Property: 39 patented claims, Lelande dist.; Burke. Development: Through 4500 ft. tunnel of Gertie Mining Co., at the end of which are more than 4000 ft. of tunnel and a 400 ft. vertical shaft. Plant: Electrically driven 1000 cu. ft. I-R compressor; air driven hoist; trolley electric locomotive haulage; complete and modern equipment. Ore: Lead-silver. Remarks: Idle.
HIDDEN TREASURE MINING CO.

HIGHLAND-SURPRISE CONSOLIDATED MINING CO.

HILL MINING & MILLING CO.

HORNSILVER MINING & MILLING CO.

HORSESHEO MINING CO.

HYPOTHEEK MINING & MILLING CO.

IDAHO COPPER MINING CO., LTD.

IDAHO & EASTERN MINING & MILLING CO., LTD.

IDAHO-LEADVILLE MINES CO.
IDAHO & LOS ANGELES MINING & MILLING CO.

IDAHO-MONTANA AND ORLANDO CONSOLIDATED MINING CO.

IDAHO MOTHER LODE GOLD MINES, INC.

IDAHO STAR MINING CO.

IDORA MINING CO., LTD.

IMPERIAL MINING CO.

INDEPENDENCE LEAD MINES CO.
Office: Wallace. Officers: H. B. Kingsbury, Pres.-Mgr.; Herman Marquardt, Sec., both of Wallace. Inc.: Filed in Idaho, Nov. 12, 1929. Capital: 4,000,000 shares; par value $1; 3,240,000 shares issued. Property: Independence group, 13 patented claims; American Commander group, 7 patented claims; Hunter dist.; Mullan. Development: American Commander group; by 4 tunnels: No. 1, 100 ft. long; No. 2, 300 ft. long; No. 3, 1200 ft. long; No. 4, 6000 ft. long. Independence group: Principally by 4 tunnels: No. 1, 100 ft. long; No. 2, 300 ft. long; No. 3, 1200 ft. long; No. 4, 6000 ft. long. a vertical raise 313 ft. long connecting No. 3 and No. 4 tunnels, and a 350 ft. vertical shaft in No. 4 tunnel. Plant: One electrically driven compressor, complete mining equipment. Ore: Lead-silver. Men Employed: Average, 2. Remarks: Property in development stage with present work all on 500 ft. shaft level prospecting for downward extension of bodies of ore disclosed in upper workings. Total development work during the year, 1200 ft.

INDEPENDENCE MINING CO., LTD.
INDIAN CREEK GOLD MINING CO.

INLAND EMPIRE MINING & MILLING CO.

INSPIRATION LEAD CO., INC.

INTERNATIONAL MINES, LTD.

JUNO MINES CORP.

KICKER CREEK LEAD CO., LTD.

JIM BLAINE SILVER SYNDICATE, LTD.
KING OF PINE CREEK MINING CO.

LACLEDE MINING CO., LTD.

LANSING SILVER-LEAD MINING CO.

LEAD BLOSSOM & MILLING CO.

LEROY GOLD & COPPER CO., LTD.

LEWIS & CLARK MINING CO.

LIBERAL KING MINING CO.

LINCOLN MINING CO.
Office: Wallace. Officers: Theodore Wellman, Pres., Wallace; Toimi Leh­tola, Sec., Kellogg. Inc.: July 9, 1923. Capital: 1,500,000 shares; par value 10c; May 7, 1928, increased to 2,000,000 shares common; par value 10c; 30,000 shares preferred; par value $10; 1,191,441 shares common, 2,975 shares preferred issued. Property: Silverado group; 34 unpatented, 2 patented claims, Evolution dist.; Osburn. Development: Principally by 1 tunnel, 7800 ft. long and an inclined shaft 570 ft. long, giving a vertical depth of 550 ft. with 4 intermediate levels. Plant: MINE: 500 cu. ft. electrically driven compressor; complete mining equipment. MILL: 50-ton concentrator, including flotation. Ore: Lead-silver. Remarks: Mine under 99-year lease to Silver Dollar Mining Co.
LINFOR COPPER CO.

LOG CABIN MINING & MILLING CO., LTD.

LOMBARDY MINING & MILLING CO.

LON CHANEY MINING & MILLING CO.

LUCKY BOY MINING CORPORATION

LUCKY BOY MINING & CONCENTRATING CO., LTD.
Office: Mullan. Officers: S. E. Shatto, Pres.; Geo. Shoemaker, Sec., both of Mullan. Inc.: Jan. 12, 1907. Capital: 1,000,000 shares; par value $1; 408,000 shares issued. Property: Lucky Boy group; 31 unpatented claims, Hunter dist.; Mullan. Development: By 8 tunnels, the principal of which is 2600 ft. long. Ore: Lead-silver. Remarks: Assessment work only.

MAINE-STDANDARD MINING CO., LTD.

MAJESTIC MINING CO., LTD.

MARSH MINES CONSOLIDATED
McGREGOR MINING CO.

MERGER MINES CORPORATION

MERRY WIDOW MINING CO.

METROPOLITAN MINES CORPORATION, LTD.
Office: Wallace. Officers: R. L. Brainard, Pres., Wardner; Roy H. Kingsbury, Sec., Wallace. Inc.: Nov. 21, 1929. Capital: 1,000,000 non-assessable common shares, par value 10c; Oct. 24, 1935, increased non-assessable stock to 1,250,000 shares; 2,000,000 assessable common shares, par value 10c; 1,000,000 non-assessable shares and 1,731,352 assessable issued. Property: Sterling Silver group; 38 unpatented claims, Big Creek, Evolution dist.; Kellogg. Development: Principally by 1 tunnel 4800 ft. long. Plant: Anaconda hoist, 5½x5½ and 10x12 G-D electrically driven compressor; complete mining equipment and camp. Ore: Lead-silver. Remarks: Report not filed for 1937.

MILITARY MINING & MILLING CO., LTD.

MINERAL FARM MINING CO., LTD.

MINERAL MOUNTAIN MINING & MILLING CO.
MINERAL POINT MINING CO.

MOE MINING CO., LTD.

MOHAWK MINING CO.

MONARCH METALS CO.

MOONLIGHT MINING CO.

MOUNTAIN CON MINING CO., INC.

MOON CREEK MINING CO.

MOUNTAIN QUEEN MINING CO.

MULLAN MINING CO.

MULLIN MINING CO.
NABOB SILVER LEAD CO.

NATIONAL COPPER MINING CO.

NEVADA STEWART MINING CO.

NEW HOPE MINING CO., LTD.

NEW JERSEY CONSOLIDATED MINES CO.
Officers: W. J. Stratton, Pres.; W. W. Smith, Sec., both of Spokane, Wash. Inc.: June 20, 1928. Capital: 5,000,000 shares; par value 10c; 1,291,478 shares issued.

KING OF PINE CREEK GROUP
Property: King of Pine Creek group; 6 patented, 3 unpatented claims and 160 acres patented land, held under lease and option from King of Pine Creek Mining Co., Yreka dist.; Kellogg. Development: By 2 tunnels: No. 1, 380 ft. long; No. 2, 350 ft. long; and a vertical shaft 300 ft. deep. Plant: Hoist and 2 I-R compressors, all electrically driven; complete mining equipment. Ore: Lead-zinc-silver. Remarks: Idle.

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.

NIAGARA PLACER MINING CO.

NINE MILE MINING CO.
NORTH AMERICAN MINING & MILLING CO., LTD.

NORTH BUNKER HILL MINING CO., LTD.

NORTH FORK DEVELOPMENT CO.
Office: Box 333, Wallace. Officers: Thure Olson, Pres., Wallace. Inc.: May 8, 1922. Charter forfeited Nov. 30, 1937. Capital: 1,000,000 shares; par value 10c; 300,000 shares issued. Property: 6 unpatented claims, Yreka dist.; Enaville. Remarks: All work on the property during the past year has been done by the President, Thure Olson.

NORTH IDAHO MINING CO.

NORTH STAR MINING CO.

NORTH STAR MINING & DEVELOPMENT CO.

NORTHERN LIGHT MINING & MILLING CO.

OASIS MINING CO.

OOM PAUL CONSOLIDATED MINING CO.
OREGON TRAIL MINING COMPANY

PACIFIC MINING & MILLING CO.

PAPUREL & GRAHAM MOUNTAIN MINING CO.

PARAMOUNT MINES CORPORATION

PARK COPPER & GOLD MINING CO., LTD.

PATUXENT MINING CO.

PEARSON MINING CO.

PINE CREEK LEAD-ZINC MINING CO.

PIONEER GOLD MINING & DEVELOPMENT CO.
SHOSHONE COUNTY

PIONEER MINING CO., LTD.

PLAINVIEW MINING CO., INC.

POLARIS DEVELOPMENT & MINING CO.
Office: Wallace. Officers: James F. McCarthy, Pres.-Mgr.; Bert P. Woolridge, Sec., both of Wallace. Inc.: Dec. 10, 1915. Charter forfeited Nov. 30, 1937. Capital: 1,000,000 shares; par value 5c; increased Nov. 22, 1917, to 1,500,000 shares; par value 5c; increased May 4, 1925, to 1,500,000 shares; par value $1; increased July 28, 1930, to 2,000,000 shares; par value $1; decreased Aug. 30, 1930, to 2,000,000 shares; par value 25c; all shares issued. Property: Polaris group; 3 patented claims, Big Creek, Yreka dist.; Kellogg. Development: Approximate total development, 16,312.79 ft. Plant: Electrically driven compressor and complete mining equipment. Ore: Lead-silver. Men Employed: Average, 128. Remarks: Surface plant enlarged and flotation mill constructed. 7939.69 ft. of development work during the year. Charter allowed to lapse and affairs of company taken over by Polaris Mining Company, a Delaware corporation.

PONTIAC MINING CO.

PRITCHARD MINING & LEASING CO.

PROGRESS GOLD MINING CO.

PURITAN MINING CO., LTD.

RAINBOW MINING & MILLING CO., LTD.
RAMONA MINING CO.

RAVEN MINING CO., LTD.

RAY JEFFERSON MINING CO.

RED CLOUD MINING CO.

REINDEER-QUEEN MINING CO.

RHODE ISLAND MINING CO., LTD.

ROANOKE MINING CO., LTD.

ROB ROY MINING CO.

RUTH CONSOLIDATED MINING & MILLING CO.
ST. ELMO SILVER MINES CORPORATION

ST. JOE LEAD & SILVER MINES CO.

SAINT LOUIS & IDAHO MINING & MILLING CO.

SAMSON MINING & DEVELOPMENT CO., LTD.

SAN FRANCISCO MINING CO., LTD.

SHADOW PEAK MINING CO.

SHERMAN LEAD CO.
Office: Wallace. Officers: Jerome J. Day, Pres.; S. F. Heitfeld, Sec., both of Wallace. Inc.: Nov. 4, 1918. Capital: 3,500,000 shares; par value 25c; Aug. 27, 1928, increased to 3,675,000 shares, par value 25c; all shares issued. Property: Sherman and Oreano groups; 9 patented claims, Lelande dist.; Burke. Development: Total development, more than 32,000 ft., consisting principally of Sherman No. 5 tunnel, 5943 ft. long; Sherman No. 6 tunnel, 2000 ft. long; Oreano No. 2 tunnel, 7441 ft. long; and two 1070 ft. inclined raises connecting Sherman No. 6 tunnel and Oreano No. 2 tunnel, in which are 8 intermediate levels. Plant: 2 electrically driven hoists, trolley locomotive haulage, and all mining equipment furnished by Hercules Mining Co. Ore: Lead-silver. Remarks: 859 ft. of development work during the year. Production resumed during April of 1937.

SHRINE MINING CO.
SIDNEY LEASING CO.

SIDNEY MINING CO.

SIERRA NEVADA CONSOLIDATED MINING CO.
Office: Kellogg. Officers: Stanly A. Easton, Pres.-Mgr.; C. W. Simmons, Sec., both of Kellogg. Inc.: May 21, 1887. Capital: 1,000,000 shares; par value $1; all shares issued. Property: Sierra Nevada group; 5 patented claims, Yreka dist.; Kellogg. Development: Principally by 4 tunnels: No. 1, 4550 ft. long; No. 2, 275 ft. long; No. 3, 700 ft. long; No. 4, 625 ft. long; total development, approximately 10,000 ft. Ore: Lead-silver. Remarks: Idle.

SILVER BAR MINE, INC.

SILVER BAR MINING COMPANY

SILVER BOWL, INC.

SILVER CLIFF GOLD & COPPER MINING CO., LTD.

SILVER CRESCENT, INC.
Kellogg. Development: Approximately 2 miles of development work. Plant: Complete mining equipment. MILL: 150 ton, crushe, rolls, ball mill and flotation units. Ore: Silver, lead, zinc. Men Employed: Average, 15. Remarks: 1200 ft. of development work during the year; unwatered Dickens mine, rebuilt 70 ft. of shaft. Mill completely repaired and overhauled; operations started latter part of April. "This report also covers the Dickens Consolidated and Silver Crescent Mining Co., which are both combined at this date under the name of Silver Crescent, Inc."

SILVER CIRCLE MINING CO.

SILVER CRESCENT MINING CO.

SILVER DALE & BIG HILL MINING CO.

SILVER DOLLAR MINING CO.

SILVER LODE MINING & MILLING CO.

SILVER MOON MINING CO., LTD.

SILVER REEF MINES, INC.
SILVER STRIKE MINING COMPANY  

SILVER STAR-QUEENS MINES, INC.  

SILVER SUMMIT MINING CO.  

SILVER SYNDICATE, INC.  

SISHER MINING & MILLING CO., LTD.  

SMUGGLER CONSOLIDATED MINING CO.  

SNOWSHOE MINING CO.  
Office: Wallace. Officers: Walter H. Hanson, Pres.; Herman Marquardt, Sec., both of Wallace. Inc.: Sept. 30, 1903. Capital: 2,000,000 shares; par value $1; 260,000 shares issued. Property: Snowshoe; 8 patented claims, Hunter dist.; Mullan. Development: Approximately 4000 ft. of workings, the principal of which are No. 2 tunnel, 3000 ft. long, and No. 1 tunnel, 900 ft. long. Plant: Electrically driven 3-drill compressor. Ore: Copper-silver. Remarks: Idle.
SONORA MINING & MILLING CO.

SPOKANE TUNNEL MINING CO.

SQUARE DEAL MINING & MILLING CO., LTD.

STANDARD GROUP

STANLEY MINING CO.

STERLING MINING CO., LTD.

SUCCESS MINING CO., LTD.

SULLIVAN MINING CO.
Office: Wallace. Officers: James F. McCarthy, Pres., Wallace; C. W. Simmons, Sec., Kellogg. Inc.: May 22, 1917. Capital: 500,000 shares; par value $3; 37,448 shares issued. Property: Star group; 31 patented claims, Lelande dist.; Burke. Development: By a crosscut, known as the "Star crosscut," which is on the 2000 ft. level of the Hecla Mine and is 8900 ft. long; and

**SUNRISE MINES CO.**

**Office:** 519 Waverly Place, Spokane, Wash. **Officers:** C. Fred Kratzer, Sec., Spokane, Wash. **Inc.:** Sept. 17, 1928. **Capital:** 1,500,000 shares; par value 10c; 1,123,000 shares issued. **Property:** 9 patented, 8 unpatented claims, Summit dist.; Wallace. **Development:** By 3 tunnels, the longest being 1900 ft. **Ore:** Lead-zinc-silver. **Remarks:** Report not filed for 1937.

**SUNSHINE CONSOLIDATED, INC.**

**Office:** Kellogg. **Officers:** Walter H. Hanson, Pres., Wallace; Frank M. Hardy, Sec., Yakima, Wash. **Inc.:** April 21, 1934. **Capital:** 3,000,000 shares; par value 25c; 2,120,000 shares issued. **Property:** 11 patented and 71 unpatented claims, Yreka and Evolution dists.; Kellogg. **Development:** By 2 tunnels, the principal one being 1300 ft. long. **Ore:** Silver-lead. **Remarks:** Report not filed for 1937.

**SUNSHINE MINING CO.**

**Office:** Kellogg. **Officers:** R. M. Hardy, Pres.; C. M. Hull, Sec., both of Yakima, Wash.; R. D. Leisk, Mgr., Kellogg. **Inc.:** Jan. 3, 1921. **Capital:** 1,500,000 shares; par value 10c; 1,488,821 shares issued. **Property:** Yankee group; 15 patented claims and 2 unpatented claims, Big Creek, Yreka dist.; Kellogg. **Development:** By 5 tunnels, the principal of which is 2000 ft., and 2 shafts, the principal vertical shaft, 2854.15 ft. deep and an inclined shaft 2356 ft. in depth; approximate total development, 69,643 ft. **Plant:** MINE: 3 Worthington compressors, 2 hoists, all electrically driven; complete mining equipment, buildings and camp. **MILL:** 1000-ton concentrator, including fine grinding and flotation. **Ore:** Silver. **Men Employed:** Average, 500. **Remarks:** 11,962 ft. of development work during the year. Also erected new office building and enlarged plant.

**SUNSHINE MINING CO., LTD.**

**Office:** Wallace. **Officers:** Walter H. Hanson, Vice-Pres.; H. J. Hull, Sec., both of Wallace. **Inc.:** Jan. 5, 1907. **Capital:** 2,700,000 shares; par value $1; 1,527,309 shares issued. **Property:** Sunshine group; 4 patented, 10 unpatented claims, Beaver dist.; Wallace. **Development:** More than 6000 ft. of underground workings. **Plant:** Electrically driven I-R 5-drill compressor; complete mining equipment and camp. **Ore:** Lead-zinc-silver. **Remarks:** Report not filed for 1937.

**TAMARACK & CUSTER CONSOLIDATED MINING CO.**

**Office:** Wallace. **Officers:** Jerome J. Day, Pres.; Paul B. Jessup, Sec., both of Wallace. **Inc.:** Aug. 6, 1912. **Capital:** 5,000,000 shares; par value $1; all shares issued. **Property:** Tamarack & Custer; 69 patented, 2 unpatented claims, Lelande and Placer Center dists.; Gem. **Development:** The three principal tunnels are: No. 5, 12,300 ft.; No. 6 (400 ft. level), 8900 ft. long; and No. 7 (1200 ft. level), 11,300 ft. long. The principal shaft is a 3-compartment, vertical shaft, 600 ft. deep; a 3-compartment raise 800 ft. long connecting No. 6 and No. 7 tunnels; and a 150 ft. vertical winze (1350 ft. level) from No. 7 tunnel. Total development, approximately 14 miles. **Plant:** MINE: 100 h. p. electrically driven hoist; three 1300 cu. ft. electrically driven compressors; storage-battery haulage on intermediate levels and trolley-locomotive haulage on main levels; complete mining equipment; modern and complete machine shop; modern hotel, change house, and camp. **Ore:** Lead-zinc-silver. **Men Employed:** Average, 50. **Remarks:** 884 ft. of development work during the year.
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TEDDY MINING & MILLING CO., LTD.

THOMAS MINES, INC.

TIBERIUS MINING CO.

TRADE DOLLAR MINING CO., LTD.

TRAPPER CREEK SILVER MINING CO.

TREASURE VAULT MINING CO., LTD.

TUSCUMBIA MINING CO., LTD.

UNITED AMERICAN MINES CO., LTD.

UNITED LEAD-ZINC MINES COMPANY
UNITED METALS CO.

UNITED MINES & METALS CORPORATION

UNITED STATES SILVER LEAD MINES CO.

VENDETTA CHIEF MINING CO.

VICTOR MINING CO.

VIENNA-INTERNATIONAL MINING & MILLING CO., LTD.

VINDICATOR MINING CO.

WALLACE IDAHO LEAD MINES, INC.

WALLACE MINING COMPANY
WALLACE SILVER-LEAD MINES COMPANY

WALL STREET MINING CO.

WASHINGTON-IDAHO MINING CO.

WASHINGTON MINING CO.

WEST BELL MINING CO., LTD.

WEST GEM MINING CO.

WEST HECLA MINING CO.

WEST MAMMOTH MINING CO.

WESTERN PACIFIC MINING CO.
MINING INDUSTRY OF IDAHO

WESTERN UNION MINING CO.

WILLOW CREEK MINING CO.

WISCONSIN MINING CO.

WONDERFUL MINING CO., LTD.

WYOMING MINING & MILLING CO., LTD.

YAKIMA-SHOSHONE MINING CO.

NAME OF MINE   MINING DIST.   OWNER   P. O. ADDRESS
American Placer  Summit    Joseph Laveigne  Murray
Anchor et al.    Summit    Mike Melley     Murray
Ancient Gravel   Yreka     Geo. H. Heller Est. Kellogg
Birthday Gr.     St. Joe    Wes. J. Horsky    Falcon
Bismark Lode     Eagle     Robt.T. Horn Est. Murray
Black Hill       Beaver    John Thiard Est. Delta
Blue Eagle Gr.   Yreka     Walter Owens    Kellogg
Blue Grouse      Evolution C. M. Patterson  Wallace
Bonanza          Eagle     Jas. Boland      Murray
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Origin and distribution of ore in the Coeur d'Alene, by O. H. Hershey, published for the author as a pamphlet by the Min. and Sci. Press, p. 32, 1916.**


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IMPORTANCE OF SILVER MINING IN SHOSHONE COUNTY

An interesting table prepared by the county auditor, Harry A. Rogers, of Wallace, shows the importance of silver mining in Shoshone County, Idaho, the largest silver producing county in the United States:

Total ounces of silver produced in past 12 months ......................................................... 19,344,686
Total value, at 77c per oz................................................................. $14,785,408.22
Total number of men employed by mining industry past 12 months ......................................................... 4,964
Total payroll for above, during past 12 months ...................... $8,609,085.34
Other business enterprises created and entirely dependent upon mines ......................................................... 396
Total number of persons employed by above, past 12 months ......................................................... 1,479
Total payroll for above during past 12 months ......................................................... $2,307,240.00
Total number of persons actually dependent on mining industry ......................................................... 19,996
Total annual wages involved ................................................................. $10,916,325.34
Total taxes paid by mining companies, for support of state and local government, as shown by 1937 county tax roll ......................................................... $372,331.88
Of total taxes paid in Shoshone County, the mining industry pays ......................................................... 48½%
The value of silver produced in the past 12 months exceeded the total wages paid for labor employed in all lines of business and industry in Shoshone County by the sum of ......................................................... $3,869,000.00

New Silver Price for the Year 1938

In fixing the price to be paid for silver mined in the United States, for the year 1938, at 64.64 cents an ounce, President Roosevelt slashed 12.93 cents an ounce off the price of 77.57 cents per ounce, which is the price the miners have received for newly mined silver during the past year. On the basis of production figures for the year 1937, and with a reasonable expectation of a duplication of the figures for the year 1938, this cut will mean a reduction of approximately $2,500,000 in income to the mining industry of Idaho.

Silver Policy of the Seventy-Fifth Congress Is Well Defined*

Chief objectives of the silver bloc program in congress as stated in debates and statements by proponents of the policy are:
1. To stabilize the price of silver and prevent wide fluctuations such as those which drove the price of the metal to the lowest point in 20 years in 1931.
2. To increase the nation's monetary silver stocks.
3. To expand the currency with a view toward raising commodity prices.
4. To encourage foreign nations to use more silver in their monetary systems.
5. To curb sales of silver by foreign countries which had abandoned the silver standard.
6. To protect American commerce against adverse effects of depreciated foreign currencies.
7. To increase the purchasing power of silver-using countries.
8. To raise the price of silver to benefit the mining industry.

* (Courtesy The Wallace Miner, Wallace, Idaho.)
TETON COUNTY

County Seat: Driggs. Area: 463 sq. miles. Population: 3573. Principal Industries: Agriculture, live stock and mining. Transportation: Ashton-Victor branch of Oregon Short Line. Teton State highway and an excellent system of county roads. Mineral Resources: Coal, phosphate rock, natural gas, limestone and asbestos. There are excellent possibilities for the discovery of petroleum. This is one of the few counties in the State that has beds of commercial coal.

Review of Year's Operations

The only active operation in the county was the property of the Gem State Coal Mining Company, about 10 miles from Driggs. The mine is operated by H. F. Samuels. The coal produced is marketed in nearby towns by means of truck.

GRAND TETON OIL CO.
Office: Earl Bldg., Idaho Falls. Officers: Geo. W. Edgington, Pres., Idaho Falls; Leo F. Smith, Sec., Seattle, Wash. Inc.: Aug. 9, 1928. Capital: 250,000 shares; par value $1; April 12, 1930, increased to 1,000,000 shares; 786,000 shares issued. Property: Oil and gas lease on 13,000 acres patented and government land lying 11 miles west of Driggs. Development: Blevins No. 1 well, 3100 ft. deep; Bevan No. 1 well, 1815 ft. deep. Plant: 2 complete well-drilling rigs and equipment. Mineral Sought: Oil and gas. Remarks: Report not filed for 1937.

IDAHO COAL & COKE, INC.

SUPERIOR COAL MINING CO.

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TWIN FALLS COUNTY


MINERAL RECOVERIES, INC.


VALLEY COUNTY

County Seat: Cascade. Area: 3779 sq. miles. Population: 3488. Principal Industries: Agriculture, stock raising, lumbering and mining. Transportation: State Highway up Payette River, the McCall-Warren-Edwardsburg-Yellow Pine-Landmark-Cascade Loop and Cascade-Bear Valley road, as well as numerous forest service roads and trails. The only railroad is the McCall branch of the Union Pacific. Relief: The county, as a rule, is high and rugged with few level spaces along the many rivers. The Payette Lakes, the largest in southern Idaho, occur at the head of the Payette River, occupying the upper end of the only large valley in the county. Mineral Resources: Gold, lead, silver, zinc, mercury, copper, tungsten, molybdenum and monazite. On account of the very difficult problem of transportation the mineral resources of this county have received scant development. Until recent years, only the placer and free lode gold could be successfully handled.

The building of roads by the forest service has been accompanied by a corresponding development in mining and this county is fast becoming one of the foremost mining districts of the state.

It has great possibilities and presents many opportunities to the prospector, operator and investor.

Review of Year’s Operations

Copper Cliffs Mining Company completed 48 ft. of development work during the year.

Profile Yellow Pine Company, Inc., reports 296 ft. of development during the year. H. T. Abstein of Yellow Pine, is president of the company.

Twenty ft. of development work was reported by the Rapid Creek Mining Co., Ltd., with a crew of 7 men.

The road over Monumental Summit was improved by the Forestry Department, and the district around Roosevelt Lake and Thunder Mountain is now accessible by automobile.

The Meadow Creek mine of the Yellow Pine Company at Stibnite, under the management of Lloyd C. White, was the largest operation in Valley County. With a crew of 60 men this property led the field in the production of gold. The ore is antimony-gold. The supplies are brought in and concentrates shipped from Cascade after being trucked a distance of 78 miles.

The mill capacity at the Thunder Mountain Mining and Milling Company was increased. The mill now handles about 40 tons daily with good recovery. A. H. Sperry, president, reports the operation has been satisfactory, meeting all expectations and returning a fair margin of profit.

The Lucky Lad Mining Company, with the assistance of other mine owners and prospectors of the Artillery Dome mining section, extended the road from Snowshoe cabin to the Lucky Lad property on Pistol Creek. Dr. George O. A. Kellogg, Nampa, who is heavily interested in this mine, reports that eight carloads of galena were shipped from the Lucky Lad since the road was completed. Kimball and Jensen, James Leahy, Harold Seaweard and
Cleve Warham, have uncovered good showings and many claims were staked during the year. Indications point to another producing community in this area which has been held back for years by inadequate transportation facilities.

Daniel C. McRea and son, of Yellow Pine, are placer mining on the south side of Thunder Mountain. These men formerly operated the Sunnyside mine, now worked by Spokane interests.

A forty-five page geologic study, indicating future possibilities in Valley County, is one of the latest publications released by the Idaho Bureau of Mines in cooperation with the U. S. Geological Survey. It is Pamphlet No. 44, "Geology and Ore deposits Near Edwardsburg and Thunder Mountain, Idaho," by P. J. Shenon and C. P. Ross. Prospectors as well as engineers will find its technical contents valuable. It is probably the most important contribution thus far to mining in this area.

A ledge of base ore was opened in the Merry Blue Mine near Cascade, which is owned by Margaret E. Ball, 400 Blackstone Avenue, La Grange, Illinois. The shaft is down only 15 feet but the ledge is stated to have been traced for about 1000 ft. The property has been recently retimbered and put in condition for further development. The workings open the property on three levels and equipment includes a 25-ton amalgamation mill powered by steam. Values are in gold, silver and tungsten.

Metal Ore mine on Profile Gap made several shipments of high-grade galena. Four men were employed by Dr. Adix and Gamble.

Annual assessment work was reported by the Copper Camp Mining company. Wm. A. Edwards of Edwardsburg is manager.

During the latter part of the year activity was reported on cinnabar holdings in this area. Particulars will be printed in the 1938 report.

The mining districts of Valley County are tapped by unimproved dirt roads and pack trails. Landing fields are located at Cascade, Idaho Minerals Company, Yellow Pine, Stibnite and Edwardsburg.

AMALGAMATED RED METALS MINES CO.

ANTIMONY GOLD ORES CO.

BIG CREEK GOLD MINES, INC.

BIG LEDGE GOLDMINES COMPANY
CASCADE VALLEY CORPORATION

COPPER CAMP MINING CO.

COPPER CLIFFS MINING CO.

DEADWOOD MINING CO., LTD.

GOLD FORKS MINING CO.

HALL INTERSTATE MINING CO.

HOLCOMB CO., LTD.

IDAHO MINERALS CO.

INDEPENDENCE MINES & POWER CO.
KEystone GOLD MINES, INC.

LOST PILGRIM MINING CO.
Office: Boise. Officers: James H. Hawley, Jr., Pres.; Chas. W. Mack, Sec., both of Boise. Inc.: Nov. 22, 1921. Capital: 600,000 shares; par value $1; 365,144 shares issued. Property: Lost Pilgrim group; 8 patented claims, Deadwood dist.; Knox. Development: By 2 tunnels: No. 1, 400 ft. long; No. 2, 300 ft. long; and 1 vertical shaft 40 ft. deep, at the bottom of which is a 70 ft. drift; also by Independence tunnel; total development, approximately 2500 ft. Ore: Silver-lead-zinc. Remarks: Idle.

LUCKY LAD MINING COMPANY

MARY JANE MINING CO., LTD.

PADDY FLAT PLACER MINING CORP.

PROFILE-TAMARACK MINES CO.

PROFILE YELLOW PINE COMPANY, INC.

RAPID CREEK MINING CO., LTD.
SMITH CREEK HYDRAULIC MINING CO., INC.

SOUTH SALMON PLACER MINING CO.

UNITED MERCURY MINES CO.

VENABLE MINING COMPANY, INC.

YELLOW PINE CO.
Office: 922 Crocker Bldg., San Francisco, Calif. Officers: P. R. Bradley, Pres., E. A. Griffen, Sec., both of San Francisco, Calif.; Lloyd C. White, Mgr., Stibnite. Inc.: Filed in Idaho, May 25, 1928. Capital: 200,000 shares; par value $1; 62,605 shares issued. Property: Meadow Creek mine; 9 patented and 518 unpatented claims, Yellow Pine dist.; Stibnite. Development: By 6 tunnels, the principal one being, 7364 ft.; approximate total development to date, 24,447 ft. Plant: MINE: Meadow Creek Camp: 12x10 I-R compressor and Ottumwa hoist, both electrically driven; steel sharpener; oil furnaces; sawmill; complete mining equipment and camp. Monday Camp: One 300 cu. ft. 12x10 I-R compressor; one 620 cu. ft. Imperial type I-R compressor, Roots positive blower; all electrically driven; steel sharpeners; oil furnaces; storage battery locomotive haulage; complete mining equipment and machine shop; complete and modern mine and camp buildings. MILL: 175-ton fine grinding flotation followed by cyanidation. POWER: South Meadow Creek hydroelectric plant, 75 kw., driven by Pelton water wheel under a 520 ft. head, water delivered through an 11,000 ft. 28 in. redwood pipe and a 1620 ft. 24 in. steel penstock; 5 miles of transmission lines. Ore: Mercury, gold-silver-antimony. Men Employed: Average, 60. Remarks: Report not filed for 1937.

NAME OF MINE | MINING DIST. | OWNER | P. O. ADDRESS
--- | --- | --- | ---
Belzer | Unorganized | L. E. Belzer | La Moine, Calif.
Bismark et al | Yellow Pine | Bonzelli & Elliott | Yellow Pine
Big Creek Gr. | Big Creek | R. H. Cowman | Yellow Pine
Buckshot | Yellow Pine | Iona Chandler | Yellow Pine
Bell's Bar | Unorganized | Wm. Darling | Cascade
Blue Gulch et al. | Yellow Pine | Art Francis | Stibnite
Big Creek et al. | Big Creek | Jhn. Rouston & Sons | Yellow Pine
Big Cr. High Bar | Big Creek | E. W. Rowland | Yellow Pine
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**BIBLIOGRAPHY**

See pages 92-93 for publisher's address, meaning of reference marks and abbreviations.


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


Big Creek gold district, Idaho, by R. N. Bell: Eng. and Min. Jour., vol. 94, pp. 891-892, Nov. 9, 1912.§


"Thunder Mountain Mining District," by Clyde P. Ross, vol. 28, No. 6, Economic Geol., 1933.


WASHINGTON COUNTY

County Seat: Weiser. Area: 1,479 sq. miles. Population: 7,962. Principal Industries: Agriculture, stockraising and mining. Transportation: North and South Highway, Oregon Trail and well maintained county roads. The railroads serving the county are: The Union Pacific main line and Huntington-Robinette branch and the Pacific and Idaho Northern. Rivers: Snake River forms western boundary and Weiser River flows southwesterly through the center of the county. Mineral Resources: Silver, copper, gold, lead, zinc, manganese, diatomaceous earth, pyrites, gypsum, clay, garnets and natural gas. History and Future: Nearly all of the mineral resources occur in the mountain ranges that lie east of the Snake River. The principal district is known as the Mineral District and at one time had two blast furnaces in operation and was a large producer of silver. The district has been dormant for many years, however, and has almost reverted to its primitive condition. Nearly all of the ores are high-grade silver-copper ores, rather complex, but can be handled by modern flotation methods.

This district is one well worthy the attention of the operator and investor.

Review of Year's Operations

There was some activity in placer mining on the Snake river. The Silver Still, owned and operated by Jas. G. Still, made shipments to the smelter.

It was reported that an important cinnabar discovery was made on Nutmeg mountain in the Cove district by Harry S. Brown, a mining man of Canyon City, Oregon. The Pittsburg Mining Company is considering the installation of a crusher and roasting plant at the property.

The iron deposits in this county were investigated by representatives of outside capital to determine the extent and commercial value of these deposits.

MIDVALE OIL & GAS CO.


WEISER GAS & PETROLEUM CO.


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<td>View of the Valley</td>
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BIBLIOGRAPHY

See pages 92-93 for publisher's address, meaning of reference marks and abbreviations.


## Companies Incorporated During 1937—
**Reports Not Yet Filed**

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## CORPORATIONS NOT OWNING PROPERTY IN IDAHO

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Patterson Mines, Inc. (Charter forfeited Nov. 30, 1937.)
Slocan Idaho Mines Corp.
Spokane Dredging & Mining Co.
The Submarine Gold M. Co.
Sylvanite Mining Co.

OFFICER
J. O. Elton, Pres.
R. L. Brainard, Pres.
R. F. Hardaway, Pres.
W. L. Casey, Pres.
M. J. Bray, Pres.
Robert G. Neider, Pres.
Frank McNees, Pres.

P. O. ADDRESS
818 Kearns Bldg., Salt Lake City, Utah
Kellogg, Idaho
1401 First Ave., Spokane, Wash.
Bonners Ferry, Idaho
Spokane, Wash.
Boise, Idaho
Bonners Ferry, Idaho

STATE SEAL
The Great Seal of the State, replica of which is embroidered in colors in the center of the flag, came into existence in 1891, by act of the first State Legislature. The translation of the Latin motto on the seal, "Esto Perpetua," is "It is perpetuated," or "It is forever." The river depicted in the shield is our mighty Snake River, a stream of great majesty.
GOLD, SILVER, COPPER, LEAD, AND ZINC IN IDAHO

By PAUL LUFT*

The output of gold, silver, copper, lead, and zinc from mines in Idaho in 1936, in terms of recovered metals, was 80,291.40 fine ounces of gold, 14,537,530 fine ounces of silver, 2,954,000 pounds of copper, 182,678,000 pounds of lead, and 98,200,000 pounds of zinc. This output compares with a production in 1935 of 83,823.06 ounces of gold, 10,240,953 ounces of silver, 2,095,867 pounds of copper, 158,040,250 pounds of lead, and 62,105,568 pounds of zinc. There were 281 lode mines and 828 placers producing in 1936 compared with 289 lode mines and 1,079 placers in 1935.

Since 1863 the output of the five metals in Idaho has been as follows:
Gold, 7,030,826.39 fine ounces; silver, 379,546,495 fine ounces; copper, 83,902 tons; lead, 5,021,437 tons; and zinc, 577,904 tons. The total value of this output has been $1,053,213,440.

Calculation of value of metal production.—The value of metal production herein reported has been calculated at the prices given as follows. Gold in 1932 is figured at $20.671835 per ounce, the Treasury legal coinage value for fine gold from January 18, 1837, to January 31, 1934; in 1933 at $25.56 and in 1934 at $34.95 per ounce, the yearly average weighted United States Government price†, and in 1935 and 1936 at $35 per ounce, under authority of the Gold Reserve Act of January 31, 1934. The silver price in 1932 and 1933 is the average New York price for bar silver; in 1934, the Treasury buying price ($0.64646464+ per ounce) for newly mined silver; and in 1935 and 1936, the yearly average weighted Treasury buying price for newly mined silver. The copper, lead, and zinc prices are weighted yearly averages of all grades of primary metal sold by producers.

Gold.—The output of recoverable gold in Idaho was 80,291.40 fine ounces in 1936, a decrease of 4 percent from the output in 1935. Gold produced from lode mines amounted to 45,861.60 ounces, a decrease of 6,210.43 ounces, and gold recovered at placers amounted to 34,429.80 ounces, an increase of 2,678.77 ounces. Most of the gold from placers came from the Warren and Boise Basin districts where dredges were operated. Twelve floating (bucket) dredges recovered 26,098.19 ounces of gold in 1936 compared with nine in 1935 which recovered 23,616.96 ounces. Siliceous gold ore yielded 42,176.01 ounces of gold (53 percent of the total) in 1936, a decrease of 6,028.02 ounces; placers yielded 43 percent. Nearly 66 percent of the gold from lode and placer mines was recovered from 12 mines in Boise, Elmore, Idaho, Owyhee, and Valley Counties. The Meadow Creek mine of the Yellow Pine Go. at Stibnite was the largest producer of gold in Idaho in 1936; it was followed by the Golden Anchor mine at Burgdorf, the Wharton property (dredge) at Centerville, the Golden Anchor mine at Burgdorf, the Wharton property (dredge) at Centerville, the Gold Hill mine at Quartzburg, the Idaho Gold Dredging Co. and the Baumhoff-Fisher Co. (dredge) at Warren, the Boise-Rochester mine at Atlanta, the Jordan Creek dredge at De Lamar, the Gnome mine near Elk City, the Mores Creek Dredging Co. at Idaho City, the Orogrande-Frisco property near Orogrande, and the Grimes Co. (dredge) at Pioneerville. The Boise-Rochester mine, the largest producer of gold in Idaho from 1932 to 1935, inclusive, was closed in June 1936 and sold to The Sawtooth Co.

Silver.—The output of recoverable silver in Idaho was 14,537,530 fine ounces in 1936, the largest output ever recorded in the State and an increase of 42 percent over the output in 1935. Idaho has been the largest producer


* Assisted by Jeannette Froiseth.
of silver in the United States since 1933; Utah and Montana rank next. Silver ore yielded nearly 69 percent of the total silver from Idaho in 1936, lead-zinc ore 19 percent, and lead ore 11 percent. The production of silver from silver ore increased from 6,310,726 ounces in 1935 to 9,991,204 ounces in 1936; silver output from lead-zinc ore and lead ore also increased. Eleven mines produced 96 percent of the silver output of the State in 1936. The Sunshine mine, the largest producer of silver in the United States, produced nearly 63 percent of the State output; it was followed by the Hecla at Burke, Bunker Hill at Kellogg, Morning at Mullan, Crescent on Big Creek, Triumph near Ketchum, Page west of Kellogg, Star near Burke, Gold Hunter at Mullan, Clayton at Clayton, and Hewer near Lakeview in Bonner County.

Copper.—The output of recoverable copper in Idaho was 2,954,000 pounds in 1936 compared with 2,095,867 pounds in 1935, an increase of 41 percent. More than half of the copper produced in Idaho in 1936 was recovered from concentrating silver ore from the Sunshine mine on Big Creek, Shoshone County; most of the remainder was recovered from concentrating lead-zinc ore from the Bunker Hill, Morning, and Triumph mines.

Lead.—The output of recoverable lead in Idaho was 182,678,000 pounds in 1936, compared with 158,040,250 pounds in 1935, an increase of nearly 16 percent but less than the average annual output (213,324,724 pounds) for the decade 1927-36. Lead-zinc ore yielded 71 percent of the total lead in 1936, and lead ore 28 percent. Lead from lead-zinc ore increased 18,412,105 pounds and from lead ore 5,535,044 pounds. Ten mines in 1936 produced 96 percent of the total lead; the combined output of the three largest—Bunker Hill, Morning, and Hecla—was 77 percent of the total. In order of output the 10 leading producing mines were: Bunker Hill, Morning, Hecla, Page, Star, Triumph, Gold Hunter, Sidney, Clayton, and Hope; all except the Triumph, Clayton, and Hope mines are in the Coeur d’Alene region, Shoshone County. Considerable lead was also produced from the Warm Springs district in Blaine County, Bay Horse district in Custer County, Pend d’Oreille district in Custer County, and Texas district in Lemhi County.

Zinc.—The output of recoverable zinc in Idaho in 1936 was 98,200,000 pounds, the largest ever recorded in the State and an increase of 36,094,432 pounds over the production in 1935. The unusually large gain was due chiefly to the increase in output of lead-zinc ore from the Star mine and to the resumption of operations at the Triumph mine near Ketchum, Blaine County. Substantial gains in the production of zinc were also made at the Bunker Hill, Sidney, Morning, and North Star mines. Lead-zinc ore yielded 99 percent of the total in 1936 and lead ore nearly all the remainder. There was an increase of 35,755,062 pounds in zinc from lead-zinc ore and 342,533 pounds from lead ore. Seven mines, each producing more than 2,000,000 pounds of zinc in 1936, yielded 95 percent of the total. The Morning mine of the Federal Mining & Smelting Co. continued as the largest zinc producer in Idaho, followed by the Bunker Hill, Star, Triumph, Sidney, Frisco, and Page mines.

MINING INDUSTRY

The mining industry in Idaho improved to such an extent in 1936 that the value of the metal output rose from $19,522,704 in 1935 to $27,654,472 in 1936, an advance of nearly 42 percent. This large gain was due chiefly to the marked increases in the average sales prices of silver, lead, and zinc; silver from 71.875 cents an ounce in 1935 to 77.45 cents in 1936, lead from 4 to 4.6 cents a pound, and zinc from 4.4 to 5 cents a pound. As a result of increased metal prices mines in Idaho produced a record output of silver and zinc and the largest output of lead since 1931. The output of gold decreased slightly due to the closing of the Boise-Rochester property at Atlanta, Elmore County, in June. However, the gradual yearly increase in the production of gold from bucket dredges is notable. The output of ore from mines in the Coeur d’Alene region, the chief producing area in Idaho, increased considerably, especially that of lead-zinc ore. The features of the year were the unusually large increase in production of silver from the Sunshine mine; the large increase in production of zinc from the Star, Bunker Hill, Sidney, and Morning mines;
and the reopening of the Triumph lead-zinc mine near Ketchum, Blaine County. The smelter and refinery of the Bunker Hill & Sullivan Mining & Concentrating Co. were active throughout the year at an increased rate, and the electrolytic zinc plant of the Sullivan Mining Co. was worked at capacity. The Sullivan Mining Co. is planning to increase the capacity of the plant from 60 to 90 tons a day.

**Gold ore.**—The output of gold ore in Idaho was 264,446 tons (including old tailings) from 171 properties in 1936 compared with 262,202 tons from 180 properties in 1935; it represented nearly 15 percent of the total output of ore in the State in 1936. More than 76 percent of the total gold ore (and old tailings) was produced from the Orogrande-Frisco property near Orogrande, Yellow Pine property at Stibnite, Gold Hill mine at Quartzburg, and Boise-Rochester mine at Atlanta.

**Gold and silver ore.**—The output of 427 tons of gold and silver ore in Idaho in 1936 came chiefly from the Come-Back mine in Boise County and the Wilson mine in Owyhee County.

**Silver ore.**—Thirty mines produced 250,265 tons of silver ore in 1936 compared with 15 mines producing 181,367 tons in 1935. More than 97 percent of the total came from the Sunshine and Crescent mines in Shoshone County and the Hewer property in Bonner County.

**Copper ore.**—A little copper ore (284 tons) was produced from eight mines in Idaho in 1936; the output in 1935 was 243 tons.

**Lead ore.**—The output of lead ore was 305,967 tons from 53 properties in 1936 compared with 256,077 tons from 56 properties in 1935. Nearly 98 percent of the total came from the Coeur d'Alene region, the Clayton mine in the Bay Horse district, and the Hope property in the Pend d'Oreille district.

**Lead-zinc ore.**—The output of lead-zinc ore (including old tailings) was 986,141 tons from 19 properties in 1936 compared with 820,674 tons from 12 properties in 1935. Except for a small lot of ore from Camas County, all lead-zinc ore (and old tailings) produced in 1936 came from 13 mines in Shoshone County and 5 mines in Blaine County and was treated by flotation. It represented more than 54 percent of the total ore. The Bunker Hill property continued to be the leading producer of lead-zinc ore, followed by the Morning, Star, Page, Frisco, Triumph, and Sidney.

**METALLURGIC INDUSTRY**

The 1,807,530 tons of ore (including old tailings) produced in 1936 in Idaho comprised 196,011 tons (10.85 percent) treated at gold and silver mills, 1,583,287 tons (87.59 percent) treated at concentration plants, and 28,232 tons (1.56 percent) shipped crude to smelters.

Of the ore (and old tailings) treated at gold and silver mills, 50,713 tons were treated at straight amalgamation plants, 46,657 tons were treated by combined amalgamation and concentration, and 98,641 tons (including 2,700 tons of old tailings) were treated at straight cyanidation plants. In 1935, 41,017 tons of ore (and old tailings) were treated by amalgamation, 91,480 tons by combined amalgamation and concentration, and 51,504 tons by cyanidation. Nearly 82 percent of the ore treated by amalgamation in 1936 came from mines in the Boise Basin district; 96 percent of the ore treated by amalgamation and concentration came from mines in the Middle Boise, Marshall Lake, McDevitt, and Warren districts; and 96 percent of the ore and old tailings treated by cyanidation came from mines in the Orogrande district.

Ore and old tailings treated at straight concentration plants increased from 1,315,585 tons in 1935 to 1,583,287 tons in 1936. Siliceous material treated at concentration plants increased from 255,021 to 309,547 tons; lead ore from 239,896 to 287,571 tons; and lead-zinc ore and old tailings from 820,654 to 986,141 tons. A little copper ore was also treated by concentration.
<table>
<thead>
<tr>
<th>County</th>
<th>Mines Producing</th>
<th>Ore (Short Tons)</th>
<th>Gold*</th>
<th>Silver†</th>
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<td></td>
<td>Lode</td>
<td>Placer</td>
<td>Total</td>
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* Includes placer production, 34,429.80 fine ounces ($1,205,043), compared with 31,751.03 fine ounces ($1,111,286) in 1935.
† Includes placer production, 11,153 fine ounces ($8,638), compared with 12,185 fine ounces ($8,758) in 1935.
## MINE PRODUCTION OF GOLD, SILVER, LEAD, COPPER, AND ZINC IN IDAHO IN 1936, BY COUNTIES, IN TERMS OF RECOVERED METALS (Continued)

<table>
<thead>
<tr>
<th>County</th>
<th>Lead</th>
<th>Copper</th>
<th>Zinc</th>
<th>Total Value</th>
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<td></td>
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<td>Pounds</td>
<td>Value</td>
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<tr>
<td>Bingham</td>
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</tr>
<tr>
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<tr>
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<td></td>
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</tr>
<tr>
<td>Power</td>
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<td></td>
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<td>Washington</td>
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<td>Total, 1935</td>
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<td>$8,403,188</td>
<td>2,954,000</td>
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</table>

* Average value of metals: Gold, $35.00 per ounce; silver, $0.7745 per ounce; lead, $0.046 per pound; copper, $0.092 per pound; zinc, $0.050 per pound.

† Average value of metals: Gold, $35.00 per ounce; silver, $0.71875 per ounce; lead, $0.040 per pound; copper, $0.083 per pound; zinc, $0.044 per pound.
ORE SOLD OR TREATED IN IDAHO IN 1985, WITH CONTENT IN TERMS OF RECOVERED METALS

<table>
<thead>
<tr>
<th>Source</th>
<th>Mines Producing</th>
<th>Ore (Short Tons)</th>
<th>Gold (Fine Ounces)</th>
<th>Silver (Fine Ounces)</th>
<th>Lead (Pounds)</th>
<th>Copper (Pounds)</th>
<th>Zinc (Pounds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry gold ore</td>
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<td>48,204.03</td>
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<td>15,336</td>
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<td>(*)</td>
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<td>Lead ore</td>
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<td>(*)</td>
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<td>779,966</td>
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<td>158,040,250</td>
<td>2,095,867</td>
<td>62,105,568</td>
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</table>

* A mine producing more than one class of ore is counted but once in arriving at total for all classes.
ORE SOLD OR TREATED IN IDAHO IN 1936 WITH CONTENT IN TERMS OF RECOVERED METALS

<table>
<thead>
<tr>
<th>Source</th>
<th>Mines Producing</th>
<th>Ore (Short Tons)</th>
<th>Gold (Fine Ounces)</th>
<th>Silver (Fine Ounces)</th>
<th>Lead (Pounds)</th>
<th>Copper (Pounds)</th>
<th>Zinc (Pounds)</th>
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<td>1,292,392</td>
<td>2,099.32</td>
<td>4,395,974</td>
<td>181,354,316</td>
<td>890,389</td>
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<td>Total, lode mines</td>
<td>281</td>
<td>1,807,530</td>
<td>45,861.30</td>
<td>14,526,377</td>
<td>182,678,000</td>
<td>2,954,000</td>
<td>98,200,000</td>
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<tr>
<td>Total, placers</td>
<td>828</td>
<td>34,429.80</td>
<td>11,153</td>
<td></td>
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<tr>
<td></td>
<td>1,109</td>
<td>80,291.40</td>
<td>14,537,530</td>
<td>182,678,000</td>
<td>2,954,000</td>
<td>98,200,000</td>
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</tbody>
</table>

* A mine producing more than one class of ore is counted but once in arriving at total for all classes.

MINE PRODUCTION OF GOLD, SILVER, LEAD, COPPER, AND ZINC IN IDAHO, 1863-1936, IN TERMS OF RECOVERED METALS

<table>
<thead>
<tr>
<th>Gold* (Fine Ounces)</th>
<th>Silver* (Fine Ounces)</th>
<th>Lead (Tons)</th>
<th>Copper (Tons)</th>
<th>Zinc (Tons)</th>
<th>Total Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>7,030,826.39</td>
<td>379,546,495</td>
<td>5,021,437</td>
<td>83,902</td>
<td>577,904</td>
<td>$1,053,213,440</td>
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</table>

1935-36 METAL PRODUCTION BY COUNTIES

ADA COUNTY

Nearly all the output in Ada County in both 1935 and 1936 was placer gold recovered from sand and gravel from the Snake River and Highland (Boise River) districts; production in 1936 was considerably more than in 1935 due to the operation of a power shovel and dragline by the Gold Flour Mining Co. on the north bank of the Snake River adjacent to Grand View.

ADAMS COUNTY

Seven Devils district.—The output of metals from the Seven Devils district has been comparatively small for several years, but in 1935 the district became an important producer of gold due to the discovery of high-grade gold ore at the Placer Basin property 40 miles northwest of Council. The property continued to produce rich gold ore in 1936, and besides 318 tons of ore shipped to a smelter, about 600 tons of ore were milled in a 25-ton cyanidation plant.

BLAINE COUNTY

Little Wood River district.—No ore was produced in the Little Wood River district in 1935; in 1936 several cars of lead-zinc ore from an ore dump near Muldoon were shipped to Midvale, Utah, for milling.

Vienna district.—The Vienna mine was leased to the Kimball Mining Syndicate in 1935, and 375 tons of silver ore were concentrated by flotation; besides silver the concentrates contained considerable gold and a little lead and copper. The property was idle in 1936.

Warm Springs district.—The value of the metal output of the Warm Springs district increased from $10,654 in 1935 to $994,818 in 1936 as a result of the operations of the Triumph, North Star, and West Shore mines. The properties were idle in 1934 and 1935, but the Hailey Triumph Mines Co. started operations in January 1936 and shipped about 38,000 tons of zinc-lead ore to Bauer and International, Utah, for milling. The Triumph mine, a large producer of silver, lead, and zinc from 1927 to 1930, was the largest producer in the county in 1936. The only output in 1935 worth mentioning was a little zinc-lead ore from waste dumps.

BOISE COUNTY

Boise Basin district (Centerville, Placerville, Idaho City, Pioneerville.)—The Boise Basin district was the chief gold-producing area in Idaho in 1936, as the output from placer mines increased from 4,981.54 ounces in 1935 to 12,335.80 ounces in 1936; the output from lode mines in 1936 was 8,814.80 ounces, an increase of 967.40 ounces over 1935. The large increase in production from placer properties was due chiefly to the gain in gold recovered by floating bucket dredges. Two floating dredges were constructed in 1935, one by The Grimes Co. and the other by the Fisher-Baumhoff Co. (Wharton placer.) The Fisher-Baumhoff Co. constructed another floating dredge in 1936, and the Mores Creek Dredging Co. also constructed a floating dredge. The output of gold from the four dredges in 1936 was 11,020.46 ounces compared with 3,508.64 ounces from two dredges in 1935. Considerable gold was also recovered in both 1935 and 1936 by sluicing at the Gold Hill Placers. The Talache Mines, Inc., by far the largest producer of gold ore in the county, increased its output from 31,181 tons in 1935 to 39,387 tons in 1936; the ore was treated by amalgamation. The Come-Back Mining Co., an important producer of high-grade gold and silver ore in 1935, continued to ship high-grade ore in 1936.

Summit Flat district.—Operations of the Golden Cycle, Rock Creek, and Jessie properties east of Pioneerville produced 381 ounces of gold and 217 ounces of silver, a large increase over the output in 1935.
BONNER COUNTY

The largest output in Bonner County in both 1935 and 1936 was lead-silver ore from the Hope (Elsie K.) mine in the Pend d'Oreille district treated by flotation-concentration; the output in 1936 (about 10,000 tons) was more than double that in 1935. The old Hewer property in the Lakeview district was reopened in July 1935 by the Revlis Co., and several thousand tons of silver ore were treated by flotation-concentration. The mine continued to produce silver ore until July 1936, when it was closed.

BONNEVILLE COUNTY

The value of the metal production of Bonneville County was virtually the same in both 1935 and 1936; the entire output was placer gold and silver from the Mt. Pisgah district, chiefly from the McCoy Creek and Idaho Consolidated properties.

BOUNDARY COUNTY

The Idaho Continental mine in the Port Hill district continued to produce a little high-grade lead ore in both 1935 and 1936.

CAMAS COUNTY

The Little Smoky Dredging Co., operating a bucket dredge on Little Smoky Creek, was the largest producer of gold in Camas County in both 1935 and 1936, but its output of gold in 1936 was less than half that in 1935. The output of gold from lode mines in the county also decreased, as less gold ore was produced from the El Oro mine near Fairfield in the Skeleton Creek district.

CLEARWATER COUNTY

The Pierce district was the only important producing district in Clearwater County in both 1935 and 1936. Almost the entire output was placer gold, chiefly from dredging operations on Rhodes Creek. The Gold Dredging, Inc., operated its bucket dredge on Rhodes Creek both years, but the output of gold in 1936 was about 500 ounces less than in 1935. A new bucket dredge was worked in 1936 on Orofino Creek, Pierce district, by the Gold Creek Placer Co., but the gold production was not large as the company started operations late in the year.

CUSTER COUNTY

Alder Creek district.—The output of the Alder Creek district increased slightly in 1936 over 1935, as a result of the increase in output of lead-silver ore from the Bluebird mine 4 miles southwest of Mackay.

Bay Horse district.—The value of the metal output of the Bay Horse district increased from $55,876 in 1935 to $151,634 in 1936, due to the large increase in output of lead-silver ore from the property of the Clayton Silver Mines at Clayton. Nearly 25,000 tons of silver-lead ore were treated in 1936 in the company 50-ton flotation-concentration mill. The Ramshorn mine was also a fairly large producer of silver-lead ore in both years.

ELMORE COUNTY

Bear Creek district.—The output of gold in the Bear Creek district in 1936 was much less than that in 1935, as the Canada Gold Mines, Inc., the chief producer in 1935, was idle in 1936.

Middle Boise district.—The value of the metal output of the Middle Boise district decreased considerably—from $737,204 in 1935 to $164,431 in 1936—due to the closing of the Boise-Rochester mine in June 1936; the mine was the largest producer of gold in Idaho from 1932 to 1935, inclusive. While the property was operated in 1936, more than 29,000 tons of gold ore were treated by amalgamation and flotation-concentration compared with 78,036 tons of ore and old tailings treated in 1935. The Last Chance Mining Co., a new company operating property at Atlanta in 1936, was also a fairly large producer of gold. Considerable gold was recovered in both 1935 and 1936 by various placer operators along the Middle Fork of the Boise River and at King Hill on the Snake River.
Yankee Fork district.—The production of gold and silver in the Yankee Fork district in 1936 was more than in 1935 due to the increase in output of gold ore from the Bachelor Mountain and Peak claims and to the output of silver ore from the Yankee Fork mine. Most of the output in 1935 was old tailings (gold) from the Sunbeam dump treated by cyanidation and concentration; the property was idle in 1936.

GEM COUNTY

The value of the metal output of Gem County increased from $2,268 in 1935 to $6,599 in 1936 as a result of the increase in production of gold ore from the Black Rock mine and placer gold from the Gattfield property, both in the West View district.

IDAHO COUNTY

Camp Howard (Salmon River) district (White Bird).—The output of gold recovered from various bars along the Salmon River from Riggins to beyond Rice Creek increased from 611.00 ounces in 1935 to 865.20 ounces in 1936. In 1936 the Horseshoe Bend Bar near the mouth of Slate Creek, operated by a power shovel and dragline, was by far the most important producer in the district.

Dixie district.—The value of the metal output of the Dixie district increased from $15,334 in 1935 to $52,569 in 1936 due chiefly to the large increase in the output of gold from the Dixie Placers. The company was organized in April 1935 to work placer claims on Crooked Creek, a tributary of Salmon River, and in 1936, a dragline with trommel washing plant handled 192,000 cubic yards of gravel. The output of gold from lode mines also increased as several hundred tons of gold ore from the Dixie Comstock property were treated by flotation-concentration.

Elk City district.—The production of gold in the Elk City district increased from 865.46 ounces in 1935 to 1,263.80 ounces in 1936 due chiefly to increases in output of placer gold from the Deadwood claim and lode gold from the Black Lady (Pilot Knob Gold Corporation) mine. The Mount Vernon Co., operating a bucket dredge at the Deadwood property, was by far the largest producer of gold in the district in both 1935 and 1936. Considerable gold was also recovered in both 1935 and 1936 from placer operations at the Columbus, Gold Hill & American Hill, and Little Millon properties. The only important lode producer in the district in 1936 was the Pilot Knob Gold Corporation; the company constructed a new 25-ton cyanide mill and treated about 900 tons of gold ore.

Florence district.—There were several placer and lode operators in the Florence district in 1935 and 1936, but the chief source of gold in both years was sluicing operations at the Homestake Placers.

Lower Salmon River district.—The entire output of the Lower Salmon River district in 1935 and 1936 was placer gold, chiefly from many transient operators near Keuterville and Boles. Most of the output in both years came from the Hatke claim near Keuterville.

Marshall Lake district (Burgdorf.)—The value of the metal output of the Marshall Lake district increased from $64,247 in 1935 to $261,345 in 1936 as a result of the large increase in output of gold ore from the Golden Anchor (Holte) mine. The Golden Anchor Mining Co. constructed a 50-ton amalgamation and flotation plant during the summer of 1935 and became an important producer of gold. In 1936 it was the largest producer of gold in the county and ranked second among the gold producers of the State. The Walker-Wilcox group, a fairly large producer of gold ore in 1934 and 1935, was idle in 1936.

Newsome district.—The chief output in both 1935 and 1936 was low-grade gold ore from the Imogene mine treated by amalgamation.

Orogrande district.—The value of the metal output of the Orogrande district in 1936 was $183,468 compared with $113,976 in 1935. Most of the output in 1935 and 1936 was gold ore from the Orogrande-Frisco and Gnome
properties treated by cyanidation; there was a substantial increase in the production of gold from each property in 1936. Low-grade gold ore (90,000 tons) from the Orogrande-Frisco property was mined by steam shovel from open-cuts and treated in a 500-ton cyanide plant. The Homestake mine operated by the Penman Mines Corporation was also a large producer of gold ore in 1935, but its output decreased considerably in 1936. More placer gold was produced in the district in 1936 than in previous years; most of it came from the Baker Gulch and Triangle claims.

**Robbins (Buffalo Hump) district.**—The production of gold from the Robbins district in 1936 was slightly less than that in 1935, as the output of gold ore from the War Eagle property was less. A large part of the output in both years was old tailings (gold) from the Jumbo dump treated by cyanidation.

**Salmon River district.**—Considerable placer gold was recovered by various operators in both 1935 and 1936 along the main Salmon River between Higgins and Froctor Creek.

**Simpson (Salmon River) district (Lucile).**—The value of gold output of the Simpson district in 1936 was about half that in 1935 as the McKinley mine, an important producer of lode gold in 1935, was idle in 1936; the output of placer gold was much less than in 1935.

**Ten Mile district (Golden).**—The Lone Pine mine was, as usual, the largest producer of ore in the Ten Mile district, but its output in 1936 was less than in 1935, consequently the total value of the metal output of the district was less. The mine produced 4,643 tons of gold ore in 1936 compared with 5,512 tons in 1935. The Shamrock mine was also an important producer of gold ore in both 1935 and 1936, and the Black Bird mine became an important producer in 1936. There were several placer operators in the district in both 1935 and 1936, but the chief production came from the Key claim.

**Warren district.**—The output of gold from the Warren district decreased from 16,143.06 ounces in 1935 to 10,239.40 ounces in 1936 due to the closing in December 1935 of the floating bucket dredge operated by the Warren Creek Dredging Co. and the large decline in production of gold from the two floating bucket dredges operated by the Idaho Gold Dredging Co. The Baumhoff-Fisher Co., a new producer in the district in 1936, operated a floating bucket dredge on Steamboat Creek; the combined output of gold from the three dredges in 1936 was about 9,300 ounces compared with 15,565 ounces in 1935. A fair amount of placer gold was also produced in both 1935 and 1936 from the Golden Rule claim. The production of gold from lode mines in the district increased considerably in 1936 owing to the large increase in output of gold ore from the Little Giant property operated by the Unity Gold Production Co. The property was operated throughout the year, and about 3,500 tons of gold ore were treated by amalgamation and concentration.

**Jerome County**

The entire metal output of Jerome County in both 1935 and 1936 was placer gold and silver recovered from various bars along the Snake River. The production of gold in 1936 was nearly double that in 1935.

**Latah County**

The entire metal output of Latah County in both 1935 and 1936 was placer gold and silver from claims in the Gold Creek, Hoodoo, and Moscow Mountain districts. The chief producer in 1935 was the Rex claim and in 1936 the Annie Marie claim, both in the Hoodoo district.

**Lemhi County**

**Blackbird district.**—The Meadow mine near Forney was the only producer in the Blackbird district in 1935 and 1936; the output of high-grade gold ore was less in 1936 than in 1935.

**Blue Wing district.**—All the output of the Blue Wing district in both 1935 and 1936 was tungsten-silver-copper ore from the Ima property 15 miles northeast of May, treated in a 100-ton flotation-concentration plant.
Eureka district.—Nearly all the output of the Eureka district in both 1935 and 1936 was placer gold, chiefly from the McNutt claim.

Gibbonsville district.—The total value of the metal output of the Gibbonsville district increased from $8,752 in 1935 to $44,970 in 1936, due chiefly to the treatment of several thousand tons of gold ore in a 50-ton flotation-concentration plant by the Gold Producers, Inc. The company constructed the plant late in 1935 to treat custom ore from various mines in the county, but nearly all the ore treated in 1936 came from properties in the Gibbonsville district. The Clara Morris property was an important producer of high-grade gold ore in 1935 and 1936, and the Sundown placer claim became an important producer of gold in 1936 under the operation of the North Fork Placers Co.

Indian Creek district.—The output of gold in the Indian Creek district in 1936 was more than three times that in 1935, as there was a large increase in the production of gold ore from the Kittie Burton & Ulysses group. The Indian Creek Mining Co., Inc., operated the property throughout the year and treated several thousand tons of gold ore by flotation-concentration.

Junction district.—The output of silver and lead increased in the Junction district in 1936 due to shipments of silver-lead ore from the Plymouth mine near Leadore.

McDevitt district.—The Copper Queen mine near Tendoy was virtually the only producer in the McDevitt district in 1935 and 1936. The mine was operated by the Tendoy Copper Queen Mining Co., and the output of gold ore (containing appreciable quantities of silver and copper) in 1936 was more than double that in 1935; about 4,000 tons of ore were treated in 1936 by amalgamation and concentration.

Mackinaw district.—The output of gold from both lode and placer mines in the Mackinaw district in 1936 was slightly less than in 1935; most of the output in both years was placer gold, chiefly from the K. G. W. and Big Jureano claims. The chief production from lode mines in 1935 was first-class lead ore from the Ringbone Cayuse mine containing considerable gold, and in 1936 the entire output from lode mines was gold ore from the Shio Fly mine.

Mineral Hill district.—The value of the metal output of the Mineral Hill district decreased from $55,969 in 1935 to $44,826 in 1936. The Grunter mine, operated by the American Consolidated Mining & Milling Co., was a large producer of gold ore in 1935, but the property has been idle since August 1935, when a fire destroyed the 100-ton concentration plant. The Gold Hill Mines, Inc., constructed a new 100-ton flotation-concentration plant in 1935 and treated a few thousand tons of gold ore from the old Kentuck & Speculation groups. The company increased its output in 1936 and became the largest producer of gold in the county.

Pratt and Sandy Creeks district.—The Gem mine on Sandy Creek was an important producer of gold ore in 1936; the output of ore in the district in 1935 was small.

Salmon River district.—Many placer operators worked bars along the Salmon River west of Salmon in 1936, and the total value of the gold output was about $3,200 in 1936 compared with $5,462 in 1935.

Texas district.—The value of the metal output of the Texas district increased from $14,082 in 1935 to $54,275 in 1936 as a result of the large increase in shipments of lead-silver ore from the Latest Out mine near Gilmore.

Yellow Jacket district.—The increase in the output of gold in the Yellow Jacket district in 1936 was due chiefly to the treatment of low-grade gold ore from the Yellow Jacket mine near Forney by flotation-concentration. Placer gold recovered from Yellow Jacket Creek was value at $1,176.

NEZ PERCE COUNTY
Most of the output in Nez Perce County in 1935 and 1936 was placer gold recovered from various bars along the Snake River.
MINERAL PRODUCTION

OWYHEE COUNTY

Carson district (Silver City, De Lamar.)—The value of the metal output of the Carson district increased from $53,800 in 1935 to $126,043 in 1936 as a result of the operation of a bucket dredge on Jordan Creek near De Lamar by the Jordan Creek Placers. The dredge started operating July 25, 1935, and its output of gold in 1936 was more than double that in 1935. The output of gold from lode mines increased from 149.80 to 326.80 ounces. There were 17 lode mines producing in the district in 1936, but only 2 were important producers—the Ida Bell (Idaho Explorations, Inc.) and Potosi mines, both producers of gold ore.

Castle Creek district.—Several small lots of exceptionally rich silver ore were produced from the Castle Creek district in both 1935 and 1936.

Snake River district.—Placer gold recovered from claims along the Snake River in Owyhee County was valued at $18,382 in 1936 compared with $22,496 in 1935. The largest producer in both years was the Valley Pride property at Grand View, but its output of gold in 1936 was only half that in 1935.

POWER COUNTY

The total value of Placer gold and silver recovered from various claims along the Snake River near American Falls was $1,795 in 1936 compared with $2,581 in 1935.

SHOSHONE COUNTY

COCR D'ALENE REGION

Mine production of gold, silver, copper, lead, and zinc in the Coeur d'Alene region, Shoshone County, Idaho, 1935-36, and total, 1884-1936, in terms of recovered metals.

<table>
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<th>Year</th>
<th>Lode mines</th>
<th>Placers</th>
<th>Ore (Short tons)</th>
<th>Gold (Fine ounces)</th>
<th>Silver (Fine ounces)</th>
<th>Copper</th>
<th>Lead</th>
<th>Zinc</th>
<th>Total value</th>
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</thead>
<tbody>
<tr>
<td>1935-------</td>
<td>28</td>
<td>76</td>
<td>1,237,244</td>
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<td>9,692,910</td>
<td>1,974,456</td>
<td>156,580,100</td>
<td>62,017,841</td>
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<td>1936-------</td>
<td>25</td>
<td>71</td>
<td>1,454,897</td>
<td>2,456.40</td>
<td>13,740,222</td>
<td>2,629,511</td>
<td>173,267,391</td>
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<td>Total, 1884-1936 *</td>
<td>(*)</td>
<td>358,452.33</td>
<td>306,283,361</td>
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<td>$4,687,373</td>
<td>$557,892</td>
<td>799,834,478</td>
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* Figures not available.
† Short tons.

The Coeur d'Alene region has been the largest producing area in Idaho for many years. In 1936 mines in this region produced more than 80 percent of the total ore output of the State, 94 percent of the silver, 89 percent of the copper, 95 percent of the lead, and 90 percent of the zinc. More than 65 percent of the total ore produced from mines in the region in 1936 was lead-zinc ore, 18 percent was lead ore, and 16 percent was silver ore.

Beaver district.—Only 21 tons of ore were produced in the Beaver district in 1935, but in 1936 about 13,000 tons of zinc-lead ore from old waste dumps of the Interstate-Callahan property were treated in the Galena flotation plant. The remainder of the district output was placer gold and silver chiefly from Potosi Gulch.

Coeur d'Alene district.—Placer gold recovered by drift mining at old claims owned by the Coeur d'Alene Placer Co. was valued at $7,127 in 1936 compared with $9,933 in 1935; the chief producers in both years were the Nugget Gulch Leasing Co. and the Beehive Bar.

Eagle district.—The Jack Waite mine, a large producer of lead-zinc ore, lies in both Shoshone County, Idaho, and Sanders County, Mont. The entire production in both 1934 and 1935 came from Sanders County, but in 1936 part of the output (about 4,000 tons) came from the Eagle district in Shoshone County, and as a result the district again became a large producer of zinc and lead.
Evolution district.—The total value of the metal output of the Evolution district in 1936 was $7,259,068, the largest of any district in Idaho; in 1935 the total value was $4,339,518. The entire output in both 1935 and 1936, except a little silver ore from the Polaris mine in 1936, was silver ore from the Sunshine mine concentrated by flotation. The mine and mill were operated continuously, and 215,949 tons of ore were treated in 1936 compared with 160,417 tons in 1935. The concentrates in 1936 contained 9,103,113 ounces of silver, as well as some gold, copper, and lead, an unusually large increase over the 5,876,910 ounces of silver contained in concentrates in 1935. The property continued to be the largest producer of silver in the United States.

Hunter district (Mullan).—The output of all metals in the Hunter district increased decidedly in 1936 over 1935 as a result of the increase in output of lead-zinc ore from the Star and Morning mines. The Star mine, idle in 1934, was reopened on a production basis late in 1935 and continued producing at a limited rate throughout 1936; about 116,500 tons of ore containing chiefly zinc and lead were treated in the Hercules flotation plant. The Morning mine, as usual, was the most important producer in the district and the largest producer of zinc in the State. The mine and 1,200-ton flotation-concentration mill were operated continuously on a 5-day-week basis, and 313,866 tons of lead-zinc ore were treated. Lessees continued to operate the Gold Hunter mine, and the output of silver and lead was considerably more in 1936 than in 1935; about 46,000 tons of lead-silver ore were treated in 1936 in a 500-ton flotation plant. The output of zinc-lead ore from the Golconda mine decreased decidedly—from 17,643 tons in 1935 to about 6,000 tons in 1936; the property was operated under lease in 1936 by the Trium Co.

Lelande district (Burke, Mace, Frisco).—The value of the metal output of the Lelande district increased from $2,863,762 in 1935 to $3,357,865 in 1936 owing chiefly to the increase in output of silver and lead from the Hecla mine. The Hecla Mining Co. operated its mine and mill continuously on a 5-day-week basis, shipped 13,135 tons of first-class silver-lead ore to a smelter, and treated 204,839 tons of similar ore by gravity- and flotation-concentration. The mine ranked second in the production of silver in the State and third in lead. The next important producer in the district in both 1935 and 1936 was the Frisco mine, operated under lease by the Hull Leasing Co.; several thousand tons of zinc-lead ore were treated by flotation-concentration, and the production of zinc and lead in 1936 was much more than that in 1935. Almost all of the remainder of the district output in both 1935 and 1936 was old tailings from Canyon Creek containing chiefly zinc.

Placer Center district.—The chief output of the Placer Center district in both 1935 and 1936 was lead-silver ore from the Dayrock mine operated by lessees.

St. Joe district.—Placer gold recovered from claims in the St. Joe district was valued at $2,226 in 1936 compared with $1,547 in 1935; nearly all the output in both years came from the Gold Producer claim on Bostonian Creek.

Summit district (Murray.)—The Idaho Mother Lode Gold Mines, Inc., was the only lode producer in the Summit district in 1935 and 1936, and the production of gold in each year was about the same. Several placer operators in the district in both 1935 and 1936 recovered considerable gold from various claims owned by the Coeur d’Alene Placer Co.

Yreka district (Kellogg).—The total value of the metal output of the Yreka district increased from $4,723,376 in 1935 to $6,360,921 in 1936, due chiefly to the increase in production of lead and zinc from the Bunker Hill, Page, and Sidney mines and silver from the Crescent mine. The Bunker Hill property was, as usual, the most important producer in the district and the largest producer of lead in the State; its production of zinc has been increasing each year since 1931. The property was operated continuously in both 1935 and 1936 on a 5-day-week basis, and 348,463 tons of lead-zinc ore were treated in 1936 in concentration plants—part by flotation and part by gravity-concentration and flotation. The Page mine, operated by the Federal Mining
& Smelting Co., was the next important producer in the district; its output of lead-zinc ore increased from 58,972 tons in 1935 to 71,100 tons in 1936. The output of the Crescent mine in 1936 was 16,788 tons of silver ore treated by flotation and 2,053 tons of high-grade silver ore smelted; its production of silver was about double that in 1935. The Sidney Leasing Co. operated the Sidney mine throughout the year and 25,618 tons of zinc-lead ore were treated in the Sweeny custom mill; the mine was reopened in October 1935 after being idle for 3 years. The remainder of the district output in 1935 and 1936 was chiefly lead-zinc ore from the Blackhawk mine and silver ore from the Caledonia mine.

TWIN FALLS COUNTY

The entire metal output of Twin Falls County in both 1935 and 1936 was placer gold and silver recovered from various bars along the Snake River near Twin Falls, Kimberly, and Hansen. The value of the output decreased from $4,394 in 1935 to $3,140 in 1936.

VALLEY COUNTY

Big Creek (Edwardsburg) district.—Nearly all the output in the Big Creek district in 1935 was gold ore from the Snow Shoe mine treated by amalgamation and concentration; most of the output in 1936 was placer gold recovered from the Smith Creek property.

Pistol Creek district.—The Pistol Creek district became a new producing area in Idaho in 1935 through the discovery of lead ore, rich in gold and silver, at the Lucky Boy mine 15 miles east of Landmark; a few cars of ore were shipped to a smelter in Utah. The property continued to produce in 1936, but the output was much less. The chief output of the district in 1936 was high-grade gold ore from the Cougar group.

Thunder Mountain district.—The Sunnyside mine at Stibnite, the only lode producer in the Thunder Mountain district, was sold late in 1935 to the Thunder Mountain Mining & Milling Co. The property was operated in 1935 by the Sunnyside Mining & Milling Co., which treated 2,340 tons of gold ore by amalgamation and concentration. The output in 1936 was much less than in 1935. Nearly half the gold produced in the district in 1936 was recovered from placer claims.

Yellow Pine district.—The output of ore and the production of gold in the Yellow Pine district in 1936 were less than in 1935, as there was a decline in the production of ore from the Meadow Creek property, virtually the only producer in the district. The Yellow Pine Co. operated the property continuously in both years, and several thousand tons of ore containing chiefly gold and antimony were treated in a 200-ton flotation-concentration plant; the resulting concentrates, including antimony, were shipped to a smelter in Utah.

WASHINGTON COUNTY

Nearly all the metal output of Washington County in both 1935 and 1936 was first-class silver ore from the Silver Still property near Mineral in the Washington district. The Silver Still Mining Co. operated the mine throughout both years; the output of ore and its metal content in 1936 were about the same as in 1935.
METAL MINING IN IDAHO, 1937—
PRELIMINARY ANNUAL FIGURES

Actual mine production for 10 months, with an estimate for November and December, indicates that the value of gold, silver, copper, lead, and zinc produced from lode and placer mines in Idaho in 1937 was $38,316,400 compared with $27,654,472 in 1936, according to the Bureau of Mines, United States Department of the Interior. Substantial gains were recorded in the output of silver, copper, lead, and zinc, but the output of gold decreased from 80,291 ounces in 1936 to approximately 78,000 ounces in 1937. The output of silver increased from 14,537,550 to 19,500,000 ounces; copper from 2,954,000 to 4,300,000 pounds; lead from 182,678,000 to 205,600,000 pounds; and zinc from 98,200,000 to 107,000,000 pounds. From 1863 to 1937, inclusive, Idaho has produced, in terms of recovered metals, 7,108,826 ounces of gold, 399,046,495 ounces of silver, 86,052 tons of copper, 5,124,237 tons of lead, and 631,404 tons of zinc; the total value of the five metals has been approximately $1,091,529,800.

In 1937 the estimated value of the gold output was $2,730,000; silver, $15,034,500; copper, $520,300; lead, $12,541,600; and zinc, $7,490,000. In 1936 the value of the gold output was $2,810,199; silver, $11,259,317; copper, $271,768; lead, $8,403,188; and zinc, $4,910,000. The average sales price of gold in 1937 was the same as that in 1936—$35 per fine ounce—but the sales price of silver was 77.45 cents in 1936 and 77.1 cents in 1937. The average sales prices per pound of copper, lead, and zinc increased—copper from 9.2 to 12.1 cents, lead from 4.6 to 6.1 cents, and zinc from 5 to 7 cents.

The production of gold from placer operations in Idaho in 1937 was about 41,000 ounces, an increase from 34,430 ounces in 1936. Most (29,250 ounces) of the placer gold produced in 1937 was recovered by 10 floating-bucket dredges; in 1936, 12 floating-bucket dredges produced 26,098 ounces of gold. Four dredges working in the Boise Basin district, Boise County, in 1937 recovered nearly half of the State output of placer gold; most of the remainder was recovered by dredges operating at Warren, De Lamar, and Pierce. The production of gold from lode mines was about 37,000 ounces in 1937 compared with 45,862 ounces in 1936. More than 75 percent of the gold came from the Boise Basin, Marshall Lake (Burgdorf), Yellow Pine, Seven Devils, Orogrande, and Middle Boise (Atlanta) districts. Approximately one-third of the total gold produced in Idaho in 1937 was recovered from placer and lode operations in the Boise Basin district. The output of gold from this district increased from 21,151 ounces in 1936 to 25,200 ounces in 1937. The output of gold from other important gold-producing districts decreased—Warren from 10,239 to 6,750 ounces, Marshall Lake from 7,070 to 6,200 ounces, Yellow Pine from 7,803 to 5,800 ounces, Orogrande from 5,193 to 3,000 ounces, and Middle Boise (Atlanta) from 4,096 to 2,000 ounces. The output of gold from the Seven Devils district in Adams County increased from 887 to 3,500 ounces, and the output from the Carson (De Lamar) district in Owyhee County increased from 3,444 to 4,700 ounces.

The largest producers of gold in Idaho in 1937 were the Fisher & Baumhoff dredges at Centerville, Mores Creek Dredging Co. near Idaho City, Golden Anchor mine at Burgdorf, Yellow Pine mine at Stibnite, Warren Dredging Co. at Warren, Talache Mines, Inc., at Quartzburg, Placer Basin mine near Council, Jordan Creek Placers (dredge) at DeLamar, Gold Dredging, Inc., near Pierce, Orogrande-Frisco property at Orogrande, Grimes Co. dredge at Pioneerville, and De Lamar Placers at De Lamar.

Idaho was again the largest producer of silver in the United States and its output (19,500,000 ounces) in 1937 was the largest ever recorded in the State and nearly 5,000,000 ounces greater than the record output of 1936. The chief producers of silver in Idaho in 1937 were the Sunshine, Hecla, Bunker Hill & Sullivan, Morning, Crescent, Polaris, Triumph, Page, and Sherman mines, all in the Coeur d'Alene region, Shoshone County, except

the Triumph which is in the Warm Springs district, Blaine County. The Clayton and Ramshorn mines in the Bay Horse district, Custer County, were also large producers of silver.

About half of the State output of copper in 1937 was recovered from silver ore from the Sunshine property; most of the remainder came from silver ore from the Polaris and Crescent mines, zinc-lead ore from the Bunker Hill & Sullivan and Morning mines, and lead ore from the Hecla mine.

Approximately 70 percent of the total lead produced in Idaho in 1937 was recovered from zinc-lead ore and nearly all the remainder from lead ore. The Bunker Hill & Sullivan Mining & Concentrating Co. was again the largest producer of lead in Idaho; it was followed by the Morning and Hecla mines. These three properties, each yielding more than 47,000,000 pounds of lead, produced 76 percent of the State total. Other large producers of lead were the Page, Triumph, Star, Sherman, Gold Hunter, Sidney, Tamarack & Custer, Clayton Silver, and Blackhawk properties.

The output of recoverable zinc in Idaho in 1937 was 107,000,000 pounds, the largest ever recorded in the State and an increase of 8,800,000 pounds over the record output of 1936. Large increases in production of zinc were reported by Snyder Mines, Inc. (formerly Halley Triumph Mines Co.), Federal Mining & Smelting Co., Tamarack & Custer Consolidated Mining Co., and Bunker Hill & Sullivan Mining & Concentrating Co. About 82 percent of the zinc produced in Idaho in 1937 was recovered from zinc-lead ore from the Morning, Bunker Hill & Sullivan, Star and Triumph mines. The Morning mine of the Federal Mining & Smelting Co. continued to be the largest producer of zinc in Idaho, followed by the Bunker Hill & Sullivan, Star, Triumph, Sidney, Frisco, Page, Tamarack & Custer, Interstate, and Hecla mines, all in the Coeur d'Alene region except the Triumph.

Most of the silver, copper, lead, and zinc produced in Idaho comes from mines in the Coeur d'Alene region, Shoshone County. In 1937 this region produced more than 94 percent of the State silver output, 91 percent of the copper, 94 percent of the lead, and 88 percent of the zinc. Most of the remainder of the silver, copper, and lead came from the Warm Springs district in Blaine County, the Bay Horse district in Custer County, the Texas district in Lemhi County, and the Pend d'Oreille district in Bonner County; nearly all of the remainder of the zinc output came from the Warm Springs district. The metal output of the Coeur d'Alene region was much greater in 1937 than in 1936; gold increased from 2,454 to 2,800 ounces, silver from 13,740,222 to 18,450,000 ounces, copper from 2,629,511 to 3,900,000 pounds, lead from 173,267,391 to 193,000,000 pounds, and zinc from 88,620,840 to 95,000,000 pounds. The gains were due chiefly to the increase in output of silver ore from the Sunshine, Polaris, and Crescent mines, the increase in output of zinc-lead ore from the Bunker Hill & Sullivan and Morning mines, the increase in output of lead ore from the Hecla mine, and to the reopening of the Sherman, Tamarack & Custer, Dayrock, and Interstate properties. The total output of ore from the region was about 1,700,000 tons in 1937 compared with 1,454,987 tons in 1936; more than 60 percent of the output in 1937 was zinc-lead ore, 20 percent was lead ore, and 19 percent was silver ore. The Sunshine Mining Co. increased the daily capacity of its milling plant to 1,000 tons of ore late in 1936, resulting in an increase in its output of silver from 9,103,113 ounces in 1936 to about 12,209,000 ounces in 1937; the company was again the largest producer of silver in the United States.

The Polaris Mining Co. completed the construction of its new 250-ton flotation mill in June 1937, and the company became a large producer of silver. Construction of a new 750-ton flotation mill by the Sullivan Mining Co. was also completed in 1937, and the plant began treating zinc-lead ore in August. The old Hercules 800-ton flotation mill, which was used in 1936 to treat ore from the Sullivan property, was returned to the Hercules Mining Co. in 1937; several thousand tons of ore were treated in the mill in 1937 from various mines in the region, chiefly from the Sherman, Tamarack & Custer, and Dayrock properties. The Callahan Zinc-Lead Co. reopened its Interstate mine in June 1937, and several thousand tons of zinc-lead ore were treated in the Galena mill owned by the company.
Following the Coeur d'Alene region, the Warm Springs district near Ketchum, Blaine County, was the most important producing district in Idaho in 1937. Its output was virtually all zinc-lead ore from property operated by Snyder Mines, Inc.; the ore is shipped to Bauer and Tooele (Utah) for milling. Approximately 63,000 tons of ore were produced in the district in 1937, yielding 1,150 ounces of gold, 425,000 ounces of silver, 120,000 pounds of copper, 7,200,000 pounds of lead, and 12,000,000 pounds of zinc. In 1936, 39,188 tons of ore yielded 303 ounces of gold, 314,536 ounces of silver, 107,696 pounds of copper, 5,513,285 pounds of lead, and 9,541,440 pounds of zinc.

The output of lead-silver ore from the Bay Horse district in Custer County increased from 25,144 tons in 1936 to about 35,000 tons in 1937, resulting in an increase in the production of silver from 115,996 to 225,000 ounces and in lead from 1,287,391 to 1,900,000 pounds. The chief producers were the Clayton and Ramshorn properties. Considerable silver and lead were also produced in 1937 from mines in the Texas district, Lemhi County, and Pend d'Oreille district, Bonner County. The output of silver in the Texas district increased from 15,140 to 80,000 ounces and lead from 555,826 to 900,000 pounds; the chief producers were the Latest Out and Silver Moon mines. The output of silver in the Pend d'Oreille district increased from 56,927 to 65,000 ounces and lead from 1,123,478 to 1,425,000 pounds; the chief producers were the Hope and Whitedelf properties.

About 2,050,000 tons of ore were produced in Idaho in 1937 compared with 1,807,530 tons in 1936. The output of zinc-lead ore was about 1,120,000 tons, an increase of nearly 134,000 tons over 1936, silver ore increased from 250,255 to 340,000 tons, and lead ore from 305,997 to 375,000 tons; the output of gold ore decreased from 264,446 to 214,000 tons. The Bunker Hill & Sullivan mine was the largest producer of ore in the State, followed by the Morning mine, both producers of zinc-lead ore. The Hecla mine, a producer of lead ore, ranked third, and the Sunshine property, a producer of silver ore, ranked fourth. The Orogrande-Frisco property near Orogrande was again the largest producer of gold ore. About 83 percent of the total ore produced in the State in 1937 came from 28 mines in the Coeur d'Alene region; the remainder was mostly gold ore from Idaho, Valley, and Boise Counties and zinc-lead ore from Blaine County.

An increase was indicated in the number of lode mines in 1937, but the number of placer mines was about the same as in 1936. There were 828 placers and 281 lode mines in 1936, a total of 1,109 mines.

Final State and county annual figures and further operating details by districts will appear in Minerals Yearbook, 1938.
MONTHLY AVERAGE PRICES OF METALS

1934-1935-1936-1937

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Quotations, cents per oz. troy, 999 fine.

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Quotations, cents per pound.

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Quotations, cents per pound.

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Quotations, cents per pound.
IDAHO MINING EXPENDITURES FOR THE YEAR 1936

SUMMARY

The following statistics of expenditures and production of the mining industry of Idaho for the year 1936 have been compiled by the Idaho Mining Association from information furnished by operators on questionnaires sent to all known operating companies and individuals of the State. Many small operators failed to make any return, which accounts largely for the discrepancy of about 8% in the total production figures of this report and those published by the U. S. Bureau of Mines in the Minerals Yearbook of 1937. Likewise the expenditure totals of this report are less than the actual figures would have been if all operators had reported.

The data on assessment and location work was furnished by, or taken from the records of, the county recorders of the thirty-one counties reported, after the close of the fiscal year ending June 30, 1937.

JAMES W. GWINN, Secretary.

RECAPITULATION

Non-Producing Development

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<th>Materials &amp; Supplies</th>
<th>All Else</th>
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State & County Taxes

Federal Taxes

$769,931.50

Producing—Non-Dividend

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State & County Taxes

Federal Taxes

$3,520,710.63

Production

$1,992,174.34
## IDAHO MINING EXPENDITURES FOR 1936

### RECAPITULATION

#### Producing Dividend Paying

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Total: $5,876,807.73 $3,755,575.83 $1,678,151.04 $10,910,534.60

Federal Taxes: 983,581.77
State & County Taxes: 931,919.21
Ore Transportation: 28,982.02
Freight & Smelter: 6,209,775.42

Production: $19,064,793.02

### RECAPITULATION—GRAND TOTALS

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<th>Materials &amp; Supplies</th>
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Total: $6,934,688.99 $4,981,612.84 $2,741,270.17 $14,657,572.00

Federal Taxes: 993,513.79
State & County Taxes: 989,793.61
Ore Transportation: 145,121.86
Freight & Smelter: 6,560,433.89

Assessment work: 866,704.00
Location work: 37,140.00

**TOTAL EXPENDITURE**

Production: $24,250,279.15

U. S. Bureau of Mines, Totals: $27,654,472.00
### Comparative Expenditures by Counties (Without Assessment Work)

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<td>Ada</td>
<td>$4,069.45</td>
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<td>Bear Lake</td>
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<td><strong>$13,165,282.06</strong></td>
<td><strong>$17,120,378.73</strong></td>
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| Assessment Work | 480,420.00 | 510,520.00 | 866,704.00 |
| Location Work   | 88,110.00  | 91,710.00  | 37,140.00  |
| **Total**       | **$13,733,812.06** | **$17,722,608.73** |

Front view of Paul Breathing Apparatus, which is standard equipment used in the Coeur d'Alene district in mine rescue work.
## IDAHO MINING EXPENDITURES FOR 1936

### ASSESSMENT AND LOCATION WORK ON UNPATENTED MINING CLAIMS

**July 1, 1934—July 1, 1937**  
*(Corrected)*

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