A MINERAL RELATED TO SAMARSKITE FROM PARRY SOUND, ONTARIO

H. V. ELLSWORTH,* *Ottawa, Canada.*

The area immediately to the east of Blackstone Lake, Parry Sound district, contains numerous pegmatite dikes which carry an interesting assemblage of rare minerals. One of the most productive of these dikes occurs on the line between lots 9 and 10, con. IX, Conger township, 13 miles by rail south east of Parry Sound town. This dike was first prospected for muscovite and later several fairly rich pockets of uraninite crystals were exposed by a comparatively small amount of work. Along with the uraninite is a small amount of the mineral here described which often occurs within a few inches of the uraninite crystals, both apparently having crystallized contemporaneously under identical conditions. A remarkable carbon mineral, which will be described in another paper under the name of thucholite, is sometimes very intimately associated with both uraninite and samarskite. Crystals of uraninite completely enclosed in this carbon have been found and the samarskite is also often partly enclosed by or in contact with the carbon mineral. Nodules of the carbon are usually intergrown with altered grayish material in part massive but showing some zircon-like crystals, which an analysis indicates to be a mixture of intergrowth of cyrtolite and a phosphate. Allanite also occurs in these dikes in small quantity but is not closely associated with the minerals just mentioned, being confined chiefly to the margins; so far as observed by the writer. The allanite is only slightly radioactive. Other dikes in the neighborhood have yielded these same minerals in smaller quantities and from one which was worked for feldspar some fine specimens of columbite were obtained.

The mineral which is the subject of this paper for convenience will be called *calciosamarskite*, though its proper classification is somewhat uncertain. It is much less abundant than uraninite, being in fact rare, in the dike mentioned above so far as exposed up to the present, though what appears to be the same mineral occurs much more abundantly in another dike a few hundred feet distant in which uraninite is apparently absent or at least was not seen. The calciosamarskite from the uraninite-bearing dike was

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however, particularly interesting because it afforded an opportunity to compare the lead ratios of the two minerals occurring only a few inches apart under identical conditions in the same dike. The complex columbate minerals frequently yield a low lead ratio, compared with uraninites from rocks of apparently identical age and the writer has ascribed this to alteration but as the two minerals rarely occur together there was of course always the possibility that the complex minerals really were younger than the uraninites. The analysis of this particular complex columbate shows conclusively that such minerals may sometimes be of no value whatever as geological age indicators. The writer's experience with Canadian minerals of this type indicates that when they contain more than a very small amount of SiO_2 the age ratio must be regarded with suspicion as being probably too low.

The calciosamarskite is black en masse, brownish and isotropic in thin grains or sections under the microscope. Other properties are: powder, brownish gray; cleavage none; fracture irregular; lustre submetallic. Hardness 6.5. Sp. Gr. = 4.485. It occurs occasionally as rough, square prisms up to ½ inch in diameter by an inch in length. It is often associated with thucholite and cyrtolite-phosphate intergrowths. Usually it occurs in feldspar near or with clusters of biotite.

The material selected for analysis was the best available, but was slightly contaminated by thucholite and cyrtolite-phosphate.

The deficiency in the summation of the analysis is largely due to the presence of carbon (from thucholite) which was not determined. The carbon also rendered it impossible to determine UO_2 and FeO with certainty. The very low lead ratio compared with that of unraninite[1] from the same dike (0.15) was so startling that several determinations were made all of which yielded practically the same result, the latest and most careful work yielding merely a trifle less lead and slightly more uranium than the earlier determinations.

The proper classification of this mineral is somewhat uncertain but it seems to be rather closely related to a mineral[2] from Hybla described by the writer as a variety of samarskite, under the name calciosamarskite.

[1] *Am. Journ. Science*, Vol. IX, February, 1925.

[2] A Mineral related to Samarskite from the Woodcox Mine, Hybla, Ontario. This Journal, preceding article.

CALCIOSAMARSKITE FROM PARRY SOUND, ONTARIO

	Per Cent	Mol. Wt.	Bases	Acids
PbO	0.38	222	0.0017	
(Pb=0.35)				
[1]UO_2 Not determined perhaps about	10.0	270.2	0.0370	
[1]UO_3 Not determined perhaps about	3.06	286.2		0.0107
(U=11.35=13.38 U_3O_8)	13.38			
ThO_2	2.16	264	0.0082	
(Th=1.90×0.38=0.72U equiv.)				
$(Ce, La, Di)_2O_3$	4.04	330	0.0123	
$(Yt, Er)_2O_3$	10.71	250	0.0428	
[1]FeO, Fe_2O_3	3.01	159.7	0.0188	
MnO	0.23	70.9	0.0032	
Al_2O_3	0.65	102.2	0.0063	
BeO	0.49	25.1	0.0296	
CaO	4.76	56	0.0850	
MgO	0.14	40.3	0.0034	
ZrO_2	0.24	122.6		0.0019
SnO_2	0.48	150.7		0.0032
TiO_2	1.43	80.1		0.0178
Ta_2O_5	4.86	443		0.0110
Cb_2O_5	43.50	266.2		0.1634
SiO_2	1.92	60.3		0.0318
H_2O–110°	0.68			
H_2O+110°	5.76		0.2483	0.2398
He, etc. alkalies—not determined				
C.....Present	98.82			
Sp. Gr.=4.485 at 24.00°				
Pb/U+0.38 Th=0.03				

[1] UO_2, UO_3, and FeO not determinable because of the presence of carbon from thucholite.

Dr. Wherry, who has very kindly given the writer the benefit of his opinion on this point, thinks that both are related to samarskite especially if the ratios of the various oxides are compared separately with those of the North Carolina samarskite. The writer, while agreeing that they are of the samarskite type, believes that the high CaO content of these two minerals (from Parry Sound and Hybla) represents a definite variation from the usual samarskite which might well be recognized by the adoption of the name *calciosamarskite* for minerals of this composition.