$\{40\bar{4}1\}$. Since Goldschmidt's *Atlas* was published, octahedron-like crystals of dolomite, up to $\frac{3}{4}$ inch in thickness have been found in New Mexico[3] and George L. English kindly sent the writer a similar smaller black crystal of dolomite from Spain. The angle $c\{0001\} \wedge M\{40\bar{4}1\}$ was measured as $75\frac{1}{2}°$ on the crystals of dolomite from New Mexico.

Of the four known localities of such octahedron-like crystals of dolomite, the rhombohedra are all positive, whereas in the majority of the occurrences for calcite (80 per cent), the rhombohedra are negative.

PROCEEDINGS OF SOCIETIES

THE CRYSTALLOGRAPHIC SOCIETY

A stated meeting of the Crystallographic Society was held November 17, 1941, in Room 4-345, Massachusetts Institute of Technology, Cambridge, Mass. Twenty-six members were present. The proposed Constitution and By-laws were discussed and approved, and the organization of the Society was placed on a formal basis. The following officers were elected for 1941–42: Professor Martin J. Buerger, President; Professor Harry Berman, Vice-President; Dr. Clifford Frondel, Secretary-Treasurer. At the close of the business meeting, Mr. Joseph Lukesh spoke of work carried on jointly by him and M. J. Buerger on "The Tridymite Problem." The talk was followed by a lively discussion bearing on the geological implications of the unusual thermal behavior reported, and on the mechanism of formation of super-structures based on silica frameworks. The speaker's abstract of his talk follows:

The Tridymite Problem

Crystals of tridymite from Plumas County, California, have been investigated by the Weissenberg method. The diffraction symmetry of the low form is *mmm*. It is based upon a face-centered orthorhombic lattice, the cell having the following dimensions:

$$a = 9.91\ Å$$
$$b = 17.18\ Å$$
$$c = 81.57\ Å$$

Possible space groups include *Fmm*, *Fmmm* and *F*222. The abnormal length of the c axis prompted investigation of tridymite from other localities. A sample from San Cristobal, Mexico, was found to have the same a and b axes, but the c axis was one-half as long. The c axis rotation patterns of the two materials were substantially identical as regards distribution and relative intensities of all reflections, except that the intermediate layer lines found on the pattern of the Plumas County material were missing on the pattern of the San Cristobal material.

Spectroscopic and chemical analyses of the Plumas County tridymite indicate a high impurity content, with an empirical formula approximating $NaCaAl_3Si_{15}O_{36}$. The presence of the impurity atoms is believed to be the cause of the doubled c axis.

Attempts were made using a controlled-temperature Weissenberg camera to locate the two inversions of tridymite at 117° C. and 163° C. as determined by Fenner from thermal observations on pure, artificial material. The Plumas County material inverted directly from the low form to the high form at 127° C. with no evidence of a middle form. The tridymite from San Cristobal showed two inversions, low to middle at 121° C. and middle to high at 135° C. The absence of a middle form in the case of the Plumas County material and the

[3] *The Mineralogist* (Oregon), **7**, 385 (1939).

smaller temperature range than expected in the case of the San Cristobal material are attributed to the presence of impurities.

Weissenberg patterns of the Plumas County tridymite were taken just above the inversion. In addition to the pattern to be expected from the hexagonal silica framework, there was found superimposed an orthorhombic pattern of satellite reflections which varied in their distribution in a definite manner with temperature, but not with time. The sequence was not reversible, and once it had been carried through to completion, it could not be obtained again on the same crystal. A similar, but less complicated, sequence was found using the material from San Cristobal. The presence and the behavior of the satellite reflections can be explained by the migration of the impurity atoms from positions taken at the time of formation of the crystals, when electrostatic forces only were satisfied, to positions taken during heating that are more compatible with packing requirements. It appears that both the Plumas County and the San Cristobal tridymite must have formed below 121° and 127° C., respectively, inasmuch as the temperature inversions are irreversible.

CLIFFORD FRONDEL, *Secretary*

NEW MINERAL NAMES

Cadwaladerite

SAMUEL G. GORDON: Cadwaladerite, a new aluminum mineral from Cerro Pintados, Chile. *Notulae Naturae Acad. Nat. Sci. Phila.*, no. **80**, 4 pp. (1941).

NAME: For Mr. Charles M. B. Cadwalader, President of the Academy of Natural Sciences of Philadelphia.

CHEMICAL PROPERTIES: A basic aluminum chloride. Analysis by William Pitman on 0.43 g. gave: Al_2O_3 27.50, CaO 2.07, Na_2O 1.85, K_2O 0.90, Cl 22.96, SO_3 0.82, H_2O- 25.13, H_2O+ 24.99; sum 106.22 (given 106.32) less $(O=Cl_2)$ 5.18=100.94. After deduction of gypsum, halite, KCl and $CaCl_2$, this gives $AlOCl\cdot 5H_2O$ or $Al(OH)_2Cl\cdot 4H_2O$. This mineral is somewhat less hygroscopic than the accompanying halite.

PHYSICAL PROPERTIES: Amorphous, optically isotropic with n (Hg yellow light) = 1.513 (variable). Color lemon yellow (Ridgway); transparent to translucent; luster vitreous. Fracture conchoidal. Gr. 1.66 (by immersion in benzol-bromoform mixtures).

OCCURRENCE: Found as grains and small masses in colorless, granular and columnar halite on the old dumps of Cerro Pintados, Province of Tarapaca, Chile. This is the type locality for pickeringite, tamarugite and trudellite. Iron sulfates (botryogen, copiapite, etc.) also occur there.

DISCUSSION: X-ray study would be desirable. It seems probable that this mineral, like many others which are "amorphous" by optical tests, will prove to be crystalline.

MICHAEL FLEISCHER

NEW DATA

Slavikite, Butlerite

SAMUEL G. GORDON: Slavikite, butlerite, and parabutlerite from Argentina. *Notulae Naturae Acad. Nat. Sci. Phila.*, no. **89**, 8 pp. (1941). Slavikite occurs with other Fe sulfates at the Mina "Santa Elena" (see sarmientite, above). The crystals were found to be hexagonal, rhombohedral, with $c=1.389$. A new analysis gives the formula $MgFe(SO_4)_4(OH)_3 \cdot 18H_2O$. The magnesium content was apparently overlooked in the original analysis. Butlerite occurs as oriented intergrowths with parabutlerite. Crystallographic study shows butlerite to be monoclinic, not triclinic.

M. F.