



FRIENDS OF MINERALOGY

Pennsylvania Chapter

NEWSLETTER

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VICE-PRESIDENT'S MESSAGE

Editorializing is not one of my strong points, so what follows is an editorial of necessity.

Recently, George Buchanan had to resign as President and member-at-large because of very important family commitments. I, for one, am going to miss his efforts. He did an excellent job as Chapter President, as well as Fall Symposium chairman, exhibiting much concern regarding the future of the organization. He has assured me that he will rejoin in the future. George had been planning to step down after the Fall symposium, so an unofficial talent search to fill the office had been underway. Finding good people to occupy the office is difficult. The "privilege" of serving is usually far outweighed by the grunt work required to hold it all together and the diplomacy needed to deal with unfair criticism.

Rock and mineral organizations in Pennsylvania seem to me to be suffering from a malaise or downslide in recent years. I've heard a lot of theories on why this is happening. Ideas range from the suggestion that there are too many clubs for the number of hobbyists to the lack of good collecting sites and lack of stimulus and incentive for new collectors to fill the ranks.

This worries me, in regard to the well being of the Pennsylvania Chapter F.M. In the past, our Chapter has been the bright spot of F.M. in the East. We have many notable achievements to show for our efforts over fifteen years. We have one of the longest-running mineral symposia of all the Chapters, presenting programs that are informative and unique, not available to the advanced collector in any other circumstances. We've published several books, important mineralogical contributions which would not be available today if it were not for our efforts. We have sponsored numerous Spring Field Conferences, which have provided learning experiences, as well as good collecting trips. Our Newsletter publishes original research on Pennsylvania mineralogy, abstracted in the worldwide Mineralogical Abstracts, as well as reporting news from other sources.

Yet, in recent years, Fall Symposium attendance has slipped, and field trip interest has waned. We've lost the participation of a number of Pennsylvania collecting "heavyweights." This saddens me, and I fear that we are beginning to lose an association of people which has been pretty special.

I have felt that our chapter of F.M. has been a torchbearer for Pennsylvania mineral tradition. Last week, I was in Philadelphia and had some free time to make a visit to the Academy of Natural Sciences. They now have a small gem and crystal room, and on display is the original mineral cabinet of Adam Seybert, dating from 1823. This is said to be the first organized mineral collection in the United States, certainly underscoring the our great historical heritage.

I yearn to see some life and interest pumped back into the Chapter. This means that more people need to be involved to help it recover. More input and ideas, and perhaps basic changes, are needed. It would be sad to see it die of mediocrity. Perhaps some time needs to be set aside at the Fall Symposium business meeting to discuss Chapter direction. Relay your comments and suggestions to me at any time, to pass on to the Board of Directors and the membership. Your participation is vital.

We are attempting some changes in this year's format for the Fall Symposium at West Chester University, November 6, 7, and 8. We will retain the popular "What's New in Pennsylvania," and the Social Hour on Friday night, and on Saturday present an excellent slate of speakers on the unique mineralogy, geology, and history of the anthracite coal region of Pennsylvania, as well as the Auction and a short business meeting. However, a

VICE-PRESIDENT'S MESSAGE (cont'd)

Saturday noon luncheon, on campus, with an entertaining speaker, will, we hope, be more attractive and practical for the membership and friends than an evening banquet. New this year, as well, will be a Swap on Sunday at a West Chester park location. With the help of F.M. members, Roger Mitchell and I are ironing out the numerous details and are preparing an interesting and detailed brochure and registration form to be mailed early in the Fall.

A good turnout for the Symposium would be a first step in turning our Chapter around. Please, if you've dropped the Symposium from your list of fall events in recent years, or are a newcomer to the Chapter, do come, and encourage others to come, as well.

In addition, let your voice be heard in helping to steer our organization back to the enthusiasm of earlier days.

Jay Lininger
R.D. #3, Ridge Road
Dillsburg, PA 17019

MEMBERSHIP INFORMATION

- DUES:** Send \$7.00 (\$4.00 for members over 62) for 1987 dues, as soon as possible, to F.M., Pa. Chapter, c/o Marge and Vince Matula, 2118 Weaversville Rd., Allentown, POA 18103.
- ADDRESS CHANGE:** Dr. Charles B. Sclar, Dept. of Geological Sciences, Williams Hall #31, Lehigh University, Bethlehem University, PA 18015.
- DEATH:** Hilde Seel, 86, widow of Paul Seel, died suddenly on Sunday, August 18, 1987. A memorial service is planned for September, and a tribute will appear in the Fall Newsletter.
- EDITOR:** Juliet C. Reed, 336 Rockland Rd., Wayne, PA 19087.

AN EXAMINATION OF GALENA FROM THE
PEQUEA SILVER MINE, LANCASTER COUNTY, PENNSYLVANIA

As part of a larger study of silver and bismuth-bearing galenas and Pb-Bi-Ag sulfosalts, several samples of galena from the Pequea Silver Mine, Conestoga Township, Lancaster County, Pennsylvania, were examined in detail by a variety of techniques. Two samples of galena collected by Allen U. Heyl in 1963 were analyzed chemically by semiquantitative and quantitative emission spectrography. One of these two samples was also analyzed by electron microprobe. The spectrographic results are given in Table I.

Electron microprobe analysis (average of 13 points) of sample no AVH-63-z yielded the following composition (wt. %): S, 13.6; Pb, 84.2; Bi, 1.35; Ag, 0.75; total 99.98. A structural formula calculated on the basis of 1 sulfur atom is: $(\text{Pb}_{0.96}\text{Bi}_{0.015}\text{Ag}_{0.016})_{\Sigma}$

0.995 . This galena shows the expected coupled substitution $2\text{Pb} \rightarrow \text{Ag}^{1+} + \text{Bi}^{3+}$. Other elements looked for and not detected were: Sb, Fe, Te, Zn, and Cu. The results for Ag and Bi contents agree closely (see Table I) with those determined by quantitative emission spectrography on sample AVH-63-B.

Single-crystal precession camera and Gandolfi camera XRD studies showed only galena to be present. The probe work also indicated the composition to be nearly homogeneous throughout the sample examined. Since the electron probe results agree very closely with the quantitative emission spectrographic results, this also indicates a high degree of long-range homogeneity.

The quantitative emission spectrographic and electron microprobe results for silver (228

GALENA FROM THE PEQUEA SILVER (cont'd)

to 223 oz./ton) are similar to the average value of 275 ounces/ton Ag reported by Genth, 1875, in Smith, 1977 (Zinc and Lead Occurrences in Pennsylvania, Pa. Geological Survey, 4th Series, Min. Resource Rept). If other analytical results reported in Smith (1977) are correct, then galena with more and less silver and bismuth occurs at the Pequea mine.

The two samples are pure galena despite the elevated silver and bismuth contents. Silver-bismuth sulfosalts such as matildite were looked for, but not found. Thus, the galena from the Pequea mine is somewhat unusual in its chemical composition compared to pure galena (PbS). It is interesting to note the presence of Te, Se, and TI and the absence of Sb. The Te and Se are substituting for the S and the TI substitutes for the Pb. Galenas from several other ore deposits (in Colorado, Nevada, and California) have been examined in detail and found to contain as much as 2-3 wt. % Ag and 4 to 6 wt. % Bi. Studies of these galenas and coexisting Pb-Bi-Ag-Cu-Hg sulfosalts will be presented in two papers submitted to Canadian Mineralogist.

TABLE I

Analyses for two galena samples from the Pequa Mine, Lancaster County, Pennsylvania.

Element	AUH-63-8	AUH-63-Z
Si	700 ppm	10 ppm
Fe	70	NI0
Mg	<10	<10
Ca	30	NI0
Ag	7,600+	>20,000
As	<20*	4*
Au	<0.8*	<0.2*
Bi	16,000+	>20,000
Cd	100 (20+)	150 (100+)
Cu	15	2
Hg	H*	H*
Mo	7	N5
P	20*	7*
Pb	Major	Major
Sb	NI00 (<4*)	NI00 (100*)
Se	200+	700*
Sn	7	7
Te	120*	200*
TI	400*	100*
Zn	40*	1*

Notes: H, interference; *, values from special chalcophile element determination by quantitative emission spectrography (C. Heropoulos, U.S.G.S., analyst); + - values from quantitative 6-step emission spectrography (N.M. Conklin, U.S.G.S., analyst). All other elements not detected at respective limits of determination.

Gene Foord
1252 Quaker St.
Golden, CO 80401

ELBAITE: A PENNSYLVANIA MINERALOGICAL MYSTERY

Elbaite, a lithium tourmaline, has been reported several times in the Pennsylvania mineralogical literature, but the whereabouts of an actual specimen or any identification data remains a mystery which collectors and curators may be able to solve.

A remarkable new book, The Tourmaline Group, by Richard U. Dietrich (Van Nostrand, New York) of Central Michigan University, presents 300 pages of data on these often beautiful and ever complicated minerals. Some of this information is included in Dietrich's 1985 article on "The Tourmaline Group, a Resume" in the "Tourmaline" issue of the Mineralogical Record (1984 vol. 16, no. 5, p. 339-351). According to Dietrich, the characteristic color of elbaite is pink or green, but it may be colorless, red, orange, yellow, blue violet, white, black, brown, and commonly zoned. As a distinct species, elbaite must be unique in its cell dimensions, while its structure fits the Tourmaline Group structure within the Trigonal Sub-System of the Hexagonal System. The formula is given (Dietrich, 1985, The Tourmaline Group, p. 345) as $\text{Na}(\text{Al},\text{Li})_3\text{Al}_6\text{B}_3\text{Si}_6\text{O}_{27}(\text{O},\text{OH})_3(\text{OH},\text{F})$.

Elbaite and liddicoatite, of all the tourmalines, are the only species which have lithium as part of its "ideal" formula. According to the Pennsylvania species lists available to this date, if elbaite were verified as a Pennsylvania mineral, it would be the first lithium mineral for the state. Arnold Fainberg pointed out (p.c., 1987) the inclusion of Bushkill, Northampton County, Pennsylvania, as an elbaite location mentioned in the Dietrich book (page 235). Backtracking the reference would be time consuming, considering the 1888 titles in the bibliography, so a look at the easily accessible Pennsylvania literature would seem to be the easiest way to find the elusive elbaite.

Samuel Gordon's 1922 volume, The Mineralogy of Pennsylvania, now out-of-print, continues to be an essential in the Pennsylvania collector's library. Sure enough, on page 98, there is an analysis of a tourmaline which must be from Dietrich's "Bushkill" locality, "Devil's Oven, Bushkill Creek, west of Easton, Northampton County." "Analysis D" shows a "trace" of lithium in a Bushkill sample, in contrast to the 2.39% shown in #3, "hypothetical analysis for an ideal elbaite." ("Chemical Analyses," Dietrich, 1985, The Tourmaline Group, Table 4-3, p. 72) and less than 25% Al in contrast to 48.82% in Dietrich's ideal sample. Calcium is also present in the Bushkill specimen, as in the other lithium tourmaline, liddicoatite, and the necessary sodium.

More recent references to Pennsylvania "elbaite" may be found in Lapham and Gray's Geology and Origin of the Triassic Magnetic Deposit and Diabase at Cornwall, Pa. (1973, Pa. Geological Survey, 4th Series, Min. Resource Rpt.) and in the earlier editions of Mineral Collecting in Pennsylvania (Lapham, D.M. and Geyer, A., Pa. Geological Survey, Gen. Geology Rept. 33). In the extensive 1968 report on the Cornwall Mine there is no discussion or verification of an elbaite occurrence. In the 4th Edition of G33 (1976), Geyer, Smith, and Barnes placed a (?) after any species for which they could not find verification. They refer (p. 167) to a tourmaline species at Cornwall as "Elbaite (?) (tourmaline group): rare; microscopic; associated with ferriferous orthoclase in pink "blue conglomerate." Referring to the earlier literature, in what appears to be the most recent reference to elbaite at Cornwall, Heyl included the mineral on his list for the locality (p. 43), in the "Appendix" to Evans' (1984) volume on The Life of Charles M. Wheatley.

What we need now are samples of the Bushkill and Cornwall "elbaites," or other likely candidates from localities mentioned in Gordon's Mineralogy of Pennsylvania (1922), so that modern methods may be applied, as well as the present knowledge of the complicated re of the Tourmaline Group. Arnold Fainberg, a retired chemist and collector of Pennsylvania minerals, relates (p.c., 1987) that he has had considerable success with identifying the various tourmaline species, using infra-red spectroscopy techniques. He invites anyone who thinks they may have Pennsylvania "elbaite" to send him (at 598 N. Prince Frederick St., King of Prussia, PA 19406) a milligram ("a crumb") sample. Other volunteers will be needed to pursue corroborating evidence. Such a sample may be found in a specimen from the late John Eyerman's collection, since Gordon's reference for "Analysis D" is from Eyerman's arti

With these clues, a Pennsylvania mineral collector may be able to solve the mystery of elbaite.

Juliet C. Reed
336 Rockland Rd.
Wayne, PA 19087