

Elko District, continued

Beryl

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*Ruby Mts. - Elko Co.*

A large part of the Ruby Mountain Range in Elko County is composed of biotite-orthoclase-quartz granite which is traversed in various places by pegmatite dikes. In the upper elevations of the western slopes a number of these pegmatite dikes contain the mineral beryl in addition to the common constituents of giant granite, such as segregated masses of feldspar, mica and quartz.

On April 26, 1931, beryl was discovered by A. R. Clayton, of Lee, Nevada, at a point 4 miles north of the Merkeley Ranch, which is on Gilbert Creek at the east end of Mound Valley, 40 miles south of Elko. Subsequent prospecting by C. W. Enke, A. B. McNabb and others from Elko disclosed beryl in pegmatite outcrops at 5 separate places on the western mountain slopes near the head of Gilbert Canyon, at elevations ranging from 6,000 to 9,000 feet, and over an area about one mile wide and two miles long. A. R. Clayton and his associates have located 28 lode mining claims, and C. W. Enke and associates have located 7 mining claims upon the land covering the beryl outcrops.

The beryl crystals are small, opaque, light-green in color, from 1/8 inch to 1/2 inch in diameter and 1 to 3 inches long, with the exception of one place where larger crystals outcrop. The dissemination is not general throughout the pegmatite veins, but is localized in small areas. At these outcrops the beryl content may average one per cent of the dike material. At the exceptional spot mentioned some large crystals have been found, and one weighing  $14\frac{1}{2}$  pounds was taken out. No mining has been done save a few desultory shots in the outcrops, the development of which might disclose a better grade of ore.

The beryl commonly appears as crystals loosely cemented in the matrix, and therefore might lend itself to a simple method of separation based on this characteristic and its hardness. Experimental work in the laboratory might lead to a process of concentration by methods of crushing, screening and water classification.



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New uses are being found for beryllium metal and its alloys, which have a wide range of remarkable special properties. The only commercial ore is beryl, which contains from 10 per cent to 14 per cent beryllium oxide.

The market quotations given by the Engineering and Mining Journal for May, 1932, are:

Beryllium ore, minimum of 10 per cent BeO (beryllium oxide) \$20. to \$30. per short ton f.o.b. U. S. mines. Ore containing a minimum of 12 per cent BeO, \$35. per ton.

Beryllium - copper, per pound, contain 12.5 per cent beryllium metal, \$6.35. The price of pure beryllium metal is still about \$100. per pound.

Beryllium metal and beryllium alloys are produced by Siemens and Halske, Akt.-Ges., Siemens-stadt, near Berlin, Germany.

The isolation of beryllium was developed simultaneously, but quite independently by Stock & Goldschmidt in Germany and by Dickinson in America. Stock & Goldschmidt and associates are now banded together in the Beryllium Institute of the firm of Siemens & Halske. The production of beryllium at the Siemens works in 1929 may have been about one ton.

The Beryllium Corporation of America, Cleveland, Ohio, is a buyer of beryl ore. The Aluminum Company of America, Pittsburgh, Pa., which in 1929 bought a patent by Archer & Fink for an aluminum-beryllium alloy, may also be getting into the market for beryl. As yet the market is limited, and there are many sources of ore in this country.

A new book on beryllium:

Beryllium, its Production and Application-

By Zentralstelle für Wissenschaftlich-Technische Forschungsarbeiten des Siemens Konzerns. Translated by Richard Rimbach and A. J. Michel, 331 pages. The Chemical Catalog Company, Inc., 419 Fourth Avenue, New York, 1932. Price, \$10.00.

Dr. Menahem Merlub-Sobel, formerly Chemical Engineer, Beryllium Corpora-



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tion of America, states in Metals & Alloys, Aug. 1929, p. 69:

"Beryllium ores - beryl particularly - are relatively common, and a recent survey of the known deposits has shown sources adequate for many years to come at American-delivered prices ranging from \$35. to \$60. per ton."

Feldspar has recently been successfully separated from quartz by 3-step flotation. Possibly more work along this line would result in an efficient method of separating beryl from quartz, feldspar and mica in low grade ore. It has been suggested that a more cheap and simpler method of concentration might be worked out for the Ruby Mountain ore, by crushing, screening and classification. Beryl is a very hard mineral, and in the Elko County ores occurs as loose crystals in the matrix, and therefore might lend itself to some method of separation based on these characteristics.

At present the Elko deposits cannot be mined, concentrated and marketed at a profit. However, they possess a potential value, and if the demand increases in the future, they might be worked at a profit.

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On June 30, 1932, we visited the plant and mine of Tri-O-Lite Products Company, located near Carlin, Elko County. The property is owned and operated by Mr. Hurd, of Carlin. Although the mill has a large capacity, depressed market conditions have resulted in only 10 or 12 carloads of specially prepared grades of diatomite being shipped during the past year. In general it has been shipped in small lots to manufacturers of widely differing products, and is carefully prepared to meet the special requirements of each as to weight, moisture, air space, mesh, etc. (See Eurdly-Wilmot for mill) At present Mr. Hurd is conducting a series of very interesting experiments on prepared diatomite for the Bell Telephone Company and General Electric Company, in an effort to find suitable insulation for apparatus to