

FRIENDS OF MINERALOGY

Pennsylvania Chapter

Vol. 12, No. 3, September, 1984

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PRESIDENT'S MESSAGE

Now the summer has ended, and I sincerely hope everyone has had a good one. I found my summer very enjoyable, with some fine field trips, including one to Iceland with Dr. Raymond Grant, formerly of Lafayette College.

Now is the time to plan for our annual Pennsylvania Chapter Fall Symposium, which will be held the second weekend (note the date changes) of November, on the 9th, 10th, and 11th, at West Chester State University. You will find the program and a registration blank (a motel list is available if you need one) on the back page of this issue of the Newsletter.

All Chapter members are urged to attend the Symposium and join in the short annual meeting before the auction, which will benefit our publications and the Memorial Fund. Plan to bring some friends, whom we'll invite to join right there at the registration table, where books on Pennsylvania mineralogy are also available. George Buchanan, Symposium Chairman, has assembled a fine list of speakers and a program, following the format so successful in other years, which should interest everyone.

Remember to bring your extra specimens for the giveaway tables set up during the informal get-together on Friday night, as well as some good donations for the auction, and news of your area for the "What's New in Pennsylvania," session, after the Workshops. See you there!

Donald Schmerling

ANNOUNCEMENT

The Friends of Mineralogy Board has instituted an annual award for the best mineralogical paper, by a student, dealing with the goals of the association. The award will include expense money toward a trip to the Tucson Show in 1985, where the winner will present his/her paper at the Friends of Mineralogy-Mineralogical Society of America Symposium. For further information, write: Dr. Peter J. Modreski, V.P., Friends of Mineralogy, U.S. Geological Survey, Mail Stop 922, Box 25406 Denver Federal Center, Denver, CO 80225.

NOTICE

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MEMBERSHIP INFORMATION

Dues: Send \$5.00 (\$3.00 for members over 62) for 1984 dues to F.M., Pa. Chapter, c/o Marge and Vince Matula, 2110 Weaversville Rd., Allentown, PA 18103.

New Members: Peter R. Frorer, 307 Elm Ave., Swarthmore, PA 19081

New Address: Lawrence Usselman, 309 Conestoga Way, Apt. E 47, Norristown, PA 19408.

NOTES, NEWS, AND VIEWSWinter Open House Days at Bryn Mawr College

About seventeen hundred minerals, on display in the halls and mineralogy classroom of the Geology Department at Bryn Mawr College, will be on view during several "Open House" days this winter. Juliet C. Reed, Assistant to the Curator of Minerals, Professor Maria L. Crawford, will host the informal get-togethers in the Science Center on Old Gulph Road, Bryn Mawr, on three Sundays: January 20, February 10, and March 3, from 11 a.m. to 5 p.m. each day. Bring a brown bag lunch if you wish, or enjoy a cup of coffee or tea while socializing with collectors from around the Delaware Valley, more distant Pennsylvania hometowns, and nearby states.

A new exhibit featuring Pennsylvania publications and minerals is planned, and updating of the old fluorescent exhibit is a current project. Write (Dept. of Geology, Bryn Mawr College, Bryn Mawr, PA 19010) or call Mrs. Reed (215-688-6180, evenings), if you would like more information, or to arrange to bring a sizeable group (the facilities are limited). Bring your "Show and Tell" specimens, including micromounts (a microscope will be provided, or bring your own). You may browse through the halls, or join an informal tour of the Department during the day.

Upcoming M.S.P. Publication

The Mineralogical Society of Pennsylvania is co-sponsoring, with Jay Lininger, a new publication authored by F. Harold Evans on Highlights of the Life of Charles Wheatley, a noted figure in Pennsylvania mining. Allen V. Heyl, Ph.D., has contributed a Foreword and Appendix, which include an updated mineral list for the Phoenixville Lead-Zinc District. Evans and Heyl collaborated on a 1980 volume on the history of copper mining in Montgomery County, Pennsylvania, also sponsored, designed, and typeset by Jay Lininger and his wife, Paula. Publication date of the new volume will be announced by M.S.P. (and in this Newsletter).

A Member's Request

Dr. Daniel Hall, a Pa. Chapter member from Ohio, has written to the Board of Directors to request a re-print of Samuel Gordon's Mineralogy of Pennsylvania (1922), since he's been searching for a copy for three years.

Editor's Note

The following "Letter to the Editor" reflects the opinion of a member of the Pa. Chapter, but is his own, not necessarily reflecting that of either the Editor, the Board of Directors, or the membership of this Chapter of the Friends of Mineralogy. Other opinions are welcome, in the hope that an exchange of ideas will promote the goals of the Chapter, to promote Pennsylvania mineralogy.

NOTES, NEWS, AND VIEWS (cont'd)Letter To The Editor

"Amateur mineral collector, hobbyist (rockhound), or professional mineralogist: it's one man's opinion that there is a difference! Amateurs and hobbyists are grouped together by professional mineralogists. I believe that this does not help the situation.

"Hobbyist and amateurs are both practitioners, but one of the differences is that the hobbyist fails to interact with a professional counterpart, or lacks the interest to pursue the study of minerals. They simply like to see pretty rocks, large crystals, pleasing color, or money value. The amateur collector tries hard to interact with professional people and learn all he can about minerals, as he collects them primarily for scientific value.

"Before I go on, I believe that there is nothing wrong in being a hobbyist (I hope that this letter offends no one). There are plenty of places for everyone to collect. I also see no reason that all mineral collectors cannot do this together. The reasons for this letter is to enlighten the professionals to the fact that they should separate the two categories, so they can establish some kind of relationship with both. I'm not naive enough to believe we can build bridges between the professional and amateur (it's been tried for many years and has failed, in my opinion). I just want some understanding between the two, and more opportunities for rockhounds to become amateurs.

"One cause of disenchantment for the amateur mineralogist is the disparagement of amateurs by some professionals. Amateurs are treated as second class citizens who are excluded from significant finds until the area is no longer collectable. Conversely, the amateur is expected to turn over any new locations or minerals to the professionals. Disparagement also appears in the failure of some professionals to acknowledge in print the contributions made by particular amateurs. The most serious difficulty is having nowhere to go to have a specimen identified. Let us hope that Dr. Fainberg's new enterprise with infrared spectroscopy can help to solve this problem somewhat.

"An irksome form of belittlement is the arrogance of some Ph.D.'s toward the amateurs who try to publish. Warm relations could have a valuable payoff, as was the case when we had Dr. Lapham and Dr. Montgomery working with the amateur and hobbyist. At present, we only have several out-of-state people, who are unable to help much because of the distance involved.

"I can only hope that this situation changes in the future. Most young people start as amateurs, but quickly end up as hobbyists. The main reason is that there are no club members able to lead them. The only clubs in which amateurs outnumber the hobbyist, in my opinion, are the micromounter organizations.

"The Friends of Mineralogy Pennsylvania Chapter, in the beginning was a club that was going to bridge the gap between the amateur and the professional. Recently, for whatever reasons, the hobbyist group in F.M. appears to me to outnumber the amateurs and professionals put together. One can only hope that through F.M. projects the hobbyist may become an amateur. I think that many professionals still feel that there is no difference, and no matter how hard I, or anyone else, tries, it is hard to change people who have their minds set. That's sad!

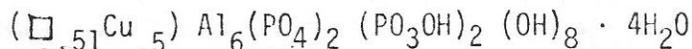
Martin Anné

TURQUOISE FROM GENERAL TRIMBLE S MINECHESTER COUNTY, PENNSYLVANIA

Editor's Note: The following letter, read at the 1983 Fall Symposium of the Friends of Mineralogy, Pennsylvania Chapter, is used with the permission of Maria Luisa Crawford, Chairman of the Department of Geology and Curator of the mineral collections of Bryn Mawr College, and Juliet C. Reed, Assistant Curator.

"Eugene E. Foord, Allen V. Heyl, and Joseph E. Taggart, of the U.S. Geological Survey in Denver, would like to report to you, who so kindly loaned us several specimens from the Rand Collection for study, on several unusual phosphate minerals from General Trimble's Mine, East Whiteland Township, Chester County, Pennsylvania. The minerals include cation-deficient turquoise and 'Lucin-type' variscite, as well as other minerals still being studied by the writers. The turquoise is the mineral from General Trimble's Mine described as coeruleolactite by Genth (1875, p. B 143), based on the original description (Petersen, 1871).

"The original type coeruleolactite from Germany is isostructural with turquoise, but the former is a mineral of distinct composition, with calcium as the main A-site cation. It is pale blue in color, because it contains about 1% of CuO. Physically, it closely resembles the 'coeruleolactite' of Genth (1875, p. B 143), as referred to by Gordon (1922, p. 138). However, the General Trimble's Mine mineral, when analyzed by J.E. Taggart and E.E. Foord, contained no calcium whatsoever. The calculated chemical formula is:



wherein the rectangle indicates about a 50% deficiency in Cu (plus a little Zn), with 4.25 to 4.58% CuO+ ZnO, as compared to 8 or 9% CuO in cation-full turquoise, such as the crystals from Lynch Station, Virginia (Schaller, 1912, p. 35-40).

"Analyses of General Trimble's Mine cation-deficient turquoise ('coeruleolactite') and Lynch Station, Virginia, cation-full turquoise follow in Table I (page 6). The lower specific gravity of the turquoise from General Trimble's Mine is the result of only half as much copper (and zinc) in this newly defined variety as in normal cation-full turquoise, such as that which is found at Lynch Station. Turquoise is a hydrated basic copper phosphate with aluminum and ferrous-ferric iron. Most analyses of turquoise are close to the aluminum end of the series (Palache and others, 1951, p. 949). Most turquoises in these analyses contain 7.40% to 9.78% CuO. However, some turquoises contain less CuO, and this data suggests that perhaps a full series exists from CuO cation-full turquoise to the cation-deficient turquoise such as that found at General Trimble's Mine.

"The cation-deficient turquoise from General Trimble's Mine varies in color from sky blue or greenish-blue to a very pale blue, suggesting some variation in the copper content. The luster is vitreous, while the streak is white and the hardness is 5, which is slightly less than that of most cation-full turquoise. Some of the encrustations in which the mineral appears are botryoidal, but more commonly they are seen, when enlarged under the scanning electron microscope, to be aggregates of 4-10 micron triclinic crystals of a parallel, tabular, wedge-shaped habit. The mineral is generally translucent, but some magnified crystals appear transparent. This is one of several localities where turquoise is found as crystals, but none seen so far are large enough for single-crystal measurements. The mineral fractures in a hackly to uneven manner (no cleavage was observed). Under polarizing light, the mineral has a 2V that is nearly uniaxial, and it is optically plus. The indices for turquoise (Larsen, 1921, p. 21) are: $O = 1.580 \pm 0.005$ and $E = 1.588 \pm 0.005$.

TURQUOISE FROM GENERAL TRIMBLE'S MINE (cont'd)

"Six-step spectrographic analysis by Nancy M. Conklin (U.S.G.S.) was completed for the copper-deficient sky blue turquoise from Pennsylvania, and is summarized in Table II (Page 6).

"In addition, the General Trimble's Mine copper-deficient turquoise was analyzed by X-ray diffraction using a copper tube, Phillips diffractometer. The principal lines of this turquoise are compared to that from Lynch Station, Virginia, in Table III (p. 7)

"The turquoise at General Trimble's Mine is closely associated with 'Lucin-type' variscite, containing no Ca or Cu, which is found as creamy buff-white to pure white masses, showing a conchoidal fracture. Variscite is a hydrated phosphate of aluminum and iron, $(Al,Fe)(PO_4) \cdot 2H_2O$. It is orthorhombic, but all the variscite in the specimens that we have observed from General Trimble's Mine is massive and without any distinctive structure or texture, even when magnified by the scanning electron microscope. The hardness is 4.5 and the specific gravity measures from 2.2 to 2.53. The luster is vitreous to slightly waxy and the streak is white. The variscite is translucent in thin fragments, and the indices are as follows: $n_{Xa} = 1.56$; $n_{Yc} = 1.58$; $n_{Zb} = 1.59$.

"A chemical analysis by Schaller (1916) on 'Lucin-type' variscite follows in Table IV (page 7). The X-ray diffraction pattern of the variscite, made using a copper tube and Phillips generator was analyzed by E.E. Foord (1983). Six main lines are given in Table V (page 7), compared with those from a Spanish specimen (Salvador and Fayos, 1972, p. 38-39).

"The variscite masses are intimately intergrown with turquoise and some radiating crystals of white wavellite, a few pearly white flakes of matulaite, and traces of limonite. Some samples contain small, round, buff-colored, smooth-surfaced, mammary-botryoidal masses of buff to light gray gibbsite. The allophane reported by Gordon (1922, p. 128) was not found by the writers in the Rand Collection specimens. However, two or three years ago, Martin Anné and Bryon Brookmyer found small quantities of golden yellow cacoenite in radiating, microscopic, needlelike crystals, shining with a vitreous luster. In addition, when visiting the site of General Trimble's Mine in 1982, with Bryon Brookmyer, A.V. Heyl found a specimen of pale blue, fibrous, cuprian wavellite.

"The large quantities of goethite and limonite at the deposit suggest that continued searching in the fields near the deposit (always with the owner's permission, so that collecting will not interfere with his crops) will lead to the discovery of other phosphate minerals, such as strengite, rockbridgeite, dufrenite, chalcocyanite, beraunite, or even bauxite. Almost certainly, not all of the minerals at General Trimble's Mine have been found or identified as yet, and now that the fields near the old shafts are accessible at times, this old locality provides a fertile opportunity to search for such minerals.

"For your convenience, the above references are enclosed (page 8)."

Allen V. Heyl, Geologist, U.S.G.S.

Eugene E. Foord, Geologist, U.S.G.S.

Joseph E. Taggart, Chemist, U.S.G.S.

TURQUOISE FROM GENERAL TRIMBLE'S MINE (cont'd)

TABLE I: Chemical Analysis

<p>'Coeruleolactite' (Genth, 1875, p. B 143), General Trimble's Mine ^{1/}</p>	<p>Copper deficient turquoise ('Coeruleolactite,' Rand Coll. #8521, Bryn Mawr College), General Trimble's Mine (Foord and Taggart, 1982)^{2/}</p>	<p>Cation-full turquoise crystals, Lynch Station, Schaller (1912, p. 35-40) ^{3/}</p>
ZnO not deter.	0.66 wt %	.00%
CuO 4.25%	3.92	9.00
CaO not deter.	none	not deter.
FeO not deter.	none	not deter.
Fe ₂ O ₃ not deter.	none	1.34
MnO not deter.	none	not deter.
Insol. 0.54%	--	not deter.
Al ₂ O ₃ 38.27%	38.2	36.50
P ₂ O ₅ 36.31%	36.4	34.13
H ₂ O (total) 21.7%	21.2	20.12
<hr/>	<hr/>	<hr/>
Total 101.07%	100.38	99.96
Sum of CuO and ZnO = 4.25%	Sum of CuO and ZnO = 4.55%	Sum of CuO and ZnO = 9.00%
 ^{1/} Wet chemical analysis; water determined in closed tube.	 ^{2/} Analyzed by a combination of induction coupled plasma analysis (ICP) and micro-coulometric moisture analysis for water. Written commun. by Foord to A. Kato, 1982	 ^{3/} Wet chemical analysis; water determined in closed tube.
Specific Gravity= 2.69	Specific Gravity=2.55-2.59	Specific Gravity = 2.84

TABLE II: Spectrographic Analysis of Trimble's Mine Turquoise (N.M. Conklin, Analyst)

	<u>%Percent</u>		<u>ppm</u>
Fe	0.07	Mn	50
Mg	0.003	Ba	1500
Ca	0.005	Cu	0
Ti	0.0015	Cr	15
Si	0.03	Ni	none
Al	7.0	Sn	none
Na	trace	V	15
K	none	Y	20
P	major	Zr	none
Cu	3.0		
Zn	0.30		

TURQUOISE FROM GENERAL TRIMBLE'S MINE (cont'd)TABLE III: X-ray Diffraction Analysis of Turquoise

Copper deficient turquoise,
General Trimble's Mine, Pa.,
by E.E. Foord, 1983; seven
main lines

Copper-full turquoise,
Lynch Station, Va.
(Erd and others, 1953, p. 964-972)

d	I	d	I
3.68	100	3.68	100
2.90	60	2.91	80
3.30	40	3.28	70
6.00	25	6.02	60
6.72	20	6.73	50
4.75	10	4.80	60
2.07	10	2.07	50

TABLE IV: Chemical Analysis of Lucin-Type Variscite (Schaller, 1916)

	Percent
CaO	--
Al ₂ O ₃	32.40
F ₂ O ₃	0.06
Cr ₂ O ₃	0.18
P ₂ O ₅	44.73
H ₂ O	22.68
V ₂ O ₃	0.32
Total	100.37

TABLE V: X-ray Diffraction Analysis of Variscite

Lucin-type variscite, powder pattern,
General Trimble's Mine, Pa., six
main lines, analysis by E.E. Foord,
1983, using copper tube and Philipps
diffractometer.

Lucin-type variscite, Palazuelo de las
Cuevas, Spain, powder pattern, six main
lines, from Salvador and Fayos, 1972, p.
38-39.

d	I	d	I
3.0	100	3.041	100
4.2	70	4.26	65
5.2	60	5.356	72
2.8	60	2.87	39
4.6	40	4.810	30
3.83	30	3.904	28

TURQUOISE FROM GENERAL TRIMBLE'S MINE (cont'd)REFERENCES

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PENNSYLVANIA MINERALS IN THE SMITHSONIAN INSTITUTION EXHIBITS

If you go to Washington, D.C. this year, you will surely plan to see the mineral exhibits in the National Museum of Natural History of the Smithsonian Institution. Martin Anné noted that there are 1,643 Pennsylvania mineral specimens in the reference collection, representing 146 species. For our information, he lists the Pennsylvania minerals in the exhibit, by case and number, species, and location.

- Feldspar, sp. (M-07), Mineral Hill, Delaware Co.
 Chalcopyrite (M-11), French Creek Mines, Chester Co.
 Chalcopyrite (M-13), French Creek Mines
 Pyrite (M-13), French Creek Mines
 Goethite (M-17), Mud Lake, Lancaster Co.
 Brucite (M-17, 2 specimens), Wood's Mine, Lancaster Co.
 Anglesite (M-21), Phoenixville District, Chester Co.
 Pyromorphite (M-22), Phoenixville District
 Titanite (M-23), Bridgewater (Co.?)
 Almandine (M-23), Delaware Co.
 Quartz, var. amethyst (M-31), Upper Providence Township, Delaware Co.
 Clinocllore (M-32), Wood's Mine, Lancaster Co.
 "Deweylite" mixture, (M-32), Wood's Mine
 Clinocllore, var. kammererite (M-32), Wood's Mine
 Clinocllore, var. penninite (M-32), Wood's Mine
 Orthoclase, var. adularia (M-33), Poorhouse Quarry, Chester Co.

FRIENDS OF MINERALOGY, PENNSYLVANIA CHAPTER

FALL SYMPOSIUM

West Chester State University

Nov. 9, 10, and 11, 1984

Friday, Nov. 9, in Schmucker Hall, on Church Street

7 p.m. to 10 p.m. Social Hour (Refreshments, "Show and Tell," Freebies)

7 p.m. to 8:30 p.m. Workshops

"Researching Mineral Localities," with Jay Lininger

"Mineral Photography," with George Buchanan.

"Methods of Mineral Identification," with Seymour Greenberg, Ph.D.

8:30 p.m.

"What's New in Pennsylvania Minerals," with Martin Anné, Bryon Brookmyer, and Donald Schmerling.

Saturday, Nov. 10, at New Main Hall, on High Street.

8 a.m. to 8:45 a.m. Registration

9 a.m. "Stratigraphic Correlation of Mineral Occurrences in the Ridge and Valley Province," by John W. Way, Ph.D., Pennsylvania Geological Survey.

10:30 a.m. "Delaware County's Obscure Localities," by Roger Mitchell.

11:30 a.m. to 12:30 p.m. Lunch, on your own, at the College cafeteria, or at a local eatery.

1 p.m. "Easton Serpentine Localities," by William Lorah.

2 p.m. "Delaware County Pegmatites," by Joseph Peters, American Museum of Natural History.

3 p.m. Chapter Meeting and Auction of Donated Specimens.

6 p.m. Banquet and Speaker: John G. Green, Ph.D., University of Connecticut, on "Researching Early Mineralogy."

Sunday, Nov. 11 Field Trip: to be announced.

Fall Symposium: Nov. 9, 10, and 11, 1984

<u>Post-marked before October 28, 1984</u>	<u>#</u>	<u>@</u>	<u>Totals</u>	<u>Door</u>
Members and Friends	_____	@ \$3.00	= _____	\$4.00
Additional Family Members	_____	@ \$2.00	+ _____	\$3.00
Senior Citizens or Students	_____	@ \$2.00	= _____	\$2.50
Banquet	_____	@ \$12.50	= _____	

Send check or money order, made out to F.M., Pa. Chapter, to Henry Decker, 532 Vista Rd., Ambler, PA 19002.

Name and Address: _____

Send self-addressed envelope for motel list or receipt.