A Silver Lining in Idaho Mining

A review of the Idaho mineral industry in 1961

by

E. F. COOK

State of Idaho
ROBERT E. SMYLIE, Governor
Idaho Bureau of Mines and Geology
E. F. COOK, Director
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IDAHO BUREAU OF MINES AND GEOLOGY
MOSCOW, IDAHO
FOREWORD

In 1961 the Idaho mineral industry rebounded from the recession it suffered in 1960. Toward the end of 1961, Idaho's metal miners, who have taken some hard economic blows in the past decade, were more optimistic than they had been in a long time. Their optimism was short-lived, however. As this is written (in late February 1962), the price of lead has fallen to 9 1/2 cents a pound, the lowest it has been in 15 years; silver, which shot up after the U. S. Treasury ceased selling it, has faltered in its rise; only zinc, of the three major Idaho metals, is holding firm.

This report on developments in Idaho mining in 1961 is one of an annual survey series to be published as Bureau Information Circulars. It complements, but does not duplicate, the annual report on the mining industry of Idaho by the State Mine Inspector; your attention is directed to Mr. Fletcher's report for 1961, just issued, which contains a wealth of information about the mineral industry in Idaho.

E. F. COOK
Director
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A SILVER LINING IN IDAHO MINING

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THE IDAHO MINERAL INDUSTRY IN 1961

Good news, but a little bad

There was big news and good news in Idaho mining in 1961. The 7-month strike that crippled the Coeur d'Alene district during the latter half of 1960 was settled and operations returned to normal in January of 1961. The best shot in the arm that Idaho mining has had in recent years came on November 27, 1961, with the announcement from Washington that President Kennedy had ordered a halt in sales of silver by the U. S. Treasury: the President's action resulted in an immediate rise in the price of silver and meant a boost in earnings for silver producers. Since Idaho produces half of the silver mined in the United States and has the three largest silver mines in the country, this news from Washington was welcome indeed.

In 1961 a federal law was passed providing for a subsidy to certain small lead-zinc producers, but no funds were appropriated to put the program into effect, and there was some uncertainty as to which Idaho mines might qualify under terms of the bill.

In the rapidly growing nonmetallic part of Idaho's mineral industry, phosphate production apparently reached the "plateau" that has been predicted for several years (the predictions apparently have been based on the increased mining cost per ton that would have to be faced in developing any new deposit; the increasing freight costs that reduce Idaho phosphate's ability to compete in distant markets; opening of new deposits in Utah and other states; and approaching saturation of the phosphate fertilizer market). But at year's end came an announcement that a large new phosphate mine for Idaho is in the offing, in the hills that lie north of Georgetown and east of Soda Springs.

Not all the news was good. On November 13, the price of lead dropped to 10¢, lowest since November of 1946. Two weeks later, the first upward movement in the price of lead since 1959 boosted the price one-quarter of a cent, giving the lead miners a little cause for hope that things might be, at long last, going to get a little better.

The price of zinc rose 1/2 cent on December 1, and the Lucky Friday silver-lead mine resumed work on December 11 after a 12-week strike. Near the year's end, reopening of the historic old Morning mine at Mullan was announced. So the
year closed on as cheerful a group of Idaho metal miners as had been seen in the hills of the Gem State for nigh on to 10 years.

Production

Production of mineral wealth in Idaho in 1961 (see Appendix D) increased more than 20% over the previous year, up from $57 million to $69 million. Silver for the third straight year was the leading mineral commodity in value ($16.2 million), nosing out lead ($15 million). In third place was zinc ($14 million) and in fourth, phosphate ($10 million).

Physical production figures in the three leading metals show that lead production (70,000 tons) was greater than in any year since 1950; zinc (57,000 tons), highest since 1954; and silver (17,900,000 ounces), greatest since 1938. Despite these high production figures, the value did not exceed that of 1957—because the combined lead and zinc price during 1961 was about 15% lower than in 1957.

STEPS TOWARD MODERNIZATION

Underground operations at the SUNSHINE MINE near KELLOGG have undergone radical changes—chief among these, according to Robert M. Hardy, Jr., President, has been the conversion of the mining system from a method requiring heavy timber support and periodic filling with broken waste rock to a cut-and-fill method utilizing sand fill and an occasional rock bolt but very little timber. The first stopes were operated with sand-fill equipment in March, 1961; since then the system has been expanded to include all the stopping operations in the mine, with the exception of a few in which small isolated remnants of ore are being cleaned up and which would not justify the installation. The results of operations under the new system demonstrate ability to operate on narrow veins with less dilution and a marked increase in grade.

The first major change in mining methods at the BUNKER HILL MINE at KELLOGG in several years, an automatic sand-fill system, was completed in July. The system involves pumping mill tailings or sand into the mine to fill abandoned workings. For many years waste rock has been used as fill in the mine. In the new system, tailings (waste) from the concentrator are pumped through classifiers on the surface which separate slimes from sand. The sand is pumped nearly two miles underground where it is placed in a storage tank. When sand is needed for filling stope areas lower in the mine the operator releases the sand in the storage tank and it flows through 3-inch lines to the stope requiring filling. A telemetering system composed of 60,000 feet of communication lines was installed to control the operations.

Five miles of pipeline are used in this automatic sand-filling system. Only one man is required in operating the system. The telemetering system includes a control center on the 9 level and a transistorized remote-controlled unit, used by the
THE RAISE CLIMBER

A new method of driving raises using a retractable drilling platform, is illustrated in these sketches. This raise climber and other inventions and improvements are the "big guns" in the fight to keep mining costs down and mines operating, in the face of rising expenses and low metal prices. The machine shown here is the ALIMAK RAISE CLIMBER, developed in Sweden, sold in the United States by The Alimak Corporation.

The CLIMBER runs along the guide rail, which is fastened to the rock with expansion bolts. Air and water hoses are brought up to the intake part of the guide rail from a remote-controlled valve station. The air hose supplying the air motor is fed from an air-motor driven reel which also has an automatic take up when the CLIMBER is descending.

The bottom guide rails with the CLIMBER are swung backwards under the cover of the roof. The top of the guide rail is protected by a heavy steel plate (header plate) through which project the hose connections for air, water and air-water spray.

For ventilation purposes there are spray nozzles in the header plate. The explosive gases are cleaned from the face by means of the air water spray which also settles the dust. Therefore, after a short interval, drilling operations may be resumed.
operator in a stope. A monitoring station in the concentrator detects any break-down in the operation. An interesting aspect of the sand-fill system is the density detection equipment. The density detector, containing the radioactive element cesium, sends gamma radiation through the sand line to measure the density. No danger is involved but an Atomic Energy Commission license is required to use the instrument. There are a number of advantages in sand filling: better metal recovery, improved ventilation, lower timber requirements, and greater simplicity and efficiency in mining methods.

The LUCKY FRIDAY MINE near MULLIAN also has an automatic sand-filling system. Newest addition to the facilities at that mine is a 1250-HP hoist capable of lifting 150 tons of ore an hour from a depth of 2,600 feet, scene of the current production, or 90 tons an hour from a depth of 5,000 feet.

A new machine called a raise-climber speeded the driving of raises and, in the GALENA MINE, facilitated the extension of a shaft: the Galena's No. 3 shaft was sunk 150 feet through a pilot raise driven with a raise-climber.

NEW DISCOVERIES AND DEVELOPMENT

Joseph T. Hall of New York, president of the Callahan Mining Company that owns the rich GALENA MINE near WALLACE, stated in Spokane in January 1961 that exploration for the upward and downward extensions of a narrow but unusually rich silver vein found about a year ago, was then underway. The ore-bearing structure, discovered north of the silver vein currently being mined, was opened for 600 feet on the 3000-foot level and has proved minable for more than half of that distance. He also reported a drift was being run on the 2800-level to explore for the upward extension of the structure and a long tunnel was being started from the present 3200-level workings to explore for the downward extension. A new ventilating shaft being opened at the property has reached a depth of about 400 feet.

Later in the year the new vein was cut on the 3200-level and opened for more than 150 feet; it was reported to average 100 ounces of silver and 2 percent copper over mineable width.

The new 60-ton mill at the EMPIRE COPPER MINE at MACKAY started operations in January. Present plans call for the construction of a large mill at the old Consol site. The mine is shipping some high-grade copper ore and will continue to ship high-grade as well as concentrates from the mill.

The shaft of the CONJECTURE MINE near LAKEVIEW was deepened from the 1000-foot level to the 2000-foot level by Federal Resources Corporation and drifting was carried on toward the Conjecture ore zone on the 2000-foot level. Cost of the current development plan is placed at around half a million dollars. Based on the ore reserve developed, Federal will build at the Conjecture property either a 250 or a 500-ton per day mill.
The BUNKER HILL Company in January began producing phosphoric acid at its $2 million plant completed last June but not in operation until after settlement of the strike. The fertilizer plant, using phosphate rock shipped from southern Idaho by San Francisco Chemical Company, can produce up to 130 tons of acid daily in an around-the-clock operation. Collier Carbon and Chemical Corporation during the year completed a $225,000 addition to the Bunker Hill phosphoric acid plant. Collier uses Bunker Hill phosphoric acid to produce anhydrous liquid phosphate, a highly concentrated phosphoric acid.

A body of silver ore disclosed by diamond drilling was developed in the Chester fault zone on the 4000-foot level of the SUNSHINE MINE. The silver vein showed better than average width and grade. The Sunshine in August started sinking its No. 10 shaft toward a target depth 1,850 feet below sea level--below all present mining depths in the Coeur d'Alene district.

The old PEACOCK COPPER MINE in the Seven Devils Mountains, discovered in 1864 and idle for more than 40 years, was again yielding high-grade copper ore in the summer of 1961. Twelve carloads of ore containing 17 percent copper were shipped to a smelter.

The BUNKER HILL MINE in 1961 started a 5-year accelerated development program. Most of the new development will be easterly and northerly from existing workings which extend more than one mile vertically from the surface to approximately 1,400 feet below sea level and total more than 100 miles in length. Two tunnels will be driven easterly toward the company's Crescent mine and to develop known veins.

In late 1961 a crash program got under way at the CLAYTON SILVER MINE to sink a winze under the lead-silver ore body currently being mined from the 800-foot level. The winze will go down 300 feet to open additional ore. During the year there was development and mining of ore in the north end of the mine together with diamond drill exploration of the walls of existing workings in search of new ore bodies. Ore being mined during the last part of the year from the new bottom level of the Clayton mine contained more silver than ore mined at higher levels. The ore body also was larger than expected and plans are being made to increase mill capacity by about 50 percent.

Salmon River Scheelite Corporation resumed production and continued development at its tungsten mine near CLAYTON after the property had been shut down for about a year due to low prices.

American Metal Climax leased to IMA TUNGSTEN MINE near PATTERTON in Lemhi County and started a sampling program. The Ima, previously a large producer, has been idle since 1957.
The LIBERTY GEM silver-lead-zinc mine in the HAILEY area was being operated on a three-shift basis; production was reported as more than 100 tons daily with milling on a 60-ton per day basis. The Index-Daley Mines Company of Salt Lake City announced plans to resume work at its property in the Hailey area.

Wonder Mining Company has started driving a drift on the 220-foot level of the firm's old gold property three miles south of GOLDEN.

The new perlite crushing-and-sizing mill and expansion plant of the Oneida Perlite Corporation at MALAD were completed early in the year. The new company is completely integrated from mine through expanded perlite. At the mine overburden is removed by bulldozer and the ore is mined by front-end loaders and trucked to the mill. At the mill the ore is crushed, dried to about 2 percent moisture and screened into six fractions, each of which is stored in a cylindrical bin. Sized ore is drawn from the bin and trucked to the Malad expanding plant. The expanded perlite is bagged and shipped to markets under the trade name of Perlor.

Two carloads of silica rock were shipped by Lyndon's, Inc., from Mason Butte, southwest of CRAIGMONT.

Slag from the electric furnaces at the elemental phosphorus plant of the FMC Corporation near POCATELLO yielded high-purity vanadium pentoxide. The vanadium is contained in the phosphatic shale smelted at the plant. The slag was processed in Garfield, Utah.

An expansion program at J. R. Simplot's POCATELLO fertilizer plant continued during 1961. Erection of an ammonium-phosphate fertilizer plant, purchased from the Anaconda Company and moved from Anaconda, Montana, was completed in November. Additional phosphoric acid capacity was installed, as well as much new equipment for other operations.

EXPLORATION AND PLANS FOR THE FUTURE

In the fall of 1961 International Minerals and Chemical Corporation and Husky Oil Company announced an agreement for developing phosphate reserves east of SODA SPRINGS. Owned by Husky, the reserves are estimated at 50,000,000 tons and are said to be among the largest reserves of surface minable phosphate ore in the United States. The agreement allows up to five years for development of a final plan for undertaking the joint venture. In the event that Husky should decide for any reason not to enter the project, the agreement provides an equitable basis for the sale of the deposits to International. T. M. Ware, International Minerals president, said the western operations would enable his company to better serve new markets for fertilizer for which phosphate is a principal ingredient. "The center of gravity of fertilizer use has been moving and will continue to move westward," Ware said. "This source will give us a
much better supply balance, meshing well with our production from Florida." The agreement was described by Glenn Nielson, Husky Oil president, as "an excellent opportunity for our company's participation in an important and exciting new area of activity, providing as it does for productive and profitable use of these valuable resources with the help of a recognized leader in the mining, processing, and marketing of food producing minerals."

A 150-ton per day phosphate processing plant was placed in operation at SODA SPRINGS by Valley Nitrogen Products. Mill treatment consists of grinding and drying. The company contracts its ore requirements from independent producers.

U. S. BUREAU OF MINES research for lead and zinc during 1962 will include work in the Coeur d'Alene mining district, where Bureau engineers will conduct laboratory and field tests on rock pressures and ground support problems associated with the mining. Their work will include tests on the effectiveness of precast, segmented, reinforced concrete drift sets; explosive shaping of rock bolts to obtain rapid rock-bolt anchorage; and the factors affecting the ground support of hydraulic stope fill.

Exploration of thorium properties was continued in 1961 on HALL MOUNTAIN north of Bonners Ferry in Boundary County and in a large area near LEMHI PASS in Lemhi County.

SILVER BUCKLE Mining Company has announced plans for a geophysical survey, bulldozer work, and diamond drilling at its property west of WALLACE. The objective will be the eastern extension of the new so-called North silver vein now being developed at depth in the nearby Galena mine; the vein was cut by Asarco while exploring the virgin ground north of the Polaris fault on the Galena 3000-foot level.

Diamond drilling was carried out throughout the year at the Silver Star-Queens Mines, Inc., near BELLEVUE and in February it was announced that the presence of the MINNIE MOORE veins had been discovered where offset by a system of post-mineral faults. Under a joint venture agreement, Federal Resources Corporation started 1,500 feet of drifting to cut the Bonanza King vein.

Sidney Mining Company carried out exploration in the Bayhorse district; diamond drilling in a property on Pine Creek; and diamond drilling in the Basin Creek uranium district of Custer County.

The POPE-SHENON copper mine southeast of Salmon was leased this year to mining contractors from Utah. A small crew began exploratory work.

Clearwater Mines, Inc., completed retubing the 2,000-foot tunnel at its property in eastern Shoshone County, 34 miles south of Superior, Montana. The company plans resumption of work in the spring. Values are in copper, silver, and gold.
The U. S. Office of Minerals Exploration announced in October that Idaho Copper Mines, Inc., was granted a loan for the exploration of copper-cobalt deposits in Lemhi County. The contract is in the amount of $88,030.

Design and engineering research on a possible additional sulphuric acid plant for the Bunker Hill Company were conducted in 1961. Estimated cost of the proposed plant would be $5 million. The Bunker Hill firm at present produces about 120,000 tons of sulphuric acid annually at a facility located adjacent to the company's Kellogg zinc plant. The proposed new unit would add 75,000 tons of acid production capacity. At the lead smelter a new sintering plant will replace the present roasting system; the first phase of construction work will be a storage bin and conveyer system. Purpose of the new system will be to simplify the preparation and feeding of materials into the blast furnace.

The IDAHO BUREAU OF MINES AND GEOLOGY, during 1961, continued the investigations of iron ore and beryllium resources of Idaho that were begun the previous year as cooperative projects with the U. S. Bureau of Mines. Both of these projects probably will be completed in 1962. A study of Idaho's volcanic construction materials was continued in 1961 and will be pursued on an expanded scale in 1962. A study of the geology and mineral resources of BONNER COUNTY, started in 1961, will be continued and completed in 1962. A similar study of TWIN FALLS COUNTY--where groundwater probably is the most valuable mineral resource--will be carried forward in 1962. A mineral-resource investigation of southern SHOSHONE COUNTY, in cooperation with the Northern Pacific Railway, is planned for 1962. The "greater Salmon project," designed to geologically map and evaluate the mineral resources of the region around SALMON in Lemhi County, will be carried on during the summer of 1962. A two-year, intensive study of the uranium and other mineral resources of the area north and east of STANLEY in Custer County has just been completed; results will be published early in 1962. Reports published by the Idaho Bureau of Mines and Geology during 1961 are listed in Appendix A of this Information Circular.

Just before Christmas, 1961, the Hecla and the Bunker Hill mining companies announced that the famed MORNING MINE near MULLAN, closed several years ago by American Smelting and Refining Company, will be returned to production. The Hecla and Bunker Companies will extend present workings of the STAR MINE into the Morning property to mine lead-zinc-silver ore known to remain in both the Morning and Noonday veins.

The MORNING, one of the Coeur d'Alene Mining Region's oldest producers, won renown as the world's deepest lead mine. The Morning ore body was mined from near the surface downward on its dip for a distance of more than 6,500 feet, or to a depth of 1,060 feet below sea level. A steady producer from 1889 until a few years ago, the Morning reached its peak output in 1916 and peak employment in 1925 with a 700-man payroll. Recorded production has totaled about 15 million tons of ore.
Asarco announced in October, 1953, that the Morning mine would be closed permanently after salvage operations because of diminishing ore reserves, low lead-zinc prices and increased production costs. About 275 men were employed at the time. Although lower levels of the mine subsequently were abandoned, the mine's life was extended through discovery of a new ore body in the Noonday vein on the 1250-foot level in a previously unexplored area. No work was being done at the mine by Asarco when the current agreement was negotiated. Hecla recently started rehabilitation work in the long Morning adit.

The STAR MINE, Idaho's largest zinc producer, employs 340 men who mine and mill about 1,000 tons of zinc-lead-silver ore daily. Hecla operates the Star Mine through an 8,500-foot connecting tunnel from the Hecla surface plant at Burke. The ore body is part of the Morning ore body and workings extend to the Morning property line on several of the bottom levels. The Morning ore body was worked up to the Star property line and some of the underground openings are connected for ventilation purposes. The Star Mine exhausts through the Morning shaft. The bottom 5200-foot level in the Morning Mine is equivalent to the 6850-foot level in the Star. An offset winze from the 4000-foot level of the Star has been extended down to the 6700-foot level and eventually will be deepened to permit extraction of ore remaining in the Morning vein below the Morning 5200-level. The Morning Mine's Noonday ore body is known to extend from the 800-foot level to about the 1600-foot level and Hecla officials say several months of tunneling will be required to reach it.

The best shot in the arm the Coeur d'Alene district has had in recent years came on November 29th from Washington with the announcement that President Kennedy had ordered a halt to federal sales of silver, an action that resulted in an immediate increase in the price of the metal, a boost in earnings of silver operations, and a rise in the stock market quotations on silver issues, in addition to the possible step-up of some mining operations and resumption of work in others. Within a week silver had risen to over a dollar an ounce and by the middle of December to $1.02. The silver price advance was especially welcome in view of the fact that most of the silver producers also mine lead, a metal bringing only 10 1/4 cents a pound compared to 12 cents a year previously. The Bunker Hill Company, a major producer of lead, zinc, and silver, is a case in point. On the basis of a normal annual silver output of about 3,000,000 ounces, each one cent advance in the price of silver adds about $30,000 to the firm's annual income. A 10-cent silver advance meant some $300,000 additional income. But, as Bunker Hill President Schwab pointed out, during the Northwest Mining Association Convention, each one cent drop in the price of lead means $800,000 less income per year to his firm and every one cent drop in the price of zinc cuts its income about $700,000 a year; thus it would take an increase of about 22 cents an ounce in silver to make up for a one cent drop in the price of lead, he said. Silver's price would be higher now than it is except for foreign speculators, in the opinion of Robert N. Hardy, President of Sunshine Mining Company, operator of the nation's largest silver mine. "It is apparent that much silver was held off the world market this year by foreigners speculating on a higher price for the metal," he said.
European speculators bought an estimated 5 to 60 million ounces in the London market and this is now coming on the silver market, and big silver users in the United States stocked up to the limits they could under Treasury regulations designed to limit their stockpiles to 60 days' operating requirements, he pointed out. It may require six months or more for the world's shortage in silver to be truly reflected in the world's market price of silver, he said. A boom in silver mine exploration and development is expected to develop next spring. Melting of the mountain snows will send prospectors into the field and next summer probably will see more mining exploration activity than in many years, said Hardy. Most of the major operating firms in this area haven't planned any immediate new projects as a result of the higher silver price, but Sunshine, Bunker Hill, Asarco, and Day Mines started underground exploration and development programs from one to two years ago in anticipation of a higher silver price.

The general feeling among mining men is that the small lead-zinc producers subsidy bill passed by Congress will do very little for Idaho. Companies with closed mines that could qualify are the Nabob, Sidney, and Golconda but none of these has indicated that it will take steps to resume operations. Several other small operations, including the Coeur d'Alenes mines and Highland Surprise are not considered eligible for the payments because they have been idle since before 1956. Clayton Silver is the one Idaho company that stands to benefit to any extent; on the basis of its 1,200-ton-per-year production of lead, it could be substantially benefited by the subsidy. The new legislation authorizes the Secretary of the Interior to make payments directly to eligible small producers of the metals equal to 75 percent of the difference between the market price and 14 1/2 cents a pound for lead, and 55 percent of the difference between the market price and 14 1/2 cents a pound.

In October Governor Smylie urged the State Land Board to launch a full scale fight to persuade the federal government to give Idaho full mineral rights on state-owned lands. The governor also called for immediate action to give the state possession of some 39,000 acres of land due Idaho in exchange for land taken for National forests when Idaho became a state.

Many mining organizations have protested the so-called Wilderness Bill, officially titled Senate Bill 174. Although the Wilderness Bill, if enacted into law, would not close any existing mine, it would—despite a provision apparently to the contrary—effectively stop mineral exploration of areas included in the proposed Wilderness System (see Appendix B in this Circular, "Mineral Aspects of the Wilderness Bill").

THE ECONOMIC NUTCRACKER

For the past 10 years Idaho metal mining has been in serious difficulty because of a cost-price nutcracker. From 1947 to 1960, the average annual wage for men employed in metal mining in Idaho rose from $3330 to $5940 (see Appendix C), and the cost of supplies and services increased in proportion. But the combined price of lead and zinc fell during the same period from 26 1/2 cents to 23 cents (at the end of 1960)
while the price of silver remained stationary at 90 1/2 cents. Under this kind of economic squeeze, it is a wonder that any mines have remained open.

From 1947 to 1951, the combined price of lead and zinc rose more or less parallel to the rise in the costs of production. Employment was at a high level, and production increased, reaching a record high in 1951. But the break in metal prices after 1951 was not paralleled by a corresponding decrease in production costs. Quite the contrary. Consequently, the marginal producer was quickly forced out of business. Employment in metal mining fell. From 1951 to 1961 the combined price of lead and zinc fell 40% (from 35 1/2 to 21 1/2 cents) but the average annual wage increased over 40% (from $4230 to $6000). Under such circumstances, it is a tribute to mining engineering and management that the major mines were able to keep open and operating. The past decade has seen the virtual elimination of metal mining in Idaho outside the Coeur d'Alene district.

Production has been maintained only by increasing the productivity of the individual miner. In 1947, for each man employed in metal mining in Idaho, there were produced:

- 1,905 ounces of silver
- 14.5 tons of lead
- 15.3 tons of zinc

In 1960, for each man employed there were produced:

- 5,980 ounces of silver
- 18.8 tons of lead
- 15.7 tons of zinc

The value of metal production per man employed rose from $10,870 in 1947 to $15,550 in 1960. A more significant figure, however, is the ratio between production dollar and wage dollar. In 1947 and 1948, about $3.50 in mineral wealth was produced for each $1 of wages paid to metal miners; but from 1953 to the present time, only about $2.65 in value has been produced for each dollar of wages—In other words the increase in productivity measured in value of the product has not kept pace with the increase in wages (and other costs, for that matter).

In the Coeur d'Alene district the next few years may well be as difficult as those since 1951. However, the picture is not all gloomy. Silver has been the salvation of the district the last few years and may well carry the district through until better days for lead and zinc arrive. Increasing mechanization of mining and milling, the application of the high-grade engineering and management know-how that there is in the district, are potent weapons in the battle against the cost spiral. And the never-say-die spirit of all mining men, no matter what the odds against them, is a factor, albeit intangible, of great importance. Furthermore, in the Coeur d'Alene district, unlike
many others, the miner does have geology on his side. As Rollin Farmin and Garth Crosby pointed out in an excellent paper on Extending Reserves in the Coeur d’Alene district, presented to the American Mining Congress in Seattle in September 1961, over many years new ore has been found to replace that being extracted. There is no geologic reason to foresee the exhaustion of ore deposits in the district for many, many years to come. There is, indeed, every reason to believe that continued exploration and development will develop more and more ore. The Coeur d’Alene district is now one of the world’s great mining districts. If the Nancy Lee (in western Montana) and the Conjecture (near Lake Pend Oreille) pan out as their backers hope, the extent of the district, and the extent of relatively unexplored but possibly ore-bearing ground will be enormously enlarged.

MINERAL INDUSTRY EDUCATION

In a spirit reflecting the mining industry and the men who made it great, the new $530,000 University of Idaho College of Mines Building at Moscow was dedicated Friday, November 3, 1961. Representatives of the mining industry, faculty members and students completely filled the room used for the ceremonies highlighted by talks by L. J. Randall, President, Hecla Mining Company, John J. Peacock, President of the Board of Regents, Dr. D. R. Theophilus, President of the University and Dr. E. F. Cook, Dean of the College of Mines, who cited the magnificent cooperation from industry which made the building possible and announced a new scholarship designed to honor those of the industry who have passed on. The building, constructed with funds one-half from the mining industry and one-half from state appropriations, was called a united effort on behalf of the State, Regents, and Industry by Randall. "We are proud of it," said Randall. "The project brought us closer to the faculty and the University of Idaho and closer with each other in the industry." President Theophilus added "the building symbolizes the confidence of the people of the state, a confidence in the future of the state, and the courage and fortitude of a great mining industry."

STATE GEOLOGISTS MEET IN IDAHO

Twenty-one states were represented by geologists and mining men who visited the Coeur d’Alene Mining district in April as a field trip forerunner of the annual meeting of the Association of American State Geologists at the Idaho Bureau of Mines and Geology in Moscow. The Lucky Friday, Dayrock, Galena, Sunshine, and Bunker Hill operations were visited. In addition to state geologists, there were directors of state geological surveys and bureaus of mines, representatives of the U. S. Geological Survey, the U. S. Bureau of Mines, the National Science Foundation, and the U. S. Bureau of Reclamation—a total of 32 states and the District of Columbia—only three short of an all-time record attendance of the session was represented at the Moscow meeting which was the first in the west for a number of years.
IDAHO MINING ASSOCIATION MEETS IN SUN VALLEY

The Idaho Mining Association meets every two years. In 1961, members of the Association gathered at Sun Valley July 5-7, to hear discussions by prominent public officials and mining men on changing concepts of public land utilization; developing a national minerals policy; the soundness of the dollar; the domestic lead-zinc industry; impact of state legislation on industrial development; and new mineral frontiers in Idaho.

L. J. Randall retired as President of the Association, and J. C. Kieffer was installed as the new President, to serve during the 1961-1963 period.

THE STATE LEGISLATURE

Several bills that would have affected the mineral industry of Idaho were considered by the 36th Idaho legislature, meeting in Boise during January and February of 1961, but none was passed.

In his opening message to the legislature, Governor Smylie said he felt the office of state mine inspector should be abolished at the conclusion of the inspector's present term. At least two bills that would have made the mine inspector's position appointive rather than elective were studied in committee but not reported out.

Two bills relating to oil exploration failed of enactment. H. B. 28, introduced in the 1961 Idaho Legislature by Burt, Whitworth, and Hirschi, would have provided a reward of $50,000 to the lessee or owner of the real property on which is located the first oil well in Idaho to produce not less than 50 barrels of crude oil every 24 hours over a period of at least 60 days. The bill passed the House by a vote of 34 to 22, but died in the Senate Finance Committee.

S. B. 114, introduced by the Forestry and Public Lands Committee would have amended the State Code to require a drilling permit, and to provide that the state board of land commissioners and the Idaho Bureau of Mines and Geology be notified in advance of the drilling. No such permit or notice is now required. The bill would have made more specific the nature of the information to be filed by the driller with the Bureau, and would have further authorized the land commissioners to require a performance bond. The bill passed the Senate without dissent. In the House it was slightly amended, then passed. But the Legislature adjourned before the Senate could consider the amended bill.

SAFETY AWARD

The Idaho Portland Cement Company, whose cement plant at INKOM has a capacity of 1 million barrels of cement a year, won the Portland Cement Association national safety award for 1959. The plant's safety record was 837 days without a lost-time injury.
APPENDIX A

1961 Publications of The Idaho Bureau of Mines and Geology

Bulletin 16 - GUIDEBOOK TO THE GEOLOGY OF THE COEUR D'ALENE MINING DISTRICT--- $1.25

Bulletin 17 - ECONOMIC GEOLOGY OF CENTRAL IDAHO BLACKSAND PLACERS, by C. N. Savage--- $2.50

Bulletin 18 - IDAHO'S MINERAL INDUSTRY - THE FIRST HUNDRED YEARS--- $1.50

Bulletin 19 - RUSH TO IDAHO, by Merle W. Wells--- $1.00

Bulletin 20 - PROSPECTING AND DEVELOPING A SMALL MINE, by W. W. Staley--- $1.00

Pamphlet 123 - GLACIAL GEOLOGY OF STANLEY BASIN, by Paul L. Williams--- $1.25

Pamphlet 124 - GEOLOGY AND MINERAL RESOURCES OF THE LEMHI QUADRANGLE, LEMHI COUNTY, by A. L. Anderson--- $1.75

County Report 4 - GEOLOGY AND MINERAL RESOURCES OF GEM AND PAYETTE COUNTIES, by C. N. Savage--- $1.50

County Report 5 - GEOLOGY AND MINERAL RESOURCES OF BONNEVILLE COUNTY, by C. N. Savage--- $1.50

Information Circular 8 - RECENT MINING LEGISLATION AND ITS EFFECT ON THE LAW OF DISCOVERY, by T. R. Walenta--- $0.50*

Information Circular 9 - ALLUVIAL MINING IN THE PACIFIC NORTHWEST, a report of the alluvial mining subcommittee of the CEBAC--- $0.50*

Information Circular 10 - METALS FROM BLACKSANDS, by C. N. Savage--- $0.50*

Information Circular 11 - IDAHO'S MINERAL FRONTIERS, by E. F. Cook--- $0.50*

*Free on request from within Idaho.
APPENDIX B

Mineral aspects of the Wilderness Bill (S.B. 174)

"The wilderness system shall include all areas within the national forests classified on the effective date of the Act as wilderness, wild, primitive, or canoe." In Idaho over 3 million acres are now so classified. What will be the effect of the bill on mineral exploration and development within these areas? The question can be answered only by consideration of the present situation and an analysis of those portions of the bill bearing on the subject.

x x x x x x

On March 8, 1961, the U. S. Forest Service stated:*

"The establishment by the Secretary of Agriculture or the Chief of the Forest Service of wilderness, wild, or primitive areas does not affect the application of the general mining laws to such areas. Unless otherwise withdrawn and where the mining laws are applicable, lands in wilderness, wild, and primitive areas are open to location and entry under the mining laws.

"The act of June 4, 1897, provides that lands in the national forests shall continue to be subject to location and entry notwithstanding their withdrawal for national forests..... The 1897 act also provides that persons may enter the national forests for all proper and lawful purposes, including that of prospecting, locating, and developing the mineral resources, provided that such persons comply with the rules and regulations governing the national forests. The 1897 act also provides that actual settlers within the national forests shall have ingress and egress from their property and may construct such roads as are necessary to utilize their property under such rules and regulations as may be prescribed by the Secretary.

"The regulations under which wilderness, wild, and primitive areas are administered provide that the landing of aircraft is prohibited unless such use has become well-established and that the use of motor vehicles is prohibited unless the use is in accord with a statutory right of ingress and egress.

"It is not considered that prospectors actually have property rights or that within the national forests they have statutory rights of ingress and egress. Therefore, prospectors are subject to the same restrictions in entering wilderness, wild, and primitive areas for prospecting purposes as are persons entering such areas for other purposes. Thus, prospectors can (sic) enter such areas by means of aircraft only if the use of aircraft in the particular area has become well-established. Also, prospectors are prohibited from using motor vehicles in the same way as are persons who desire to enter such areas for other purposes.

"holders of valid mining claims within these areas do have rights of ingress and egress and may construct and use roads to their claims. the forest service considers it proper in cases where there may be question as to the validity of the mining claim to have a determination made as to the validity of the claim before a road is permitted to be constructed. such determinations are made by the bureau of land management or, in rare cases, by the courts.

"the right to construct roads to valid mining claims is subject to the rules and regulations of the secretary. the forest service requires its approval as to the location and design of the road in order that minimum damage will result to the national forest resources.

"...helicopter transport to a valid mining claim would likewise be permissible."

this statement is clear and understandable, except perhaps for the matter of how the validity of a mining claim is determined—a subject of sporadic, spirited debate between mining people and the bureau of land management.

*****

now, how would the situation change under provisions of the wilderness bill? first, some relevant sections of the bill:

sec. 6(b)—
"except as specifically provided for in this act and subject to any existing prior rights, there shall be no commercial enterprise within the wilderness system, no permanent road, nor shall there be any use of motor vehicles, motorized equipment, or motorboats, or landing of aircraft nor any other mechanical transport or delivery of persons or supplies, nor any temporary road...in excess of the minimum required for the administration of the area for the purposes of this act..."

sec. 6(c)(8)—
"nothing in this act shall be construed to prevent, within national forest and public domain areas included in the wilderness system, any activity, including prospecting, for the purpose of gathering information about mineral or water resources or to prevent the completely subsurface use of such areas, if such activity or subsurface use is carried on in a manner which is not incompatible with the preservation of the wilderness environment.

sec. 6(c)(2)—
"within national forest and public domain areas included in the wilderness system, (a) the president may, within specific area and in accordance with such regulations as he may deem desirable, authorize prospecting..., mining..., and the establishment and maintenance of reservoirs, water-conservation works......including the
road construction and maintenance essential to development and use thereof, upon his
determination that such use or uses in the specific area will better serve the interests
of the United States and the people thereof than will its denial...."

Under another much-discussed provision of the bill, primitive areas (not
wilderness areas) are to be reviewed for "suitability...for preservation as wilderness"
...the same paragraph would allow the President to recommend the "exclusion and re-
turn to national forest land status of any portions not predominantly of wilderness value"
or to recommend "the addition of any contiguous area of national forest lands pre-
dominantly of wilderness value."

The bill carries no specific prohibition of claim-staking, but it may be
assumed that the digging of a discovery pit, the erection of monuments, and any as-
sessment work would be construed as activity "incompatible with the preservation
of the wilderness environment".

In order to make any valid analysis of the effect of this bill on mineral explo-
ratio and development, it is necessary to have a few additional facts:

1 - In our country, prospecting is carried on almost entirely by the mineral in-
dustry, by private companies. Government agencies, except in rare in-
stances, do no prospecting; they start their work based on prior discov-
eries.

2 - Again with the exception of rare cases, mineral deposits today are no
longer found and developed by the individual prospector, traveling on
horseback or by shank's mare. Exploration today is done by teams of
highly trained men using modern techniques and complex instruments.
Exploration is very expensive.

3 - The only incentive for mineral exploration, under our system of government,
is the right to develop and mine any economic mineral deposit found.

4 - As far as I know, even when this country needed uranium badly and the
government was strongly encouraging exploration for uranium, no area
withdrawn from mineral entry was opened by Presidential action to uranium
exploration.

5 - I know of no completely subsurface method of mining, that might be car-
ried on under Sec. 6-6–8. I suppose that, should a mineral deposit be
so fortunately located that one could tunnel into it from outside the wilder-
ness boundaries, one might be allowed to mine it.

6 - Nothing in the bill requires investigation and evaluation of mineral re-
sources in the determination of areas that are or are not predominantly
of wilderness value.
Little is known about the mineral resources in the areas affected by the bill.

In past evaluations of the resources of potential wilderness areas, notably in the Forest Service proposal for the reclassification of the Selway-Bitterroot primitive area to wilderness status, mineral resources have not been considered and mineral potential has not been evaluated, except in terms of the existence of mining claims.

From these facts one can draw his own conclusions as to the effect of the wilderness bill on mineral exploration and development in the areas affected.

My conclusion is that mineral exploration and development, now allowed in primitive, wild, and wilderness areas under stringent rules and regulations of the Forest Service, will be effectively stopped in such areas by the wilderness bill because no company in its right mind (if companies have minds) could afford to take the risk inherent in the bill, could afford, in other words, to bet that the President would allow them to mine what they found.
## APPENDIX C

### Metal production and employment in Idaho, 1947-1961

<table>
<thead>
<tr>
<th>Year</th>
<th>Men employed</th>
<th>Value of Idaho metal production (in thousands)</th>
<th>Value of production per man employed</th>
<th>Production per man</th>
<th>Avg. 2/ annual wage</th>
<th>Combined price Pb-Zn</th>
</tr>
</thead>
<tbody>
<tr>
<td>1961 (est.)</td>
<td>3000</td>
<td>$47,432</td>
<td>$15,800</td>
<td>5980</td>
<td>23.3 18.9</td>
<td>$6000+ 22.2¢</td>
</tr>
<tr>
<td>1960</td>
<td>2282</td>
<td>$35,460</td>
<td>$15,550</td>
<td>5980</td>
<td>18.8 15.7</td>
<td>$5940 24.6¢</td>
</tr>
<tr>
<td>1959</td>
<td>3305</td>
<td>$52,160</td>
<td>$15,780</td>
<td>5040</td>
<td>18.9 16.8</td>
<td>$5560 23.5¢</td>
</tr>
<tr>
<td>1958</td>
<td>3633</td>
<td>$49,630</td>
<td>$13,680</td>
<td>4400</td>
<td>14.8 13.7</td>
<td>$5330 22.2¢</td>
</tr>
<tr>
<td>1957</td>
<td>4388</td>
<td>$58,190</td>
<td>$13,280</td>
<td>3435</td>
<td>16.4 13.2</td>
<td>$5400 25.9¢</td>
</tr>
<tr>
<td>1956</td>
<td>4498</td>
<td>$58,780</td>
<td>$13,210</td>
<td>2995</td>
<td>14.3 11.0</td>
<td>$5150 29.4¢</td>
</tr>
<tr>
<td>1955</td>
<td>4112</td>
<td>$54,840</td>
<td>$13,330</td>
<td>3370</td>
<td>15.6 13.0</td>
<td>$4860 27.2¢</td>
</tr>
<tr>
<td>1954</td>
<td>4206</td>
<td>$55,110</td>
<td>$13,100</td>
<td>3765</td>
<td>16.5 14.6</td>
<td>$4700 24.5¢</td>
</tr>
<tr>
<td>1953</td>
<td>4479</td>
<td>$55,300</td>
<td>$12,350</td>
<td>3265</td>
<td>16.7 16.1</td>
<td>$4880 24.6¢</td>
</tr>
<tr>
<td>1952</td>
<td>5231</td>
<td>$67,400</td>
<td>$12,890</td>
<td>2880</td>
<td>14.1 14.2</td>
<td>$4700 32.7¢</td>
</tr>
<tr>
<td>1951</td>
<td>5236</td>
<td>$74,500</td>
<td>$14,250</td>
<td>2820</td>
<td>14.7 14.9</td>
<td>$4230 35.5¢</td>
</tr>
<tr>
<td>1950</td>
<td>5280</td>
<td>$72,750</td>
<td>$13,790</td>
<td>3050</td>
<td>19.0 16.7</td>
<td>$3990 27.7¢</td>
</tr>
<tr>
<td>1949</td>
<td>5073</td>
<td>$57,770</td>
<td>$11,390</td>
<td>1980</td>
<td>15.6 15.1</td>
<td>$3800 28.2¢</td>
</tr>
<tr>
<td>1948</td>
<td>5221</td>
<td>$72,380</td>
<td>$13,860</td>
<td>2095</td>
<td>17.0 16.5</td>
<td>$3630 31.2¢</td>
</tr>
<tr>
<td>1947</td>
<td>5439</td>
<td>$59,000</td>
<td>$10,870</td>
<td>1905</td>
<td>14.5 15.3</td>
<td>$3330 26.5¢</td>
</tr>
</tbody>
</table>

1/ Average annual employment, Idaho Employment Security Agency

2/ Obtained by dividing annual payroll by average annual employment. Both figures from Idaho Employment Security Agency
## APPENDIX D
VALUE OF IDAHO'S MINERAL PRODUCTION 1861-1961

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Value recorded through 1960</th>
<th>1961 preliminary values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antimony</td>
<td>$17,300,000</td>
<td>$24,000</td>
</tr>
<tr>
<td>Clay</td>
<td>779,000</td>
<td>none</td>
</tr>
<tr>
<td>Cobalt</td>
<td>1/</td>
<td>none</td>
</tr>
<tr>
<td>Columbium-tantalum</td>
<td>1/</td>
<td>none</td>
</tr>
<tr>
<td>Copper</td>
<td>70,885,325</td>
<td>2,604,000</td>
</tr>
<tr>
<td>Garnet</td>
<td>2,114,000</td>
<td>1/</td>
</tr>
<tr>
<td>Gold</td>
<td>206,171,503 2/</td>
<td>170,000</td>
</tr>
<tr>
<td>Iron ore</td>
<td>150,000</td>
<td>1/</td>
</tr>
<tr>
<td>Lead</td>
<td>947,934,412</td>
<td>14,982,000</td>
</tr>
<tr>
<td>Manganese</td>
<td>167,556</td>
<td>none</td>
</tr>
<tr>
<td>Mercury</td>
<td>6,109,313</td>
<td>206,000</td>
</tr>
<tr>
<td>Mica</td>
<td>1,000,000</td>
<td>none</td>
</tr>
<tr>
<td>Phosphate rock</td>
<td>71,794,000</td>
<td>9,800,000</td>
</tr>
<tr>
<td>Pumice</td>
<td>2,198,000</td>
<td>95,000</td>
</tr>
<tr>
<td>Sand and gravel</td>
<td>76,594,000</td>
<td>7,000,000</td>
</tr>
<tr>
<td>Silver</td>
<td>537,081,241</td>
<td>16,220,000</td>
</tr>
<tr>
<td>Stone</td>
<td>44,641,000</td>
<td>2,100,000</td>
</tr>
<tr>
<td>Tungsten</td>
<td>32,000,000</td>
<td>6,000</td>
</tr>
<tr>
<td>Zinc</td>
<td>453,780,691</td>
<td>13,027,000</td>
</tr>
<tr>
<td>Others and values included in 1/</td>
<td>54,528,000</td>
<td>2,455,000</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>$2,525,228,000</strong></td>
<td><strong>$68,689,000</strong></td>
</tr>
</tbody>
</table>

1/ Figure withheld to avoid disclosing individual company confidential data.

2/ Includes estimate of $12.7 million for 1861-2