

FRIENDS OF MINERALOGY

REGION 3

FM

see edition

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FRIENDS of MINERALOGY
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FM Sponsored Field Trip: VALLEY AND RIDGE STRUCTURE AND STRATIGRAPHY -
SUSQUEHANNA AND JUNIATA VALLEYS

The trip will introduce basic geologic information which will serve as useful background to mineral collectors. This is not a mineral collecting trip.

DATE: Saturday, October 26 at 8:00 A.M. sharp. Leaving from parking lot of Penn Harris Motor Lodge, Camp Hill, off Route 15.

COST: \$2 - includes transportation and lunch. (A reference guide book will be available on day of trip at additional cost of \$2.50 (optional).)

WHO: Limited to 12 FM members only picked at random from all responses by Dr. Davis M. Lapham.

DEADLINE: Friday, October 4. LEADERS: R.B. Wells, R.C. Smith, J.H. Way

GEAR: Bring hard hat, hammer, field boots and foul weather gear.



VALLEY AND RIDGE FM FIELD TRIP

Mail to: Dr. Davis M. Lapham
 RD # 1
 New Cumberland, Pa. 17070

NAME _____

ADDRESS _____

PHONE # _____

Part 2,

Tin at Zerbe, Schuylkill County: As part of his studies in fuel science at Penn State, James Vivian O'Gorman (1971) examined the mineral matter and trace elements in some North American coals. The low temperature ash from one of his anthracite samples from the Buck Mountain seam in the southern anthracite field at Zerbe (Zerbe is one half mile north of Newtown) was found to contain 4,250 ppm (0.425%) Sn (tin) or about 100 times the normal amount of tin in the earth's crust and nearly 1,000 times the mean amount in anthracite (D.M.Lapham, personal communication). Other channel samples representing the top 7 inches and bottom 16 inches of the Buck Mountain seam were found to contain 0.1 to 0.4% SnO_2 in the ash. Ash from the middle 25 inches of the coal seam, however, contains only about 0.05% SnO_2 . The average ash content of Buck Mountain anthracite was found to be 15%, but the range is 8 to 34%. There is no apparent correlation between tin and ash content.

O'Gorman was not only satisfied with knowing that parts of the anthracite seam are very rich in Sn. He also attempted to determine how the Sn occurs and what other minerals compose the ash. Unlike the ash from coal fires in which the minerals have been destroyed, O'Gorman used a special low temperature ashing procedure in which low pressure oxygen was activated by a high energy electromagnetic field from a radio frequency oscillator. With coal, this analytical procedure yielded maximum temperatures of about 160°C (320°F) which had little effect on even pyrite and clay minerals.

O'Gorman found that the Sn is concentrated in the heavy mineral fraction in the coal. Higher-temperature (600°C or 1112°F) ash from this heavy mineral fraction yielded some of the more intense X-ray diffraction lines for cassiterite. Because this sample was reconstituted during ashing and because the X-ray data are incomplete, Zerbe should not be considered a valid location for the mineral cassiterite at the present time.

Crystals of SnO_2 and three tin sulfides have been found on the Forestville burning culm piles approximately 3.7 miles northeast of Zerbe (Finkelman and others, 1974). The banks at Forestville probably contain waste derived from the Buck Mountain, as well as other seams. This suggests that the tin content of the Buck Mountain seam may be high elsewhere in the Minersville quadrangle, or that other seams in the Llewellyn and Pottsville formations may have a high con-

tent of tin in this area. The most appropriate source rock for tin, termed a greisen, is not known to occur in Pennsylvania. Until such hydrothermally-altered granitic rocks containing cassiterite, topaz, fluorite, lepidolite, muscovite, tourmaline, molybdenite, or wolframite are found, the source rock and origin of the tin will remain problematic. It is difficult to imagine either placer cassiterite entering a coal-forming swamp or plants in one swamp being able to concentrate tin more efficiently than similar plants in a nearby swamp.

Rather complete analyses by O'Gorman for major, minor, and trace elements show that the ashed Zerbe anthracite samples also contain 3.3% TiO_2 (titania). This rather high TiO_2 content was confirmed by semi-quantitative X-ray diffraction which showed that the ash contains 1-10% rutile. With other techniques, such as infrared analysis, O'Gorman showed that the Sn-bearing, low-temperature ash contains well-crystallized, authigenic (formed during or after deposition of original sediment) kaolinite, illite, pyrite, calcite, rutile, and quartz.

Zerbe is in the Minersville 7-1/2' quadrangle, for which geologic map GQ-690 (Wood and others, 1968) is available from the U.S. Geological Survey, 1200 S. Eads Street, Arlington, Virginia 22202, for \$1.00. The Buck Mountain coal seam is indicated on this map by the letters bm. This seam occurs about 1 mile northwest of Zerbe where it is drained by the headwaters of Swatara Creek and Gebbard Run. Panning or sluicing for cassiterite (S.G.7) and rutile (S.G.4.2) released from the coal by weathering might be successful in Swatara Creek from one-half to one and one-half miles northwest of Zerbe.

References

- Finkelman, R. B., Lapham, D. M., Barnes, J. H., and Downey, W. F., Jr. (1974), Observations on minerals from burning anthracite seams and culm in Pennsylvania, Geol. Soc. America Abstracts with Programs, v.5, p.27-28.
- O'Gorman, J. V. (1971), Studies on mineral matter and trace elements in North American coals, unpublished Ph.D. Thesis, Pennsylvania State University, University Park, Pennsylvania.
- Wood, G. H., Trexler, J. P., and Yelenosky, Andy (1968), Geologic map of the Minersville quadrangle, Schuylkill County, Pennsylvania, U. S. Geol. Survey GQ 690.

GEOLOGICAL LITERATURE FOR THE MINERAL COLLECTOR

Mineral collectors are becoming more sophisticated, both in their knowledge of minerals and in their exploration for minerals. In the last newsletter, B. C. Smith II suggested to collectors that they turn to the literature to find possible new mineral localities. To compliment that approach, some of the variety of sources of geologic information are presented here.

A free pamphlet published by the Pa. Geological Survey containing a list of publications on the geology of Pennsylvania issued by the Survey, the U.S. Geological Survey, and the U.S. Bureau of Mines is available from the Bureau of Publications, 10th & Market St., Harrisburg, 17120. This list covers an extremely wide range of geologic topics throughout the entire state. As this publication is so readily available, it would be one of the best places to start a literature search. Once the area or topic has been determined, the next place to turn to is the library.

The most accessible libraries with the greatest amount of recent geologic information are in the colleges and universities offering degree programs in geology. Older information, including out of print material, not found in these libraries is available for use at the Pa. Survey. Through inter-library loan, most libraries are very helpful in obtaining books and articles that are not available.

The next point to consider is just what types of information are available and, more specifically, what will interest the mineral collector. In addition to the many popular reports (e.g. Rocks & Minerals and club newsletters), that the collector is familiar with, the available geologic literature can be divided into five major categories: theses, professional journals, professional reports, maps, and non-published data. Each of these will be discussed briefly and succeeding articles will expand on these areas.

Several undergraduate (e.g. Allegheny, Bryn Mawr, Dickinson, Franklin & Marshall Colleges) and nearly all graduate programs in colleges and universities requires a student in a degree program in geology to do original research, which upon completion, is compiled into what is normally termed a thesis. Usually, these theses are not published and remain within that institution's library. Sometimes information based on thesis work is later published, thus receiving somewhat wider distribution; however, potentially useful data may remain unnoticed within dusty bindings. Often these theses are available through inter-library loan, but some schools prohibit loans. Nearly all recent Ph.D. theses and many M.S. and M.A. theses are available on microfilm or printed copies made from microfilm through University

Microfilms, Ann Arbor, Michigan. A list of theses dealing with Pennsylvania geology (1898-1970) from colleges and universities within the state has been compiled by the Survey's librarian, Mrs. Sandy Blust, and is available for use at the Survey.

The list of professional journals in geology stretches on and on; however, the direct value of these to the mineral collector attempting to locate specimens is limited, especially with respect to Pennsylvania geology. For those interested in the more generalized aspects throughout the entire range of specialization in geology, several journals are available that are non-technical. However, for this discussion, journals are the least helpful sources for Pennsylvanian localities.

Included under professional reports are bulletins, folios, circulars, investigations, atlases, papers and field guides. In other words, published information such as is produced by the U.S.G.S., U.S.B.M., Pa. Survey, and Penn State, comprises the major contributions to this category. It is this portion of the literature which will prove to be the most helpful to the collector. An entire article for a future newsletter will deal specifically with this category and how best to go about finding useful data.

Maps accompany most professional reports and could have been included above; however, some maps are published with little or no explanatory text. The understanding and use of topographic and geologic maps can become tools as important as the hammer and chisel to the collector, for without this understanding, data dug out of the literature will be of little use. This also will be the topic of a future newsletter article.

Non-published data includes information that has been written down and kept on open file within many agencies; that is, information that anyone can see and use, but that is not available in formal "take out" form. To this category could be added the data in the notes and heads of professional researchers working in a specific area: geology professors, consulting geologists, survey geologists to name a few groups. There are not too many professionals who are unwilling to take the time to help the serious collector. Get to know the professional geologists in your area and use them as a source of information. Much new can be gained, including a possible friendship.

In conclusion, several varied sources of informational literature have been briefly discussed that the collector can use freely and frequently. Ultimately, a better knowledge of the subject promotes better results for the collector. In addition, the collector himself becomes a very valuable source of information, especially for the professional. The useful exchange of information is mutually beneficial to all.

J.H.Way, Jr.

FRIENDS OF MINERALOGY, REGION 3

REGION 3, HIGHLIGHTS:

Region 3 officers and committee chairmen met during the months of July and August to make plans for the Pennsylvania Mineral Symposium to be held on November 1, 2 and 3, 1974 at Lafayette College.

Dr. Robert Smith, Treasurer reports that he has started to reimburse Gordon's share holders alphabetically. Those who are in need can request repayment by contacting Robert Smith.

"Gordon's Minerals of Pennsylvania" is still available at \$5.50 per copy. You can also order "The Minerals of Pennsylvania" (1922-1965) by Dr. Arthur Montgomery at \$5.00 per copy from Martin Anne', 509 Maple Avenue, Wrightsville, Pa. 17368. A set of these books will make a fine birthday or Christmas gift.

Col. Thomas Myers, Historian, and Julius Weber, Natural History Museum, New York, have been very busy in putting together the educational slide program for F/M Region 3. The premiere showing will be at the symposium in November.

The printing of the William W. Jefferis manuscript is underway. The first printing will be available for purchase at the November symposium. The Jefferis mineral collection went to the Carnegie Museum, Pittsburgh, Pa. in 1905. Later the notes and miscellaneous papers including the unpublished manuscript written by Jefferis in longhand went to Carnegie Museum. Friends of Mineralogy, Region 3 are indebted to Dr. M. Graham Netting, Director of Carnegie Museum of Natural History in Pittsburgh, for permission to reproduce the Jefferis' manuscript in facsimile.

Dr. Robert Smith, II is the author of "Clues to Mineral Occurrences from the Geological Literature" as it appears in the Region 3 Newsletter. A series of articles will be published. On completion we hope to put it all together in booklet form. Dr. Smith's second article appears in this Newsletter.

CORRECTIONS AND ADDITIONS TO THE CLUB LISTING

Correction: Mineralogical Society of Pennsylvania

Editor: Lawrence G. Heinrich

142 Paoli Pike, Malvern, Pa. 19355

Additions: NEW CLUBS

Chester County Rock Hounds

President; J. Murter

Box 88 Kirk Rd., Boothwyn, Pa. 19061

Mineralogical Society of Northeastern Pennsylvania

President; Walter Kakareka

Moscow, Pa., 18444

Please note -- if there are any additions, corrections or changes in the Club listing, please send information to the F/M Editor.

MINERAL NOTES AND NEWS

Glen Mills, Pa.- Some fine micro zircon and alandite crystals can be found in the lower levels of the quarry. Excellent stilbite and heulandite are showing on the upper levels.

SYMPOSIUM 1974 SYMPOSIUM

Friends of Mineralogy, Region 3 will hold their 2nd annual Symposium at Lafayette College, Easton, Pa. on Nov. 1, 2 and 3, 1974. The '74 Symposium theme will be "Igneous Rocks in Pennsylvania", followed by various topics of general interest. The Symposium will start Friday, Nov. 1, with registration from 7:00 to 8:30 p.m. A talk on using a geological map to locate minerals at 8:30 p.m. followed by social hour. Registrations can be made Saturday morning from 8:00 to 9:00 a.m. The lectures will begin Saturday morning at 9:00 a.m. and continue throughout the day. There will be morning and afternoon coffee breaks. Lunch and dinner can be purchased at the campus cafeteria. Please note on registration form if you plan to have lunch, dinner or both on campus. Saturday evening beginning at 6:30 p.m. there will be mineral identification (microscope and x-ray) with experts available to assist you with identification. A mineral auction will be held, micro mounting and the swapping of Pennsylvania minerals. A field trip is planned for Sunday morning to a C. K. Williams type of serpentine quarry in the Easton area, giving all those who participate a fine opportunity to collect some fine mineral specimens. We urge everyone who plans to attend the symposium to pre-register as soon as possible. Pre-registration must be made before October 26 to take advantage of the reduced rates. Help us to prepare the program by registering early.

The Symposium will be held in Van Wickle Hall at Lafayette College. The closest motels and hotels are:

Holiday Inn, route 22 in Bethlehem (about 10 miles)	
Holiday Inn, route 22 in Phillipsburg, N.J.) about 5
Howard Johnson, route 22 in Phillipsburg, N.J.)	miles
Hotel Easton in Easton	

There are several other motels on route 22 in Allentown. Camping is not readily available in the area. The nearest campgrounds are west of Allentown or at Delaware Water Gap and in both cases are over 20 miles away. There will be space provided to a limited extent in a campus parking lot for persons with self-contained camping vehicles. Please let Dr. Montgomery know ahead of time if you want to camp overnight on the campus.

EDUCATIONAL SLIDE PROGRAM

The slide program will be a part of the Educational Program sponsored by F/M Region 3. These slides after cataloging and programing will be made available to clubs, schools and colleges within the region.

"State Mineralogies - Pennsylvania an Example" by Dr. Raymond Grant will be published in four parts in the F/M Newsletter. The articles will cover state mineralogies. These range from very scientific complete surveys to very sketchy and inaccurate lists. The purpose of these articles will be to review the historical aspects of Pennsylvania mineralogies and to outline some of the current activities and problems. Also, the value of state mineralogies will be discussed.

Your Newsletter editor is still looking for articles to publish, let's hear from you.