

MNCA Website dcmicrominerals.org
The Mineral Mite



Vol. 48 – No. 1 **Washington D.C. – A Journal for Micromineralogists** **January 2015**

January 28 Time: 7:30 p.m. – 10 p.m.

Long Branch Nature Center, 625 S. Carlin Springs Rd. Arlington, VA 22204

Program: Foote Lithium Mine at Kings Mountain, North Carolina

By Dave Fryauff, Vice President

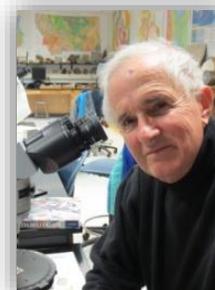
Dave Fryauff will present micromineral collecting from the Foote Lithium Mine at Kings Mountain, Cleveland County, North Carolina. Thanks to the guidance of Jason Smith, I enjoyed a good day of collecting in the Foote Mine "east dump" and came away with a back pack of mostly oxidized spodumene-rich pegmatite. Further cleaning & examination of this rock yielded a surprisingly good representation of the phosphate minerals that this mine has become famous for. I have micros mounted for microscopy & outstanding photos from Mindat & Jason Smith (JBS) who is the source of virtually all the mineral photos from the Foote Mine. Article page 9-10



President's Message:

By: Dave MacLean

At the NVMC Christmas gift exchange I brought an oversize thumbnail mineral in a wrapped jewelry box labeled mineral and three micro upper Michigan minerals in a small baggy wrapped in Xmas paper marked micro. The oversize thumbnail was picked up and the micros left behind. Were the micros left behind because of lack of interest or because they were not in a prettily wrapped jewelry box.

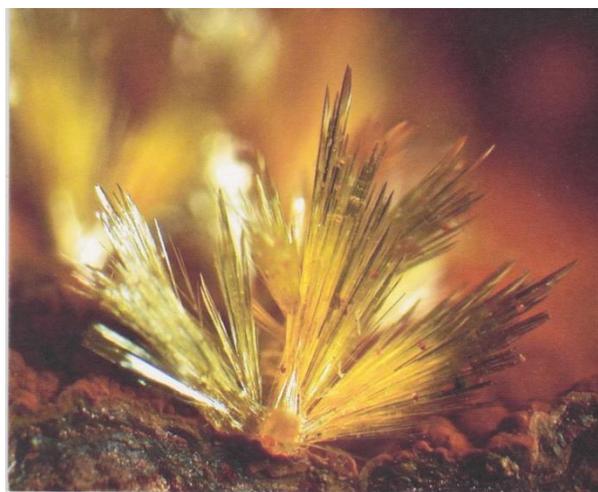


Our demos at the NVMC and GLMSMC shows drew a steady stream of children and adults. However very few pursue their curiosity further and do more in microminerals. Do the public consider our microscopes too high tech or expensive? Can we demo what persons can see with a 10X loupe which is inexpensive, available, and easily portable? At the NVMC show we did sell out Jim Kostka's loupes. 95% of my looking is through a 10X loupe especially in field collecting.

Photo of the Month

Legrandite Ojuela Mine, Mapimi, Mun. de Mapimi, Durango, Mexico field of view: 2.67 mm

Robert Rothenberg photomicrographer



Previous Meeting Minutes: 12/15/14

By: George Reimherr, Secretary

The occasion was a joint Christmas/Holiday party with the Northern Virginia Mineral Club, during which each of the two clubs held a brief business meeting. About 36 persons were present from the two clubs. Club president Dave MacLean opened the micromounters business meeting at 7:50 p.m. The only item for discussion was the election of club officers for the year 2015. The club officers from 2014 were unanimously re-elected by the club members. The business meeting concluded at about 7:53 p.m.



2015 MNCA officer election results:

- President – Dave MacLean
- Vice President – Dave Fryauff
- Treasurer – Michael Pabst
- Secretary – George Reimherr

Previous Program Reviewed 12/15/14

By: George Reimherr, Secretary

Christmas/Holiday party with the Northern Virginia Mineral Club *photos courtesy Kathy Hrechka*



The "Crystallography Tree" was originally designed by Cynthia Payne, and is used each year for our club member micromineral gift exchange.



Pucherite and Schumacherite

By Michael Pabst, Treasurer

We continue our exploration of vanadium-containing minerals by considering Pucherite and Schumacherite, which are two bismuth vanadate minerals. They were discovered at the Pucher Shaft, Wolfgang Maaßen Mine field, Schneeberg District, Erzgebirge, Saxony, Germany about 1871. Even today, they are still fairly rare minerals. There are nice pictures of Pucherite on Mindat (www.mindat.org) from one location in Australia (Wombat Hole [charming name!], Morass Creek gorge, Benambra, Victoria) and from two locations in Germany. All the photos of Schumacherite on Mindat are from the Pucher shaft.



Pucherite, Pucher Shaft, Wolfgang Maaßen Mine field, Schneeberg District, Erzgebirge, Saxony, Germany. Field of view = 2 mm.

Pucherite is one of three polymorphs of bismuth vanadate, $\text{Bi}(\text{VO}_4)$, the other polymorphs being Clinobisvanite and Dreyerite. At first glance in dim light, Pucherite looks like brown Vanadinite, lead vanadate, $\text{Pb}_5(\text{VO}_4)_3\text{Cl}$. When brightly lit with halogen light, the brown color becomes more reddish brown, as shown in the picture below. However, Vanadinite forms true hexagonal prisms or barrels (hexagonal dipyramidal $6/m$), whereas Pucherite is orthorhombic dipyramidal (mmm), and forms crystals with a variety of symmetrical blocky shapes. Because bismuth and lead are neighbors in the periodic table of elements, it is not surprising that their vanadates show some similarities.

Vanadates (containing the vanadate anion $(\text{VO}_4)^{3-}$) hold vanadium in its highest 5+ oxidation state. Vanadate compounds are typically orange, red, or brown. This contrasts with the vanadyl ion $(\text{VO})^{2+}$ that holds vanadium in the 4+ oxidation state, and which is blue or green, as we saw in Cavansite or Sincosite in previous articles.



Vanadinite, Jack Frost Mine, Magdalena, Socorro County, New Mexico

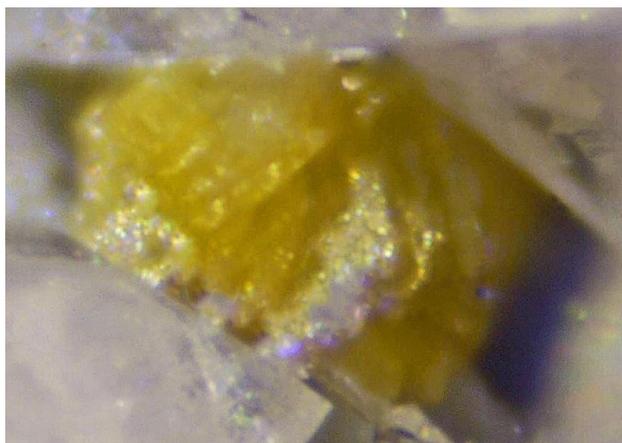
Continued on page 4

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Schumacherite is an oxidized form of bismuth vanadate, $\text{Bi}_3(\text{VO}_4)_2\text{O}(\text{OH})$. Schumacherite is triclinic, although distinct crystals are rare, and crusts are more common. The Pucher Shaft also contains phosphate and arsenate analogs of Schumacherite, namely;

Petitjeanite, $\text{Bi}_3(\text{PO}_4)_2\text{O}(\text{OH})$, and
Preisingerite, $\text{Bi}_3(\text{AsO}_4)_2\text{O}(\text{OH})$.

Schumacherite and its cousins are all bright yellow. They are usually found as crusts, and they all look about the same. With imagination, I believe that I can distinguish individual crystals of Schumacherite in the crystal cluster on my specimen below. On Mindat, there are a few photos showing individual crystals and crystal clusters of Schumacherite, where less imagination is needed than with my photo.



Schumacherite, Pucher Shaft, Wolfgang Maaßen Mine field, Schneeberg District, Erzgebirge, Saxony, Germany. Field of view = 1 mm.

Bismuth vanadate is a trendy material. Powdered bismuth vanadate is the new preferred yellow pigment, because of its brilliant yellow color, permanence, and low toxicity. Bismuth vanadate is less toxic than cadmium sulfide pigments; and it does not darken on exposure to light like lead chromate-sulfate. It resists weathering, and exposure to acids, alkalis, and solvents.



Synthetic Bismuth Yellow pigment (Bismuth Vanadate) from Anhui Elite Industrial Co., Ltd., Hefei, Anhui, China, which sells for approximately \$40 per kilogram.

Bismuth vanadate, doped with various metal ions like tungsten, is also in the scientific news as a catalyst that can use sunlight to reduce water to hydrogen. The hydrogen can later be burned in a fuel cell to produce energy. This approach represents an alternative to a photo-voltaic cell and a battery to generate and store energy from the sun. Research on bismuth vanadate and sunlight is currently being carried out at James Madison University and at many other universities.

**Field Trip: James Madison University
with Dr. Lance E. Kearns,
Featuring the JMU Mineral Museum
Saturday, February 14, 2015 9am - ?**

By Tom Tucker

Note from Mike Pabst: Dear Members of MNCA, Here is information from Tom Tucker about our upcoming visit to James Madison University. Please let me know if you will attend; email me at (michaeljpabst@yahoo.com). We would like to have a good estimate of how many people are coming by Thursday, February 12. (But don't worry if you find at the last minute that you either can, or cannot, come. We don't want anyone to suffer anxiety. Just give me your best guess about attending.) Michael

Dr. Lance Kearns, professor of Mineralogy at James Madison University in Harrisonburg, Virginia, has again invited our Clubs, Northern Virginia Mineral Club, Mineralogical Society of the District of Columbia, and the Micromineralogists of the National Capital Area, to visit his laboratories and Mineral Museum, on Saturday, 14 February, 2015. This event continues a courtesy and tradition Lance began a couple of decades ago, when he invited the Micromineralogists to his labs, and it has now expanded to I think five weekends and seven or more Clubs from the region.

The finest mineral museum in Virginia has been assembled over the years by Lance and his many supporters. Perhaps a thousand quality specimens are displayed in a series of about 15 standing wall cases and center islands, and a small alcove which provides a dark area for a spectacular fluorescent mineral exhibition. You will not find a finer mineral display in the region.

Pete Chin is found here admiring some of the minerals, because they are not found in Hawaii.



Dr. Lance Kearns, Fred Stohl, John Ebner, Cynthia Payne

In the labs, Lance will be able to answer your mineralogical questions. Using various analytical techniques he has offered to attempt to identify any unknowns you bring along. Here's your chance to get that ugly black smudge from locality X identified, as best we can. If we have specimens too small for conventional analysis, after lunch we will probably go across campus, and work with the Scanning Electron Microscope and x-ray spectrometer. Bring your little unknowns and they may get identified. A rice-grain sized fragment will be sufficient for an x-ray diffraction analysis. For lunch we will probably all go out to a local restaurant, and then visit the SEM facilities in the afternoon.

If you are unsure about wanting to attend, talk with other Club members who have been to the labs in previous years, and you will be convinced that this is something not to be missed.

Lance will have an array of various mineral specimens that have been donated for sale at this gathering. They will be displayed on various counter tops, for your selection and appropriate donation. They will either be priced very reasonably, or will be there for you to make a significant contribution. These aren't "giveaways" - they're here for you to acquire for a fair donation. Don't be CHEAP!! There will also be a large selection of pertinent geology and mineralogy books (priced at half or less of the cheapest you can find on The Web!). There will be a large selection of micromounts for the Micromounters to peruse and select. There are plenty of student microscopes in the lab for all of us to use - treat them as you would your own.

Driving directions on page 6

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Driving Directions to JMU:

To reach the geology labs at JMU, it's about a 2½ hour drive from the Beltway. Take I-66 west 65 miles to the junction with I-81, and go left or south on I-81, toward Roanoke for about 55 miles. At exit 245, leave the interstate and go right on Port Republic Road. Go almost a mile to High Street, and turn right. Go north on High Street about a half mile to Historic Cantrell Avenue (now named Martin Luther King Way), and turn left into the campus parking area, at Memorial Hall. Being Saturday, parking permits will not be required. To find the geology department laboratories in Memorial Hall, just follow the signs. When you get to the right area, the laboratory we're in should be obvious.

We usually "pass the hat" to make appropriate donations for the mineralogy department activities, and to reimburse Lance for his getting breakfast rolls and coffee for us. For Lance to know how many to expect, please email Mike Pabst (michaeljpabst@yahoo.com) and let him know that you are coming. We would like to get a head count to Lance by Thursday, February 12th.

I have had a "preview" of some of the new material that Lance will have for our selection. This year there will be a MULTITUDE of nice micromounts, from at least three donated collections. Be prepared to look at a lot of material if you'd like to acquire new specimens for your collection. Remember, please make a reasonable donation for the specimens you select - it all goes to support the Mineral Museum, and student activities, such as their field trips to Franklin, NJ and the Rochester Symposium.

There are a slew of geology and mineralogy books - some great deals!! There will also be 30 or more flats of larger specimens, donated by a number of Museum supporters - most of whom you would know. If you have appropriate material, Lance is always looking for more donations of specimens for this activity.

I'll see you all on Saturday, February 14.

Tom Tucker



The Mineral Mite



GeoWord of the Day and its definition:

Bergeron-Findeisen process *Precipitation formation in cold clouds whereby ice crystals grow at the expense of supercooled water droplets in response to differences in vapor pressure relative to water and ice surfaces. Also known as the ice-crystal process.*

All terms and definitions come from the [Glossary of Geology, 5th Edition Revised](#).

GeoWord of the Day is brought to you by: Thermo Scientific! Check them out at thermoscientific.com.

Go to www.agiweb.org/word to subscribe or unsubscribe from GeoWord of the day.



Ice crystals on the windshield of my car rental in Wisconsin on December 29; 4 degrees Fahrenheit

Photo by Kathy Hrechka while visiting family

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The Mineral Mite Archived 1967- 2014

By Kathy Hrechka, Editor/Historian

Our webmaster, Julia Hrechka has completed the digital scanning of all volumes of *The Mineral Mite* since 1967. She hand scanned many of the early year editions, due to the frailty of the paper. The majority were scanned through a duplex scanner provided by Jim Kostka. The process has been a lengthy undertaking, due to the fact that Julia is in college. Each break, she has been working on the project. Newsletters which did not scan properly, also had to be hand scanned. Julia's attention to detail provided our club with a great finished product.



Note: Julia found no newsletters for the following months:

March 2008, June 2009, Oct. Nov. Dec. 2009, March, April, May, June 2010.

If you have any of the listed copies, please lend them to me for scanning into the archived collection.

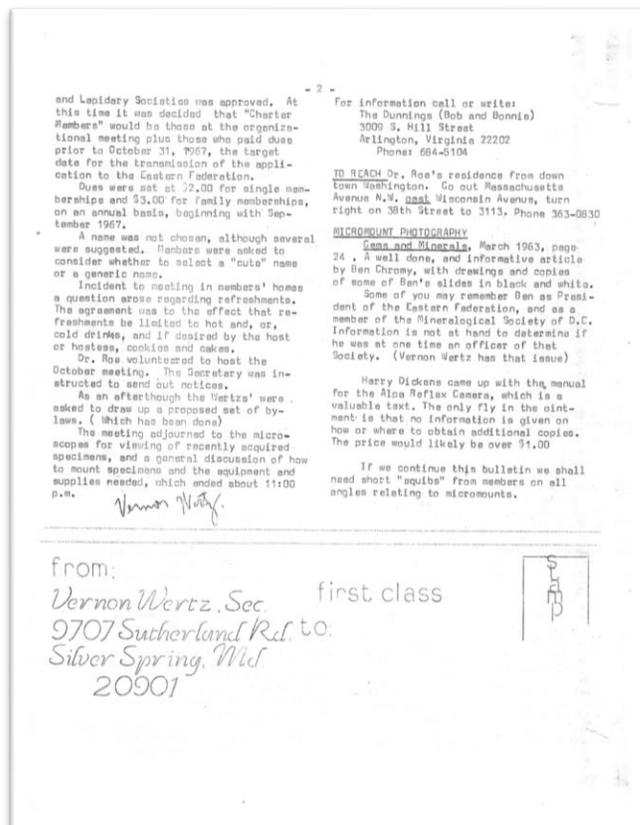
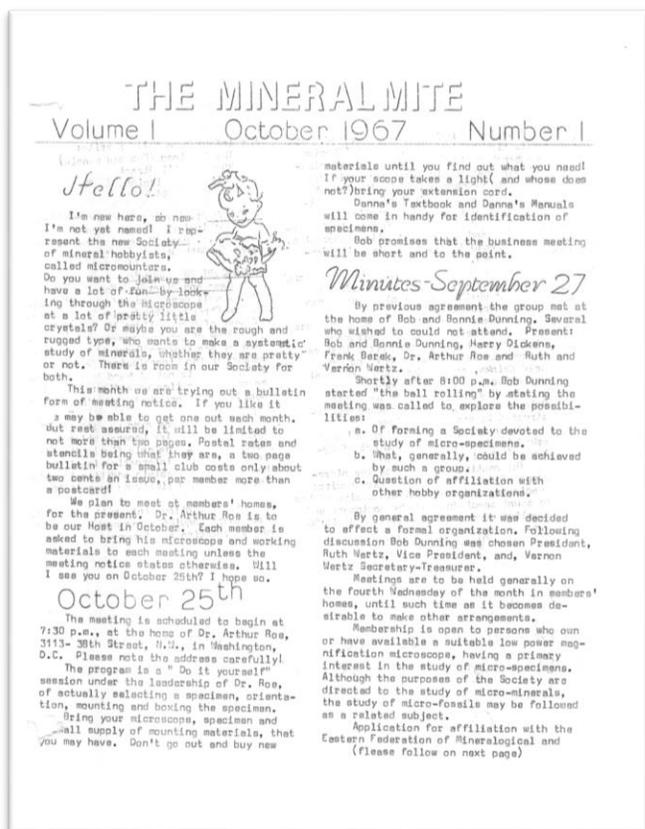
The digital collection of newsletters are stored in a file on my computer, in Google Drive, and on a flashdrive. If you would like a copy of the digital collection, simply supply me with a 8 gb flashdrive.

I have also acquired Cynthia Paynes newsletter collection, which is a paper copy back up to my original newsletter collection. Both collections are stored in my home office for safe keeping.

Scan of the first *Mineral Mite* October 1967 Vol I Dr. Arthur Row was first host in Washington DC

Notice: No club name yet.

Vernon Wertz, secretary, treasurer, and editor.





Atlantic Micromounters Conference

Submitted & Recalled by George Reimherr;
Members are listed Left to Right

**Field Trip to Rockville Quarry
March 28, 1999**

Can you find yourself in the photo?

George Loud, Barbara Sky, Roy Grim, Bruce Gaber, Roger Barnett, Cathy Gaber, Fred Schaefermeyer K.C. Foster, ? , Andy Dietz, Leonard Morgan, Fred Parker, Bob Meny, Georgia Olmstead, Tom Tucker, Steve Weinberger, Dave MacLean, Jim Edwards, Carolyn Weinberger, Jon Ertman, Mary Edwards, Jennie Smith, and Paul Smith

Rochester Mineralogical Symposium

April 23-26, 2015 Rochester, NY 14623

Greetings!

Well, it's a new year, and all going well, the **RMS Micromounters' Playroom** will open on April 23rd. If you'd like a seat, please let me know as soon as possible. There are only 21 seats available, so it's first come, first served.

Cheers, Quintin Wight <qwight@sympatico.ca>

Preliminary Speaker Roster April 23-26, 2015

- *Tony Albini- Connecticut Pegmatites
- *Carl Francis - Maine Gem and Mineral Museum
- *Peter Lyckberg - The Malmberget Mine, Sweden
- *Kim Tait - TBA
- *Peter Lyckberg - TBA
- *Ray MacDougall - Into the Andes: Quiruvilca, Peru
- *Herwig Pelckmans - Minerals of Belgium
- *Alex Schauss - TBA
- *Jeff Scovil - What's New in Minerals

First Time Collecting; Foote Mine, Kings Mountain, North Carolina

By David Fryauff, Vice President

Over the past few years, during which I have discovered the pleasures of micromineralogy, I have become especially interested in “the phosphates”-- a large class of minerals which contain single or multiple phosphate (PO₄) groups in their chemical formula. A great majority of these phosphate minerals are virtually unknown to the casual mineral collector, and can only be seen, and appreciated, by microscopy. Also during this time I have become keenly interested in Lithium carbonate and Lithium orotate, as mood stabilizers for the treatment of bipolar disorder, and the special position of the Foote Lithium Co. Mine, in Kings Mountain, NC, as one of the world’s most important industrial sources of Lithium for many years.



It just so happens that the Foote Mine is also a special source for a variety of rare and unusual minerals—some 147 valid entries according to Mindat and many of them rare phosphates—with 11 type localities thus far and others reportedly on the way. During the course of my several years with microminerals I have been fortunate to become friends with a very sharp young geologist/micromineralogist from Charlotte, NC, named Jason Smith. Jason has been collecting minerals from the Foote Mine for about 15 years, specializing in the rare phosphates, and has become,

I believe, the world’s leading authority on this subject. He is also an outstanding photographer and many of the beautiful photos of phosphate minerals found on Mindat and attributed to “JBS” are the work of Jason. Jason Smith and the Foote Mine “dumps” were also the special feature of a very informative and interesting November 2013 article in Jake Slagle’s “Mineral Bliss” blogspot. Reading

this article got me excited about collecting at the Foote Mine and Jason had invited me to come down and collect with him at “his” special east dump location. However, it’s a seven hour drive down there from Gaithersburg, and the opportunity for a visit did not come up until the first week of December, 2014, when I planned a trip down to Florida to see my dad. Although Jason gave me excellent directions to the East Dump, I was a bit wary of going alone, and was very much looking forward to collecting with him, and learning from him on his home turf. As luck would have it, something came up that kept him at work all that day, and I had to go it alone. I got a (surprisingly) good night’s sleep in the Kings Mountain Hotel 8, but I woke up to a dark, bleak, cold, rainy morning. It was definitely not a great morning to set off alone, into the unknown, and I had some misgivings. I had studied the Google satellite maps of the area from the 10,000 foot perspective, and I had Jason’s directions, but I did not know the topography. After a spare Hotel 8 breakfast of raisin bran and coffee I felt better, and resolved. This place was legendary and who knew when, or if, I would ever get back here again. I had to do this. And luckily, it all fell into place.

The turnoff and parking place was just a half mile down the road, on solid ground, despite all the rain. The trees had all lost their leaves so the woods was not too dark, and I could see a path—the path—quite easily. Even in the gloom and rain, it was easy to see the huge boulders that made up this mine dump, and I spent some time just scouting around at the top where it was mostly a flat field of briars with sparse pines and dogwoods. At the edge you looked down maybe 50-60 feet onto a tumble of large boulders but it was very easy climb down and back up. Judging by the trees growing among the boulders, I guessed this dump was 20 or 30 years old. It was a big, lonely place with no postings and very little indication that anyone ever came there. The big boulders up on top were studded with lots of pale, dull green Spodumene crystals up to several inches

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long, and some of these crystals were even gem-clear, but I knew, or felt, that the phosphate minerals

I was looking for what would only be found in the more weathered, oxidized rock; that was down below. Jason had advised me to look for telltale oxidation colors of red, green, and yellow on the rocks and I knew well enough to bring a small sledge hammer and an assortment of chisels. Gloves, safety glasses, and a 20x loup with LED light were essential.

In the short time that I had, I did not really look for the minerals, per se, but rather promising weathered rock that contained vents, vugs, and crevices that might support the growth of these minerals. The rock was hard, but nothing like Buck Hill syenite. As the morning brightened, I got into the physical work, mainly of breaking down pieces of weathered pegmatite rock, checking them quickly, and tossing “good” candidates into my bucket. The rain ended, the day warmed, and the time flew by.

By 2PM I had filled about 1/3 of the 5 gallon bucket I brought with miniature and small hand-sized pieces to examine. Except for a few larger pieces with 2-3” spodumene crystals, I had not seen any recognizable minerals or microcrystals in the rocks I had been breaking and I felt rather disappointed. At 2:30 I called it quits and headed south, figuring to arrive in Vero Beach at about 1AM. Somewhere in South Carolina or Georgia I got a call from Jason asking me how it went. I was glad that I could tell him I found the place and was hauling back some rock with tiny vents and vugs. He warned me that most of the vugs and vents would be empty. I didn’t tell him but I was not impressed with “his” east dump.

When I got back from Florida, ten days later, and had the time, I went through my Foote Mine rocks, examining them more carefully under the microscope and breaking them down further. Those that looked most promising in the field, and that I had taken care to cushion on the long trip, yielded nothing under the scope.

But surprisingly, those candidates that I just tossed into the bucket yielded a very nice assortment of tiny, but rare, and beautiful crystals. Although I am probably wrong in a number of these identifications, and look forward to working with Jason, Tom Tucker, & Lance Kearns on these, the provisional species list from this collection includes: collinsite, mitridatite, eosphorite, stewartite, parsettensite, matulaite, hureaulite, vivianite, cacozenite, laeuite, bertrandite, fluorapatite, albite, & what may be kastingite, fairfieldite, schoonerite, & kingsmountite (or strunzite).

Several others that I can't even guess at. Maybe holmquistite, too. Pretty good pickins for a first-timer & more-or-less flying blind. But you gotta love micros & and you gotta break a lot of rock. Surprisingly, I did find one hand-sized piece of quartz with some nice vivianite crystals. Everything else is tiny...tiny but beautiful. The Foote Mine East Dump Rocks and I’m going back!!!



Eosphorite



Stewartite



(c) Thomas Witzke + Abraxas Verlag

Kastingite

Photos on Mindat

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American Federation of
Mineralogical Societies

AFMS)
www.amfed.org

**American Federation Mineralogical
Societies Show
October 23-25, 2015 Austin, Texas**

Upcoming Regional Federation Conventions from Bob Livingston, Show Coordinator

With the exception of the Southeast Federation, all the regional federation conventions for 2015 have been scheduled

- *California Federation; June 12-15 Lodi, CA
- *Eastern Federation; March 27-29 Hickory, NC
- *Midwest Federation; May 23 – 24 Wheaton, IL
- *Northwest Federation; April 10 - 12 Ogden, UT
- *Rocky Mountain Fed.; July 16–18 Cody, WY
- *South Central Fed.; AFMS Oct. 23-25 Austin, TX
- *Southeast Federation; TBD

MNCA Weather alert: SNOW CONTINGENCY

If schools in Arlington County are to be cancelled, or let out early, because of weather on the day of our scheduled meeting, we will have no meeting. Call the MNCA President or a Board Member



Eastern Federation of
Mineralogical and
Lapidary Societies

(EFMLS)
www.amfed.org/efmls

**Communication and Involvement
Are the Keys to Our Success!**

Geology Events:

January:

- 26 - NVMC Meeting** 7:30 pm - 10 pm
Dr. Mike Wise, Smithsonian Mineral Dept.
Long Branch Nature Center, Arlington, VA
- 28 - MNCA Meeting** 7:30 pm - 10 pm
Dave Fryauff, Foot Lithium Mine at Kings Mt, NC
Long Branch Nature Center, Arlington, VA

February 14, 2015 - "Field Trip to JMU" -
8:30am - 3pm Mineralogy Laboratories and
Museum at James Madison University. Dr. Lance
Kearns has again invited the MNCA Micromounters
along with NVMC and the DC Mineral Club to
gather in his mineral lab.

**Mark your calendar:
Eastern Federation Mineralogical Society
Show & Convention, March 27-29, 2015
in Hickory, NC**

Wildacres; 2015 EFMLS Workshops

By Steve Weinberger, Wildacres Committee Chair

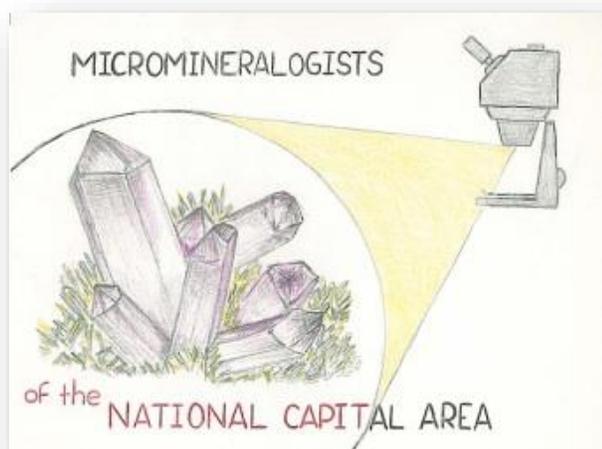
- *Bob Jones, Sr. Editor for Rock & Gem Magazine will be with us in spring. May 18 -24, 2015.
- *Denise Nelson, jewelry appraiser and designer will be our fall speaker. No fall dates confirmed yet.
Little Switzerland, NC;
Cost \$390 plus supplies

Check EFMLS website
Tab Wildacres for
complete details.



Micromineralogists of the National Capital Area, Inc.

42st Annual Atlantic Micromounters' Conference April 10 – 11, 2015



Presented by
The Micromineralogists of the National Capital Area, Inc.



Our featured speaker will be Robert Rothenberg from Oneonta, New York.

Robert has collected micros since 1964, and has been a photomicrographer for the past ten years.

2015; Special recognition goes to Barbara Sky, and charter member Cynthia Payne.

Location: Springhill Suites by Marriott, Alexandria.
6065 Richmond Hwy, Alexandria, VA 22303
Phone (571) 481-4441

Registration:
Kathy Hrechka, MNCA Conference Chair
kshrechka@msn.com

Details are posted on our club website:
Tab Events - Conference
www.dcmicrominerals.org

Micromineralogists of the National Capital Area Meeting: The 4th Wed. of each month 7:30 -10 p.m.
Long Branch Nature Center, (Except Easter & Dec.)
625 S. Carlin Springs Road, Arlington VA 22204

MNCA Purpose: To promote, educate and encourage interest in geology, mineralogy, and related sciences.

Pres: Dave MacLean, dbmaclean@maclean-fogg.com
Vice Pres: David Fryauff, fryauffd@yahoo.com
Secretary: George Reimherr, greim@cox.net
Treasurer: Michael Pabst, Michaeljpabst@yahoo.com
Editor/ Historian: Kathy Hrechka, kshrechka@msn.com
Website: Julia Hrechka, dcmicrominerals@gmail.com
Conference: Kathy Hrechka, kshrechka@msn.com

The society is a member of:

- * Eastern Federation of Mineralogical and Lapidary Societies (EFMLS) www.amfed.org/efmls
- * American Federation of Mineralogical Societies (AFMS) www.amfed.org

Dues: MNCA Membership Dues for 2015
\$15 (single) or \$20 (family)

Payable to MNCA - Michael Pabst, Treasurer
270 Rachel Drive
Penn Laird, VA 22846



Editor's Note: by Kathy Hrechka

Send your articles and photos to your editor.

Club Article Deadline is 10th of each month.
The Mineral Mite will be emailed on 15th.
No newsletter July/August

AFMS Editor's Award
First Place 2011 - Mini Bulletins



January

Articles:

- *Michael Pabst
- *Dave Fryauff
- *Tom Tucker
- *George Reimherr
- *Quintin Wight

