The American Mineralogist

Journal of the Mineralogical Society of America

Vol. 23 DECEMBER, 1938 No. 12, Part 2

Nineteenth Annual Meeting

MINERALOGICAL SOCIETY OF AMERICA

Waldorf-Astoria Hotel

New York City

December 28-30, 1938

PROGRAM
ABSTRACTS
AND
SCHEDULE OF PRESENTATION OF PAPERS

Entered as second class matter at the post office at Menasha, Wis., under Act of March 3, 1879.
Acceptance for mailing at the special rate of postage provided for in section 1103, Act of Oct. 3 1917, paragraph 4 section 429 P. L. & R. authorized March 13, 1922.

posed as a geometrical means of describing mechanical twinning by Liebisch in 1889. Analytical expressions for the indices of a crystal face in the untwinned crystal in respect to the indices of the same face after reorientation and referred to the axes of the twinned crystal in terms of the constants of a strain ellipsoid were derived by O. Muegge in 1889. These formulae have been used as an indirect solution of the twinning elements by most crystallographers since that time. A new and direct graphic solution of the twinning elements from the relative positions in respect to the original crystal axes of two or more faces before and after deformation is presented.

The differences between the morphology of a mechanically twinned crystal and a growth twin involving the same twinning elements are explained.

A compilation of all of the work which has been done on mechanical twinning and new investigations attempting to correlate the twinning elements and the crystal structure are now being carried on.

A MICRO-BALANCE FOR SPECIFIC GRAVITY DETERMINATION

HARRY BERMAN

A micro-balance of the torsion type has been applied, after slight modification, to the measurement of specific gravities of fragments from 3 to 50 milligrams. The attainable accuracy is well within one per cent, and the time required for the necessary measurement is only a few minutes.

COMPOSITION AND OPTICS OF COPIAPITE

L. G. BERRY

From *x*-ray and density measurements on analysed copiapite from Chuquicamata, Chile, Peacock has obtained triclinic structural elements and the cell formula:

$$X(OH)_2Fe'''_4(SO_4)_6 \cdot nH_2O$$

in which X represents several bases amounting to one oxygen equivalent.

Reduction of many analyses of copiapite to 6 atoms of sulphur, instead of the usually accepted 5, confirms this formula and shows that the component X may be $\frac{2}{3}$R'''(Fe''', Al), 1 R''(Fe'', Mn, Cu, Zn, Ca, Mg), or 2 R'(Na, K), and the full value of n is 20. For the varieties in which X is mainly Fe''', Fe'', or Mg (each represented by several good analyses), the names *ferricopiapite* (natural and artificial), *ferrocopiapite* and *magnesiocopiapite*, respectively, are proposed. For the variety in which X is mainly copper the name *cuprocopiapite* was recently proposed by Bandy. Ferricopiapite and cuprocopiapite are also optically distinguishable from ferrocopiapite or magnesiocopiapite, which are optically similar.

THE MECHANISM OF THE GENESIS OF POLYMORPHOUS FORMS

MORTIMER C. BLOOM

Polymorphous forms are found throughout the mineral kingdom under conditions of apparent thermodynamic instability. The mechanism of the genesis of such forms is the subject of this paper.

In the Sb_2O_3 system, precipitation from pure aqueous solutions gives the stable senarmontite structure. Sufficiently acid solutions generate the unstable valentinite structure which contains some of the acidic constituents in solid solution, thus increasing its thermodynamic stability. Acid concentration is not the sole factor. The anion of the acid has a marked effect.

These results are determined by (a) the nature of the groups in solution, (b) the nature of the available crystal structures. The low temperature structure of Sb_2O_3 consists of discrete Sb_4O_6 molecules, the high temperature structure of chains composed of units of the following type: