

NOMENCLATURE IN MINERALOGY: THE BASIS FOR NEW  
MINERAL NAMES

DUNCAN MCCONNELL,

*Gulf Research & Development Company, Pittsburgh, Pennsylvania.*

In a recent note, Mr. Ernest E. Fairbanks<sup>1</sup> suggests that mineralogists use the prefix "micro" in order to indicate, as we understand it, that the "new mineral" may not be a new mineral at all. Mr. Fairbanks, furthermore, implies that some mineralogists are in favor of introducing new mineral names on the basis of inadequate descriptions provided the prefix "micro" is affixed. These opinions seem to bear upon the fundamental nomenclature of mineralogy and therefore warrant further consideration.

It is self-evident that the existence of a physical entity, such as a mineral, is independent of the methods of observation. Consequently, mineralogists should be quite reluctant to assign a mineralogical name embodying the prefix "micro" because the sole evidence for the existence of the substance is based upon microscopic observations. A mineral name should not encompass within its definition any particular method for determination.

On the other hand, the proof of the existence of mineral substance is dependent upon the methods of observation. The evidence for its existence must be conclusive. Mineralogists should be emphatic in the rejection of careless and inadequate work, particularly with regard to the introduction of new mineral names where the evidence is inconclusive. Any modern description of a new mineral should include accurate and nearly complete determinations of the following:

- I. *Chemical properties*—complete chemical analysis of highly purified material, determination of the stoichiometric ratios of oxides, solubility, etc.
- II. *Optical properties*—the principal refractive indices (if transparent or translucent, otherwise the anisotropism), orientation of optic axes, color, pleochroism, etc.
- III. *Structural properties*—crystal system and class, cleavage, specific gravity, hardness, unit-cell dimensions, space group, etc.

Almost complete data are required in order to demonstrate that a mineral has not been previously described. Minerals that have been named solely on the basis of incomplete determinations of their optical properties and erroneous or incomplete chemical data should be disregarded by mineralogists and papers containing incomplete descriptions should be rejected by editors.

A mineral name is merely a useful label which serves to denote a chemical compound of natural origin having certain crystallographic and

<sup>1</sup> *Am. Mineral.*, 32, 683 (1947).

physical properties. If the properties are not described with sufficient accuracy and completeness to permit systematic classification, the name serves no useful purpose whatsoever.

Furthermore, in the description of new minerals, authors should demonstrate the crystallographic and chemical relationships of any new species to other minerals. Adherence to this practice will not only aid in the recognition of the particular mineral species when discovered at another locality with isomorphic variants, but will aid in the formulation of more significant geological and geochemical principles.

Unrecognizable, unidentifiable, or unknown mineral substances are frequently encountered by skilled mineralogists and petrographers. This fact does not reflect on the intelligence or capability of the mineralogist or petrographer; he should frankly state that the mineral was not identifiable by the methods employed or during the time available. Nothing is gained by adding another poorly defined term to the literature. Prefixing of "micro" makes the situation worse rather than better. Well-authenticated mineral names beginning with "micro" already exist, including microcline, microlite, and microsommite. The nomenclature of mineralogy is sufficiently complex without unnecessary additions to the "conspiracy in jargon."

#### UNIT CELL AND SPACE GROUP OF PIRSSONITE

HOWARD T. EVANS, JR.,

*Section of Graphics, Massachusetts Institute of Technology,  
Cambridge, Massachusetts.*

The unit cell and space group of pirssonite have been determined from a series of Buerger precession photographs taken from a broken fragment obtained by crushing a crystal from Searles Lake, California. These crystals from the type locality were described by J. H. Pratt<sup>1</sup> as orthorhombic hemimorphic; his data are checked by the x-ray study. The results of this study are tabulated below. Zero, first and second levels were photographed normal to both the *a* and *b* axes. The patterns with their characteristic extinctions provided an unequivocal determination of the space group. Calibration of the camera with a quartz crystal indicates that the values for the cell edges are accurate to 0.02 per cent. They are calculated from the wavelength ( $\text{CuK}\alpha$ ) recently reported by Bragg in absolute Angstrom units.

Mineral: pirssonite,  $\text{CaCO}_3 \cdot \text{Na}_2\text{CO}_3 \cdot 2\text{H}_2\text{O}$ .

Locality: Searles Lake, California.

Crystal class: orthorhombic hemimorphic,  $C_{2v} = 2mm$ .

<sup>1</sup> Pratt, J. H., *Am. Jour. Sci.*, ser. 4, 2, 126 (1896).