THE PHILADELPHIA MINERALOGICAL SOCIETY

The Wagner Free Institute of Science, September 14, 1916.

A stated meeting of the Philadelphia Mineralogical Society was held on the above date with President Trudell in the chair. Those present were Allen, Bradford, Egee, Flack, Geist, Gordon, Groth, Jones, Knabe, Leffman, Rothermel, Streland, and Trudell.

Mr. Rothermel gave a brief account of a trip to the Grand Canyon and the Petrified Forest, exhibiting many specimens. Mr. Gordon reported a trip to West Paterson, and one to South Mountain, Adams and Franklin Co., Pa.; and read a paper on "A Review of the genesis of the zeolite deposits of First Watchung Mountain, N. J." illustrated with numerous specimens.

The following officers were nominated for 1916–1917: President, Mr. Harry W. Trudell; Vice President, Mr. E. A. Groth; Secretary, Mr. Samuel G. Gordon; Treasurer, Mr. Oscar Streland.

Samuel G. Gordon, *Secretary.*

REVIEWS AND ABSTRACTS

LIST OF WORKS RELATING TO THE GEOLOGY, MINERALOGY AND PALEONTOLOGY OF NEW JERSEY.

George Fraser Black. *Bulletin of the N. Y. Public Library.* June 1916. Reprint Sept. 1916. 36 pp.

A very interesting and comprehensive index to papers on the minerals of New Jersey in the Library. In most cases gives a brief abstract of, or mentions the minerals discussed in each paper. Certain omissions may be noted: the discovery of willemite from Franklin, N. J. announced as silicate of zinc in the listed paper by Vanuxem and Keating, J. Acad. Nat. Sci. Phila. **4**, 8, 1824. Also the announcement of the fluorescence of willemite from Franklin, N. J. in the unlisted paper, Annals N. Y. Acad. Sci. **11**, No. 17, 402–403, Oct. 13, 1898.

Some later reprints of certain listed papers might have been included and perhaps also certain papers which discuss correlations of L. I. and N. J. geologic features as listed in U. S. Geol. Survey Prof. Paper No. 82, The geology of Long Island, N. Y., by M. L. Fuller.

It will interest members of the N. Y. Min. Club to note how many of its former and present members have contributed to the list of works here compiled. Some of them are Apgar, F. W. (under the name of Apgood, an error of the journal cited); Canfield, F. A.; Gratacap, L. P.; Hawkins, A. C ; Hollick, A.; Hunt, J. H.; Hovey, E. O.; Johnson, D. W.; Julien, A. A.; Kemp, J. F.; Kunz, Geo. F.; Levison, W. G.; Martin, D. S.; Rogers, A. F.; and Whitfield, R. P. W. G. L.

HANDBOOK AND DESCRIPTIVE CATALOGUE OF THE METEORITE COLLECTIONS IN THE UNITED STATES NATIONAL MUSEUM.[1] GEORGE P. MERRILL. *U. S. Nat. Mus. Bull.* **94**, 207 pp., 41 pl., 1916.

"The handbook and catalog presented herewith is intended primarily for the use of the general public, but the subject matter is at the same time so arranged as to meet the needs of the student and investigator as well . . . ."

The classification, mineral and chemical composition, structure, early records and opinions, phenomena and number of falls, of meteorites are briefly discussed in Part I. Part II is a catalog of the U. S. National Museum collections which number 412 falls (this has since been increased to 432 falls), including that of the recently acquired C. U. Shepard collection of 234 falls, 83 of which are not represented in the National Museum collection proper (of 329 falls and an equal number of thin sections). The meteorites are fully described with numerous analyses and excellent plates of specimens and thin sections, reference being facilitated by the alfabetical arrangement. Moldavites, billitonites, and other glasses of supposed meteoric origin, are discussed, and instances of terrestrial irons are cited, in the two appendices.

S. G. G.

ANNUAL REPORT OF THE INTERNATIONAL COMMITTEE ON ATOMIC WEIGHTS, 1917. F. W. CLARKE, T. E. THORPE, and G. URBAIN. *J. Chem. Soc.*, **109** and **110**, 777, 1916.

The committee suggests that Cb should be altered to 93.1, otherwise the table for 1916 remains unchanged. S. G. G.

[1] Copies of this catalog can be obtained from the Superintendent of Documents, Washington, D. C., for 55 cents.

THE ORIGIN OF TOPAZ AND CASSITERITE AT GUNANG BAKAU, MALAYA. William R. Jones. *Geol. Mag.* [6], **3,** (6), 255–260, 1916.

"The topaz-bearing rocks of Gunang Bakau bear striking similarities in their mode of occurrence and mineral content to those found in other tin-fields, and especially those of Erzgebirge." Evidence is brought forward to show that the topaz and cassiterite are of secondary origin, produced by "greisenization" (hydrothermal metamorphism) of the granite by fluorine-bearing vapors. S. G. G.

SERICITE, A LOW TEMPERATURE HYDROTHERMAL MINERAL. Austin F. Rogers, of Leland Stanford Junior University. *Econ. Geol.* **11,** (2), 118–150, 1916.

Sericite, tho very similar to, if not identical with, muscovite in chemical composition, may be considered a distinct mineral and not simply a variety of muscovite. The greatest development of sericite is in altered wall-rocks of ore-bearing veins and in metamorphic rocks, not only replacing silicates, but also the various sulfides. It is a low temperature mineral formed at, or towards the close of the hydrothermal period, or in a corresponding late stage in metamorphic rocks. Sericite apparently does not form in the zone of weathering and probably not in the zone of static metamorphism. S. G. G.

NEW MINERAL NAMES. W. E. Ford, of Yale University. *Am. J. Sci.* [4], **41,** (6), 566–570, 1916.

It is planned to publish lists of new mineral names in the last numbers of volumes of the Am. J. Sci., to serve, in a measure, as a continuous supplement to Dana's System of Mineralogy. The first is here presented, the minerals being arranged alfabetically, followed by a supplementary list in which the new names are arranged according to the chemical classification. The original reference and the principal physical and chemical properties are mentioned under each name. S. G. G.

THE SEVERAL FORMS OF CALCIUM CARBONATE.

JOHN JOHNSTON, H. E. MERWIN, and E. D. WILLIAMSON, of the Geophysical Laboratory. *Am. J. Sci.*, [4], **41,** (6), 473–512, 1916.

At ordinary temperatures calcium carbonate exists in at least three anhydrous crystalline forms,—the two well known forms calcite and aragonite, and another designated by the writers μ-$CaCO_3$. Four other reputed forms, the so-called vaterite, conchite, ktypeite, and lublinite have also been described; there seems now to be little doubt that vaterite is a porous calcite, that conchite and ktypeite are porous aragonite, and that lublinite is merely a special variety of calcite. A number of hydrates have also been described, but with the exception of one, the hexahydrate, $CaCO_3.6H_2O$, their definite existence is uncertain, since the experimental evidence leaves much to be desired.

The writers discuss the various physical and chemical methods for the identification of the various forms. It is their opinion that the chemical methods should not be used alone as they are indecisive, particularly so where they are most useful. This opinion is based in part upon a number of observations outlined, and in part upon the fact that some of the factors upon which the tests depend are very difficult to control.

Calcite is, at ordinary pressure, the stable form of calcium carbonate at all temperatures from 0° (or lower) up to 970° at which temperature it inverts to α-$CaCO_3$; under these conditions aragonite and $\mu CaCO_3$ are always unstable with respect to calcite, tho there is an indication that aragonite has a stable field of existence at about $-100°$ or lower. Under all ordinary conditions, therefore, pure aragonite tends to go over into calcite; how far it does so depends upon the rate of transformation under the particular circumstances. There is, therefore, no definite transition point; and the interval required is comparatively long. By reason of this instability, one cannot specify the factor or factors which determine the precipitation of $CaCO_3$ as aragonite; indeed, its appearance would seem to be a matter of chance.

In so far as the writers have been able to ascertain, natural aragonite is formed (a) thru organic agencies, (b) by deposition from hot springs, (c) when an isomorphous carbonate is present to serve as a nucleus, (d) in salt waters containing sulfate even at ordinary temperatures. Pure aragonite can persist as such only when dry; but aragonite containing other substances in solid solution may thereby be enabled to persist in the presence of certain solutions. There are indications that the μ-form (hexagonal) often occurs as an intermediate step in the precipitation of the other forms, but it soon transforms in the presence of water. The properties of these three forms and of the hexahydrate are described, and their solubility discussed. S. G. G.

SOME MINERALS FROM THE FLUORITE-BARITE VEIN NEAR WAGON WHEEL GAP, COLORADO. ESPER S. LARSEN and ROGER C. WELLS, of the U. S. Geological Survey. *Proc. Nat. Acad. Sci.*, **2**, (7), 360–365, 1916.

Description of gearksutite and *creedite*—a new fluoride-sulfate (see below under NEW SPECIES), occurring at Wagon Wheel Gap, Colorado.

GEARKSUTITE

Color: snow-white. Form: powdery balls, becoming plastic when wet, and without grit. Under the microscope homogeneous, composed of an aggregate of threads. Sp. Gr. 2.768. $n = 1.454 \pm 0.003$, with moderate birefringence.

An analysis by Wells gave: Al_2O_3 28.49, Fe_2O_3 tr., CaO 31.37, MgO tr., Na_2O .05, K_2O .08, F 41.00, $-H_2O$ .44, H_2O 15.20; less O for F 17.27, total 99.36, agreeing with $CaF_2.Al(F,OH)_3.H_2O$; $F:OH = 2:1$.

The gearksutite is believed to have been formed by metasomatic alteration of the rhyolitic wall rock by the hot ascending solutions which deposited the fluorite in the vein [hydrothermal metamorphism of rhyolite]. S. G. G.

NEW SPECIES

Creedite

Esper S. Larsen and Roger C. Wells, of the U. S. Geological Survey: SOME MINERALS FROM THE FLUORITE-BARITE VEIN NEAR WAGON WHEEL GAP, COLORADO. *Proc. Nat. Acad. Sci.*, **2**, (7), 360–365, 1916.

Name: From the Creede quadrangle, Colorado, where it occurs.