NEW MEXICO

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A Department of the School of Mines

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BARITE OF NEW MEXICO

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INTRODUCTION

Increasing activity in the oil fields of New Mexico and West Texas in the past few years has created a market for local barite to be used in drilling muds. Development of the barite deposits in the past has been retarded for several reasons: The market until recent years has been negligible. The low price of barite does not allow for very great transportation costs of crude material. Several of the largest deposits are mixtures of barite and fluorspar with minor amounts of metallic minerals. Milling methods for satisfactory separation of barite and fluorite have not been perfected until recently. Exploitation of some of these mixed deposits for the recovery of two or more products is now economically possible.

Mention of barite has been made in New Mexico Bureau of Mines and Mineral Resources Bulletins 4, 8, 11, 12 and 21. A few prospects have been reported in the past year and every effort is being made to bring to light previously overlooked occurrences. This circular is a compilation of all data available in the files and publications of this Bureau at present.

GENERAL FEATURES 1/

Barite, frequently termed "barytes" or "heavy spar", is a sulfate of the metal barium. It has the chemical formula BaSO4, and contains 65.7 per cent barium oxide or baryta, BaO, and 34.3 per cent sulfur trioxide, 50_3. It is the heaviest of the common non-metallic minerals, having a specific gravity of about *4.5*. Its average hardness is 3, or about the same as that of calcite.

1/ See reference 1.

In most deposits barite occurs with other minerals. It is commonly associated with clay, limestone, fluorspar, gypsum, and quartz. In New Mexico it is common as a gangue mineral in fluorspar deposits and in the ores of certain metal-mining districts.

The commercial use of barite, as such, is largely dependent on the fact that it is a heavy white mineral, chemically inert and comparatively cheap.

USES

Barite enters into commerce in the following forms: 2/

1. Crude barite. This is the raw material for the manufacture Hof ground barite, lithopone, 3/ and barium chemicals. It may be sold as it comes from the mines, or it may be washed in jigs or log washers to remove clay, iron oxides, and other impurities.

2. Ground barite. This is crude barite after it has been washed and then ground very fine. Naturally white barite, or barite intended for use where color is of small importance, needs no treatment other than grinding. Otherwise, the ground mineral must be subjected to further treatment, generally bleaching with dilute sulfuric acid. "Off-color" or "unbleached" barite is sold for use in dark-colored paints, for use as drilling mud with rotary tools in oil-well drilling, and for the manufacture of lithopone. The bleached or naturally white ground mineral is known as "prime white" or "water-floated" barite and is used as a pigment in white paints, as a filler in white paper, linoleum, rubber goods, artificial ivory, and for other purposes where a white, inert pigment or filler is desired.

Ground barite is also used in ceramics, lake colors, fireworks, glassware, phonograph records, printers' ink, heavy textiles, soap, and other articles.

3. Barium chemicals. Chemical compounds of barium are manufactured directly from crude barite, from ground barite, or from witherite (barium carbonate). The more important manufactured salts are the sulfate (blanc fixe), carbonate, chloride, nitrate, monoxide, dioxide, hydroxide, and sulfide.

NEW MEXICO OCCURRENCES

DONA ANA COUNTY

TONUCO MOUNTAIN DEPOSITS 4/
(Near center S 1/2 sec. 31, T. 19 S., R. 1 W., and
N 1/2 sec. 6, T. 20 S., R. 1 W.)

Location and Accessibility

Tonuco Mountain in Dona Ana County in east of Heathdon on the Albuquerque and El Paso branch of the Atchison, Topeka & Santa Fe Railway.

2/ See reference 2.

3/ Lithopone is a pigment and filler consisting largely of barite and zinc sulfide.

4/ See reference 3.

It rises 800 feet above the valley of the Rio Grande, attaining a maximum elevation of approximately 4800 feet. The mountain rises abruptly from the bolson on the east and its western side overlooks the Rio Grande.

There are two properties on the mountain, the Tonuco mine of the Ore Production Company on the west side and the Beal claims on the east side. The Tonuco mine is 700 feet above the railway. It is reached by a fair road, too steep for trucks, which climbs to the mine in a distance of 1 mile and continues east to the Beal claims.

Geology

Tonuco Mountain is composed of a series of Tertiary volcanic agglomerates, in part pyroclastic and in part mud flows, with interbedded water-laid sandstones and conglomerates which are down-faulted against pre-Cambrian granite and mica schist. On the southeast side of the mountain there is a small fault block of Abo sandstone and shales of Permian age.

The Rocks.-- The total thickness of the agglomerate series is at least 800 feet. The lower half of the series consists of gray to blue-gray pyroclastic material, ash beds and broken flows. The upper part is a series of dark, plum-colored mud flows which stand in bold cliffs around the mountain. Some water-laid sandstones are interbedded in the upper part of the series. The mud flows are composed of angular to sub-angular fragments of latites and andesites with feldspar and quartz crystals up to 5 mm. in diameter in a groundmass of clayey material. Occasional andesite fragments several inches across occur, and some of the beds in the mud flow series have a groundmass of very finely crystallized quartz. The interbedded sandstones are conspicuously arkosic with subangular grains of orthoclase, plagioclase feldspars, epidote, and a little tourmaline.

At the most western opening on the Tonuco vein a basal conglomerate consisting of angular granite, mica schist, vein quartz, and basic extrusive rocks rests upon the pre-Cambrian series. This conglomerate passes upward into a series of fine grained water-laid arkosic sandstones, apparently the basal members of the Tertiary agglomerate series.

The pre-Cambrian rocks include a dark green mica schist intruded by pink granite. The schist in its exposures has been considerably weathered and shows extensive development of chlorite, sericite, and kaolin. The granite is fresh in a few exposures. It is made up of quartz, orthoclase, microcline, and muscovite with some apatite and tourmaline as accessories. In most of the granite exposures, however, the feldspars are well kaolinied and in the neighborhood of the fluorite veins, much secondary silica and some sericite is present. On the wall of the Tonuco vein, the granite has been altered by the addition of great quantities of finely crystallized silica replacing the feldspars in the rock.

On the southeast side of the mountain is a small fault block of Abo sandstone tilted to the east. The Abo is characteristically composed of thin beds of red, fine-grained sandstones separated by beds of dark red shale.

Perched on the shoulder of the mountain on the southwest and northeast sides are two areas of bolson gravels at elevations conformable with the bolson of the Jornada del Muerto to the east. Surrounding the area are gravels and alluvium of the present cycle of the Rio Grande.

Faulting.-- Faulting in the area occurred in two periods. The first, to which the Tonuco vein belongs, is pre-Tertiary; the second, represented by the S-shaped fault running from north to south between the pre-Cambrian on the east and the agglomerates on the west, is Tertiary.

The earlier faults are in the pre-Cambrian granite and mica schist and are the sites of fluorite and barite deposition. The Tonuco vein, which belongs to this group, occupies a fracture striking N. 70° W. and dipping 70° to the southeast. In the upper tunnel on the west side of the mountain the vein attains a width of 10 to 25 feet with granite on the hanging wall and mica schist on the foot wall. Capping the pre-Cambrian rocks and truncating the vein is 15-foot bed of agglomerate composed of fragments of granite, schist, latite and andesite. Some pieces of fluorite and barite are included. The agglomerate passes upward into a fine-grained, yellow arkosic quartzite having an exposed thickness of 20 feet. These water-laid clastic rocks represent the basal members of the Tertiary agglomeratic series which are down-faulted against the pre-Cambrian on the west....

The veins on the Beal claims on the east side of the mountain occupy fissures in granite and mica schist striking N. 20° to 30° They probably belong to the older fault system.

The later faulting is represented by the great S-shaped north and south fault between the pre-Cambrian and Tertiary agglomerates on the north and Abo sandstone and agglomerates on the south. The agglomerate series has moved downward with reference to the older rocks on the east. A total displacement in excess of 700 feet is indicated by the basal water-laid elastics capping the Tonuco vein on the east side of the fault.

In the southeastern corner of the mapped area a block of Abo sandstone down-faulted against the pre-Cambrian granite on the north has been tilted to the east. The northwest-striking fault between the Abo and the granite probably belongs to the later series.

Workings and Ore Deposits

The ore of the Tonuco Mountain deposits occurs as a fissure filling in the pre-Cambrian rocks. Fluorite and barite are the principal vein minerals, but quartz is locally abundant and some calcite occurs. No sulfides were noted.

Tonuco Vein. The Tonuco vein occupies a fault fissure in pre-Cambrian granites and schists. At its western end it strikes N. 70°W. but toward the east it swings to the south striking No. 25° W. at its most eastern exposure.

The western end of the vein is exposed in the upper adit on the west face of the mountain overlooking the Rio Grande. An open cut 40 feet long passes into a 70-foot adit with a course of N. 70° W. along the strike of the vein. In the outer part of the adit the ore was 10 feet across. It widened to a maximum width of 25 feet 60 feet from the portal, and then 'pinched to a width of 10 feet, remaining constant to the present vein face.

The ore is a mixture of barite and fluorite with much clayey material, horses of country rock, and some secondary quartz and gypsum cutting the face. Laterally the vein shows great variation in the barite-fluorite ratio. When first visited in August, 1927, the vein face was estimated to contain barite 60 per cent, fluorite 35 per cent, and country rock as inclusions and horses 5 per cent. Six months later, at the time of the writer's second visit, the breast had been advanced 30 feet and the face was estimated to contain barite 20 per cent, fluorite 60 per cent, and country rock 20 per cent. The barite and fluorite have crystallized in large masses easily separated in the course of mining. The country rock present in the vein as inclusions and horses is highly silicified and is replaced peripherally by fibrous quartz to a depth of 1/2 to 1 1/2 inches.

The vein dips 70° to the southwest. The hanging wall is silicified granite with pronounced vertical slickensides and the foot wall is kaolinized and chloritized mica schist. Much sericite was noted in both walls.

A few feet north of the main vein is a small parallel fracture in the mica schist approximately 2 feet wide containing fluorite and barite. Only a few feet of drifting had been done and the persistence and relationship of the vein could not be determined.

Southwest of the upper adit and 60 feet lower on the hillside an adit was driven S. 75° E. for 350 feet in an unsuccessful attempt to pick up the vein.

On the east side of the Tertiary agglomerate capping the vein, an open cut 40 feet long, exposes 3 feet of barite and fluorite, apparently a pinch in the Tonuco vein. The walls are granite and mica schist, both much altered.

Southeast across a ravine the vein again widens, reaching a maximum of 20 feet of ore. Here the strike is N. 25° W and the dip 60° to the southwest. A tunnel 400 feet long follows the strike of the vein across a small spur extending north from the mountain on the south. The vein ranges from 5 to 18 feet in width in the length of the tunnel. At the southeast end it pinches to a width of a few inches and consists chiefly of barite.

Both walls of the vein are pink granite. In places there are zones in which brecciated country rock occurs as inclusions in the vein material, averaging 2 inches in diameter. These granite fragments have been silicified and peripherally replaced by a shell of fibrous quartz. Much post-fluorite quartz also occurs in the ore, most of which has been left in place. The greater part of the ore, however, contains only small amount of quartz. It is made up of a mixture of barite and fluorite, sometimes intimately intergrown and sometimes crystallized in separate masses easily sorted in the process of mining. An average of the vein material is estimated to be 40 per cent fluorite, 40 per cent barite, and 20 cent quartz and country rock. About 20 per cent of the total material mined is said to have been marketable fluorite. 5/ The ore above the level of the tunnel has been removed and the stopes open on the surface for a distance of 200 feet.

A winze descending 65 feet on the vein shows the fluorite, barite, and quartz to pinch rapidly to 2 or 3 feet with 1 foot of good fluorspar on the hanging wall. A drift 15 feet northwest shows an increase in barite.

Beal Veins.-- On the eastern side of Tonuco-Mountain a series of narrow parallel veins in granite strike N. 20° to 30° The vein material is a mixture of barite and fluorite, grading from one to the other along the strike and vertically. In general the veins are 2 to 4 feet wide.

The highest opening on the hillside is an adit 120 feet long following a vein 12 to 18 inches wide. Approximately 40 feet from the portal of the adit a winze 25 feet deep descends on 2 feet of vein material, mostly fluorite. At the bottom of the winze the vein is estimated to contain 70 per cent fluorite and 30 per cent quartz as chert veinlets cutting the ore. The vein here is free from barite. Approximately 1000 tons of metallurgical lump spar are said to have been removed from this vein. 6/

Lower on the hillside to the southeast a parallel vein striking N. 30° W. is divided by a parting of granite 1 1/2 feet wide. A shaft descends on the vein to a depth of 40 feet where the parting is lost and 2 1/2 to 4 feet of good fluorspar is exposed. Near the surface the vein material is largely barite, but at the bottom of the shaft the vein is estimated to contain less than 10 per cent of barite. With ordinary care in sorting most of the vein material can be marketed as metallurgical lump. A number of other parallel veins in the vicinity contain 1 to 2 1/2 feet of barite and fluorite.

The Ore

The ore in all of the Tonuco Mountain deposits is a mixture of barite and flourite, sometimes closely intergrown but usually crystallized

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5/ Roy Beal, personal communications.

6/ Roy Beal, personal communications.

in distinct masses easily separated in the process of mining.

The ore in the tunnel on the southeast end of the Tonuco vein, which contains zones of brecciated granite, is of both genetic and economic interest..... Blocks of granite have been silicified by the addition of fine-grained quartz which has replaced the mica, and, in part, the feldspar throughout the rock mass. Surrounding a silicified granite center is a replacement band of fibrous quartz 1/2 to 1 1/2 inches thick with prisms normal to the surface of the fragment. The interstices between these replaced granite blocks are filled with clear green fluorspar. A final generation of quartz completes the cavity filling with groups of well-developed crystals connected by thin quartz films.

By careful sorting an acid lump ore can be obtained, and a few cars of this material have been shipped. Metallurgical lump is, however, the most practical product.

In March, 1928, approximately 25 tons of ore were piled at the portal of the upper adit on the western side of the Tonuco vein. An analysis of the best material in this ore pile showed 96.67 per cent CaF_2, 0.45 per cent $CaCO_3$, 0.93 per cent $BaSO_4$, and 1.85 per cent SiO_2. This analysis represents picked material. The run of the ore pile is metallurgical lump.

An analysis of selected ore from the Beal veins showed 97.53 per cent CaF_2, 0.31 per cent $CaCO_3$, and 2.28 per cent SiO_2.

The grade of the ore produced by the lessees operating the Tonuco property will depend entirely upon the demands of the market. In avery case more than 50 per cent of the material mined goes to the dump.

History

The Tonuco mine was located in 1917 by Roy Beal of Heathdon, New Mexico. In 1918 the Ore Production Company took over the property and shipped approximately 2,500 tons of metallurgical lump between April 1, 1919, when the mine was opened and June, 1921, when the mill vas completed. Air drills were used during the period. The mill proved unsuccessful and. the Ore Production Company was taken over by J. E. Brazeal of Rincon, the present owner of the property. From the time the mill closed to the present, small quantities of metallurgical lump have been mined by native lessees, who have shipped a car occasionally. In the early part of 1928 lessees were working a number of openings on the property.

In 1920 Roy Beal located the claims on the east side of Tonuco Mountain and has worked them since 1926, producing approximately 1200 tons of ore. From September, 1927, to February, 1928, he shipped approximately 150 tons to Manasse and Hayner of Las Cruces, New Mexico.

Milling Operations

Ladoo, 7/ who visited the property in 1922, gives the final flow sheet of the mill. Harz jigs were used for the separation of the coarser material and Wilfley tables for the finer ore. He says:

"The main milling plant is located at the railroad about a mile from the main tunnel and was constructed at a cost of about $15,000. This mill has been remodeled several times in an effort to effect a separation of the barite and silica from the fluorspar, but the problem has not been solved. (A sample taken from the mill heads analyzed as follows: 47.33 per cent CaF_2, 29.49 $Si0_2$, 1.03 $CaC0_3$.and 17.26 $BaSO_4$; sample of gravel from the car on siding ready to ship analyzed 78.52 per cent CaF_2, 10.33 $Si0_2$, 0.50 $CaCO_3$ and 9.70 $BaSO_4$. A sample from the drawoff from the best two cells on fine jig analyzed 79.87 per cent CaF_2, 13.62 $Si0_2$, 0.71 $CaCO_3$ and 5.20 $BaSO_4$.)

"The barite product from the mill has been segregated in a separate dump in the hope of being able at a later time to work out some method of producing a marketable barite product. This dump at present contains about 200 tons of low—grade barite."

Ore Reserves and Future Possibilities

It is impracticable with knowledge of the extremely variable character of the veins to estimate ore reserves. Particularly is this true where no development in advance of mining has been done. The Beal veins give promise of having extensive ore bodies as yet undiscovered. A small steady production of metallurgical lump by lessees on the Tonuco vein should continue.

Rothrock states: 8/ The mine is on the Beulah May Nos. 1 and 2 lode claims, which were acquired in 1940 by the Newalpitt Corporation of Pittsburg . . . .The principal deposits are called the Tonuco vein on the No. 1 or north claim, and the Beal vein on the No. 2 or south claim. . . . The principal addition to the workings since Johnston's study is a development tunnel driven by the Newalpitt Corporation to cut the Beal vein and its flanking veins about 240 feet below the highest outcrop. . . .

Note: Present owner is G. A. Breen, Emeleton, Pennsylvania. Rufus C. Little, Route 1, Box 3, Santa Fe, is the New Mexico representative.

7/ See reference 4.

8/ See reference 5.

ASSAYS OF ORE FROM T} TONUCO MOUNTAIN DEPOSITS

Assay No.	Description of sample	Chief constituents (percent) CaF_2	SiO_2	$BaSO_4$	$CaCO_3$	R_2O_3
	Tonuco vein					
1.	Mill heads	47.33	29.49	17.26	1.03	---
2.	Loading bin at mine	54.92	30.16	10.70	1.42	---
3.	Vein in bottom of winze, width 42 inches	54.08	14.70	26.48	1.83	---
4.	Grab sample of selected ore from upper adit	96.67	1.85	9.93	0.45	---
5.	Shipping concentrates from jig mill	78.52	10.33	9.70	0.50	---
	Beal vein					
6.	Mill head representing 379 tons (141 tons represented in assay for BaSO4)	69.0	-----	19.0	----	---
7.	Hill heads representing 60 Tons	58.4	28.1	8.2	1.2	3.7
8.	Selected ore, grab sample	97.53	2.28	----	0.31	---

1, 2, 3, 5 - Ladoo, R. B., Fluorspar, its mining, milling, and utilization: U. S. Bur. Mines Bull. 244, pp. 124-126, 1927.

4, 8 - Johnston, W. D., Jr., Fluorspar in New Mexico: N. Mex. School of Mines, State Bur. Mines and Min. Res. Bull. 4, p. 71, 1928.

6 - Data furnished through the courtesy of R. C. Little, district manager, Newalpitt Corporation.

7 - Assay by U. S. Geological Survey.

DEVIL'S CANYON MIN 9/
(SW 1/4 sec. 33, T. 23 S., R. 4 E.)

The Devil's Canyon mine, at the head of Target Range Canyon, has exposed a body of barite which replaces brucite-serpentine marble. . . .

The mass of barite is about 100 feet long, measured north-south and 20 feet wide. It has been explored to a depth of about 25 feet by means of an opencut. A snail amount of colorless fluorite is associated with the barite. There seems to be a considerable reserve of barite, not only in this body but also in adjacent, as yet unexplored, replacements. The owners are A. and A. H. Beasley of Las Cruces. Shipments of barite were made during 1932, 1933 and 1934.

9/ See reference 6.

PALM PARK GROUP 10/
(Secs. 10 and 15, T. 18 *S.,* R. 3 L)

J. W. O'Brien, the sole owner of Mudrite Chemicals, holds possessory rights to the Palm Park group of mining claims comprised of the Palm Park No. 1, No. 2 and No. 3 claims and the Hatch Extension No. 1 and No. 2 claims. This group of barite claims is located approximately eight miles east of Hatch, New Mexico. A new road into the deposit was completed in latter March which connects, by short and favorable route, the deposit with the paved Hatch-Rincon road at a point three miles from Rincon, New Mexico.

The deposit can be described as the barite, fluorspar and quartz filling of a brecciated rhyolite sill that was intruded along a limestone-shale bedding contact. The deposit has the same dip and strike as the limestone-shale beds. The fluorspar content is not appreciable and neither it nor the quartz should constitute a major problem in mining or concentrating the barite.

Mr. O'Brien plans to commence mining operations soon and is establishing at this time the best economical procedure for the operation. The deposit is well established in extent by outcroppings and test pits. Mr. O'Brien plans to mine the dipping deposit by mechanical open-pit -methods with the crude ore being cleaned to specifications at Rincon, New Mexico. The concentrates will be sold to other interests who will complete final grinding, bagging and marketing of the product. . . .

Note: Metallurgical tests were made by U. S. Bureau of Mines metallurgical laboratories. This work is reported in U. S. Bur. Mines R.I. 4280, "Investigation of Ore-dressing Methods for Barite Ores from New Mexico, Missouri, and Arkansas", May 1948.

LINCOLN COUNTY

CONQUEROR NO. 4 AND HILLTOP PROSPECTS 11/
(SE 1/4 SE 1/4 sec. 24, T. 1 S., R. 11 E.)

The Conqueror No. 4 and Hilltop deposits consist of a connected series of veins on unpatented claims belonging to the Continental Engineering Company. They are on nearly parallel ridges separated by a narrow steep ravine. Quartzitic sandstone and siltstone of the Yeso formation crop out on the ridges, but in the ravine bedrock is covered by a deep mantle of talus.

The ore bodies are contained in a series of fractures and brecciated zones striking N. 45° E. within a zone about 150 feet wide On the Hilltop claims these fractures are connected by one that strikes N. 70° W. On the Conqueror No. 4 claim the connecting fracture is faulted

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10/See reference 7.
11/ See reference 8.

and curved but has a general strike of N. 15° W. The length of the mineralized ground, as determined by trenching and sampling by the Federal Bureau of Dines, is 650 feet. The ore is widest near the intersections of the fractures, but is not continuous throughout them. Several breccia zones that appear to be favorable hosts for deposition contain very little fluorite. The maximum widths of ore are on the Hilltop claims, where good ore shoots are from 4 to 10 feet wide, On the Conqueror No. 4 claim, ore widths range from 3 to 6 feet. The ore bodies generally end in stringers or low-grade breccia zones. Although the veins can not be traced across the talus-filled ravine between the two exposures, it is probable that they are continuous. Movement along the fractures after mineralization broke the fluorspar into large fragments, which because of weathering now resemble boulders.

The fluorspar in most exposures is fine-grained, compact, and blue or purple on fresh exposures; it is white weathered. The deposit consists of tiny crystals of fluorite and quartz with larger barite crystals irregularly distributed. The quantity of barite in the deposit ranges from traces to as much as 20 percent. Irregular replacement of barite by fluorite is in part responsible for this variation. The southwest end of the deposit contains scattered clusters of green fluorite crystals up to 1 inch in diameter. The following assays of composite samples from the deposits indicate the character of the ore,

Although the ore bodies are discontinuous, they cover a relatively large area. Their location in an intensely fractured area suggests that they extend to as great depths as any of the larger deposits in the Gallinas district. The difference in altitude between the highest and lowest outcrops of ore is about 90 feet.

ASSAYS OF COMPOSITE SAMPLES FROM THE

CONQUEROR NO. 4 and HILLTOP PROSPECTS 12/

Prospect	Chief constituents (percent)			
	CaF_2	$Si0_2$	$BaSO_4$	CaO
Conqueror No. 4	63.4	17.8	14.6	1.6
Hilltop	57.4	20.8	21.2	1.2

EAGLE NEST PROSPECT 13/

(NW 1/4 SE 1/4 sec. 2L T.,1 S., R. 11 E.)

The Eagle Nest prospect is about three-quarters of a mile north of the Red Cloud mine on a high southwest-trending spur of Rough Mountain. The deposit, which is on Eagle Nest claim No.2 filed by the

12/ Sampling and assaying by the U. S. Bureau of Mines.
13/ See reference 8.

Continental Engineering Company of Carrizozo, has been explored by three shallow pits and a small open cut made by the owners, and by six trenches dug by the Federal Bureau of Mines.

The deposit is in a fault breccia in quartzitic sandstones of the Yeso formation, which dip generally northeastward at angles ranging from 15° to 35°, The fault is nearly vertical and strikes north at the southern end of the deposit and northwest at the northern end. It is mineralized for at least 600 feet along the outcrop, 450 feet of which contains material rich enough to be classified as ore. This deposit may be almost as large as the Old Hickory, probably the largest fluorspar deposit in the Gallinas Mountains, The ore body grades into fluorite-bearing rock of low CaF_2 content at its ends and at some places along its sides. Stringers of fluorspar branch from the main vein, following bedding planes. The thickness of the body is variable and the margins are indefinite in some places. Trenching by the Bureau of Mines indicates an average thickness of 9.5 feet.

The ore is a dense crystalline aggregate of fluorite, barite, and quartz. The groundmass is finely crystalline blue or purple fluorite, through which are scattered short laths and weathered masses of light-pink barite and clusters of medimum-grained green fluorite. Near the margin of the vein tiny cubes and pyritohedra of pyrite and of limonite pseudomorphs are common. Minute crystals of bastnasite occur rarely. The weighted-average CaF_2 content of samples of the outcrop of ore is 60.5 percent, and the proportions of its chief constituents, as determined by an assay of a composite sample made by the Federal Bureau of Mines, are 65.7 percent CaF_2, 13.4 percent $Si0_2$, 16.4 percent $BaSO_4$, and 1.0 percent CaO.

BOTTLENECK PROSPECT 14/
(NE 1/4 SE 1/4 sec. 24, T. 1 S., R. 11 E.)

The Bottleneck prospect is three-quarters of a mile northeast of the Red Cloud mine, A shaft about 25 feet deep, an adit about 30 feet long, and two shallow pits have been dug by prospectors. The deposit has been further exposed by four trenches made by the Federal Bureau of Mines.

Sandy gray limestones and quartzitic arkosic sandstones of the Yeso formation and a sill of rhyolite (?) porphyry from the country rock. These rocks are folded, faulted, and tilted, but generally strike northeast. The faults trend irregularly north-northwest, and the rocks adjoining them are extensively fractured, In the shaft, fault gouge and fine breccia form a vertical band from 2 to 4 feet thick. The adjoining quartzitic sandstones are coarsely brecciated for much greated widths. The fault breccia and parts of the fractured rocks are

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14/ See reference 8,

partly replaced by fluorite, barite, and quartz, which form bodies that are extremely variable in size, shape, and content of CaF_2. The maximum width exposed, in trench 56, is 40 feet. Although most of the deposit has a low CaF_2 content, the part exposed in this trench averages 5 CaF_2. A composite sample of ore from various trenches assayed 47.9 percent CaF_2, 25.2 percent $Si0_2$, 21.2 percent $BaSO_4$, and 1.3 percent CaO. 15/

The fluorspar appears to have been formed chiefly by replacement of the less resistant constituents of the arkosic sandstones and fault breccia. The limestones have been little mineralized. More than one period of fluorite deposition is indicated by veinlets of fluorite cutting the fluorite barite aggregate. The porous parts of the deposit contain considerable calcite that was formed during a relatively late stage of deposition.

OLD HICKORY PROSPECT 16/
(NW 1/4 SW 1/4 sec. 19, T. 1 S., R. 12 E.)

The Old Hickory prospect is in the head of a valley northeast of the Red Cloud mine. It is on the patented Old Hickory claim, owned by Adele Lehman and Edna Lehman Davis of Alhambra, California. In a search for copper, operators in the early part of the century explored outcrops of fluorspar. The workings consist of a shallow shaft, from the bottom of which an incline cuts across the vein; a shaft about 200 feet deep, with drifts and crosscuts developed at the 100- and 200-foot levels; and an adit, winze, and incline that connect the deep shaft with the surface at a point 45 feet below the collar of the shaft. Several pits were dug by the prospectors, and trenches and core-drill holes were made by the Federal Bureau of Mines in exploring the deposit.

The following description of the prospect is taken chiefly from an unpublished report by Robert G. Smalley, geologist of the U. S. Geological Survey, who participated in the joint investigation conducted by the Survey and the Federal Bureau of Mines.

The principal rocks are hard fine-grained slightly feldspathic quartzites. They are considerably disturbed by Tertiary intrusives, which are represented by a trachyte dike in the vicinity of the workings, Later movement along this dike shattered it and the adjoining rock and supplied an avenue of access for mineralizing solutions. These solutions replaced a part of the dike and some of the brecciated quartzite, forming a fluorspar vein, At either end of the dike, on the surface, small branching veins of fluorspar follow diverging fractures in the sedimentary rocks, but the veins pinch out or become very thin within short The vein is 180 feet long and averages about 13 feet in thickness. becomes narrower and shorter with depth. On the 100-foot level a 40-foot drift exposes a vein with an average thickness of feet. On the 200-foot level the average thickness of a lens 65 feet between narrow terminations, is 3 feet.

15/ Sampling and assays by Federal Bureau of Mines.

16/ See reference 8.

The vein material consists chiefly of a fine-grained dense intergrowth of fluorite, barite, quartz, calcite, and dolomite. The proportions of the chief constituents are shown by the following assay of a composite sample of ore made by the Federal Bureau of Mines from trenches and channels cut in the deposit: CaF_2, 56.0 percent; $Si0_2$, 15.1 percent; $BaSO_4$, 15.4 percent; CaO, 2.3 percent.

The sequence of mineralization in this deposit appears to have begun with the deposition of fluorite, accompanied by crystallization of minor amounts of pink barite. During the later stages of this process, or possibly after it was completed, calcite was formed. Small scattered crystals of galena and coatings of malachite indicate that weak lead and copper mineralization took place subsequent to the principal period of fluorite deposition. Then followed a period of dolomitization, when nearly the entire breccia and some of the adjacent sedimentary rocks were impregnated and partly replaced by calcium and magnesium carbonates. Fiore recently, ground water attacked the more soluble constitutents and produced water courses and caves in the rock adjoining the vein. At present these cavities are above the ground-water table, and calcite in the form of dripstone is being deposited in them.

CONGRESS PROSPECT 17/
(NW ¼ SW ¼ sec. 19, T. 1 S., R. 12 E.)

The Congress prospect is near the top of Rough Mountain. In 1944 it was one of the holdings of the Continental Engineering Company, Two pits near the discovery monument on the Congress claim are along a fault striking N. 20° E. that cuts the Yeso formation, bringing quartzitic sandstone on the east against limestone on the west. The fault is filled with breccia that is about L feet wide and is irregularly mineralized with fluorspar similar to that in the Conqueror No. 4 prospect. The vein could not be traced on the surface because of soil cover.

HOOSIER GIRL PROSPECTS 18/
(NW ¼ SW ¼ sec. 19, T. 1 S., R. 12 E.)

The patented Hoosier Girl claim, owned in 1944 by Edna Lehman Davis of Alhambra, California, is three-quarters of a mile northeast of the Red Cloud mine. Three prospects consist of shallow shafts sunk by miners, and trenches made by the Federal Bureau of Mines in the vicinity of each shaft. Shafts Nos. 1 and 2 are 440 and 300 feet, respectively, west-northwest of the main workings of the Old Hickory prospect. Shaft No. 3 is about 650 feet southwest of Nos. 1 and 2 across a ravine.

All the workings are in the Yeso formation, which here consists of fine-grained quartzitic sandstones with a few interbedded limestones.

17/ See reference 8.
18/ See reference 8.

The surface exposures are measured in a few tens of feet and are associated with intersecting fractures trending approximately north, northeast, and east.

Shaft No 1 is on the south side of a lenticular fluorspar body that extends for at least 50 feet west-northwest from the shaft and measures 25 feet at its widest points It was not explored southeastward, The middle, of the dens contains an ore body that is roughly circular in plan and about 25 feet in diameter. This body is surrounded by fractured quartzite and limestone that contains Stringers, small lenses, and irregular masses of fluorspar The fluorspar closely resembles that in the Red Cloud deposit. A composite of the samples taken in the ore body was assayed for its chief constituents, which are present in the following proportions: CaF_2, 54.2 percent; $Si0_2$, 8.2 percent; $BaSO_4$, 15,0 percent; and CaO, 4.5 percent. [19] A vein branching from the deposit was followed by trenching for 75 feet south of the shaft. It Contains fluorspar in widths ranging from 1 to 5 feet for about 50 feet; and only stringers beyond this section.

Shaft No. 2 is sunk along a small lens or chimney of fluorspar. In the shaft, which is about 20 feet deep, thin-bedded quartzitic sandstone forms the east wall, and thickbedded brecciated quartzitic sandstone the west wall, of a vertical fault that strikes N. 5° W. The north and south faces of the shaft contain masses of fluorspar and quartzite in about equal proportions. Fluorspar extends a few feet north of the shaft, where it is bounded by a fracture that strikes N. 40° E. The shaft is surrounded on all sides except the east by trenches that are from 10 to 20 feet from it. All the trenches are in barren rock. The deposit, therefore, is restricted en the surface to the immediate vicinity of the intersection of the fractures.

Shaft No. 3 is sunk along a fluorspar body that is exposed for 30 feet on the surface. Its thickness ranges from a few inches to 6 feet, and it has been followed by the shaft to a depth of about 30 feet. The top and sides of the shaft, which is inclined about 45° in the direction N. 40° W., consist chiefly of fluorspar, much of which is porous because of leaching. The deposit also contains dolomitic rock, travertine, small euhedral calcite crystals, and inclusions of quartzitic sandstone, The walls of the deposit are not definite, but a narrow mineralized zone has been traced for 30 feet north where it is cut by a fault that strikes N. 70° E. The offset segment was not found. A shallow trench 20 feet southwest of the shaft is in barren quartzitic sandstone.

EUREKA PROSPECT 20/
(SE ¼ SW ¼ sec. 19, T. 1 S., R. 12 E.)

The Eureka prospect is anent three-quarters of a mile northeast of the Red Cloud mine. It is southeast and across a small ravine from

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19/ Sampling and assays by the Federal Bureau of Mines.
20/ See reference 8.

the Old Hickory prospect, and is on the patented Eureka claim. The workings comprise three shafts, an open cut, and an adit; all are connected underground.

The country rock comprises quartzitic sandstones and limestones of the Yeso formation, and a syenite sill. They are tilted eastward away from the laccolith that domed the mountains, but the general structure has been greatly modified by local faulting. The faulted ground contains two veins, one of which contains copper bearing minerals and the other fluorspar. The adit follows the fluorspar vein for 255 feet in an irregular course that has a general trend of N. 70° W. The vein is in a zone of fault breccia that ranges from 2 to 6 feet in width and dips 90°-65° The breccia is partly replaced by fluorite and other nonmetallic minerals, which form narrow veins of high-grade fluorspar and wider veins of lower-grade material in the breccia. The distribution of these bodies is irregular. Sampling by the Federal Bureau of Mines disclosed six small ore bodies with a total length of 150 feet and an average thickness of 3 feet. The best of these bodies is 43 feet long and 2.4 to 6.7 feet thick. A composite sample from it assayed 43.8 percent CaF_2, 10.8 percent $Si0_2$, 25.5 percent $BaSO_4$, and 5.5 percent Ca0. The fluorspar is porous and and consists of tiny crystals of purple fluorite in a mass of small calcite and barite crystals, brecciated rock, and clay.

The copper-bearing vein has been exposed in the open cut and in two shallow shafts. It lies along the contact of quartzitic sandstone with overlying limestone, and in fractures and small porous areas in the limestone. The copper is chiefly in the form of chrysocolla. Fluorite, which was deposited before the copper, and galena are present in minor amounts.

SOCORRO COUNTY

HANSONBURG MINE 21/
(Sec. 1, T. 6 S., R. 5 E)

Fluorspar occurs in the Hansonburg or McCarthy lead mine, on the steep west-facing escarpment at the north end of the Oscura Mountains. The property on which the mine is situated comprises the unpatented. Halstead, Louise, Eva, Prairie Springs, Oscura, and Calcite claims, which in 1943 were owned by F. L. Blanchard of Roswell, New Mexico. The workings extend for several hundred feet along the escarpment; they include about 800 feet of drifts and crosscuts and numerous surface cuts. They were made in the search for lead, which was extracted by dry con-centration in a mill erected in 1916. 22/ A good truck trail about 6 miles long connects the mill site with U. S. Highway 380, between San Antonio and Carrizozo.

Note: Present ownership is the Portales Mining Company, Box 382, Socorro, New Mexico.

21/ See reference 9.

22/ See reference 10.

The mine is on one of the major faults that cut the west face of the mountain. - The segments formed by the faults are successively lower toward the west, but the strata are generally tilted eastward. 23/n the vicinity of the mine the fault is entirely within limestones and shales of the Magdalena group. A vein was formed along this fault by the irregular deposition of quartz, fluorite, barite, calcite, and galena, followed by a second generation of quartz. The fluorite was deposited in the interstices of silicified fault breccia, near the margins of the vein, and in cavernous openings in the adjoining limestone. The remaining openings were partly filled with barite, calcite, quartz, and scattered crystals or crystal clusters of galena. The larger cavities are lined with a network of these minerals and contain many well-formed purple or green euhedral crystals of fluorite that range from half an inch to 2 inches in diameter; however, the incrustation of fluorspar generally is only a few inches thick, and the cavities in which it occurs are widely scattered along the vein. High-grade ore could be obtained by the careful hand-sorting of ore from these scattered occurrences, but the run-of-mine product would unavoidably contain large percentages of barite, quartz, and calcite.

RECENT DEVELOPMENTS IN THE HANSONBURG DISTRICT

Mex-Tex Group

The Mex-Tex Mining Company owned by A. R. Hickey, W, Hickey, and F. Kay all of Artesia, New Mexico, holds thirty claims or more which adjoin the north claims of the Portales Mining Company. Much road and some exploration work has been done on the Mex-Tex property during the past year. Several occurrences of barite-fluorite-galena ore have been exposed by open cuts.

Royal Flush Mines

The Royal Flush group comprises four claims which lie about one mile north of the Hansonburg mine. These claims are bounded on the south by the Hex-Tex claims. The Royal Flush claims and four adjacent claims have been recently purchased by Ben B. Scott of the Scott Mineral

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23/ See reference 11.

Company, Alpine, Texas. Considerable exploration work has been done which has disclosed several sizeable bodies of barite and lead ore. Two or three cars of lead ore have been shipped. The Scott Mineral Company proposes to mine both barite and lead ore. The former will be shipped to Houston, the latter to the smelter in El-Paso.

DEWEY MINE 24/

Location

The Dewey shaft at the west end of the Dewey vein in the Joyita Hills is approximately 5 miles N. 82° E. from San Acacia, a station on the Atchison, Topeka & Santa Fe Railway.

Note: Present owner of La Joya Grant is Thomas D. Campbell, Albuquerque, New Mexico.

Geology, Ore Deposits and Workings

The country rock of the Dewey vein is chiefly coarse pegmatitic granite consisting of quartz and pink feldspar. The vein has an easterly course and is exposed for a distance of approximately 4000 feet. Near the west end of the vein the Dewey shaft attains a depth of 300 feet. It was in bad condition when visited and an examination of the underground workings could not be made.

The Dewey mine has been described by Gordon 25/as follows:

"A vein which is 3 to 5 feet wide cuts the gneiss nearly parallel with the strike of the limestones and associated beds. The ore (galena) occurs in bunches distributed in a gangue of quartz, barite, and fluorite, which occupies the full width of the vein. The walls are usually well defined and are covered to a thickness of one-fourth to one-half inch with clay gouge. At the Dewey mine a shaft has been sunk on the vein to a depth of 300 feet. No water was encountered. In the upper 230 feet the dip is about 65° SE.; below that it is 75° to 80°. Above the change of dip the ore mostly follows the hanging wall, but below that point it occurs principally along the foot-wall side. No shipments have been made from the mine, but about 100 tons of ore now lie on the dump. It is a low-grade galena ere carrying very little gold or silver. The well defined character of the vein and the fact that it maintains this character to the bottom of the shaft indicate its continuation to a point considerably below the present workings."

24/ See reference 12.
25/ See reference 13.

An analysis of a grab sample of the ore pile at the Dewey shaft, which is selected material and not an average of the vein, gave returns of 41.18 per cent CaF_2, 1.78 per cent $CaCO_3$, 11.78 per cent $BaSO_4$, 7.94 per cent PbS, 23.32 per cent $Si0_2$, and 13.6 per cent Al_20_3 / Fe_20_3.

West of the Dewey shaft the vein becomes more siliceous and is lost before it reaches the Magdalena limestone on the west side of the Joyita Hills. To the east it can be traced for 3000 feet. A few prospect holes show the variable character of the vein material, in some places barite being the dominant mineral and in others fluorite. About 1500 feet east of the Dewey shaft a shallow shaft on the vein shows 4 feet of fluorite, barite, chert, and a very small amount of galena. An analysis of the material mined from the shaft gave the following results: 12.16 per cent CaF_2, 1.57 per cent $CaCO_3$, 38.06 per cent $BaSO_4$, 0.90 per cent PbS, 34.65 per cent $Si0_2$, and 12.52 per cent Al_20_3 /Fe_20_3.

Near the east end of the Dewey vein and about 400 feet west of the contact between the pre-Cambrian rocks and Tertiary volcanic rocks is a shallow pit in which the vein material *is* largely cherty quartz. A small amount of chalcopyrite occurs in the vein and the secondary topper mineral chalcocite and malachite are sparingly present.

Future Possibilities

The ore of the Dewey vein cannot be mined profitably for any one of its chief constituents, which are fluorite, barite, and lead. Radical advances in milling procedure whereby both fluorite and lead, and perhaps barite also, could be saved and marketed might alter the situation.

GONZALES PROSPECT 26/
(E 1/2 sec. 2, T. 3 S., R. 1 E.)

The Gonzales prospect is 5 miles by airline and 12 miles by road east of Socorro, in the foothills that border the alluvial terraces of the Rio Grande valley. The property is reached by crossing the river on a bridge 4 miles north of Socorro and following a trail that leads to the south and east for 8 miles, chiefly over sand and gravel. The deposit is on the Gonzales Nos. 1 and 2 claims, leased from the State in August 1942 by P. Innebichler and others. In the spring of 1943 it was subleased by the Humphreys Gold Corporation, which sampled the deposits in cooperation with the Federal Bureau of Mines.

Note: Present ownership is J. J. McPhaul, Magdalena, New Mexico.

The deposit occupies a fault in the west flank of an anticline whose axis strikes N. 15°-20° W. The fault parallels the axis and dips about 70° W. Its upthrown (east) side exposes a narrow band of pink

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26/ See reference 14.

coarse-grained pre-Cambrian granite about 1,800 feet long and 200 feet across at its widest part. The surrounding rocks belong to the Magdalena group. 27/ East of the fault the rocks above the granite consist of thin-bedded limestones, sandstones, and red, brown, or gray shales, and have an aggregate thickness of about 100 feet. Above them are several thick beds of coarse-grained gray sandstone with intercalated thin beds of limestone and shale. These beds, which have a total thickness of about 500 feet, belong to the Sandia formation of the Magdalena group. West of the fault the oldest beds consist chiefly of coarse-grained to conglomeratic sandstone and probably represent the upper part of the Sandia formation. Above them are cherty limestones of undetermined thickness that belong to the Madera limestone of the Magdalena group.

The fault is sinuous, and in the areas of greatest deviation from the general trend, the adjacent downthrown rocks are greatly shattered. Elsewhere the sedimentary rocks generally exhibit drag and are brecciated along a zone several feet wide adjoining the fault. Within the granite outcrop the fault is prominently marked by a ridge of silicified granite that forms the footwall of the fluorspar vein. Near the ends of the granite outcrop the evidences of deposition of fluorite and silica almost disappear, and the extensions of the fault in the sedimentary rocks are chiefly indicated by discordances in the strike and dip of the strata. In some places in the sedimentary rocks this fault and subsidiary fractures are marked by calcite veins.

The Gonzales fluorspar deposit is exposed only along that part of the fault that borders the granite outcrop. Most of the fluorspar is in the adjoining brecciated sedimentary rocks, although commonly a narrower vein of siliceous fluorspar is frozen to the footwall, and stringers and patches of high-grade fluorspar extend into this wall. The vein varies greatly in thickness; it contains two shoots, one 240 feet long and the other 280 feet long, in which the width of fluorspar ranges from 3 to 22 feet. Elsewhere the shoots are too narrow or too short to be of commercial interest.

The principal minerals in the vein are fluorite, barite, and quartz. The fluorite and barite occur as large intergrown crystals. . . . The quartz is micro-crystalline and is most commonly near the footwall. These minerals occur in percentages that show the following ranges: CaF_2, 15.0 to 65.7 percent; SiO_2, 9.2 to 50.2 percent; and $BaSO_4$, 9.9 to 39.5 percent. 28/ Galena and sphalerite occur sparingly as scattered crystals.

AMERICAN FLUORSPAR GROUP
(Sec. 11, T. 15 S., R. 3 E.)

Location

The property is on the eastern flank of the San Andres

Mountains. It lies on the south side of Sulfur Canyon, one-quarter mile

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27/ See reference 15.

28/ Assays by the Federal Bureau of Mines.

southwest of the Frank Crockett ranch house. By road it is 52 miles from Hot Springs to the property. The property is reached from Hot Springs by traveling east 10 miles on State Highway 52 and taking the turn—off to Cutter. From Cutter, it is 32.3 miles by road to the prospect. The last 10 miles of this road is in poor condition. Loading facilities of the Atchison, Topeka and Santa Fe Railway are available at Cutter.

Physical Features

Maximum relief in this part of the San Andres Mountains is over 2,000 feet and the area is well dissected. Precipitation is slight in all but the highest areas, and the vegetation is sparse, mainly cactus and other semi—arid plants. The only timber available is juniper trees that grow on the highest parts of the range. There are several small springs in the vicinity of the claims. If a larger supply of water is needed for mining operations, it might be obtained by drilling wells west of the claims.

Ownership

Nine lode claims, 600 feet by 1500 feet, have been staked by the American Fluorspar Group, Incorporated, Hot Springs, New Mexico. Their long dimensions lie along a N. 45° W. direction. The claims cover most of the surface outcrops of barite and fluorite that occur in the area,

Geology

The country rock consists of gray, massive to medium bedded limestone belonging to the Madera formation of Pennsylvanian age. The limestone beds strike N. 10° E. and dip 100 towards the west. Crossing the claims is a normal fault which trends N. 30° W. and dips 85° to the northeast. Vertical displacement of the limestone beds along the

fault is at least 200 feet. Along the fault is a broken and mineralized zone from 10 to 30 feet wide at the surface. Minerals seen in this zone are barite, galena, calcite, quartz, and fluorite. There are lenses of relatively pure barite in the zone. Deposits of barite and fluorite also occur adjacent to the fault, between the limestone beds. The lateral extent of these deposits is probably great, but only in localized areas where the minerals were deposited in solution cavities is there a chance of finding a sizeable body of ore.

Smaller faults and fracture zones lie parallel to the major fault described. A lense of barite containing galena crystals was found along one of these fracture zones, one-quarter mile south of the large fault. The main fluorite prospect is on this fractured and mineralized zone. This prospect consists of a 20-foot drift which goes into the hill about 20 feet and cuts a zone of broken limestone The limestone fragments are coated with drusy quartz, barite, and fluorite crystals of museum specimen quality. The solution cavities are filled with crystalline barite and fluorite. A small trench 150 feet south of the main prospect drift exposes an 18-inch layer of broken fluorite, limestone, quartz, and barite. The analyses of samples taken from the major fault zone, the main fluorite prospect, and from the small cut are given in the following table.

Location and Sample Number	Pb Percent	$CaCO_3$ Percent	$Si0_2$ Percent	CaF_2 Percent	$BaSO_4$ Percent
Sample No. 1 from small prospect cut	*	6.47	48.05	32.66	6.09
Sample No. 2 from dump of fluorspar prospect	*	7.60	32.53	34.28	20.67
Sample No. 3 from surface cut across fault zone	0.44	*	*	*	71.38

*No analysis.

Conclusions

These properties certainly warrant further prospecting, but any such future work should be confined to the main fault zone or along the fracture zone adjacent to the fluorite pros ct one-quarter mile southwest of the fault.

No estimate as to the size and quality of the fluorite and barite deposits can be made from the limited amount of development work that had been done at the time of this examination. Analyses from the fluorite prospects showed the material to be too low in fluorite and too high in barite and quartz for satisfactory beneficiation by present metallurgical methods. The sample from the trench in the main fault was too low in barite to be marketed without further concentration. Unless future development work indicate6 the presence of additional fluorite much lower in barite and quartz or more pure barite, this deposit is not large enough to warrant the expense of mining, transportation, and concentration.

TORRANCE COUNTY

VINCENT MOORE CLAIM
(Sec. 6, T. 9 N., R. 7 E.)

A barite claim held by Vincent Moore, 715 North Fifth street, Albuquerque, and located seven miles south of the village of Barton was described in a memo of April 1945 by T. D. Benjovsky. The barite occurs as fissure filling in limestone. Old prospect Cuts and shafts show the vein of white barite, slightly stained by malachite, to be six to ten feet wide.

The nearest railroad facilities to the claim are located at Moriarty a total distance of 21 miles; seven miles over unimproved dirt

roads, 14 miles on paved U. S. Highway 66.

Benjovsky believed this prospect to have good possibilities of producing a large tonnage.

MISCELLANEOUS REPORTS

Talmage & Wootton reported several occurrences of barite in the State: 29/

A deposit of barite has been reported near the summit of the Organ Mountains, but no information regarding it has been obtained.

In October, 1932, according to the Alamogordo News, Alamogordo, N. Mex., a carload of barite was shipped from the Stevens mine in the Organ Mountains. The material was hauled by truck to the railroad at, Alamogordo. The shipment is said to have been consigned to the Hid-Continent Mud Co., Houston, Tex. This company probably used the barite in preparing a product for making heavy drilling mud for the rotary drilling of oil wells.

In the spring of 1933, Bates & Long of El Paso, Tex., shipped 12 carloads of crude barite from the White Spar mine in secs. 33 and 34. T. 23 S., R. 4 E., in the southern part of the Organ Mountains. It is reported that the vein is in limestone and that most of the barite has been taken out. The barite was hauled to La Tuna, Tex., and shipped by rail to Houston, Tex., where most of it was made into a constituent of heavy drilling mud. . . .

Tabular crystals of barite are reported to be plentiful at the Black Hawk mine in the Black Hawk district, Grant County. The mineral is reported to be abundant in the ores of the Pinos Altos district, Grant County.

In Luna County some barite occurs in the fluorspar veins on the Duryea claims in the Little Florida Mountains, southeast of Deming. The veins average 2 feet in width and are fissure fillings in Tertiary agglomerate. The barite is associated with fluorspar and iron and manganese oxides.

It has been reported 30/ that A. L. Austin, of Alamogordo, Otero County, has partially developed a deposit of barite 10 feet wide and 300 feet long. This deposit is said to be near the Warnock lead mines in the Sacramento Mountains. No other information on this deposit is available.

29/ See reference 16.
30/ See reference 17.

Barite is reported to occur as concretions and veins in the Kirtland shale and as concretions, veins, and sheets in the Puerco formation in San Juan County. 31/

A small amount of barite is found as a gangue mineral in the Nakaye, Esperanza, Harding, and other fluorspar deposits in Sierra County. A carload of crude barite was shipped from a prospect near Derry in 1918.

The ores of five districts in Socorro County are known to contain varying amounts of barite. The Lava Gap prospect, 27 miles west of Three Rivers and near the northern end of the San Andres Mountains, has considerable barite in a vein 2 to 5 feet wide. Barite predominates in the north end of the vein. . . .

Barite occurs in the Magdalena district, Socorro County, especially in that part of the district north of the Atchison, Topeka & Santa Fe railway.

The silver veins of the Socorro Mountain district, Socorro County, contain barite as one of the' gangue minerals. The barite constitutes about 70 per cent of the' vein matter. The average width of the veins is about 2 feet, but in places a width of nearly 3 feet has been noted. The barite is generally iron stained.

In the Zuni, Mountains, Valencia County, a 10-foot vein of barite is reported 32/ to have been prospected many years ago for silver. A search for this vein in October, 1927, failed to disclose any barite except as a minor constituent in the vein matter of the Carnation-Columbine group of fluorspar claims.

REPORTED PROSPECTS

Samples of barite have been sent into this office in the past few months, but we have not yet had an opportunity to examine the deposits.

Such prospects are held by the following persons:

Brown, C. L.
Grants, New Mexico.

Buck, H. S.
Engle, Mew Mexico
Lead- zinc- barite in San Andres Mountains.

Bunch, F. E.
Las Cruces, Mew Mexico
Deposits in Organ Mountains (?).

31/ See reference 18.
32/ See reference 19.

Campbell, Thomas D.
323 S. Third Street
Albuquerque, New Mexico.

Eldred, Gerald W.
322 S. Fifth Street
Albuquerque, New Mexico.

and

Torres, Al 809
Hardy
Albuquerque, New Mexico
Barite in Manzano Mountains.

Hanson, Blanchard
Hot Springs, New Mexico.

Johnston, W.-I.
Box 522
Magdalena, New Mexico.

Latham, A. H.
Box 785
Hot String, New Mexico
Lead-fluorite-barite in San Andres Mountains.

Mejia, Alejo
1604 Montezuma Street Las
Vegas, New Mexico.

Preece, 0. W.
Radium Springs, New Mexico.

Shockley, Chester L.
325 Washington
Santa Fe, New Mexico
Barite in Torrance County.

Wheeler, Lew, and Meahl, Thomas
New Mexico School of Mines
Socorro, New Mexico
Barite in Blue Canyon, Socorro Mountains.

CONSUMPTION 33/

The distribution of consumption of barite in the United States in 1946 was reported as follows (1945 in parentheses): For well drilling, 372,610 short tons (407,871); for lithopone, 154,166 (139,288); for chemicals, 102,439 (99,173); for glass, 29, 181 (25,761); for paint filler, 26,000 (21,000); for rubber filler, 20,000 (10,000); and for other purposes, including grinding losses, 17,677 (17,810); total, 722,073 (720,903).

These figures include both foreign and domestic barite and are therefore more comprehensive than data published by the Bureau of Hines each quarter on domestic barite only.

PRICES 34/

There was no immediate reaction when the Office of Price Administration removed price ceilings on crude and ground barite on November 9, 1946. Price ceilings in Georgia had ranged up to $11.50 a long ton for chemical-grade material, and on the whole these levels were maintained for the remainder of the year. Similarly, no change was reported in the Missouri price, which has been $8.50 a short ton, premium-penalty basis, since July 1944.

Price ceilings on ground and crushed barite were removed by the Office of Price Administration on July 26, but little change was noticed in quotations during the rest of the year. Glass-grade barite was quoted generally at $15.50 a short ton, bulk, with $2 a ton extra for packing in 100-pound bags. Well-drilling grades of ground barite averaged $15.15 a short ton, bulk f.o.b. mine, according to reports of grinders to the -Bureau of Hines. .

According to the Oil, Paint and Drug Reporter, ground bleached barite was quoted at $31.10 a short ton in bags, carlots, St. Louis, Mo. -an increase of $3.45 over the 1945 price of $27.65.

PRODUCERS AND MARKETERS OF BARITE IN THE SOUTHWEST

Barites Corporation
500 Fifth Avenue New
York, New York.

Baroid Sales Divisior
National Lead Company
830 Ducommun Street
Los Angeles, California.

Magnet Cove Barium Corporation
Malvern, Arkansas.

Nilwhite Company, Inc.
Cotton Exchange Building
Houston, Texas.

Hudrite Chemicals
Hatch, New Mexico.

Scott Mineral Company
Alpine, Texas

33/ See reference 20.
34/ See reference 20.

REFERENCES

1. Talmage, S. B., and Wootton, T. P., The non-metallic mineral resources of New Mexico and their economic features (exclusive of fuels): N. Mex. School of Mines, State Bur, Mines and Min. Res. Bull. 12, pp. 49-50, 1937.
2. Santmyers, R. M., Barite and barium products; pt. 1, General informa- tion: U. S. Blur. Mines Inf. Circ. 6221, January 1930.
3. Johnston, W. D., Jr., Fluorspar in New Mexico: N. Mex. School of Mines, State Bur. Mines and Min. Res. Bull. 4, pp. 65-72, 1928.
4. Ladoo, Raymond B., Fluorspar Mining in the Western United States: U. S. Bureau of Mines, Reports of Investigations, Serial 2480, Hay 1923.
5. Rothrock, H. E.,Johnson, C. H., and Hahn, A. D., Fluorspar resources of New Mexico: N. Mex. Bur. Mines and Min. Res. Bull. 21, pp. 53-54, 1946.
6. Dunham, K. C., The geology of the Organ Mountains; with an account of the geology and mineral resources of Dona Ana County, New Mexico: N. Hex. School of Nines, State Bur. Mines and Min. Res.Bull. 11, p. 2142, 1935.
7. N. Mex. Miner & Prospector, vol. 10, no. 12, p. 7, December 1948.
8. Rothrock, H. E., Johnson, C. H., and Hahn, A. D., op. cit., pp. 111, 115-121.
9. Idem., pp. 175-176.
10. Johnston, W. D., Jr., op. cit., p. 123.
11. Lasky, S. G., The ore deposits of Socorro County, New Mexico: N. Mex. School of Mines, State Bur. Mines and Min. Res. Bull. 8, p. 65, 1932.
12. Johnston, W. D., Jr., op. cit., pp. 127-128.
13. Gordon, C. H., Ore Deposits of New Mexico: U. S. Geol. Survey Prof. Paper 68, pp. 240-241, 1910.
14. Rothrock, H. E., Johnson, C. H., and Hahn, A. D., op. cit., pp. 171-173.
15. Darton, N.H., Geologic map of New Mexico: U. S. Geol. Survey, 1928.
16. Talmage, S. B., and Wootton, T. P., op. cit., pp. 51-52.
17. Arizona Mining Journal, vol. 14, no. 18, p. 23, February 15, 1931.
18. Bauer, Clyde Max, Contributions to the geology and paleontology of San Juan County, N. Mex.: 1, Stratigraphy of a part of the Chaco River valley: U. S. Geol. Survey Prof. Paper 98, pp. 274, 277, 1916.
19. Schrader, F. C., Stone, R. W., and Sanford, Samuel, Useful minerals of the United States: U. S. Geol. Survey Bull. 624, p. 209, 1917
20. Minerals Yearbook 1946: U. S. Bur. Mines, pp. 165, 169-170, 1948.