REVIEWS AND ABSTRACTS

THE COMPOSITION OF NATURAL BORNITE. E. T. ALLEN, of the Geophysical Laboratory. *Am. J. Sci.* **41**, (5), 409–413, 1916.

Previous work on this mineral is reviewed, and it is shown by 6 analyses made on specimens of which the homogeneity was confirmed metallographically that the formula of the mineral is undoubtedly Cu_5FeS_4 and the specific gravity of the purest material 5.06–5.08. E. T. W.

THE GROWTH OF CRYSTALS UNDER EXTERNAL PRESSURE. STEPHEN TABER. *Am. J. Sci.* **41**, (6), 532–556, 1916.

Crystals of copper sulfate, potassium sulfate and alum were grown in crystallizing dishes in desiccators, loading the crystals in many cases with weights. It was found that loaded crystals were able to increase in height only when there were no unloaded crystals or volunteer crystals present in the same dish.

A characteristic feature, shown whenever a measurable lifting of a weight took place, was the development of a terraced cavity or hollow on the under side, and in a few instances on the upper side; careful measurement showing that the distances thru which the weights are lifted are always the same as the depth of the hollows. The cavities are not formed by solution as thought by Bruhns and Mecklenburg, but are due to the downward growth of the outer edge, while at the same time no material is being deposited on the under surface within this edge.

A crystal will grow in a direction in which external forces oppose growth, if the surface on which the forces are acting is in contact with a supersaturated solution. If the crystal of a substance, the solubility of which increases with pressure, is subjected to a greater pressure, an increase of the concentration of the solution is necessary; if the pressure is greater in one direction than in others (as when a weight is placed on a crystal), the surfaces that are under lesser pressure will tend to limit the concentration of the solution and prevent it from becoming supersaturated with respect to the surfaces that are rendered more soluble because of greater pressure,—means for maintaining the supersaturation must then be provided.

Dr. Taber believes that the forces developed during crystal growth have played an exceedingly important part in the formation of many veins, and in other geological phenomena.

S. G. G.

CONTRIBUTIONS TO MINERALOGY AND THE MINERAL SPRINGS OF JAPAN. George F. Kunz, of New York. *Science* **43,** 748–750, May 26, 1916.

A review of three publications issued in 1914–1915.

E. T. W.

NOTES ON RARE MINERALS IN MADAGASCAR. T. P. Waites. *J. Chem. Met. Soc. S. Africa* **16,** 187–189, 1916.

A general description of uranium-bearing minerals found on the island. E. T. W.

STUDIES IN HYDROTHERMAL ALTERATION. I. THE ACTION OF CERTAIN ALKALINE SOLUTIONS ON FELDSPARS AND HORNBLENDE. E. A. Stephenson, of the University of Chicago. *J. Geology* **24,** (2), 180–199, 1916.

Powdered minerals were heated in specially constructed apparatus with water and dilute solutions of sodium carbonate, sodium bicarbonate, potassium fluoride, etc. The feldspars were apparently not attacked by pure water, but at the higher temperatures (up to 280°) were decomposed by alkalies with the separation of silica and crystalline compounds, such as analcite and other zeolites, some not known to exist in nature. Fluorides, borates, sulfides, and aluminates had no marked influence on the reactions. No kaolin forms from alkaline solutions, and it is inferred that it is produced by the action of acid waters on minerals. E. T. W.

SELENIDE OF SILVER. W. W. Bradley. *Mining Sci. Press* **112,** (21), 741, 1916.

A mineral believed to be aguilarite is reported from the Delama mine, Owyhee Co., Idaho. It is associated with quartz, pseudomorphous after lamellar calcite. E. T. W.

THE EMERALD DEPOSITS OF MUZO, COLOMBIA.

Joseph E. Pogue, of Northwestern University. *Bull. Am. Inst. Mining Eng.* **1916,** (5), 799–822.

(Abstract reprinted by permission from *Chemical Abstracts*, **10,** (15), 1972, 1916.)

The deposits are described under the headings location, history, general geology, detailed geology, minerals, age, origin, mining methods, production, other deposits, acknowledgements, and selected bibliography. The emeralds are found almost entirely in calcite veins that traverse a black, carbonaceous, rather intensely folded formation consisting of thin-bedded shale and limestone. This emerald-formation lies discordantly on a heavier-bedded, barren formation, and between the two occur either albite rock, soft granular aggregates of calcite, dolomite, and quartz, or aggregates of calcite rhombs in a fine-grained calcareous matrix. Pegmatite dikes occur in the vicinity. It is believed that an intrusive magma gave rise to these pegmatites and also gave off mineralizing solutions which, under pneumatolytic conditions but mostly at temps. below 575°, produced the peculiar rocks observed beneath the emerald formation, and deposited the emerald and associated minerals. It is suggested that the occurrence of the emerald only above the plane of discordance is due to the fact that the gaseous portions of the pneumatolytic emanations, which would naturally ascend, caused the formation of the emerald. The carbon of the emerald formation is also believed to have had some precipitating or reducing action.

E. T. W.

ON HYDROZINCITE.

W. E. Ford and W. M. Bradley, of Yale University. *Am. J. Sci.* **42,** (1), 59–62, 1916.

Crystallized hydrozincite has recently been found at Good Springs, Lincoln County, Nevada, lining openings in light brown earthy smithsonite. The crystals are exceedingly thin, tabular, and lath-shaped, sharply pointed, and show a pearly luster. Extinction is parallel to the elongation, the direction of the slower ray; optical character biaxial, and with the optical axial plane parallel to the plates; refractive indices: $\alpha = 1.650$ and $\gamma = 1.740$, both $\pm .0005$.

These characters are essentially identical with those of aurichalcite. Accordingly the formula of hydrozincite should be

$2ZnCO_3.3Zn(OH)_2$, to correspond to that of aurichalcite, $2(Zn, Cu)CO_3.3(Zn, Cu)(OH)_2$. The following analyses were made by Bradley:

GOOD SPRINGS, NEVADA

	Crystals	Crystalline Material	Theory for $2ZnCO_3.3Zn(OH)_2$	Sardinia
ZnO	75.58	74.67[1]	74.14	73.72
CO_2	(15.78)	(16.41)	16.03	(15.47)
H_2O	8.64	8.92	9.83	10.81
	100.00	100.00	100.00	100.00

[1] Average of two closely agreeing determinations.

These results agree with those obtained on aurichalcite, so that hydrozincite is evidently the copper-free form of latter.

S. G. G.

DETERMINATION OF MINERALS

Minerals sent postpaid to any of the editors of this magazine will be identified, free of charge, in so far as this is possible with the means at our disposal. In most cases an ounce of material is ample for such determination, but a large enough piece should be sent to show something of the mode of occurrence or of the associated minerals, and the locality should be stated in every case. Only scientific data can be supplied—we will NOT determine the percentages of gold, tungsten, radium, etc., present, or furnish information concerning the commercial values of ores; for such information assayers or mining engineers must be consulted. Results will be announced on the last page of reading matter in this magazine. Specimens to be returned should be accompanied by return postage.

THE PHILADELPHIA MINERALOGICAL SOCIETY FIELD TRIPS, 1916.

October 22: New Galena, Bucks Co., Pa.
Nov. 30 (Thanksgiving Day): Unionville, Chester Co., Pa.