

GYPSUM DEPOSITS OF THE LARAMIE BASIN, ALBANY COUNTY, WYOMING

Red shales with interlayered beds of gypsum crop out along the flanks of most Wyoming mountain ranges. These sedimentary sequences of redbeds and gypsum were deposited during the Permian, Triassic, and Jurassic Periods, a span of geologic time between 140 and 250 million years ago. The gypsum beds in these formations range in thickness from a fraction of an inch to nearly 80 feet, and beds of minable thickness have been described in many areas of the state.

Wyoming currently ranks 12th among the 21 gypsum-producing states of the Union, with 316,000 tons of gypsum mined in 1973. The two largest gypsum producers in Wyoming are in the Big Horn Basin, the Big Horn Gypsum Company near Cody, and the Georgia-Pacific Company in Lovell. Both of these operations include a wall-board plant. A major new gypsum producing and wallboard manufacturing facility is currently under development at Thermopolis.

Lesser amounts of gypsum production for agricultural uses and for Portland cement materials have been recorded at various localities in the state. The only such operation currently is that of the Monolith Portland Midwest Company northeast of Medicine Bow. This gypsum is used in the manufacture of Portland cement at the Laramie plant.

The most important factor in the economics of gypsum mining and the manufacture of gypsum construction products is transportation. Deposits amenable to low cost production abound in Wyoming. Transportation cost for carrying crude gypsum to the processing plant and for carrying gypsum products to market can be

expected to be minimal for many of the rock gypsum and gypsite deposits near the Union Pacific Railroad in Albany County. The area would appear to be well situated to supply the growing markets in Colorado, in the energy-boom areas of Wyoming and Montana, and in the gypsum-deficient Pacific Northwest.

INDIVIDUAL DEPOSITS IN THE LARAMIE BASIN

Major deposits of rock gypsum are found on the eastern, northern, and southern boundaries of the Laramie Basin, and in 1890 a deposit at Red Buttes, 9 miles south of Laramie on the Union Pacific Railroad, was the site of the first commercial gypsum mining in the state. A bed of pure white rock gypsum at this site was worked to a depth of 15 feet, and wall plaster and plaster of Paris, were manufactured in a small mill nearby. A large deposit of gypsite (a soft, earthy form of gypsum created by solution and redeposition of rock gypsum) was discovered just south of Laramie in 1895. Two plants were constructed in Laramie for the manufacture of wall plaster, and one of these continued in operation until 1948. Production of the Laramie gypsite was extremely inexpensive, as the deposit was covered only by about one foot of soil. The 9 foot thick gypsite just below the soil layer disaggregates easily and consequently did not require grinding before being cooked.

No detailed maps or reserve estimates have ever been made for the rock gypsum and gypsite deposits of the Laramie Basin. The accompanying map illustrates the outcrop area of gypsum-bearing formations in the county, however, and the location of the individual numbered deposits described below.

1. T 23 N, R 77 W

The gypsum deposits in the Goose Egg Formation near Medicine Bow and Como Bluff are the source of supply for Monolith Portland Midwest Company's cement plant at Laramie.

2. Secs. 3, 4, 7, 8, 9, 10, T 12 N, R 76 W

Gypsum beds in the Satanka Formation crop out along the north base of Red Mountain, about 25 miles southwest of Laramie. A section measured in Section 9 shows the massive gypsum layer at the base of the sequence at its maximum thickness of 67 feet. This same bed is reported to have a thickness of 30 feet or more along 5 miles of its outcrop in this area.

3. Sec. 7, T 13 N, R 73 W

One mile east of Sportsman Lake, a bed of pure rock gypsum has been exposed in a small pit to a depth of 4 or 5 feet. The full thickness of the bed has not been determined.

4. Secs. 20, 21, T 14 N, R 73 W

The Satanka Formation contains two gypsum beds of significant thickness at Red Buttes, 9 miles south of Laramie along the Union Pacific Railroad. The Red Buttes deposit was mined beginning in 1890, and plaster was manufactured at a small mill located nearby. The rock gypsum at this locality is extremely pure. A chemical analysis yielded the following results: CaO - 32.5%, Al₂O₃ - 0.3%, SiO₂ - 0.2%, SO₃ - 46.3%, and H₂O - 20.8%.

5. NE 1/4 Sec. 21, T 14 N, R 73 W

A 5 to 6 foot thick deposit of gypsite is found in the

valley of Harney Creek, one mile southeast of Red Buttes. This gypsite was used with rock gypsum for the manufacture of cement plaster at the Red Buttes plant.

6. T 14 N, R's 73, 74 W

Gypsite deposits occur over an extensive area in the lower 2 miles of Willow Creek Valley and extend to the north to a point two miles beyond the junction of Willow and Lone Tree Creeks.

7. Sec. 4, T 15 N, R 73 W

Finely divided gypsite is found immediately southeast of Laramie. The 9-foot thick unit is about 80% pure and consists of an upper 7 foot thick layer of gypsite, an intermediate 5 inch red parting, and a lower layer of white gypsite resting on gravel and red clay. The deposit was worked for over 50 years to supply material for the two Laramie plaster mills. The operation was terminated in 1948.

8. SW 1/4 Sec. 2, T 16 N, R 73 W

A 10 foot thick lens of gypsum in the Satanka Formation is exposed on a hillside five miles north of Laramie. Monolith Portland Midwest Company mined this deposit for a short time in 1949.

9. Secs. 3, 4, T 16 N, R 73 W

A thick gypsite bed is found about 5 miles north of Laramie.

CONCLUSIONS

The anticipated population growth associated with energy development in the Rocky Mountain West should substantially increase

the local market for gypsum construction products. The Pacific Northwest is a gypsum-deficient area, an area of population growth, and an area easily accessible from Wyoming by rail.

Detailed geologic investigations of the gypsum deposits of the Laramie Area are needed to determine whether this abundant resource would be a suitable basis for a gypsum board fabrication plant to supply the growing market demand in the Rocky Mountain West and for export to the Pacific Northwest. The data that are immediately available indicate large reserves, high quality, and little mining difficulty. Laramie's ideal location with respect to rail transportation was the factor which caused the first gypsum plant in Wyoming to be built at Red Buttes and is just as critical today.

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SELECTED REFERENCES ON GYPSUM IN ALBANY COUNTY, WYOMING

Darton, N. H., and Siebenthal, C. E., Geology and mineral resources of the Laramie Basin, Wyoming: U. S. Geological Survey Bulletin 364, 1909, 81 p.

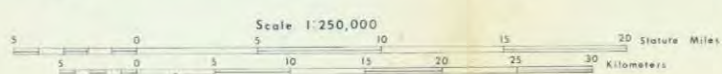
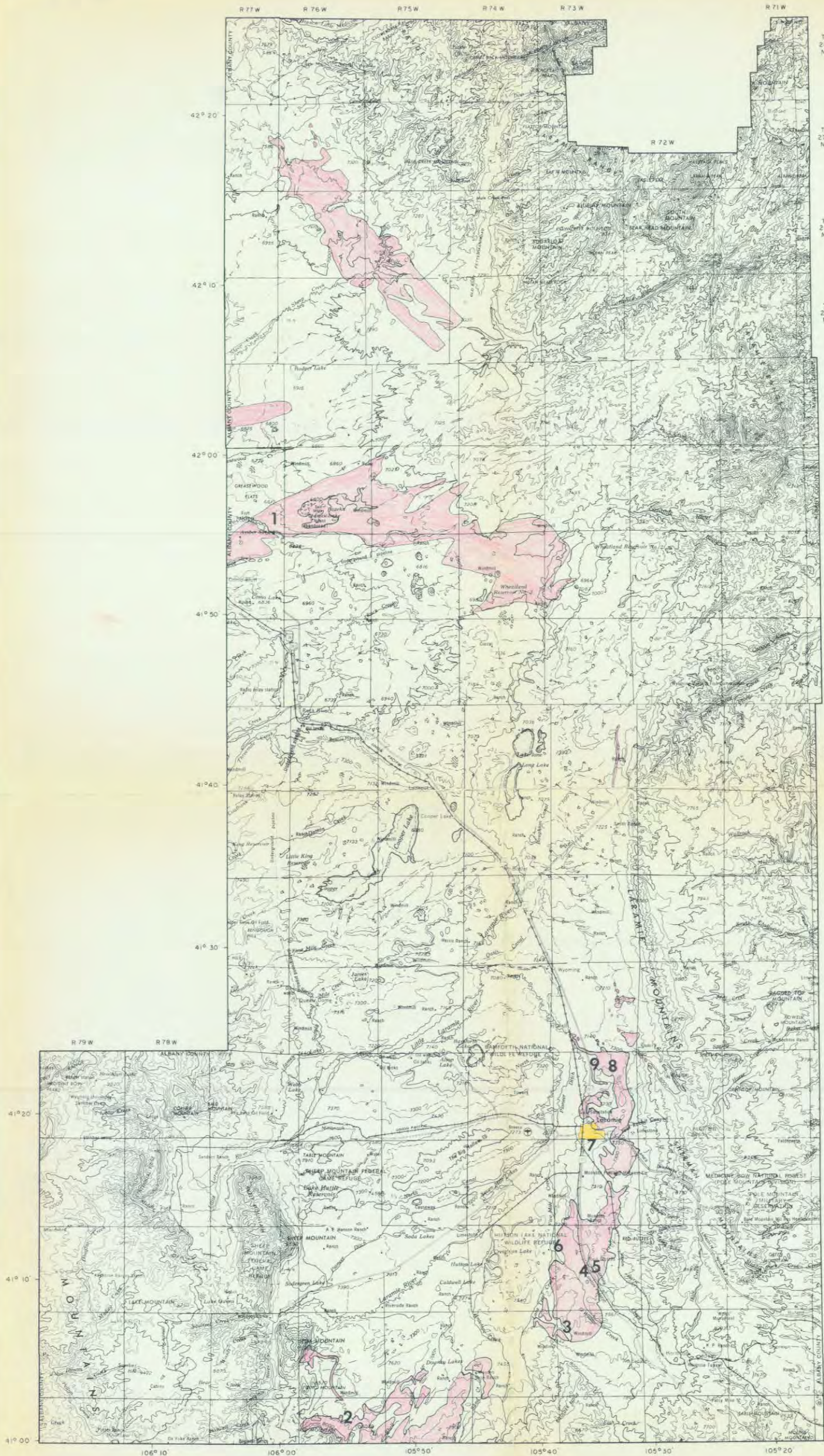
Dunbar, R. O., Geology of the Como Bluff Anticline, Albany County, Wyoming: Unpublished M.A. thesis, University of Wyoming, 1942, 40 p.

Knight, W. C., Gypsum deposits in Wyoming: U. S. Geological Survey Bulletin 223, 1904, p. 79-85.

Siebenthal, C. E., Contributions to economic geology, 1905, Gypsum deposits of the Laramie District, Wyoming: U. S. Geological Survey Bulletin 285-K, 1906, p. 404-405.

Stone, R. W., and others, Gypsum deposits of the United States: U. S. Geological Survey Bulletin 697, 1920, p. 295-308.

Westervelt, T. N., Gypsum deposits of Wyoming: Unpublished report, Wyoming Geological Survey files, 1969.



ALBANY COUNTY

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