$0.378/100=0.0017g\ K_2O$. The K_2O values can now be expressed in terms of grams of muscovite as follows:

$$\frac{0.0267g}{10.30\%\ K_2O} \times 100 = 0.259g \text{ muscovite before treatment}$$

and

$$\frac{0.0017g}{10.30\%\ K_2O} \times 100 = 0.017g \text{ muscovite after treatment}$$

Therefore $(0.017/0.259)\times 100=6.6\%$ of the original muscovite was left after treatment.

These calculations show that treatment of a mixture of muscovite and feldspar would have resulted in a separation of better than 90%, inasmuch as the experimental data show that potassium feldspar was unaffected chemically.

Conclusions

The treatment described here is capable of selectively removing dioctahedral mica from admixture with potassium feldspar. The efficiency of separation is approximately 90%. The method can be used for the quantitative determination of dioctahedral micas and potassium feldspars provided that (1) accurate nominal potassium contents can be assumed for these minerals, and (2) these are the only potassium-bearing phases present.

Acknowledgments

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BROMYRITE NEAR EAGLE, COLORADO

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In June 1960, several samples of a soft silvery green mineral resembling cerargyrite were collected from fracture coatings in the breast of a short horizontal adit located on Horse Mountain about eight miles south of the town of Eagle, Eagle County, Colorado, in the Brush Creek Mining Dis-

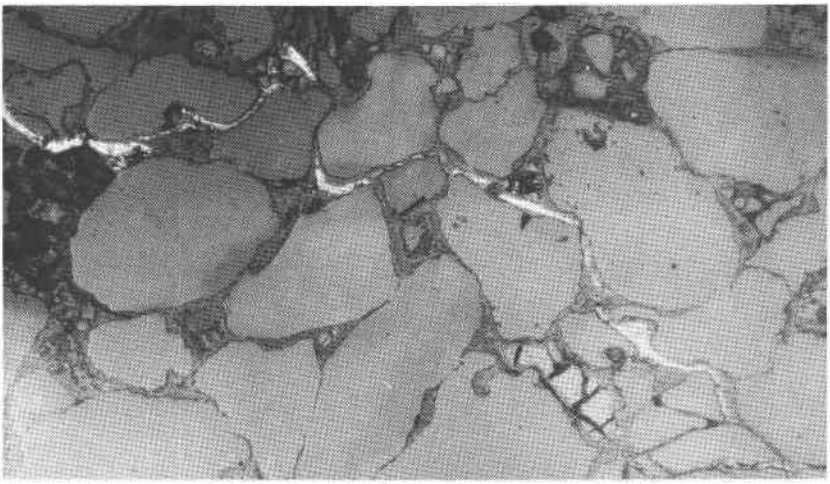

FIG. 1. Thin veinlets of native silver (white) partially replacing sand grains (gray) and associated with interstitial asphaltic bitumen. Incident light. ×280

trict. Microscopic, x-ray diffraction and spectrographic analyses indicate the cerargyrite group mineral to be bromyrite, AgBr.

The tunnel on Horse Mountain has been driven through about 600 feet of Permo-Pennsylvanian(?) red beds terminating in a faulted and badly fractured zone of Jurassic Entrada sandstone. The Entrada sandstone in the tunnel is medium to light brown in color, fine to very fine grained, and variably dolomitic to calcareous in composition. Most exposures are limonite stained and contain notable amounts of petroleum residues along some bedding planes. Where the sandstone is well impregnated with asphaltite or petroleum residues, it is dark brown to gray in color, and locally mineralized with native silver filling the interstices of the rock. About two tons of silver ore were mined from the sandstone in the tunnel forty years ago (George, 1913; Hess, 1933; Vanderwilt, 1947).

Polished thin-sections of the ore indicate that native silver is intimately associated with asphaltic impregnations in the sandstone, and has replaced quartz grains preferentially along certain bedding planes (Fig. 1). In weathered portions of the sandstone, native silver has been oxidized, partially removed, and subsequently redeposited as late secondary coatings of bromyrite along select joints and vertical fractures (Fig. 2). Coatings consist of waxy dark green crystals of bromyrite ranging up to 100 μ in size and of octahedral crystal habit. Crystals are usually isotropic under the petrographic microscope, but may appear birefringent due to strain deformation from grinding. The refractive index measured from a number of different crystals averaged near 2.25.

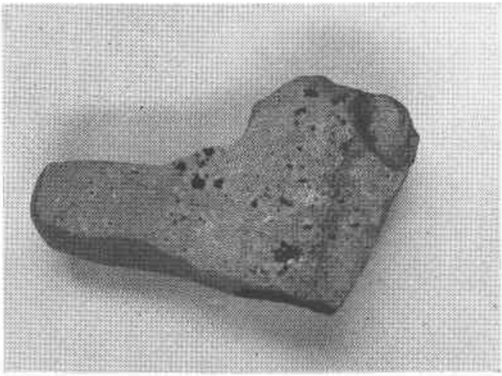

FIG. 2. Secondary coatings of bromyrite (dark spots) along joint surface in sandstone. 1/3×

Positive identification of bromyrite was made possible by *x*-ray diffraction and spectrographic methods. Major d spacings were 2.90Å (10), 2.05 Å (6), and 1.68Å (2) and matched the pattern reported for bromyrite on ASTM Card No. 6-0438. It was suspected after preliminary examination that the mineral may be a bromian cerargyrite, but *x*-ray spectrographic analyses using a helium path attachment showed major amounts of bromine and silver, and an absence of other halogens, *i.e.*, chlorine, iodine, etc. The mineral is therefore concluded to be bromyrite, the bromide end member of the cerargyrite group on the basis of optical properties, *x*-ray diffraction patterns, and composition.

The source of the bromine is not known, but it may have been an original constituent of the organic substances present in the rock. An alternate source might be from weathering of the superposed volcanic rocks nearby. The sandstone contains small discrete patches of asphaltite, a few millimeters in diameter, exposed on the fractures, and the bromyrite has developed almost exclusively on these asphaltite patches. Just a few centimeters above the bromyrite covered asphaltite patches, the sandstone is limonite stained, impregnated with asphaltic bitumen, and contains some interstitial native silver. Oxidation and migration of the silver from this point downward along the fractures suggests the source of the silver in the bromyrite.

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