NEW MINERALS

FAMILY 9. SILICATES

R'''—HYDROXY-ORTHO-SILICATES

TOERNEBOHMITE

PER GEIJER: The cerium minerals of Bastnäs at Riddarhyttan. *Sveriges Geol. Undersökning, Årsbok (Swedish Geol. Survey, Yearbook)*, **14**, No. 6, 24 pp., 1920; this mineral, pages 16–20.

NAME: After the late A. E. Törnebohm, a pioneer in the geological study of the Archean rocks of central Sweden.

PHYSICAL PROPERTIES

Color, light green to olive; luster vitreous. H. 4.5; sp. gr. 4.94. Shows no crystal faces, but from optical properties and relations with allanite is inferred to be monoclinic.

OPTICAL PROPERTIES

Refractive indices near those of cerite ($\beta = 1.81$), but double refraction much higher: $\gamma - \alpha = 0.030$, tho $\beta - \alpha$ is but 0.001. Biaxial, with a moderate axial angle; $2E = 49°$, $2V$ probably about 26°. Sign +. Dispersion very strong, $v > \rho$. Remarkably pleochroic, with α light rose to greenish yellow, β bluish green, and γ light rose; absorption $\beta > \alpha = \gamma$. It is striking that there is a marked difference in absorption between axes which show little difference in index.

CHEMICAL PROPERTIES

Material was carefully selected for analysis so as to avoid admixture of cerite, allanite, and bastnaesite. Minute amounts of chalcopyrite and molybdenite could not be separated, but these introduce no difficulty. Slowly soluble in hot concentrated HCl. The small sample obtained was analyzed by R. Mauzelius, giving: SiO_2 22.05, Ce_2O_3 27.52, $(La, Nd)_2O_3$ 34.85, Al_2O_3 8.55, FeO 1.91, MnO 0.05, MgO 0.49, CaO 0.23, F_2 0.29, ign. 1.70, chalcopyrite 0.96, insol. 0.95, sum 99.55%. This is regarded as corresponding essentially to $H_2O : 3R_2O_3 : 4SiO_2$, or $R_3(OH)(SiO_4)_2$. It is suggested to be related to topaz and to cerite.

OCCURRENCE

Occurs in the cerite ore, tho more closely associated with allanite than with the cerite. It might be supposed to be the original mineral from which the cerite has been derived by hydration, but paragenetically it appears to be later than the cerite, and as no intermediate stages can be recognized, this view is untenable.

The balance of the paper is taken up with a detailed description of this rare-earth deposit and its minerals. The principal of these are bismuthinite, molybdenite, chalcopyrite, linneite, quartz, magnetite, bastnaesite, lanthanite, malachite, fluocerite, actinolite, allanite, cerite, and talc. The fluocerite is a new report; it has been recognized optically; compare following abstract. The bastnaesite occurs in individual grains, and as alteration products; new optical data on it ($\omega = 1.7225$) are given. The allanite (orthite) is usually

stated to contain only 0.3 to 0.5% H_2O, but analysis by Mauzelius showed the correct figure to be 1.52%, so that the formula corresponds well with that of the epidote group. Cerite, the mineral in which cerium was discovered, occurs only at this locality. It has been regarded as variable in composition, but analyses have mostly been made on altered material, and the most nearly correct one appears to be Nordström's, which gives $2(Ca, Fe)O : 3(Ce, La, Nd)_2O_3 : 6SiO_2 : 3H_2O$. Its β is about 1.81.

The deposit is believed to be a contact-metamorphic replacement of limestone.

DISCUSSION

[May be regarded as established, altho there are some uncertainties about the formula which it is to be hoped will be cleared up by the subsequent finding and study of better material. E. T. W.]

DISCREDITED MINERALS.

FAMILY 3. HALIDES.

"Tysonite" (Dana No. 182) = Fluocerite (No. 196)

PER GEIJER: Fluocerite and tysonite. *Geol. För. Förh.*, **43** (1), 19–23, 1921.

Optical study of a specimen of fluocerite from the collection of Berzelius, who first described the mineral, as well as of other fluocerites and of tysonite, has shown the essential identity of all of them (Dana gives "tysonite . . . fluocerite pt."). They differ only in extent of alteration. Crystallographic and chemical evidence, which have been supposed to indicate their difference, are discussed in detail, and the discrepancies are accounted for. The name fluocerite, having priority, should be used for the species. Its formula should be stated as is now done for tysonite, $(Ce, La, Nd)F_3$, and the oxyfluoride formula of Weibull (accepted by Dana) discarded. E. T. W.

NOTES AND NEWS

The delay in the issue of this and the preceding number has been caused by the compositors' strike. It may be several months before we get back to normal again, and we ask subscribers to wait a few weeks before assuming that their copies have been lost in the mails.

Mr. Samuel G. Gordon of the Academy of Natural Sciences of Philadelphia has started on a trip to South America in the hope of obtaining some mineral specimens for the William S. Vaux Collection of the Academy.

ABSTRACTS—MINERALOGY

SOLUTION AND GROWTH FORMS OF QUARTZ FROM SODIUM TETRABORATE SOLUTIONS HEATED UNDER PRESSURE. GABRIEL LINCIO. Turin. *Beitr. Kryst. Min.*, **1**, No. 3, 87–101, 1916.

[Nos. 1 and 2 of Goldschmidt's Beiträge were abstracted in our previous volume, Feb., 1920; some additional numbers have now reached this country, and will be abstracted.]