

might be a part of the illite mineral.<sup>1</sup> Possibly the illite in the Ste. Genevieve shale may contain the uranium as well as the vanadium.

Further field and laboratory work on the occurrence, mineralogy, and origin of the radioactive minerals is being carried on under the direction of the authors.

#### SYNTHESIS OF UVAROVITE

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During the course of an investigation of pure compounds for use in ceramic fields, the synthesis of three garnets of the general formula  $3\text{CaO} \cdot \text{R}_2\text{O}_3 \cdot 3\text{SiO}_2$  was attempted by dry reaction using chemically pure oxides as follows:

	Grossularite	Andradite	Uvarovite
	%	%	%
CaO	37.3	33.0	33.5
Al <sub>2</sub> O <sub>3</sub>	22.7	—	—
Fe <sub>2</sub> O <sub>3</sub>	—	31.5	—
Cr <sub>2</sub> O <sub>3</sub>	—	—	30.6
SiO <sub>2</sub>	40.0	35.5	35.9

##### 1. Grossularite

This mineral cannot be formed by dry reaction at atmospheric pressure. Extended heat treatments (150 hours) at 835, 1000, 1155, and 1240° C. all failed to produce grossularite, the principal reaction products being pseudowollastonite and anorthite. A glass of the grossularite composition yielded only pseudowollastonite and anorthite when devitrified. These results were to be expected in view of the previous work of H. S. Yoder (1), who emphasized the hydrothermal nature of the mineral.

##### 2. Andradite

Extended heat treatments at 1105, 1200, and 1400° C. at atmospheric pressure failed to produce the mineral. The principal phase present was pseudowollastonite.

##### 3. Uvarovite

The synthesis of pure  $3\text{CaO} \cdot \text{Cr}_2\text{O}_3 \cdot 3\text{SiO}_2$  was achieved as low as 855° C. by holding for 150 hours. A 100 hour treatment at 1200° C. and a short duration run at 1400° C. also produced uvarovite. The x-ray data obtained by the use of a Norelco spectrometer ( $\text{CuK}\alpha = 1.537 \text{ kX}$ ) are presented below:

<sup>1</sup> Fischer, Richard P., Vanadium deposits of Colorado and Utah: *U. S. Geol. Survey, Bull.* 936-P, 377 (1942).

<i>Natural Uvarovite</i> <i>Jacksonville, Calif.</i>		<i>Synthetic Uvarovite</i> 1400° C., 2 hrs.	
<i>d</i>	<i>I/I<sub>0</sub></i>	<i>d</i>	<i>I/I<sub>0</sub></i>
7.42	.1		
7.12	.2		
5.08	.23		
4.68	.34		
4.61	.27		
4.56	.26		
4.45	.26		
4.41	.26		
4.22	.26	4.20	.25
4.08	.19	4.14	.27
3.82	.14		
3.77	.14		
3.71	.13		
3.57	.2	3.20	.12
3.54	.17	3.18	.11
2.99	.53	2.96	.63
2.84	.14		
2.68	1.00	2.65	1.00
2.56	.16		
2.55	.16		
2.51	.14		
2.45	.76	2.43	.59
2.36	.25	2.33	.11
2.19	.23	2.17	.08
1.94	.35	1.96	.03
1.90	.2	1.93	.21
1.66	.37	1.66	.24
1.62	.18		
1.60	.98	1.60	.69
1.34	.28	1.34	.04
1.31	.31	1.31	.07
1.28	.22		

The natural uvarovite was carefully selected from a 1"×2" specimen supplied by Hatfield Goudey of Yerington, Nevada. The linear thermal expansion coefficient of the synthetic product was found to be  $85 \times 10^{-7}$  cm/cm/° C. in the range 25 to 1000° C.

After heating to 1490° C. for one hour, the fine-grained synthetic green uvarovite changed to a coarse-grained gray-black material; x-ray and microscopic examination showed that the synthetic uvarovite had dissociated to pseudowollastonite and Cr<sub>2</sub>O<sub>3</sub>.

#### REFERENCE

1. YODER, HATTEN S., JR., Stability relationships of grossularite, presented at the twenty-eighth annual meeting of the Mineralogical Society of America at Ottawa, Canada, December 29-31, 1947. Abstracted in *Am. Mineral.*, **33**, March-April (1948).

INTERNATIONAL UNION OF CRYSTALLOGRAPHY  
SECOND INTERNATIONAL CONGRESS AND GENERAL ASSEMBLY 1951

The Executive Committee of the International Union of Crystallography has accepted an invitation from the Swedish National Committee to hold the Second International Congress on Crystallography and the Second General Assembly of the Union in Stockholm from 27 June to 3 July 1951. These dates have been chosen in consultation with the Swedish National Committee and with the National Committees of all the countries which adhere to the Union. It is hoped that this early notice will make it possible for those interested in crystallography and its related fields to arrange to attend. Further information can be obtained from the General Secretary of the Union, Dr. R. C. Evans, Cavendish Laboratory, Cambridge, England.

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Dr. Howard T. Evans who was in charge of the X-ray Diffraction Division of the Laboratory for Insulation Research at the Massachusetts Institute of Technology has joined the staff of the Philips Laboratories, Irvington-on-Hudson, New York. His work will be in the field of application of x-ray crystallography to the study of the physics of solids.

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Norman Davidson, a geochemist of the U. S. Geological Survey, died December 31, 1949. He joined the staff as preparator in 1942. He continued his evening studies at George Washington University and was promoted to junior chemist. Successive promotions followed and in July 1949 he was sent to Denver as Head of the Investigations Section Analytical Laboratory.

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Robert C. Vance, a long time employee of Ward's Natural Science Establishment, passed away in his sleep January 19, at Pittsford, N. Y.

Mr. Vance had been employed at Ward's Natural Science Establishment for 33 years, and was head of the mineral department from 1934 until the time of his retirement in November 1947.

He was a Fellow and Life Member of the Rochester Academy of Science and had served as Chairman of the Mineralogical Section of the Academy from 1936 to 1946. He was also a Fellow of the Society for Research on Meteorites, and a member of the Mineralogical Society of America, The Mineralogical Society of Great Britain and Ireland, The Walker Mineral Club of Toronto, and the Rocks and Minerals Association.

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On January 1, 1950, the activities of the American Society for X-Ray and Electron Diffraction and the Crystallographic Society of America were officially ended, and a new society, the *American Crystallographic Association*, came into existence. This new society will carry on the activities of both the old ones. According to the aims stated in its new Constitution, "The object of this Society shall be to promote the study of the arrangement of atoms in matter, its causes, its nature and its consequences, and of the tools and methods used in such studies." The charter members of the new society totaling 496, have elected the officers for the first year, as follows: *President*, I. Fankuchen, Polytechnic Institute of Brooklyn; *Vice-President*, R. W. G. Wyckoff, National Institute of Health; *Secretary*, H. T. Evans, Jr., Philips Laboratories, Inc.; *Treasurer*, J. Karle, Naval Research Laboratories. Meetings will be held twice yearly, and the first one is scheduled for April 10-12 to be held at Pennsylvania State College. Further information concerning the American Crystallo-

graphic Association may be obtained from the Secretary, Dr. Howard T. Evans, Jr., Philips Laboratories, Inc., Irvington-on-Hudson, N. Y.

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The Spring Meeting of the Society for Experimental Stress Analysis will be held at the Hotel Statler, Cleveland, Ohio, on May 25th, 26th, and 27th, 1950. Inquiries should be addressed to the Society for Experimental Stress Analysis, P.O. Box 168, Cambridge 39, Massachusetts.

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#### Errata

The lazulite-scorzalite isomorphous series

W. T. Pecora and J. J. Fahey

Vol. 35, page 5, table 2: in analysis number 3,  $\text{TiO}_2=0.20$  should read 0.22; in analysis number 4, total=100.94 should read 100.40; in analysis number 6, add  $\text{ZnO}=0.17$ .

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#### Correction

In vol. 34, November-December, 1949, on page 838, lines 11 and 12, "a spectrographic analysis by K. J. Murata showed aluminum present in tenths of one per cent and calcium, zinc, and magnesium in hundredths," should have been written, "a spectrographic analysis by K. J. Murata showed Ti and Mg to be present in concentrations greater than 5 per cent, Fe between 1 and 5 per cent, Al and Mn in tenths of one per cent, Ca, Si, V, Zr, and Cb in hundredths of one per cent, and Cr and Sn in the thousandths."

Our sincere apologies to K. J. Murata.

(Signed) Joseph Murdoch  
Joseph J. Fahey