37.6, (Y, Dy, Er)$_2O_3$ 17.7, Fe_2O_3 2.1, FeO 0.8, loss on ign. 0.4 sum 100.9%. II. By J. Sterba-Böhm, SiO_2 45.45, Sc_2O_3 42.06, (Y, Dy, Er)$_2O_3$ 8.89, Fe_2O_3 2.83, BeO 0.51, loss on ign. 0.54, sum 100.28%. The spectrum shows no B_e lines, indicating impurity or misinterpretation of some precipitate obtained in the second analysis. The material analyzed had been carefully hand picked in both cases. An incomplete analysis by Tauchert confirmed the figures of analysis I. The powdered mineral is partially decomposed by concd. HCl without gelatinization. On ignition its gray-green color changes to reddish white.

CRYSTALLOGRAPHIC PROPERTIES: System monoclinic. $a:b:c=0.7674:1:0.5569$, $\beta=77°28'$. Forms: $m(110)$, $p.(111)$, $o(\bar{1}11)$, c (001), $u(\bar{1}31)$, and $v(\bar{1}41)$. Habit usually prismatic on m. Usually twinned with twinning axis normal to m, twinning and composition planes $=m$.

OPTICAL PROPERTIES: Biaxial, negative, with values for D: $\alpha=1.756$, $\beta=1.793$, $\gamma=1.809$, $\gamma-\alpha=0.053$. Plane of optic axes (010), $c:a=5°$ in obtuse angle β. Axial angles $2V=65°\ 30'$ $2E=152°$. Pleochroic with $a>\beta=\gamma$, with a deep green, β and γ brownish yellow, shown only in thick grains.

PHYSICAL PROPERTIES: Color grayish green to black. Luster vitreous to subadamantine. Cleavage prismatic. Fracture uneven to conchoidal; very brittle. Hardness 6–7. Sp. gr. 3.57. No measurable radioactivity.

OCCURRENCE: Has now been found at 4 localities in Saetersdalen, Norway, all in small granite-pegmatite dikes. The paragenetic succession in these is euxenite, monazite, alvite, ilmenorutile, thortveitite, beryl, magnetite, biotite, muscovite, oligoclase, microcline, quartz. One crystal observed was 35 cm. long and 4 cm. thick.

DISCUSSION: Not closely related to any other known mineral. It is noteworthy that thortveitite seems always to be fresh, whereas many similar rare-earth minerals are usually altered into amorphous forms; this is suggested to be due to the lack of radioactive constituents. E. T. W.

DOUBTFUL SPECIES

FAMILY: PHOSPHATES, ETC. DIVISION: R″:R‴″:R⁗:H_2O=4:2:3:12(?).

"Stasite"

ALFRED SCHOEP: Sur las stasite, un minéral nouveau, dimorphe de la dewindtite. (Stasite, a new mineral dimorphous with dewindtite.) *Compt. rend.*, **174**, 875–977, 1922.

NAME: In honor of the Belgian chemist, J. S. *Stas*.

CHEMICAL PROPERTIES: Appears to have the formula $4PbO:8UO_3:3P_2O_5:12H_2O$. The average of two fairly complete and several partial analyses made on material dried at 100° gave: PbO 25.86, CaO,MgO, traces, UO_3 56.02, P_2O_5 10.47, H_2O 5.60. Behavior similar to dewindtite.

CRYSTALLOGRAPHIC AND OPTICAL PROPERTIES: Crystal system undetermined. Form, minute prisms, with square terminations. Elongation+. Refractive index >1.74.

PHYSICAL PROPERTIES: Color golden yellow. Cleavage perfect in one direction. Sp. gr. 5.03.

OCCURRENCE: Found admixed with the torbernite from Kasolo, Belgian Congo.

DISCUSSION: The author considers this a dimorphous form of the compound previously described as dewindtite. The data presented hardly seems conclusive

in establishing either the distinctness of the two, or the composition of the present one, and it is therefore classed as doubtful. E. T. W.

"Wodanite"

G. LATTERMANN: Investigations of the minerals of the Katzenbuckel, quoted by H. ROSENBUSCH, *Elemente der Gesteinslehre*, Ed. 3, p. 201, 1910; W. FREUDENBERG: Titanium-biotite (wodanite) from the Katzenbuckel. *Mitt. Bad. Geol. Landesanst.*, **8**, (2), 319–335, 1920.

NAME: Origin unknown, as Lattermann's original manuscript was lost; presumably after the mythological character, *Wodan*.

CHEMICAL PROPERTIES: Four analyses are given, but they show wide variation; the following (by O. H. Heidenreich of Kristiania) is considered the most reliable SiO_2 38.69, TiO_2 12.56, Al_2O_3 9.45, Fe_2O_3 3.09, FeO 10.63, MnO 0.09, MgO 13.80, CaO (+traces of SrO and BaO) 0.83, K_2O 7.96, Na_2O 1.69, F 0.71, H_2O 0.76, sum 100.26%. It is concluded that the Ti is present largely as TiO_2 replacing SiO_2. From this a highly complex formula is derived.

PHYSICAL PROPERTIES: Exhibits the features of biotite of the meroxene variety.

OCCURRENCE: Found in the shonkinite rock of the Katzenbuckel, a famous German locality. C. S. Ross.

DISCUSSION: The simple composition, corresponding as closely to the analysis as could be expected in view of the evident variability of the material, is: K_2O: 4(Mg, Fe)O: MgF(OH):$(Al, Fe)_2O_3$:Ti_2O_3:$6SiO_2$, an "orthosilicate" ratio; placing the Ti along with the Si makes the ratio too basic. It should be called tentatively *titaniferous biotite*. E. T. W.

FAMILY: COLUMBATES, ETC. DIVISION: XR″:YR″ ′:ZCb, WITH $X>Z>Y$.

Unnamed

YUJI SHIBATA and KENJIRO KIMURA: Chemical investigation of Japanese minerals containing rare elements. IV. Samarskite and an unnamed mineral from Ishikawa, Iwaki Province. *J. Chem. Soc. Japan*, **43**, 301–312, 1922; thru *Chem. Abstr.*, **16**, 2750, 1922.

CHEMICAL PROPERTIES: A preliminary analysis gave: MgO 1.07, CaO 0.86, MnO 0.40, FeO 11.78, Al_2O_3 0.87, rare earths 8.40, UO_2 21.88, SnO_2 1.20, SiO_2 0.30, TiO_2 0.21, $Cb_2O_5$36.80, Ta_2O_5 15.00, H_2O 0.89, sum 99.66%. This seems to correspond to 10 R″O.R″ ′$_2O_3$.6 $(Cb, Ta)_2O_5$, where R″ includes (UO_2).

PHYSICAL PROPERTIES: Color black; luster brilliant; opaque; H.=5–6; sp. gr. =6.2–6.4.

DISCUSSION: Thought to be different in properties from the minerals of the samarskite group, but assignment of a name is withheld until a final analysis is made. Up to the present time at least two names, "nohlite" and "ånneroedite," have been given to material not essentially different in composition from that noted above. E. T. W.

ABSTRACTS—CRYSTALLOGRAPHY

THE STRUCTURE AND SYMMETRY OF ANATASE, RUTILE, ZIRCON, AND XENOTIME. A. JOHNSEN. *Centr. Min. Geol.*, **1919**, 97–105.

According to Johnsen, anatase, rutile, and xenotime are ditetragonal bipyramidal, while zircon is either ditetragonal or tetragonal pyramidal.

EDW. F. HOLDEN.