CAMSELLITE AND SZAIBELYITE

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Schaller[1] has recently concluded that camsellite and szaibelyite are probably identical, since they seem to be very similar both chemically and optically, so far as can be inferred from published descriptions. His summary of the chemical analyses serves to show that the two minerals are at least similar in chemical composition. His summary of the optic properties leads to an analogous conclusion, but unfortunately it is incomplete in regard to the available optic data for camsellite.[2] In a description of szaibelyite published recently[2] the writer made no attempt to select the correct optic data but stated that published data are very inconsistent; Schaller's corrected data[3] make it very probable that szaibelyite is uniaxial and negative with $N_o = 1.65\pm$ and $N_e = 1.58\pm$, as reported recently by Gillson and Shannon.[4] Therefore it is important to describe in some detail the evidence for the statement[2] that the optic angle of camsellite is large.

On account of the fact that the original description[5] of camsellite did not include any measure of N_m nor of the optic angle, the writer obtained a small fragment of the type material through the courtesy of Dr. Ellsworth. A study of this material was undertaken by R. H. B. Jones and C. H. Stockwell. It was found to be in the form of microscopic lath-shaped crystals with *X* parallel with the elongation and *Y* normal to the laths. In order to measure N_m by the immersion method it was necessary to turn one of these laths on edge. To accomplish this Mr. Jones used an ingenious device. One of the laths was inserted in a capillary glass tube of the proper size and this tube was placed lengthwise on an object glass previously prepared for it by cementing on its upper surface two rectangular strips of cover glass large enough to cover the object glass, except for a narrow space between the strips, as shown in Fig. 1. A suitable immersion liquid was allowed to fill the capillary

[1] W. T. Schaller, *Amer. Mineral.*, **XIII**, 1928, p. 230.

[2] See A. N. Winchell, *Optical Mineralogy*, Part 2, **1927**, p. 93.

[3] The incorrect data for N_o and N_e of szaibelyite were unfortunately repeated from *Zeit. Krist.*, **LX**, 1924, pp. 162, 163, 170 in the writer's *Optical Mineralogy*, part 2, **1927**, p. 93.

[4] *Amer. Mineral.*, **X**, 1925, p. 137.

[5] H. V. Ellsworth and E. Poitivin, *Trans. Roy. Soc. Canada*, **XV**, 1921, p. 145.

tube, and the same liquid was used to fill the space between the tube and the surrounding glass plates (including a cover glass placed over the tube). A magnified section through the apparatus is shown in Fig. 2. Then, since the tube was somewhat longer than the cover glass, it was easy to turn the tube, and thus turn the

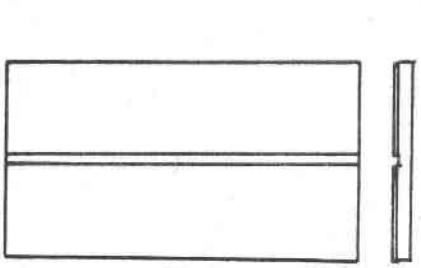

Fig. 1

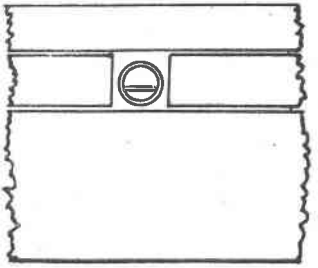

Fig. 2

FIG. 1.

Object glass with two strips of cover glass cemented to surface. True size.

FIG. 2.

Magnified vertical section through a capillary tube between two pieces of cover glass. The tube rests on an object glass and has a cover glass over it; it contains a lath-shaped crystal.

lath-shaped crystal, so as to set it on edge with respect to the microscope. In this way it was found that the index of the crystal, for light vibrating normal to the elongation varied decidedly during rotation of the crystal about its long axis. In fact, the index was 1.649 when the lath was lying flat with respect to the object glass and 1.620 ± 0.005 when the lath was set on edge. Assuming no error in this determination of N_m, the optic angle (2V) must be nearly 80°, since $N_p = 1.575$. Therefore camsellite is biaxial (and negative) with a large optical angle. According to the best data now available, szaibelyite is uniaxial. Therefore the two minerals cannot be the same even if there is no chemical difference between them, a condition which is not yet fully proved.

Through the courtesy of Dr. Ellsworth in supplying type material Messrs. Jones and Stockwell were able to measure the indices of sussexite by the same method and thus determine that it is biaxial and negative with a small optic angle. Their results on sussexite were as follows: $N_g = 1.712 \pm 0.003$, N_m slightly higher than 1.70, $N_p = 1.6388$, $N_g - N_p = 0.073$.