THE PROBABLE IDENTITY OF CAMSELLITE WITH SZAIBELYITE*

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Szaibelyite, from Hungary, was described in 1861 and analyses published a few years later. Although not so stated, the "secondary fibrous mineral" associated[1] with ludwigite at Philipsburg, Mont., is probably the same. In 1921, camsellite from Canada was described[2] as a new mineral. In April 1925 Eakle described[3] camsellite from California and in June, the same year, szaibelyite was described[4] from Nevada.[5]

The occurrence of the Hungarian szaibelyite was again mentioned by Koch in 1888 (abstr. in *Zeitschr. Kryst. Min.*, vol. **17**, p. 505, 1890) and its optical properties given by Loew in 1911 (abstr. in *Zeitschr. Kryst. Min.*, vol. **54**, p. 181, 1914) as follows: Parallel extinction, negative, $\epsilon=1.59$, $\omega=1.65$. Slavik in 1917 (see *Zeitschr. Kryst. Min.*, vol. **60**, pp. 162, 163, 170, 1924) and (in French) in 1918 (Données optiques sur quelques minérals: *Bull. Internat. Acad. Sci.*, Boheme, **1918**) gave[6] the properties, parallel extinction, uniaxial?, elongation negative, $\epsilon=1.575$, $\omega=1.60$. Larsen, in *U. S. Geol. Survey Bull.* **679** (1921) quotes Loew's values.

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[1] Schaller, W. T.; Mineral. Notes, Series 1. *Bull.* **490**, *U. S. Geol. Survey*, p. 28, 1911.

[2] Ellsworth, H. V., and Poitevin, E.; Camsellite, a new borate mineral from British Columbia, Canada. *Trans. Royal Soc. Canada, Sect. IV, Ser. III*, vol. **XV**, p. 145, 1921.

[3] Eakle, A. S.; Camsellite from California. *The American Mineralogist*, vol. **10**, p. 100, 1925.

[4] Gillson, J. L., and Shannon, E. V.; Szaibelyite from Lincoln County, Nevada. *American Mineralogist*, vol. **10**, p. 137, 1925.

[5] The associated needle-like unknown mineral has the optics of ascharite, another hydrous magnesium borate. Gillson (priv. com.) called attention to its more probable identity with fluoborite, as suggested by Geijer. The formula of ascharite, $2MgO \cdot B_2O_3 \cdot {}^2/_3H_2O$, is very close to that of szaibelyite (camsellite) but the indices (Larsen) are considerably lower, instead of higher, as they would be expected to be with less H_2O. The composition and properties of ascharite need restudy. The possible presence of fluorine in these magnesium borates must be considered.

[6] The reference in *Zeitschr. Kryst. Min.*, vol. **60**, has ϵ and ω interchanged.

If, now, the optical properties of szaibelyite and camsellite, as given in the literature, be tabulated, it can readily be seen that they are not only very close but practically identical. The value of $\omega(=1.60)$ given by Slavik is the only discordant value and is probably a little low.

COMPARISON OF OPTICAL VALUES OF SZAIBELYITE AND CAMSELLITE

Mineral	Locality	Extinction	Elongation	Sign	Character	ϵ	ω
Szaibelyite	Hungary, Loew	Parallel	—	negative	—	1.59	1.65
	Hungary, Slavik	Parallel	negative	—	Uniaxial?	1.575	1.60
	Nevada	Parallel	—	negative	Uniaxial	1.575	1.650
Camsellite	Canada	Parallel	negative	—	(a)	(α) 1.575	(γ) 1.649
	California	Parallel	negative	—	—	(α) 1.580	(γ) 1.651

(a) For the original camsellite (from Canada)it is stated that the fibers are flattened parallel to the axial plane and it is suggested that the mineral is orthorhombic. 2V is thought to be probably very large although no axial figure was seen. β was not determined. The statement in Dana (p. 878) that szaibelyite is optically biaxial is not verified by the other determinations (Loew, Slavik).

A comparison of the analyses shows a similar composition, although the presence of silica in several of the samples analyzed, complicates the comparison. Eakle considers the silica as essential to the camsellite from California, whereas Ellsworth and Poitevin consider all the silica in the Canadian sample to be due to admixed serpentine. In the following comparison of analyses, both these occurrences are given twice, that from California, first (column 5) with the silica as given by Eakle, and second (column 6) with the silica omitted and the analysis recalculated to the same total. For the Canadian camsellite, the analysis is first given (column 7) with only the admixed dolomite deducted and the analysis recalculated to 100 per cent and second (column 8) with both the dolomite and serpentine (based on the silica content) deducted and the analysis recalculated to 100 per cent. If there is no silica in the Canadian camsellite, then column 8 represents the composition of the analyzed mineral. If any silica belongs to the mineral, then its composition would be represented by values between the figures given in columns 7 and 8. The last column, No. 9, gives the calculated composition according to the formula $2MgO \cdot B_2O_3 \cdot H_2O$. Columns 1, 2, 3 are the analyses of szaibelyite from Hungary, as given by Dana and Hintze. Column 4 is the analysis of szaibelyite from Nevada. All other elements present, mostly less than one per cent, are grouped together under *X*. Probably all the samples (except possibly the mineral from California) were admixed with other substances, whose allocation is not attempted but which are grouped together under *X*. The interpretation of the silica present in the camsellite from California is not attempted but the evidence afforded by the analysis of material from other localities suggests that its presence may be interpreted in other ways than that it is an inherent part of the mineral. The close relationships to sussexite likewise suggests that the silica does not belong to the mineral.

COMPARISON OF ANALYSES OF SZAIBELYITE AND CAMSELLITE

	Szaibelyite				Camsellite				
	Hungary			Nevada	California		Canada		Calc.
	1	2	3	4	5	6	7	8	9
SiO_2	—	0.20	—	4.83	7.16	—	8.57	—	—
MgO	54.65	52.49	49.44	46.72	46.07	49.62	44.00	44.59	47.87
FeO	—	—	—	—	2.46	2.66	—	—	—
B_2O_3	38.35	36.66	34.60	31.22	33.34	35.91	32.57	41.24	41.44
H_2O	7.00	6.99	12.37	9.87	10.94	11.78	11.07	10.47	10.69
X	—	2.15	3.40	7.36	—	—	3.79	3.70	—
	100.00	98.49	99.81	100.00	99.97	99.97	100.00	100.00	100.00

Colums 1, 2, 3. Analyses are given in Dana and Hintze.
Colum 4. Analysis as given. B_2O_3 by diff.
Column 5. Analysis as given.
Column 6. Same as 5 with silica deducted.
Column 7. Analysis with only admixed dolomite deducted.
Column 8. Analysis with both admixed dolomite and serpentine deducted.
Column 9. Calculated composition for formula $2MgO \cdot B_2O_3 \cdot H_2O$.

Considering not only the similarity of the analyses as given above, but also the practical identity of the optical properties, it seems reasonable to conclude that the two minerals szaibelyite and camsellite are probably the same. The name szaibelyite has priority by many years. The confusion regarding the solubility of the mineral in acids still needs clarification; perhaps the degree of fineness of the fibers has not been sufficiently considered.