

at the Algomah mine. Several of these specimens were identical to those just described. A few, however, consist of massive paramelaconite which is coarsely granular and shows well developed basal parting. Close examination revealed that this material is pseudomorphous after quartz, and large, perfectly developed crystals show the rhombohedra z and r , the prism, and one or more trigonal trapezohedra.

Veinlets of a fibrous blue mineral cutting the paramelaconite in these specimens were examined and proved to be planchéite as defined by Billiet (1942). The optical properties of the planchéite are as follows: $\alpha = 1.697$, $\beta = 1.720$, and $\gamma = 1.744$. The optic sign is + with 2V approaching 90°. The pleochroism is fairly strong in blue; Z and Y are blue and X is sensibly colorless with $Z > Y > X$. The fibers show positive elongation and parallel extinction.

Thin sections of this material show the sequence diopside-paramelaconite-planchéite-malachite-chrysocolla. Perfect pseudomorphs of planchéite after diopside are relatively common.

On a recent collecting trip to the Algomah mine a few massive pieces of paramelaconite were found, two of which contain small pockets of crystals. The Algomah mine is now closed and filled with water; it seems unlikely that it will ever be reopened.

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"SILICONE COMPOUND," A SUBSTITUTE FOR VASELINE AS A POWDER BINDER FOR GLASS FIBER MOUNTS IN X-RAY DIFFRACTION CAMERAS¹

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"Silicone compound" may be substituted for vaseline as a powder binder for glass fiber mounts in x-ray diffraction cameras. Isotropic vaseline crystallizes with time and produces interfering diffractions. In contrast, diffraction effects from seven-year old "silicone compound"

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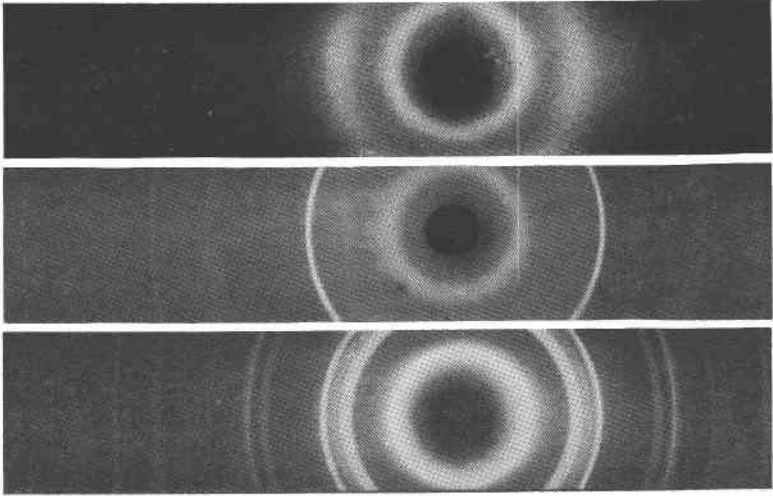


FIG. 1 (top). The diffraction bands from 8.6 to 6.6 Å and 4.7 to 3.7 Å of seven-year old "silicone compound." Exposure conditions: $\text{CuK}\alpha$ radiation, 35 KVP, 15 ma, 15 hours, and line focus.

FIG. 2 (center). Diffraction pattern of graphite using recently purchased "silicone compound." The strongest line is the (0002) reflection of graphite at 3.32 Å. Exposure conditions: $\text{CuK}\alpha$ radiation, 35 KVP, 15 ma, 8 hours and line focus.

FIG. 3 (bottom) Diffraction pattern of kaolinite using recently purchased "silicone compound." The strongest line is the (001) reflection at 7.2 Å. Exposure conditions: $\text{Cu K}\alpha$ radiation, 35 KVP, 15 ma, 5 hours, and spot focus.

were found to be the same as those for recently purchased material. "Silicone compound" has the same consistency as vaseline and may be handled easily. Two diffuse diffractions bands are produced by "silicone compound" at 6.6 to 8.6 Å (Fig. 1) and 3.7 to 4.7 Å.

Interference by the diffraction bands of the "silicone compound" is negligible for d -spacings less than 6.6 Å (Fig. 2) because the band from 3.7 to 4.7 Å is very weak. The intensity of the diffraction band from 6.6 to 8.6 Å is weak. Strong diffraction lines can easily be recognized in the band, provided the ratio of the amount of sample to the amount of compound is sufficiently large (Fig. 3).

The samples used for diffraction (Figs. 2 and 3) were prepared by crushing to pass a 325-mesh screen. A bead of "silicone compound" one-half millimeter or less in diameter was formed on the tip of a fine glass fiber. Mineral powder was then picked up with the bead and the bead formed into a spherical shape. The bead was placed in a Debye-Scherrer camera and diffraction produced with $\text{CuK}\alpha$ radiation.

Two of three "silicone compounds" and greases tested were found to

be satisfactory. The third compound contained impurities which produced interfering diffractions. In addition, metallic lead diffraction patterns were observed in a few cases in which "silicone compound" from lead tubes was used. Spectrographic analysis of ignited residues of "silicone compound" from the lead tube and a glass jar supplied by a manufacturer indicated the lead was a contaminant introduced by the lead tube and that lead was not detectable in the "silicone compound" from the glass jar. "Silicone compound" was found to contain: (1) Si- a major constituent, (2) B-0.0X% and (3) Mg-0.000X%. The amount of lead contamination in the "silicone compound" from the lead tube was 0.0X%.

A satisfactory "silicone compound" (Silicone compound No. 8101 Transistor Z-5) is made by General Cement Manufacturing Company, 3225 Exposition Place, Los Angeles 18, California, U.S.A. or 400 South Wyman Street, Rockford, Illinois, U.S.A. The pure "silicone compound" in a glass jar was obtained by written request.

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POLYTYPISM IN CRONSTEDTITE¹

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Cronstedtite from Kuttenberg, Bohemia, was shown by Hendricks (1939) to have a three-layer rhombohedral structure related to that of kaolinite. Fe³⁺ systematically replaces half of the Si, valence compensation being affected by replacing the unshared oxygen of the Fe³⁺ tetrahedrons by (OH). The idealized trioctahedral relation to kaolinite may be written as below.

Cronstedtite	Fe ₃ ²⁺	(Fe ₁ ³⁺ Si ₁) ₂	O ₄ (OH)	(OH) ₄
Kaolinite	Al ₂	Si ₂	O ₅	(OH) ₄

The reported chemical analyses of cronstedtite indicate that the octahedral layer may also contain Mg, Ca, Mn, Al and Fe³⁺ in part and that it need not be completely filled.

Cronstedtite from a new locality at the Cornucopia mine, Nye County,

¹ Mineralogical Contribution No. 405, Harvard University.