PETROLOGY FOR STUDENTS. AN INTRODUCTION TO THE STUDY OF ROCKS UNDER THE MICROSCOPE. ALFRED HARKER. 6th edition, revised. 302 pages with 100 text figures. Cambridge University Press, *London*; The MacMillan Co., *New York*, 1923.

The popularity of this book as a text for students in petrology is clearly shown by the rapid succession in which new editions follow one another. The subject matter and presentation in the sixth edition conform very closely to that of the fifth edition which appeared in 1919. A few new figures have been added and some old ones have been withdrawn. Of the 300 pages, slightly more than two-thirds of the book is devoted to a discussion of igneous rocks, about 60 pages to sedimentary rocks and 40 pages to the effects produced by thermal and dynamic metamorphism.

Judged from an American standpoint, in the opinion of the reviewer, this edition, like the previous one, suffers from three minor weaknesses. (1) Not a single chemical analysis is recorded in the entire book. (2) As a text for the "English-speaking students" greater emphasis should have been given to the description and occurrence of rock types in America. (3) In recent years unusual progress has been made along the line of quantitative petrology. Not only has the chemical system (commonly referred to as the C. I. P. W. system) been firmly established in America, but more recently a rational mineralogical quantitative system (Johannsen) has been proposed as well. It would seem that a chapter or two devoted to this phase of petrology would have been quite appropriate and exceedingly helpful to both English and American students. W. F. H.

NEW MINERALS: NEW SPECIES

CLASS: SULFO-SALTS. DIVISION: $RS:R_2S:Sb_2S_3 = 5:9:7$.

Berthonite

H. BUTTGENBACH: Sur un nouveau Mineral Provenant de Tunisia. [On a new mineral found in Tunisia.] *Ann. soc. geol. Belg.* **46**, 212, (1923).

NAME: In honor of M. *Berthon*, mining engineer.

CHEMICAL PROPERTIES: *Formula*, $5PbS.9Cu_2S.7Sb_2S_3$. Theory, Pb 20.79, Cu 22.96, Sb 33.75. Analysis gave Pb 21.83, Cu 23.68, Sb 32.45. Gives the usual blowpipe reactions for lead, copper and antimony. Easily fusible.

PHYSICAL PROPERTIES: Fine granular without cleavage; metallic luster; color lead gray; streak black; density 5.49; hardness 4 —5.

OCCURRENCE: Associated with galena in small, later veins in the iron mines of Slata, Tunisia.

DISCUSSION: This mineral has been examined minerographically by Mr. E. B. Samson. The material was found to be essentially homogeneous. A few minute veins, of what is apparently limonite, penetrate the mass and become abundant near the border of the veins. The mineral appears to be isotropic. No structure was developed by etching. With conc. HNO_3 the mineral is strongly attacked with effervescence. Negative with HNO_3, HCl, KOH, KCN, $HgCl_2$, $FeCl_3$. With

acid $KMnO_4$ (1 cc. conc. $KMnO_4$: 1 cc. H_2O with 1 drop H_2SO_4) quick tarnish, at first brown, then blue when heavier. After about 2 min. becomes persistent and will not rub off. HCl dissolves tarnish and leaves bright unattacked surface. Alk. $KMnO_4$ as with acid $KMnO_4$. Bournonite, in contrast with these reactions, is not attacked brown by HNO_3; is attacked brown by alk. $KMnO_4$, developing structure. Bournonite is distinctly anisotropic in polished section.

Berthonite is apparently distinct from bournonite, the only other lead copper sulf-antimonide. It is evidently a new species although its exact formula is in doubt.

W. F. F.

CLASS PHOSPHATES, ETC. DIVISION; R′ : R″ : Sb=1:2:2.

Weslienite

GUSTAV FLINK: Weslienite, ett nytt mineral från Långbans Gruvor. (Weslienite, a new mineral from the Longban Mine.) *Geol. Fören. Förh.*, **45**, 567, (1923).

NAME: From J. G. H. *Weslien*, manager of the Longban Mine.

CHEMICAL PROPERTIES: An antimonate of calcium, sodium and iron, $Na_2FeCa_3Sb_4O_{15}$. Analysis by Dr. G. Karl Almstrom: Sb_2O_5 67.37, As_2O_5 tr., FeO 6.56, MnO tr., CaO 17.91, MgO 1.24, K_2O 0.62, Na_2O 5.40, ign. 1.03, sum 100.13. Theory Sb_2O_5 68.0, CaO 17.8, FeO 7.6, Na_2O 6.6.

CRYSTALLOGRAPHIC PROPERTIES: Isometric, octahedral in habit. Forms: *o* (111), *a* (100), *m* (110), *n* (331), *e* (311). Crystals up to 2 mm. in size.

PHYSICAL AND OPTICAL PROPERTIES: Color, honey-yellow to resinous brown. Luster, vitreous to adamantine. Fracture splintery. H 6.5. Sp.Gr. 4.967. Anomalously birefracting, optically positive with large axial angle. Shows anomalous birefringence color of a violet blue and undulatory extinction. Index of refraction for sodium light, 2.21.

OCCURRENCE: Found at the Hindenburg workings of the Longban Mine. Forms isolated individuals or druses in massive hematite associated with manganophyllite, richterite and a pale berzelite or adelite—like mineral. A later filling is partly hedyphane and partly calcite.

DISCUSSION: Weslienite is a mineral similar to atopite, romeite or schneebergite but apparently differs from all of these. The relationships of these minerals, however, are not well understood. They may be compared as follows; Romeite, $5RO.3Sb_2O_5$. Atopite, $2RO.Sb_2O_5$. Weslienite, $5RO.2Sb_2O_5$. Schneebergite, $2RO.Sb_2O_4$. It will be seen that atopite lies half way between romeite and weslienite while schneebergite has antimony in two states of oxidation. Weslienite should ther fore be classed as a distinct species until some definite relationship can be shown to exist between it and romeite and atopite.

W. F. FOSHAG.