COPIAPITE IN COAL

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MELANTERITE is of rather frequent occurrence in old entries of bituminous coal mines, forming bunches of silky fibers, and masses weighing as much as 30 pounds have been reported. A specimen of this mineral was obtained for our museum in an abandoned working of the Congo coal mine in Perry County, Ohio. The sample, as received, was a beautiful light green fibrous mineral resembling fibrous serpentine. The melanterite was contained between slate partings in the coal, its fibers being about two centimeters in length.

The specimen, after examination and cataloging, was put in a cardboard box and deposited in the museum. On examination about a year later the mineral was found to be dotted over with yellow particles, which seemed to represent an alteration product of the melanterite. The latter had in the meantime changed from a pale green color to a dull white, and its fibers had become brittle. The yellow particles were certainly not on the specimen as received from the mine, and seemed to have formed chiefly at the contact points of the melanterite and the shale.

Under the microscope the yellow lumps were found to be groups of plates 0.05 mm. by 0.03 mm. in size. The plates showed a crystal outline with somewhat rounded edges and corners. When standing on edge they showed parallel extinction and a positive elongation.

An obtuse bisectrix ($Bx_0 = \mathfrak{a}$) emerged normal to the tabular face. The acute bisectrix ($Bx_a = \mathfrak{c}$) made an angle of $-53°$ with the principal direction of elongation ($\dot{c}$).

The indices obtained were: $\alpha = 1.525$; $\beta = 1.545$; $\gamma = 1.595$ all ± 0.003; sign therefore $+$. Pleochroism was very marked with $\mathfrak{a}$ and $\mathfrak{b}$ colorless and $\mathfrak{c}$ deep yellow. These results appeared to indicate the mineral to be copiapite altho the data differ somewhat from those recorded in the literature.[1]

Enough of the yellow mineral had formed in something over a year to give enough material for an accurate chemical analysis,

[1] The optical properties of different samples of copiapite vary rather widely, altho it seems to be uniformly + rather than − as usually described, and the means of my measurements lie close to the values given by Dr. McCaughey. The cause of this variation should be further investigated.—E. S. LARSEN.

which yielded: Insoluble 0.31, Fe_2O_3 29.98, SO_3 39.68, H_2O 30.45, sum 100.42 per cent. The water was determined by mixing the sample with anhydrous $PbCrO_4$ and igniting the mixture in a combustion furnace, catching the water in a weighed $CaCl_2$ tube. The formula indicated is $Fe_2O_3.5SO_3.18H_2O$.

The microscopic examination and the chemical analysis show that the mineral is undoubtedly copiapite. Such a transformation from melanterite to copiapite is worthy of note, especially as it took place in the dry atmosphere of a mineral cabinet, while the mineral specimen was enclosed in cardboard.

Because of these rather unexpected results, it was thought worth while to examine a coal reported to contain sulfur. It was found on examination that the label was in fact wrong, and the "sulfur" proved to be *copiapite*. It is more than likely that many if not all of the reported occurrences of elementary sulfur in coal and in slack piles are due to the presence of this mineral. The color is strikingly similar to sulfur, and the mineral has somewhat the appearance of the sulfur found in some of the hot springs of Yellowstone Park.

PROCEEDINGS OF SOCIETIES

THE PHILADELPHIA MINERALOGICAL SOCIETY

WAGNER FREE INSTITUTE OF SCIENCE, MAY 9, 1918

A stated meeting of the Philadelphia Mineralogical Society was held on the above date with the president, Dr. Leffmann, in the chair. Twelve members and two visitors were present.

Mr. John G. Rothermel addressed the society on the Geology and Mineralogy of the Petrified Forest of Arizona, illustrated with lantern slides and specimens. Dr. Leffmann exhibited some radiographs.

Mr. Gordon reported the following trips.

(1) Devil's Pool, Wissahickon Creek. About 200 feet north of the pool is an exposure of a meta-pyroxenite dike (a mixture of talc and amphibole) which has metamorphosed the Wissahickon "gneiss" (mica schist) immediately adjoining with the development of cyanite and staurolite. The cyanite is obtainable in indifferent specimens. The staurolite is found in abundance, weathered out of the schist, on top of the hill, in crystals, sometimes twinned, up to two inches in length.

(2) Deshong's quarry, Leiperville, Delaware County. Large microcline crystals were obtained and one large yellowish green beryl, 14 inches long and 1½ inches thick, somewhat altered on the surface and opaque, but clear and exhibiting a good aquamarine color where broken across.