

By F. D. Benjovsky

A MODERN SAMPLING, MILLING AND REDUCTION PLANT AT SALIDA, COLORADO



The exploration and development of the metal resources of Colorado has not been as intense as in other western states. Because of this the future of the many known Mineral areas of the state on exploration and development looks bright and has good chances of being very profitable. The early history of mining shows that the greatest activity is in areas reasonably close to market. That history is being repeated is evidenced by the record productions that are being made in the Cripple Creek district, Boulder, Park, Eagle, and even Lake Counties are on the up trend.

The establishment of such an enterprise that will furnish another market at this time is very desirable for the Mining industry of Colorado. The present treating plants in Colorado are owned by private interests who also control many acres of very rich mining claims. These are the only markets which exist at this time, and the independent producer is paid and given such service as these private interests care to pay and give.

Colorado independent producers excepting Boulder and Clear Creek Counties, have no agency serving as a control point in the shipping nor do they have at this time the advantage of a market in the state which can treat the Complex ores of the state. This positively prevents many potential small shippers from operating because they cannot afford a modern milling plant, further their tonnage would probably never justify such a plant. It is time for the State or Municipalities to look around and see the feasibility of a real plant located somewhere central that can furnish a market for many small producers. It is, further, time to consider a modern reduction plant where all the minerals after being segregated into individual masses by concentration are treated and the metals contained recovered individually, produced.

The Federal Government has recognized the importance of payrolls furnished by established industry. It is further beginning to realize that relief payrolls are not desirable and it has made their P. W. A. funds available for the establishment of industry. The City of Salida, as well as Chaffee County, has taken interest so intent on such a project that the City has applied for a Grant and Loan thru the P. W. A. to construct a Sampling, Modern Milling and Reduction Plant that will furnish a local as well as a state market to the mining industry at large. It is proposed to Sample and purchase outright any amount of ore that a producer brings in, paying for same market prices, less charges for milling and treating such ores. The producer to furnish his product F. O. B. the plant.

The establishment of such an enterprise offers a real source for individual and collective labor to furnish itself with a gainfull occupation. The Mining Industry, once the most important, is so linked with the other major industries, particularly Agriculture, Lumbering, Manufacturing, Transportation and Power, thru utilization and consumption of their products, that fluctuations in their activities, immediately and directly effect all others. The development of agriculture and its branches have reached a maximum, more water for irrigation of more land is not available, stock raising is at maximum, more grazing lands are not available, and the lumbering and timber industry cannot be expanded. There is only one natural resource of wealth left capable of expansion, Mining.

The great cause as to the decline in the production or activity of the mining industry commonly attributed to the decline in metal prices cannot be proven by this fact. Statistics show our greatest production was made from mines during a period of time when prices of metals were low. The cause has been attributed to many conditions principally among these are increased costs of treatment, transportation, labor legislation and the changing of oxide ores to complex sulfides or mixture of sulfides of various metals. However, don't forget the fact that Colorado made its greatest metal production over a long period of years when markets were available locally—by means of many samplers, many smelters and many reduction works. Today, and for many years past, the many has changed to one smelter and one reduction works. It is a fact that with the development of the floatation system our methods of concentration have been improved. This improvement has brought about a new product of concentrates. Smelting plants that were designed to treat crude or coarse ores found it difficult to function properly on products that were all fine as is being produced in our mills of modern design. Even Reduction Works found it necessary to change their modes of operanda. Unfortunately the smelters in Colorado did not for their own private reasons change any practice

but continued in the old way to treat ores and add costs for treatment sufficient to pay their own operating costs which inadequate practice made the producer pay. Producers began to shut down because they could not pay the increased costs. The smelters began closing down because of no production and thus disappeared the local markets. In other states smelting practice was revised—and mining continued to flourish.

The mining industry in Colorado has probably been a most wasteful carried on industry. We have wasted our natural wealth in that the producer had to ship his product to plants obsolete. If he was paid for a lead content in a complex lead-zinc ore he was penalized for the zinc and the smelter distributed the zinc to the atmosphere. This does not include the tons and tons of sulphur which was sent to the atmosphere. If the producer was paid for zinc, he was penalized for lead. If any copper silver and gold were present, if paid for, the amount paid compared to actual content and value was ridiculously small, and in many cases no pay was made. Today these conditions can be remedied. Flotation not only will concentrate the minerals but by its use they can be segregated successfully. These products may be treated in modern plants recovering the metals successfully at not prohibitional costs.

The mining industry during the period 1891 to 1918, furnished employment according to reliable statistics for some 30,000 men in and about the mines of Colorado. The vast number employed in the manufacturing industry directly dependent on metal mines is estimated at 35,000. In times past about 51 per cent of all freight handled by railroads is direct result of mining. Probably one-half of the people employed by railroads owe their livelihood to mining. In Colorado this amounted to over 15,000 employees. The grand total is over 80,000 men. These figures are based on 28 years average and what can be called normal times in the industry. This figure represents about 10 per cent of the population of the state, covering that period of time. It is possible to return to this prosperity, the municipality or other branches of government are certainly to be encouraged in establishing markets through such a plant or plants as is suggested.

The future of the metal mining industry of Colorado because of the increased price for gold and silver is at this time only indicated. Increased production from OLD MINES in Boulder, Chaffee, Eagle, Mineral, Park, Pitkin, Rio Grande, San Juan, San Miguel and Teller counties is evidence of this. Already this increased production has taxed the local markets. These markets have begun to restrict production by increasing cost of treatment charges and limiting the grade of ore acceptable to them. In cases they have notified shippers to look for other markets. Such conditions as these absolutely show that expansion of mining industry depends on local market.

Salida, the county seat of Chaffee County, is located some 44 miles southwest of the geographic center of the state. Regarding the mineral resources, it is most centrally located. The same can be said of agriculture, timber, power and railroads, both narrow and broad gauge serving the mineral districts radiate from Salida. Improved highways north, south, east and west, radiate from Salida as a center. A large part of the production from the mines pass through Salida in transit to market. This with the fact that over 58 per cent of the metal production of the state comes from within a radius of 65 miles from the city, makes Salida the most central location for such a plant.

The average daily tonnage of ore produced and treated in Colorado over a 20 year period, (1904-1923) was 6,293 tons. This produced 2,375 ounces of gold, 23,216 ounces of silver, 19,792 pounds of copper, 192,037 pounds of lead and 246,780 pounds of zinc per day. Compare this production to the production of 1934. In 1934 Colorado produced per day, 841 ounces of gold 7,415 ounces silver 30,666 pounds of copper, 23,036 pounds of lead and 41,805 pounds of zinc. A line on future production of the state may be had comparing the 1933 production with 1934. Gold production for the year is up a plus 23.4 per cent over the year previous. Silver plus 35.5 per cent increase, copper 12.42 per cent increase, lead 42 per cent increase and zinc a minus 41.4 per cent or a decrease.

This increase of production is coming from principally old mines, in many cases from mines which were abandoned in the past. With local markets available who can say what the future production will be. It is not impossible that the production may pass the 20 year average.

The possibilities of flotation ore indicated by the number and importance of the companies now using the process. The tonnage and the varieties of the ores handled, the grade of concentrates produced and the high recoveries of the metals contained in the area. In point of tonnage treated, flotation is at present leading all other methods of ore concentration. The following table shows importance of the concentration of non-ferrous ores. Year 1927.

TABLE
Gold, silver, copper, lead and zinc ore treated in U. S.. 1927
Slag, Matie and Cleanings.

Method of Treatment	Tons	Per Cent
Concentration	79,689,574	86.8%
Direct Smelting	4,472,423	4.9%
Amalgamation and Cyanidation.....	3,401,521	3.7%
Sulfuric Acid Leach.....	4,139,873	4.5%
Volitalization	44,859	0.1%

The following shows effect of flotation concentration on smelting proctic. The total silver-lead furnaces operating in 1916 was 79, in 1928 it was 48. In the mean time the tonnage treated in these furnaces dropped from 5,300,000 tons in 1916 to 3,510,000 tons in 1928, but there was an increase of over 40 per cent in the total production of lead from these 48 furnaces.

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