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LIMESTONE OCCURRENCES IN EASTERN OREGON

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The following report is the companion to "Limestone Occurrences in Western Oregon" which appeared in the April 1958 Ore.-Bin. These two reports combine to give a ready reference and bibliography on all known limestone occurrences in Oregon. It will be noted that certain "limestone areas" are shown on the eastern Oregon map without specific designation of "limestone occurrences." The text, however, briefly describes the nature of the "occurrences" within the "areas." Of particular significance to the investigator is the fact that no limestone occurrences are known outside the areas shown on the map.

Interest in limestone deposits in eastern Oregon has been high since completion of the natural gas line in 1956 between the Southwest and Portland as the pipeline traverses the region of the deposits. Since completion of the line the Chemical Lime Company has gone into operation. Its plant, located 5 miles north of Baker, has a yearly capacity of 75,000 tons and produces burnt and hydrated lime. The quarry, located 10 miles west of the plant, is in exceptionally high-grade limestone. (See The Ore.-Bin, November 1957, for complete details on the operation.)

Ed.

Wallowa County

*1. BIG BAR DEPOSIT (16)**

Location: Parts of secs. 8, 17, 18, and 19, T. 5 S., R. 49 E., and parts of secs. 24, 25, and 26, T. 5 S., R. 48 E., in the Snake River Canyon approximately 10 miles north of Homestead.

Description: Thick beds of massive limestone. Highly contorted and recrystallized to a variable degree in different places. Analyses of chips taken on 6- to 8-foot intervals over a horizontal distance of 115 feet beginning at the southern contact showed 53.69 percent CaO, 0.64 percent MgO, 1.04 percent R_2O_3 , 1.22 percent SiO_2 , and 42.62 percent ignition loss. A chip sample taken over a horizontal distance of 400 feet beginning at the northern contact showed 52.28 percent CaO, 0.68 percent MgO, 1.70 percent R_2O_3 , 3.10 percent SiO_2 , and 42.10 percent ignition loss.

Wallowa County
(cont.)

2. IMNAHA RIVER DEPOSITS (7, 17)

Location: Sec. 15, T. 3 S., R. 48 E., in Imnaha River Canyon, and NW $\frac{1}{4}$ sec. 22, T. 3 S., R. 48 E., on Summit Creek, approximately 23 miles south of Imnaha.

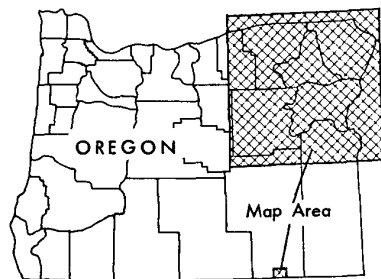
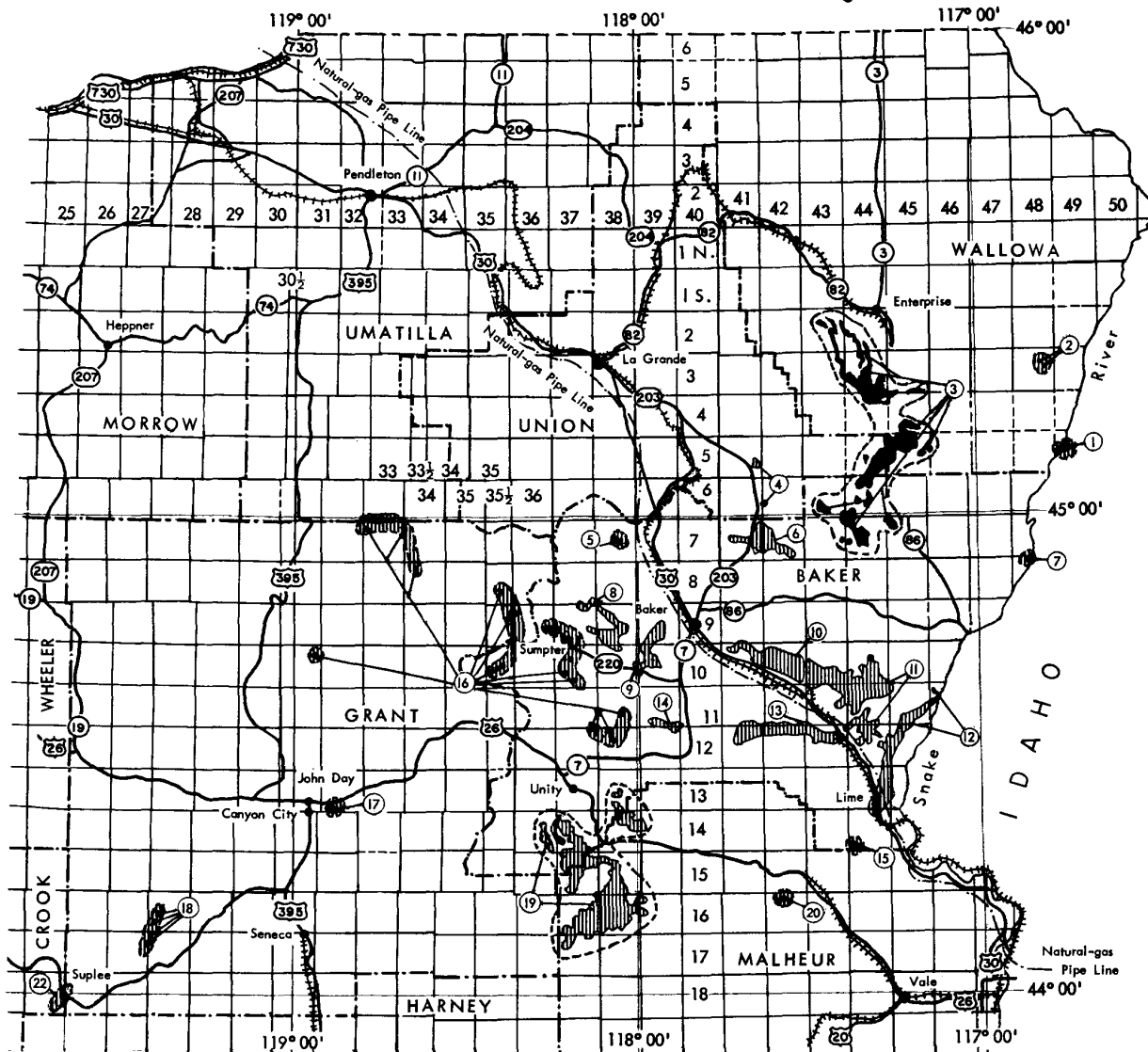
Description: The Imnaha Canyon deposit crops out in one place as a bluff 170 feet high of thick-bedded, slightly recrystallized and locally silicified limestone. Nearby, and along the banks of the river, the rock is described as thick bedded, noncrystalline, and soft. Analysis of the soft limestone shows 54.44 percent CaO, 1.12 percent SiO_2 , and other impurities low.

The Summit Creek occurrence is small. No analysis available.

* Number refers to map locality.

** Numbers in parentheses refer to bibliography on page 47.

Limestone Occurrences In Eastern Oregon



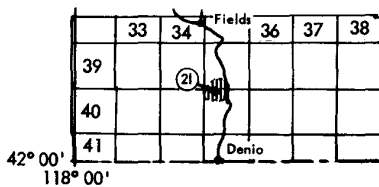
Index Map

EXPLANATION

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0 5 10 15 20 25
Scale Miles

State of Oregon
DEPARTMENT OF GEOLOGY
and
MINERAL INDUSTRIES
MAY 1958



Wallowa and Baker Counties

3. WALLOWA MOUNTAIN LIMESTONE (7, 11, 12, 22)

Quantities of limestone and marble occur in the Wallowa Mountains, and the areal distribution of these occurrences is indicated on the map. However, since most are too remote to be of commercial value, specific locations are given only for those occurrences situated within a reasonable proximity to rail transportation. These occurrences are all in the northern foothills and are as follows:

Location: (Lostine River) Parts of secs. 3, 4, and 9, T. 2 S., R. 43 E., in the Lostine River Canyon approximately 6 miles south of Lostine.

Description: Thick massive limestone, light gray in color and substantially recrystallized into a finely granulated texture. Quarried and burned into quicklime for local consumption years ago. Analysis indicated a 54.50 percent CaO content, with 0.92 percent SiO₂, 0.52 percent MgO and lesser amounts of other impurities. A bed of similar marble occurs high on the east bank of the Lostine Valley at a point opposite the old quarry. This bed of marble forms cliffs 300 to 500 feet high and is exposed for nearly 6 miles up the Lostine River at elevations of about 5000 feet.

Location: (Black Marble Quarry) Secs. 19 and 20, T. 2 S., R. 44 E., at an elevation of about 6000 feet and approximately 5½ miles from a plant rail siding on the Wallowa River.

Description: A well-bedded, dense, black limestone quarried for burned lime purposes in the 1920's and intermittently thereafter, but purchased in 1949 by the Pacific Carbide and Alloys Co. of Portland and now used for carbide manufacture. Average analysis of 250 feet of drill core from the present quarry indicates the following purity: CaO, 53.37 percent; MgO, 1.06 percent; SiO₂, 1.10 percent; Al₂O₃ plus Fe₂O₃, 0.23 percent; P, 0.004 percent; free carbon, 1.25 percent.

Location: (Hurricane Creek) Parts of secs. 9, 10, 15, and 16, T. 3 S., R. 44 E., where first encountered in Hurricane Creek approximately 9 miles south of Enterprise. The occurrence extends south from the above location to the Matterhorn Peak in secs. 10 and 11, T. 4 S., R. 44 E.

Description: This immense body of limestone is a marble in some places. Composition varies from high purity to low grade.

Union County

4. CATHARINE CREEK OCCURRENCES (18)

Location: About sec. 24, T. 5 S., R. 41 E., on the south fork of Catharine Creek plus two small occurrences on the hill to the south in about secs. 25 and 26; also one small occurrence northeast of Medical Springs in sec. 24, T. 6 S., R. 41 E.

Description: These are all very small occurrences. No analytical data available.

Baker County

5. BULGER HILL LIMESTONE (10)

Location: Sec. 9, T. 7 S., R. 38 E., on the south flank of Bulger Hill approximately 5 miles from the railroad at Hutchinson.

Description: Two rather narrow parallel beds of limestone strike about N. 60° W. and extend nearly two-thirds of a mile across the southern section. The southernmost of the two beds is in contact with diorite but the other one is walled on both sides by argillite. Abundant development of garnet in places, especially along the diorite contact, but clean limestone is also present.

6. MEDICAL SPRINGS OCCURRENCES (3)

Location: T. 7 S., Rs. 41 and 42 E., 3 to 6 miles south of Medical Springs.

Description: A total of twenty individual lenses has been mapped in this area. Some are single, isolated occurrences. Others are grouped in clusters. All are associated with Permian greenstones. The grade is probably quite good in many of the occurrences, but most are too small to be of commercial significance.

7. OXBOW LIMESTONE (16)

Location: Parts of secs. 4, 8, and 9, T. 8 S., R. 48 E., in Snake River Canyon approximately 6 miles south of Copperfield.

Description: Limestone associated with Permian-Triassic volcanics and in contact with Mesozoic diorite. No analysis available.

8. ELKHORN MOUNTAIN OCCURRENCES (5, 9, 10)

Location: Principally in T. 9 S., R. 38 E., but with minor overlap into adjoining townships on the north, south, and west.

Description: A total of 145 separate limestone bodies occurs in this area, most of which embraces the higher elevations of the Elkhorn Range. These occurrences represent a series of disconnected lenses in pre-Tertiary argillites. The limestone is dense and for the most part moderately recrystallized. The two largest occurrences, both of which are far larger than any of the others, are owned by the Chemical Lime Co., of Baker. Rock from the occurrence at the head of Marble Creek is being burned for industrial uses. Total potential reserves have not been fully established but a calculated 2,000,000 tons has been demonstrated by diamond drilling to average 55 percent CaO, 0.17 percent MgO, 0.384 percent SiO₂, 0.106 percent R₂O₃, and 0.0072 percent P. No analytical data available for any of the other occurrences.

9. WASHINGTON GULCH OCCURRENCES (3, 14)

Location: Portions of Tps. 9 and 10 S., R. 39 E., with minor overlap into T. 10 S., R. 38 E.

Description: Forty-five separate occurrences are mapped within this area. Most are in association with argillites but several are in contact with, or in a close proximity to, gabbro. The largest single occurrence, secs. 22 and 27, T. 9 S., R. 39 E., runs 80.24 percent CaCO₃, 44.96 percent CaO, 16.54 percent SiO₂, 1.84 percent Al₂O₃, 0.88 percent MgO.

Baker County
(cont.)

10. PLEASANT VALLEY OCCURRENCES (3)

Location: Portions of T. 10 S., Rs. 41 and 42 E., with minor overlap into T. 9 S., R. 41 E.

Description: A swarm of approximately 160 separate occurrences is shown on the geologic map of the Baker quadrangle within this area (Gilluly, 1937). The occurrences are in argillite. The three largest cover an area estimated to range between 15 and 30 acres. The rest are much smaller. Two of these occurrences were utilized for burned lime for local building purposes about the year 1900. No analysis available.

11. PLEASANT VALLEY EXTENSION OCCURRENCES (2)

Location: Parts of Tps. 10 and 11 S., R. 43 E., and Tps. 10, 11, and 12 S., R. 44 E.

Description: Small pods and lenses of limestone occur here in a frequency probably comparable to that described under location 10, but they are not designated separately on any available map. The same host argillite occurring in location 10 extends into this area and delimits the possible bounds of these occurrences.

12. LIME-SODA CREEK OCCURRENCE (4, 5, 7)

Location: Parts of Tps. 12 and 13 S., R. 44 E., and Tps. 11 and 12 S., R. 45 E., with minor overlap into T. 11 S., R. 46 E.

Description: A series of massive, but separate, limestone bodies extends through this belt. The largest bodies occur at the heads of Fox, Conner, and Hibbard creeks and involve an estimated minimum of 300,000,000 tons according to Moore (1937). Cement is manufactured by the Oregon Portland Cement Co. from occurrences located near Lime, Oregon, on the southernmost extension of this belt. This company also controls large reserves at the head of Fox Creek. The Conner Creek occurrence was sampled a few years ago by other interests. Available analyses for these properties are: CaO, 55.65 percent for a grab sample from the Fox Creek property, reported by Moore (1937); CaO, 53.60 percent for a composite of two 25-foot channel samples on the Conner Creek occurrence reported by Hodge (1944).

13. DURKEE-BURNT RIVER OCCURRENCES (2, 3, 8)

Location: Parts of Tps. 11 and 12 S., Rs. 41, 42, and 43 E.

Description: A series of parallel exposures of massive crystalline limestone beds extends west a distance of approximately 18 miles from the site of the National Industrial Products Corporation quarry on Burnt River at Nelson Siding. Rock from this quarry is regularly delivered to sugar and paper plants and to Oregon Portland Cement Company.

Composite analysis of 1,040 carloads of the "sugar rock" is: 98.20 percent CaCO_3 , 0.70 percent MgCO_3 , 0.25 percent iron and aluminum oxides, and 0.85 percent insolubles. Quarry waste, composed of all minus 3/4-inch rock from the quarry plus dirt that overlies the deposit, averages 89.53 percent CaCO_3 , 0.92 percent MgCO_3 , 1.20 percent iron and aluminum oxides, and 6.19 percent insolubles. No analysis available for the westward extension of this belt but quarriable limestone in grades comparable to that at Nelson doubtless occur.

Baker County
(cont.)

14. DOOLEY MOUNTAIN OCCURRENCES (3)

Location: Part of T. 11 S., R. 39 E., with minor overlap into T. 12 S.

Description: Twenty-six small lenses occur in a pre-Tertiary schist within the bounds of the area indicated. All are situated high on Dooley Mountain. No analyses available.

15. LIMESTONE BUTTE (1)

Location: Sec. 30, T. 14 S., R. 44 E., approximately 10 miles from Huntington via Birch Creek Road.

Description: A butte of dense, crystalline pre-Tertiary limestone in close proximity to an exposure of granite. Much recrystallization and many local inclusions of shaly material. No analysis available but grade manifestly poor.

Baker and Grant Counties

16. MISC. BLUE MOUNTAIN OCCURRENCES

(10, 15, 19, 20)

Location: Widely diverse as indicated on the map.

Description: Small pods and lenses of crystalline limestone in metamorphosed pre-Tertiary formations. No analysis available.

Grant County

17. DOG CREEK OCCURRENCES (13)

Location: Secs. 32 and 33, T. 13 S., R. 32 E.

Description: Five small lenses of crystalline limestone in metamorphosed Permian sediments. No analysis available.

18. IZEE AREA OCCURRENCES (21)

Location: Parts of secs. 20, 30, and 31, T. 16 S., R. 28 E.; sec. 6, T. 17 S., R. 28 E., with some overlap into the adjoining section to the west; and sec. 12, T. 17 S., R. 28 E.

Description: Four massive limestone beds of Triassic age occurring along the axis of a syncline. Other small occurrences of "reef" limestone are reported in the area but these are presumably small and few in number. No analysis available.

Baker and Malheur Counties

19. IRONSIDE MOUNTAIN AREA OCCURRENCES (6, 24)

Location: Portions of several townships in the area generally surrounding Ironside Mountain.

Description: Fossil-bearing limestone interbeds are mentioned in description of the Rastus formation of highly metamorphosed pre-Tertiary sediments. These interbeds are presumably small in size, few in number, and widely scattered in occurrence. Area shown on the map is that occupied by the host sediments in which the limestone interbeds occur thus delimiting possible range of location. This series of pre-Tertiary sediments extends northeastward toward the Willow Creek (Malheur) Reservoir, but contained limestones have as yet been reported only in the areas indicated. No analyses available.

Malheur County

20. BROGAN LIMESTONE (9)

Location: About secs. 9 and 10, T. 16 S.,
R. 42 E.

Description: Gray, crystalline limestone exposed in association with red and green Triassic shales. No analysis available, but appears to be clean.

Harney County

21. PUEBLO MT. OCCURRENCE (23)

Location: Approximately sec. 5, T. 40 S.,
R. 35 E.

Description: Thin beds of marble in the vicinity of Arizona Creek along the upper reaches of the eastern flank of Pueblo Mountains. Associated with highly metamorphosed sediments, greenstones, and granites. No analysis available.

Crook County

22. SUPLEE LIMESTONE (6a)

Location: Principally in Tps. 17, 18, and 19 S.,
Rs. 24, 25, and 26 E., partly in Grant County.

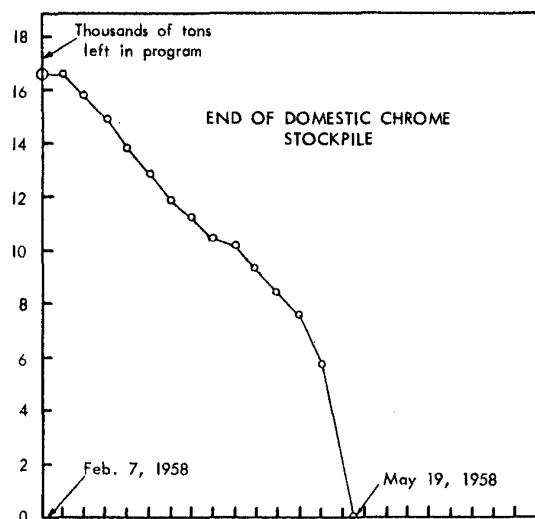
Description: Occurs in massive deposits, lenses of all sizes, reefs, and small irregular masses. No analysis available but material grades from nearly pure to calcareous sandstone. Numerous Paleozoic age fossils in some areas.

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CHROME STOCKPILE CLOSES SUDDENLY

Purchases of lump chrome and concentrates at the Grants Pass Depot were stopped May 19 by the Defense Materials Service of the General Services Administration. Although the program was known to be nearing the end of the 200,000 long-ton quota, the termination came as a surprise to many shippers in the State who expected to have at least two weeks notice in which to clean up their shipments. California shippers who swamped the Depot with last minute deliveries caused the precipitous curtailment on purchasing (see chart).



Letters addressed to all stockpile shippers were mailed out on May 14 by GSA advising them that the purchasing program was nearing its end and to get clearance from the Depot before making shipments. In the John Day area shippers received the notice on the same day the stockpile shut down. Al Dunn had 25 tons of concentrate and 10 tons of ore ready to ship when the quota was completed. Al Curzon was also left with 15 tons of ore on hand.

Dan Beyer, manager of the Grants Pass Depot, reported that as nearly as could be determined no shipper would be left with undeliverable concentrates or ore that was ready to ship when the closing announcement was received. Producers with chrome ready to ship were being allotted certain

tonnages to avoid confusion during the wind-up phase which was expected to extend to the end of May. A shortage of trucks developed as mines rushed to get their ore delivered.

First shipments to the Grants Pass Depot under the program just completed were made August 3, 1951. Originally the program was to be for five years only but subsequent revisions extended it until June 30, 1959, or until 200,000 long tons were received. A total of 41,697 tons was delivered to the stockpile by Oregon mines up to December 31, 1957. Value of Oregon chrome amounted to \$3,435,154.

UTAH URANIUM FIRM CLAIMS AEC BONUS

The Lisbon Uranium Company of Salt Lake City, Utah, was the first uranium ore producer to claim the \$10,000 bonus offered by the Atomic Energy Commission's Circular 2. This Circular went into effect ten years ago (April 11, 1948) and expired at midnight on April 11, 1958. It required the discovery, production, and delivery to the Commission of not less than 20 tons of ore containing 20 percent or more U_3O_8 . Carnotite-roscoelite type ores of the Plateau were not eligible. The Lisbon ore was of the uraninite-pitchblende type and weighed in at 22.25 tons. Assays revealed it contained 22.92 percent uranium oxide or 10,200 pounds of U_3O_8 . It was delivered in a single truck load to the Grand Junction headquarters of the AEC on April 10, 1958, one day before the expiration of the Circular. (From AEC Grand Junction Operations Office Press Release.)

MINERALS STABILIZATION PLAN

A five-year minerals stabilization plan, backed by the Administration, was submitted to a Senate Interior subcommittee on April 28 by Secretary of the Interior Fred A. Seaton. Under the plan, "stabilization payments" would be made to producers of copper, lead, zinc, acid-grade fluorspar, and tungsten. The government would pay the producers the difference between the prevailing domestic price at the time of the sale and the "stabilization price." Proposed prices, annual tonnage limitations, and current market quotations for the five mineral commodities under consideration are shown in the accompanying box.

	<u>Stabilization Price</u>	<u>Annual Tonnage Limitation</u>	<u>Current Market Quotation</u>
Copper	27.5 ¢ lb.	1,000,000 tons	24.65 ¢ lb.
Lead	14.75 ¢ lb.	350,000 tons	11.5 ¢ lb.
Zinc	12.75 ¢ lb.	550,000 tons	10.0 ¢ lb.
Fluorspar (acid-grade)	\$48 short ton	180,000 tons	\$50 short ton
Tungsten	\$36 short-ton unit	375,000 units	\$18-20 short-ton unit

Implementation of the stabilization plan would cost approximately \$161,000,000 the first year, with costs slowly diminishing as production responds to demand, according to testimony presented by Seaton. Equitable distribution of "stabilization payments" within each industry would be provided for by the establishment of specific production limits for each producer. If the plan is adopted, no new government agency to administer it would be required as it could be handled by the Assistant Secretary for Mineral Resources of the Department of the Interior. In Seaton's opinion the plan would not require the imposition of import quotas on foreign ores. Seaton agreed, in response to a subcommittee suggestion, to study the conversion of "stabilization payments" into percentages of 1957 domestic consumption of the five minerals involved, with the object of protecting domestic production as consumption increases.

The plan also calls for:

1. Enactment of legislation extending the minerals exploration loan program now being conducted by DMEA, which otherwise would terminate June 30, 1958.
2. Possible later recommendation that Congress relax the present four-year \$100,000-per-year limitation on the expensing of exploration costs.
3. A supplemental appropriation of \$5.5 million for the fiscal year beginning July 1, 1958, to enable the U.S. Geological Survey and the U.S. Bureau of Mines to undertake high-priority minerals research projects.

Activities of the Defense Minerals Exploration Administration programs which terminate on June 30, 1958, would be continued on a permanent basis under the new program, using existing DMEA offices and personnel. Seaton feels that the \$100,000 limitation now imposed

on exploration programs should also be relaxed to encourage increased exploration activity "absolutely essential to the future well being of the mining industry and the Nation as well." Particular research projects envisioned in connection with the recommended supplemental appropriation of \$5.5 million "are urgent in the sense that new demands on our mineral resources are being created by missile, rocket, and other related defense developments," Seaton testified.

Seaton also reviewed the current status of several other metals and minerals, including the considerable sums being expended on research in each case by the Bureau of Mines. He noted that the asbestos purchase program will not expire until the end of this year; that the beryl purchase program still has three years to run; that the chromite purchase program will expire soon and that a pending proposal to provide chromite production bonuses should be enacted, as well as a similar proposal covering columbium-tantalum; that General Services Administration is still making contracts, under DPA authority, with domestic producers for delivery of metallurgical-grade fluorspar; that a low-grade manganese ore purchase program cannot be justified on the basis of defense needs, but there is a need for sustained research in this commodity; that the mercury situation after the current DPA purchase program expires at the end of this year is very uncertain; and that the Government stockpile program for domestic strategic mica has another four years to run.

ASSESSMENT WORK DEADLINE NEARS

Assessment work on all unpatented quartz and placer mining claims should be completed on or before noon July 1, 1958. Federal law requires that \$100 worth of work must be expended annually on each claim. The work must be of benefit to the claim. Supplies such as timbers and powder used in connection with the work may be included in the total cost. Immediately the assessment work is completed, a proof-of-labor blank should be filled out and recorded in the office of the clerk or recorder of the county in which the claim is located. A fee of \$1 is charged for each document recorded by the county.

DOMESTIC METAL PRICES

(From E&MJ Metal and Mineral Markets, May 15, 1958)

Copper - 24.655 cents per pound, domestic delivered.
Lead - 11.5 cents per pound New York.
Zinc - 10 cents per pound East St. Louis.
Quicksilver - \$229 - \$232 per 76-pound flask New York.
Aluminum - per pound f.o.b., primary pig, 24 cents; ingot, 26.1 cents per pound.
Antimony - domestic bulk 29 cents per pound.
Nickel - per pound duty included, 74 cents.
Platinum - per troy ounce \$64 - 70.
Silver - per troy ounce 88.625 cents.
Cobalt - \$2.00 per pound in 500-pound lots.
Cobalt ore - per pound of cobalt contained, free market, 10 percent, 60 cents; 11 percent, 70 cents; 12 percent, 80 cents.
Columbium - per pound 99½ percent, depending on lot, roundels, \$55 - 70.
Osmium - per ounce troy, nominal \$70-90.
