NOTES AND NEWS

BERYLLIAN IDOCRASE FROM FRANKLIN, NEW JERSEY

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In 1930 beryllium-bearing idocrase from Franklin, New Jersey, was described by Palache and Bauer (1930). Their analysis reporting over 9 per cent BeO and the statement, "It seems highly probable that beryllium is generally present in this mineral but has not been recognized, being determined as alumina" stimulated great interest in idocrase as a possible commercial source of beryllium.

Several analyses of idocrase from different localities have subsequently been made without finding significant amounts of beryllium. Silbermintz and Roschkowa (1933) in testing fourteen idocrases from various localities found only three samples containing beryllium. These ranged from 0.008–0.18 per cent BeO. Meen (1939) reported 1.07 per cent BeO in idocrase crystals from the Great Slave Lake Region, Canada. In connection with a study of helvite and danalite from New Mexico, Glass, Jahns and Stevens (1944) reported 1.09 per cent BeO in idocrase. Spectrographic analysis of this material by Strock gave 1.06 per cent BeO. In 1932 Mr. E. K. Gedney made an extended tour of the western United States in search for beryllian idocrase. He carried with him a portable laboratory with which to make tests for beryllium. His findings were not published, but in several hundred analyses he found a maximum of 1.5 per cent BeO.

Inasmuch as the Franklin material alone showed appreciable amounts of beryllium, it appeared that the analysis might be open to question. Through the kindness of Mr. L. H. Bauer, two specimens of beryllian idocrase from Franklin were loaned for reanalysis. These presumably were of the same material he had analyzed earlier. Analyses of these specimens have been made by Mr. F. A. Gonyer; one in 1941 and the other in 1951. These are given in Table 1 with the earlier analysis by L. H. Bauer.

As a further check on the beryllium content, the idocrase of the specimen of analysis No. 3 was analyzed spectrographically by Dr. Lester Strock. The average of three analyses is 1.1 per cent BeO. The difference between the BeO reported in the chemical and spectrographic analyses may represent an error, or it may correspond to real differences in the material analyzed. Optical examination shows color zones that may be different chemically but which show almost no difference in refractive index.

TABLE 1. ANALYSES OF IDOCRASE FROM FRANKLIN, NEW JERSEY

	1	2	3
SiO_2	34.25	34.83	36.61
Al_2O_3	9.70	12.98	16.67
Fe_2O_3	—	5.69	3.31
FeO	trace	—	—
MnO	4.84	.24	3.28
MgO	3.17	2.91	2.87
CaO	33.15	33.84	33.64
BeO	9.20	3.95	1.56
Na_2O	—	.86	.17
K_2O	—	.08	—
CuO	—	—	.26
ZnO	4.86	—	.14
H_2O	1.31	.86	.68
F	—	3.07	.91
	100.48	99.31	100.10
Less $0=F_2$		1.29	.38
	100.48	98.02	99.72

1. Analyst, L. H. Bauer; 2. Analyst, F. H. Gonyer, 1941; 3. Analyst, F. H. Gonyer, 1951.

The formula given by Warren and Modell (1931) for idocrase is $Ca_{10}Al_4(Mg,Fe)_2Si_9O_{34}(OH)_4$. It is difficult to determine where the beryllium should be placed in the formula. It is possible that it substitutes for the divalent metals or for the aluminum. However, the analyses do not help to identify either of these two mechanisms.

Examination of the three analyses of Table 1 show striking differences not only in BeO but also in Al_2O_3, Fe_2O_3, MnO, ZnO and F. It seems highly unlikely that the analysts working on identical material would

TABLE 2. OPTICAL PROPERTIES OF BERYLLIAN IDOCRASE

Locality	Per Cent BeO	*n*O	*n*E	G
1. Great Slave Lake	1.07	1.712	1.708	
2. Iron Mtn., New Mexico	1.09	1.718	1.711	3.3+
3. Franklin, N. J.	9.20	1.712	1.700	3.385
4. Franklin, N. J.	3.95	1.716	1.710	3.380 ± .002
5. Franklin, N. J.	1.56	1.714	1.709	3.375

Indices determined by: 1. V. B. Meen, 2. J. J. Glass, 3. H. Berman, 4 and 5. C. S. Hurlbut, Jr.

arrive at such dissimilar results for so many elements. It is more probable that the idocrase specimens collected by Mr. Bauer and thought to be the same were actually different and the difference is reflected in the analyses.

From Table 2 it appears that there is no correlation between the percentage of BeO and the refractive indices and that the difference in index is probably due to variation in the other elements.

The dimensions of the unit cell of the Franklin idocrase (crystals of analysis No. 3) determined by Weissenberg photographs are: $a_0=15.59$ Å, $c_0=11.81$. These dimensions are in fair agreement with $a_0=15.63$ kX, $c_0=11.83$ given by Warren and Modell (1931) for idocrase from Sanford, Maine; and $a_0=15.63$ kX, $c_0=11.93$ given by Kakané (1933) for idocrase from Miho, Japan.

Conclusion. From a consideration of the chemical and spectrographic analyses of the Franklin idocrase, one must conclude that either the original analysis was in error in reporting too high a percentage of BeO or that the specimen on which the analysis was made was unique.*

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DEMONSTRATION POLARISCOPE

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In teaching optical crystallography, frequently it is necessary to demonstrate and explain certain optical phenomena seen through the polarizing microscope. In a large class this can be very time consuming if the in-

* After the manuscript of this note was sent to the Editor of *The American Mineralogist*, the mineral collection of Mr. Bauer was purchased by the National Museum and Harvard University. There were several specimens labeled "Be-vesuvianite" and a tube of powdered material labeled "Be-vesuvianite—analysed." Some of the powdered mineral was sent to Dr. W. T. Schaller of the U. S. Geological Survey. A spectrographic analysis made at the Geological Survey by Mr. Harry Dies gave 0.17 per cent BeO. From this analysis of the original material, one must conclude that the percentage of BeO reported in Mr. Bauer's analysis is in error.