

L

# WYOMING MINING DEVELOPMENTS

by

Horace D. Thomas  
State Geologist

Nonmetallic mining held the spotlight in Wyoming mineral industries during 1948. Nonmetallic rocks and minerals were produced in larger quantities and in greater variety than ever before. Important new mining projects got into full swing, new processing and treating plants were constructed and old operations were expanded.

## NONMETALLIC MINING AND PROCESSING

Bentonite. Wyoming's bentonite industry was characterized by a record production during 1948 and by the construction of two new large bentonite mills. Wyoming is the leading bentonite producing state and about 35% of the nation's production comes from northeastern Wyoming, aggregating about 250,000 tons per year. Main uses of bentonite, which is a colloidal clay occurring as sedimentary beds, are in oil refining, in rotary drilling muds and in foundries, although many other uses are known.

Bentonite mills operate at Moorcroft, Upton, Osage and Casper. A new modern plant has been completed and another is under construction in the northeastern corner of Wyoming. In September the Baroid Sales Division of the National Lead Company completed a plant at Alladin which is of large capacity and is equipped with three rotary dryers and four Raymond grinding mills. Bentonite is mined at nearby points in Wyoming and South Dakota. The Wyodak Chemical Company is constructing a plant near Colony equipped with thermostatically controlled dryers, modern pulverizers and a complete dust-collecting system. The plant will have a productive capacity of 350 tons per day and is so constructed that additional equipment may be installed to double this output.

Phosphate rock.-- The year, 1948, marked the first real production of phosphate rock in the State. The large strip mine of the San Francisco Chemical Company, located at Leefe, about 20 miles south of Cokeville, on the Oregon Short Line, in Lincoln County, operated during the year. Main effort, however, was on construction, but at the year's end the mine was ready for full production. A railroad spur had been built to the mine and a modern crushing, pulverizing and bagging plant constructed. Crushing facilities are almost unlimited and the capacity of the two pulverizers is 200,000 tons per year. The rock is not processed but is shipped for direct application in the raw form to phosphate-deficient soils. The phosphate rock is being stripped mined, with operations on a 6-foot bed of exceptionally high-grade rock carrying from 32% to 35% phosphorus pentoxide. Slightly leaner rock lies just below the bed now being mined. The reserve of phosphate rock is large.

Phosphate Mines, Inc., is opening the second mine in Lincoln County at a point about 16 miles northwest of Kemmerer. An underground mine is being developed to operate on a 7-foot vein of high-grade rock. The mine is still in the development stage but full production is expected in 1949.

Trona.-- The deep mine of the Westvaco Chlorine Products Company, located about 15 miles west of Green River, produced trona throughout most of 1948 for the manufacture of soda ash in the adjacent treating plant. The trona is a natural sodium carbonate which occurs as a flat-lying bed at a depth of about 1,500. A 1,600-foot vertical shaft penetrates the bed and extends downward for an additional 100 feet as a sump. Development mining has proceeded away from the shaft site, with the driving of a main entry with multiple entries extending from it. In the treating plant the sodium carbonate is heated to dehydrate and calcine it to convert it from sodium carbonate to sodium oxide, or soda ash. The plant capacity is

200 tons per day of raw trona, yielding 140 tons of soda ash. Soda ash is used in the ceramic industry and as an alkali in many metallurgical, manufacturing and treating processes.

Sodium sulphate.- Natural sodium sulphate has been produced from saline lakes near Casper and near Rawlins for many years. Main uses are in the ceramic and paper industries, in stock feeds and as a flux. No production figures are available for 1948.

Feldspar.- Feldspar is mined from small open pits in the granite area comprising the nucleus of the Laramie Mountains. Feldspar is the pink rock-forming mineral in granite, but in places occurs in essentially pure bodies. The feldspar is shipped in the raw state for use in the glass industry elsewhere. The production is about 20,000 tons per year.

Vermiculite.- None of the vermiculite properties in the Encampment area was operative during the summer of 1948. Main activity lay in the core drilling of deposits by the Bureau of Mines and by private concerns with the object of outlining ore bodies and determining reserves.

Gypsum products.- Wyoming has virtually inexhaustible reserves of high-grade gypsum. Gypsum for agricultural use as a soil conditioner is mined near Thermopolis and near Cody. The Soil Sulphate Distributing Company at Thermopolis produces a soil-conditioner composed of ground sulphur-bearing gypsum carrying a minimum of 22 per cent sulphur. Gypsum Products, Inc., at Cody, mines and pulverizes gypsum for agricultural use. The United States Gypsum Company operates a mill at Laramie which calcines gypsum to produce plaster products.

Clay products.- The Lovell Clay Products Company is the only large producer of clay products in Wyoming. Bricks, hollow blocks, sewer pipe, drain pipe, flue lining and wall coping are manufactured from clay mined at an open pit east of Lovell.

Cement.- The only cement plant in Wyoming is that of the Monolith Portland Midwest Company near Laramie. A natural cement rock is quarried southwest of Laramie for use in the plant which produces about 750,000 barrels of cement each year.

Limestone.- The only underground limestone mine in Wyoming is the Horse Creek mine of the Great Western Sugar Company, about 36 miles northwest of Cheyenne. Two limestone beds, which stand vertically and are each about 23 feet thick, are penetrated by a 1200-foot tunnel. The mined limestone is hauled underground by Diesel locomotives to the modern crushing, screening and preparation plant. About 240,000 tons of limestone averaging 97% calcium carbonate are mined each year and over 2 million tons have been mined to date. The limestone is used in beet sugar refining, in construction and in metallurgical industries in the Rocky Mountain region. Limestone is also produced from a quarry near Laramie by the Monolith Portland Midwest Company for use in the manufacture of cement, and from a quarry on the Idaho-Wyoming border by the Utah-Idaho Sugar Company for use in refining beet sugar.

Crushed stone.- Crushed stone produced in Wyoming supplies not only the local needs but is used in the Plains States where outcrops of tough rock are not found. The largest quarry is that of the Union Pacific railroad system. The plant is capable of producing 4,000 cubic yards of ballast, or nearly 80 carloads, per day and nearly 2,000,000 tons have been produced since the plant went into operation in 1944. The quarried granite is crushed to yield ballast and chips; uncrushed rock is used for riprap.

The Burlington Lines rock quarry near Guernsey produces ballast and riprap from quartzite, a very tough type of rock. This quarry employs about 40 men and produced 112,000 cubic yards of rock during the summer. The Burlington Lines also obtains ballast from a quarry opened about 30

years ago at Minturn, just east of Gillette. This material is a natural clinker produced from the burning of coal beds and makes a very satisfactory ballast in dry climates. Gravel is also obtained by the Burlington Lines from a gravel pit at Elkhorn, just north of Glendo. This pit has been operated for 25 years.

A second large quarry in the Guernsey area is operated by Tobin Quarries, Inc. The tough dolomite is crushed, screened and sized for use as ballast, riprap and gravel. Much rock from this quarry is used in Nebraska.

Building stone.- A building stone quarry near Laramie, operated by the University of Wyoming, supplies the attractive native rock used in all buildings on the campus. Important new improvements have been made at the quarry and operation was essentially continuous during 1948 to provide stone for the four new buildings being erected.

Gemstones.- Wyoming continued to be one of the largest producers of gemstones in the nation. Increased tourist trade has been a stimulus to the jade industry in Lander. Wyoming jade has sold in the rough for as much as \$15 per pound. The quality of some approaches that of the jade of Chinese Turkestan and most equals the quality of New Zealand jade. Minor amounts of agate of various sorts are produced over the State.

#### METAL MINING

Gold and silver.- The production of gold and silver in Wyoming in 1948 showed a marked decrease over 1947. In 1948 the output was 53 fine ounces of gold valued at \$1,855, compared with 1,486 ounces valued at \$52,010 in 1947. The silver output in 1948 was only 5 ounces valued at \$5, compared with 95 ounces valued at \$86 in 1947. The Carissa Mine in the South Pass district, which produced 98 percent of the gold in 1947, was idle during most of 1948 except for development work. No recoverable

copper, lead or zinc was produced in Wyoming in 1947 or in 1948.

Iron ore.- The Sunrise mine of the Colorado Fuel and Iron Company operated throughout the year, producing a high quality hematite ore for shipment to the smelter at Pueblo, Colorado. This is the only important metal mine in the State and it has operated almost continuously since 1900. Ore production for 1948 was in excess of 600,000 tons, although no official production figures are available.