It is concluded that an amphibole of the arfevdsonite composition is not stable at low temperatures but will become unmixed. The compositional range of the gap in alkali amphibole solid solutions is not known. The optical properties of the alkali amphiboles, particularly of the arfvedsonite-riebeckite series, must necessarily be influenced by the exsolution.

Acknowledgments. Thanks are due to Mr. Aarno Juurinen and Mr. Kai Hytönen, both of this Institute, for making the chemical analysis of arfvedsonite and for the optical measurements, respectively.

References

Adamson, O. J. (1944), The petrology of the Norra Kärr district: *Geol. För. Stockholm Förh., Bd.* **66,** 114.

Eskola, Pentti, and Sahlstein (Sahama), Th. G. (1930), Ueber die unvollkommene Auslöschung einiger Amphibole: *C. R. Soc. géol. Finlande,* **3,** 89.

Hori, S. (1942), On an abnormal optical phenomenon of alkali-amphibole: *Geol. Soc. Japan Jour.,* **49,** 445.

Inoue, Tami (1950), Amphiboles and biotites from the Fukushinzan alkaline complex, Korea: *Geol. Soc. Japan Jour.,* **56, 71.**

Iwao, S. (1939), Petrology of the alkaline rocks of the Nayosi district, Sakhalin, Japan: *Japanese Jour. Geol. and Geography,* **16,** 155.

Sato, S. (1936), Geology and petrology of Jehol, report of the first scientific expedition to Manchukuo, sect. II, part III, Tokyo, p. 41. (Cited according to Yagi)

Yagi, Kenzo (1953), Petrochemical studies on the alkalic rocks of the Morotu district, Sakhalin: *Bull. Geol. Soc. Am.,* **64,** 769.

UNIT CELL AND SPACE GROUP OF BARYLITE

J. C. Smith, *Department of Mineralogy and Petrography, Harvard University, Cambridge, Mass.*

The occurrence of barylite, $Be_2BaSi_2O_7$, has been described by Palache and Bauer (1) and by Palache (2) from Franklin, N. J., and by Aminoff (3) from Långban, Sweden. Ygberg (4) made an x-ray examination of the barylite from Långban, by the rotation, Laue and powder methods. Aminoff, from morphological investigation, found that barylite belonged to the orthorhombic holohedral class (D_{2h}—mmm). The x-ray study by Ygberg reduced the space group to two possible choices, D_{2h}^5—$Pmma$ and D_{2h}^{16}—$Pnma$, of which he considered the latter to be the more plausible.

An analyzed sample of the barylite from Franklin described by Palache and Bauer (1) was examined using Cu radiation and the Weissenberg method. The lattice type proved to be primitive orthorhombic, and the following extinction criteria were recognized: $hk0$ missing when h is odd; $0kl$ missing when $k+l$ is odd. These establish the space group as

Pnma. The unit cell dimensions obtained from 0-layer photographs are compared to those of Ygberg's, below:

Smith	*Ygberg*
$a_0 = 9.80 \pm .01$ Å	$a_0 = 9.79$ Å
$b_0 = 11.65 \pm .03$	$b_0 = 11.61$
$c_0 = 4.71 \pm .02$	$c_0 = 4.63$

The slightly larger cell dimensions obtained on the Franklin barylite probably are due to a small variation in the chemical composition. This is suggested also by the slight differences observed in the indices of refraction and specific gravities of the Franklin and Långban materials. The reported analyses indicate that the Långban material is relatively rich in calcium, and the Franklin material in lead; both elements substitute for barium. Indexed *x*-ray powder spacing data are given in Table 1.

TABLE 1. *X*-RAY POWDER SPACING DATA FOR FRANKLIN BARYLITE
Cu radiation, Ni filter, in Ångstroms

Index	Meas. *d*	Calc. *d*	Index	Meas. *d*	Calc. *d*
020	5.743	5.810	102	2.300	2.270
210	4.464	4.500	112	2.224	2.229
011	4.263	4.298	241		2.215
220	3.748	3.740	401	2.175	2.168
121	3.389	3.410	022		2.165
201	3.323	3.378	311	2.135	2.129
211	3.206	3.240	202	2.090	2.108
040	3.006	2.905	212		2.098
132	2.881	2.871	421	2.040	2.065
231	2.564	2.550	222	1.998	1.981
240	2.473	2.488	341	1.977	1.970
410	2.412	2.392	302	1.908	1.907
141		2.391	312	1.868	1.870
002	2.367	2.333	042	1.825	1.813

REFERENCES

1. PALACHE, C., AND BAUER, L. H., On the occurrence of beryllium in the zinc deposits of Franklin, N. J.: *Am. Mineral.*, **15,** 30 (1930).
2. PALACHE, C., The minerals of Franklin and Sterling Hill, Sussex County, N. J., *U.S.G.S., Prof. Paper* **180** (1935).
3. AMINOFF, G., Om en association med Barylit och Hedyfan vid Långban.: *Geol. För. Förh., Stockholm,* **45,** 124 (1923).
4. YGBERG, E. R., On the structure of barylite: *Geol. För. Förh., Stockholm,* **134,** 394 (1941).