



MNCA Website dcmicrominerals.org
The Mineral Mite



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October 2017

50 Years 1967 - 2017

October 25 Time: 7:30 p.m. – 10 p.m.

Long Branch Nature Center, 625 S. Carlin Springs Rd. Arlington, VA 22206

Program: “Making North America”

By David Fryauff, Vice President

We will view a PBS Dvd hosted by the renowned paleontologist, Dr. Kirk Johnson, Sant Director of the Museum of Natural History. He explores the nation’s tumultuous deep past, while setting out to answer three fundamental questions: How was the continent built? How did life evolve here? And how has its spectacular landscape shaped human lives and destinies? Dr. Johnson’s journey reveals the incredible story of a majestic continent.



President’s Message:

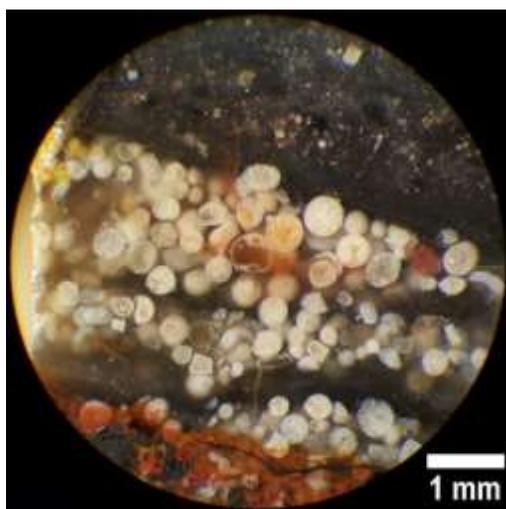
By: Dave MacLean



I am slowly giving away most of my collection. When I asked one grandson Max Maclean what rocks and minerals he wanted, he said give me BIG CRYSTALS. Last year I gave him a 10X loupe. Many persons including children and teens overlook the wonders of small things. Our loupes and microscopes make small things look big. We have another chance to show adults and children the wonders of microminerals at the NVMC show 18 and 19, November at the Johnson Center, George Mason University. Thank you, for those of you who have signed up.

We are working out the details of our response to the invitation of MSDC to celebrate their 75th anniversary and remember our 50th anniversary which we celebrated at our conference in April 2017. I look forward to our meeting on October 25.

Photo of the Month



Impact spherules 32x optical microscope image from 3.47 billion-year-old rocks in Australia

The “photo of the month” was taken by Alec Brenner from his field season in Australia this past summer. The strikingly round grains formed when molten droplets were ejected from a massive meteorite impact and then cooled. Alec has been a Northern Virginia, junior mineral club member for years. His interest in geology has led him to the California Institute of Technology during college. He is now attending Harvard Graduate School.

Read Alec’s article on pages 6 – 8.
Photomicrography by Alec Brenner

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Previous Meeting Minutes: 9/27/17

By Secretary Bob Cooke

President Dave MacLean called the meeting to order at 8 PM. Seven members and one guest (Dave Nanney) were present. No past presidents were present.



Old Business: No minutes from the June meeting were recorded. The consensus of members present at today's meeting was that no business was conducted at the June meeting. No correction to the meeting description as recorded in the September Mineral Mite is required. Minutes of the May 2017 meeting were approved as published in the June Mineral Mite.

New Business: Dave Nanney, President of the Mineralogical Society of the District of Columbia (MSDC), reviewed plans for MSDC's 75th Anniversary celebration on December 9th and asked if MNCA wanted to co-sponsor the event as part of our 50th Anniversary celebration. Following discussion, MNCA members agreed to co-sponsor the event, subject to a better budget estimate. Given the tight schedule for planning the event, Dave MacLean and Dave Fryauff agreed to coordinate with MSDC to resolve costs and the extent of MNCA participation. Dave MacLean circulated a sign-up sheet for the MNCA demonstration table at the Northern Virginia Mineral Club's mineral show on November 18/19. Bob Cooke noted the low stocks of loupes available for sale at the table and will order 30 more LED-illuminated loupes.

Dave Fryauff and Kathy Hrechka will attend the Baltimore Mineral Society's 2017 Desautels Micromount Symposium on October 13 - 15, 2017. They will submit an article about the Symposium for publication in the Mineral Mite. In preparation for December's annual election of club officers, Bob Cooke agreed to head the Nomination Committee. (The current president, vice-president and secretary have agreed to continue serving in 2018. The treasurer was not present to announce his plans.)

Kathy Hrechka will contact Nanoscience Instruments (the Alexandria company marketing the Phenom brand of affordable Scanning Electron Microscopes) to determine if any further effort by MNCA to assist Nanoscience's development of mineral recognition is desired.

The November MNCA meeting was re-scheduled from the 22nd to the 15th because of the Thanksgiving conflict. The joint NVMC/MNCA Holiday party is scheduled for December 18th at Long Branch Nature Center.

Announcements: Kathy Hrechka will investigate procedures for nominating Alec Brenner for an AFMS scholarship. Meeting adjourned at 9:15.

Election of 2018 Officers

At the December 18 club meeting, we will elect club officers for 2018. We need candidates for president, vice-president, secretary, and treasurer. As chair of the nominating committee, I am asking club members to step forward to help. We need both long-term club members and newer members in officer positions for the leadership we will need in the future. Former club officers are willing to mentor new officers as needed. Self-nominations are welcome, as are nominations by friends! So please step up, folks!

Send all nominations to me at

rdotcooke@gmail.com

Membership Dues: 2017

Single = \$15. Family = \$20.

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

Previous Program Reviewed: 9/27/17

By Bob Cooke

Members watched a presentation from the 2012 Dallas Mineral Collecting Symposium by Les Presmyk on mining operations and minerals of Bisbee, Arizona. "Bisbee Arizona: Queen of Arizona's Copper Camps and King of Arizona's Mineral Localities". Les Presmyk who has specialized in Arizona minerals since 1980 and is an authority on the history of Arizona mining, particularly that of the Bisbee District. The remaining half of the meeting time was dedicated to a micromount workshop.



Les Presmyk



Scheelite

By Michael Pabst Ph.D.

Having finished for the moment with molybdenum minerals, it is time to write about tungsten minerals. Scheelite is calcium tungstate CaWO_4 . It is an important ore of tungsten. Scheelite has the same symmetry as Powellite, calcium molybdate, CaMoO_4 , namely, tetragonal $4/m$. You can see, and play with, a nice 3D rotatable crystal diagram on the Mindat page for Scheelite: www.mindat.org/min-3560.html. You can see the 4-fold axis of symmetry (c-axis), and the single mirror plane (top-to-bottom, but not right-to-left or front-to-back). Ordinary crystals of Scheelite often look octahedral, but they are pseudo-octahedral.



Scheelite was named for Carl Wilhelm Scheele (1742-1786), a Swedish pharmacist and chemist, who discovered several elements, including molybdenum and tungsten, and he discovered important chemical compounds, including hydrofluoric acid. His work was dangerous, and he died at the age of 43, probably from heavy metal poisoning.

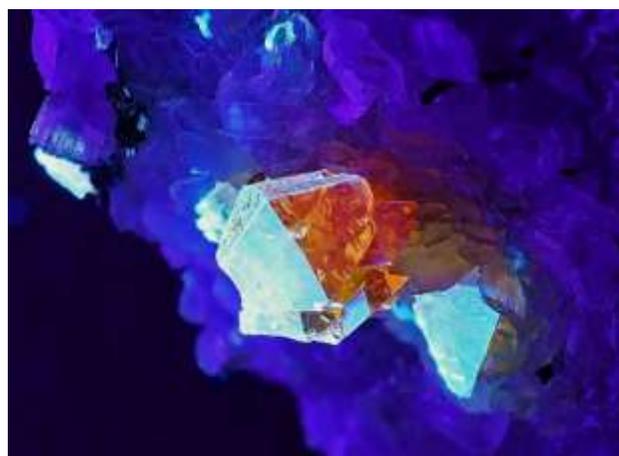
Scheelite comes in a variety of colors, but pure calcium tungstate is colorless. I have in my collection orange, yellow, and brown specimens of Scheelite. Scheelite fluoresces blue-white, compared with the yellow fluorescence of Powellite, although molybdenum or rare earth impurities in Scheelite can produce yellow or green fluorescence. There is a series between Scheelite and Powellite, Ca(W,Mo)O_4 , so fluorescence color is variable and not definitive for identification. Only ~10% molybdenum content will cause yellow fluorescence (Tyson RM, Hemphill WR, Theisen AF, Effect of the W:Mo ratio on the shift of excitation and emission spectra in the scheelite-powellite series, American Mineralogist 73: 1145-1154, 1988).

As mentioned in the last article on Powellite, Powellite fluoresces with both short-wave UV and long-wave UV. In contrast, my four specimens of Scheelite responded only to short-wave UV light.

My first specimen comes from the best Scheelite locality in Brazil: the Morro Velho mine. The Scheelite is on Dolomite $\text{CaMg}(\text{CO}_3)_2$, with minor Pyrrhotite Fe_7S_8 and Cubanite CuFe_2S_3 . (See a nice big Scheelite crystal from Morro Velho here: www.mindat.org/photo-393013.html.)



Scheelite from Morro Velho Mine, Nova Lima, Iron Quadrangle, Minas Gerais, Brazil. FOV 10 mm. Photos by Michael Pabst. *Above*: visible light. *Below*: blue-white fluorescence with short-wave ultraviolet light coming from the left, with the fluorescence emission lighting up the right side of the main crystal to show the orange color.



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The second specimen of Scheelite comes from the Ortiz Mine near Santa Fe in New Mexico. This Scheelite is associated with black Hematite.



Scheelite from Ortiz Mine, Golden, Old Placers District, Santa Fe County, New Mexico. FOV 11 mm. Photos by Michael Pabst. *Above*: visible light. *Below*: yellow-white fluorescence with short-wave ultraviolet light. (Because of limitations in positioning of the bulky UV lamp, the crystal on the right is in shadow, but it also is fluorescent.)



The third specimen of Scheelite comes from Hunan, China. The specimen has white fluorescence, and the matrix is Dolomite.



Scheelite on Dolomite from Yaogangxian Mine, Yizhang County, Chenzhou Prefecture, Hunan Province, China. FOV 10 mm. Photo by Michael Pabst, using 60 mm macro lens; 25 images stacked with CombineZP.

The fourth specimen of Scheelite is from the Rauris valley in Austria. This is not a spectacular specimen, but I am fond of specimens from this locality, because I once had the pleasure of observing a cow enter a china shop in the town of Rauris. The cow was evicted with brooms.

Continued next page



Scheelite from Leidenfrost, Hoher Sonnblick, Hüttwinkl Valley, Rauris Valley, Hohe Tauern, Salzbug, Austria. FOV 2 mm. Photo by Michael Pabst, using stereomicroscope; 12 images stacked with CombineZP. The specimen features a group of 3 pseudo-octahedral crystals on smaller crystals.

In the next article, before proceeding with other tungsten minerals, we will take a small detour to visit rhenium, an element that closely resembles tungsten.

About the author: Michael Pabst is our MNCA club treasurer who is dedicated each month to writing mineral articles for our newsletter. He enjoys photomicrography with his new camera, along with stacking photos using CombineZP. Each spring, Michael photographs microminerals which are auctioned at our Atlantic Micromounters' Conference.

Photomicrography by Michael Pabst

Julia's Tiara, Smithsonian Blue Room

By Kathy Hrechka, Editor/Mom



Mom & Julia, with hand model Dr. Michael A. Wise
Photo by Bruce Gaber

Our geologist friends in the Mineral Sciences department have been most gracious to local mineral clubs through the years. During a visit in 2000 to the Blue Room, Dr. Michael A. Wise invited Julia, to model the Post Diamond Tiara. Today this tiara is on display in the GGM Gallery. Julia designed the MNCA website in 2013, and is our current webmaster.



Tiara in GGM Gallery: Photo by Kathy Hrechka

The tiara containing 1,198 diamonds is a beautiful example of a garland of wild roses. Historically, the tiara was made in France during the mid-19th century, and was once the property of British noble, Rt. Hon. Lord Methuen. It was purchased at auction by Marjorie Merriweather Post for the Smithsonian in 1970.

Lab Notes: Aussie Edition

By Alec Brenner, Harvard graduate student

Before I say anything else, a major thanks to Kathy Hrechka for inviting me to speak at the June meeting! It was a blast to talk shop about the fun and science of microscopy, mineralogy, and paleomagnetism with such an interested group. Also thanks to Kathy for writing up the excellent summary of my talk in the September MNCA newsletter.



In that talk, I went over some research I'd done at Caltech in summer 2016 on the Jack Hills Zircons of Western Australia. At up to 4.4 billion years old, these crystals are the oldest Earthly materials known to science. I also briefly mentioned that soon, I'd be entering Harvard's Earth and Planetary Sciences Department as a Ph.D. student under Prof. Roger Fu. Soon after I gave the talk, Roger and I kicked off our research with a three-week field season in the Pilbara, Western Australia. The season was an incredible success, and on Kathy's suggestion, I'd like to apprise the club of how it went, and where we're going with the samples we collected.

Roger is Harvard's brand-new paleomagnetism professor. Paleomagnetists study the magnetizations (very weak magnetic fields) preserved in rocks. The properties of rocks' magnetizations record all sorts of information about the rocks and their history. For instance, the direction along which a rock is magnetized is related to the position on Earth where the rock formed, and can therefore allow geologists to reconstruct the positions of the continents in Earth's past ("paleogeography"). The strength of the magnetic field preserved in a rock can tell geologists about the strength of Earth's magnetic field in the past ("paleointensity"). The way a rock's magnetization diminishes with heat ("thermal demagnetization") tells geologists about both the rock's magnetic minerals and how the rock has been heated or altered in the past. Other magnetic properties have dated the formation of rocks, revealed when Earth's magnetic field has reversed (i.e., when the south and north poles exchange places), showed that the Earth has been plunged into global glaciations ("Snowball Earth events"), and validated the theory of plate tectonics.

But back to Roger and me in Australia. Flying into Perth, we drove 1300 km north through the flattest, reddest, dustiest terrain I've ever seen (Nothing like a 21-hour drive to get to know your new advisor!), eventually arriving in the hills of the Pilbara Craton. In geologist lingo, a "craton" is an extensive piece of the Earth's crust which is very ancient. Other pieces of crust are added onto these cratons to make continents. As one of Earth's oldest and best-preserved cratons, with rocks dating to 3.8 billion years ago, the Pilbara is a mecca for geologists like us who study Earth's distant past.

This field area was everything that you'd expect out of Australia. Since it's in the outback, it's inescapably rural; the shire of Marble Bar is Pilbara's central bustling metropolis of 200 people. It's hot and dry in the winter, and almost unlivable hot in the summer, with a biblical monsoon season. Records from 1923-1924 showed that the temperature *never* dropped below 100°F for 161 consecutive days, prompting locals to call Marble Bar Australia's hottest town. We witnessed plenty of bushfires up-close and personal, often hearing them crackling in the distance as we slept under the southern stars. The native animals are kangaroos (that love jumping in front of cars), dingos, venomous snakes, and the occasional parrot. For their part, humans introduced cattle, horses, and camels, all of which promptly escaped into the wild. One type of bunchgrass called "spinifex" is basically the only plant in the Pilbara, and as its name suggests (it means "spine-maker"), every leaf is sharp, stiff spine rich in silica, making the very act of walking around a treacherous endeavor.



Alec poses in the field in Australia, next to 2.78-billion-year-old limestones.

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Roger and I weren't there to enjoy the modern natural wonders, though – we came for the rocks laid down when the Pilbara was 3 billion years younger. Earth was a very different place back then, as I'll soon show – it was bombarded with asteroids large and small, it lacked life any bigger than a bacterium, and its atmosphere closely resembled the fumes from your car's tailpipe, minus oxygen.

We collected samples for three major projects. The first brought us to the Tumbiana Formation, a limestone laid down 2.78 billion years ago (the late Archean Era). Last year, another team of geologists published a paper on these rocks, showing that they contained micrometeorites. (These are exactly what they sound like – tiny meteorites, not a tenth of a millimeter wide, that constantly rain down from space.) The paper was controversial, since the authors found small amounts of rust on the meteorites, implying that they were exposed to oxygen at some point in the past. Assuming this was during their fall through the atmosphere 2.78 billion years ago, the authors concluded that they'd found a "whiff" of oxygen in the late Archean atmosphere, going against all current understanding of how the Earth worked during the Archean. On the other hand, if the rust formed while the micrometeorites were entombed in limestone, their findings would be nullified. Since the type of rust they found (magnetite, Fe_3O_4) is very magnetic, paleomagnetists like us have the ability to weigh in. Specifically, we want to determine whether or not the magnetic signature of the rust (and therefore the oxygen) pre- or post-dates the formation of the limestone.

Our second project also dealt with meteorites... of a *much* larger variety. Around 3.47 billion years ago (early Archean Era), a massive asteroid, perhaps 10 or even 100 times the size of the one that contributed to the extinction of the dinosaurs slammed into Earth. In addition to causing worldwide tsunamis on an unprecedented scale, the impact vaporized and melted immense volumes of rock from both the meteorite and the Earth below, and threw this vaporized and molten rock into space. The molten rock cooled into small droplets called impact spherules that fell back to Earth, blanketing the planet in a global fallout layer up to a meter thick. 3.47 billion years later, Roger and I hiked up to the outcrop of this fallout layer for samples. We want to know if and how the impact affected Earth's magnetic field, which is generated by

great swirling currents of molten iron in Earth's core. If this impact was large enough to change Earth's magnetic field appreciably, that tells us a great deal about how Earth's early magnetic field behaved.

Third on our project hit-list was Soanesville, located approximately 70 km southeast of Marble Bar. So far as I can tell, Soanesville was previously inhabited by a grand total of 3 ranchers, quickly abandoned, and then named by a lonely geologist in an effort to make his long-forsaken field area seem more like a real place. After driving as far as we could on dirt roads, Roger and I spent every day for a week hiking 5 km in and out of the field area to drill sample cores from 3.18-billion-year-old (mid-Archean Era) basalt lava flows from the Honeyeater Formation. These lavas erupted right in the middle of a 600-million-year interval, during which the geographic position of the Pilbara Craton on Earth is totally unknown. We hope to fill that gap with measurements of these ancient basalts.

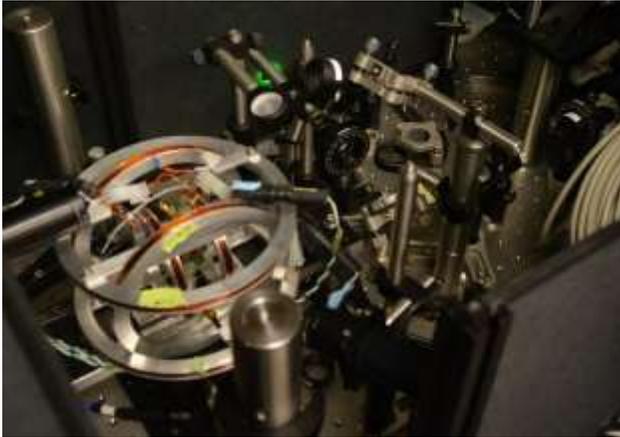
As a bonus on the long drive back, Roger and I dropped in on a field trip with another team of geologists, led by professors Ben Weiss (Roger's own Ph.D. advisor from MIT) and Adam Maloof (Princeton). Their field area, like the Jack Hills I talked about in June, has rocks with zircon crystals dated to over 4 billion years ago. Their team wants to find out whether or not the zircons preserve evidence that early Earth had a magnetic field, which is presently the topic of a major debate.



32x optical microscope image of impact spherules from 3.47-billion years ago in rocks in Australia.

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So, what's next? Now that all our samples are safe at Harvard, we can start measuring them in Roger's new paleomagnetism lab, currently a work-in-progress. This facility will have two types of magnetometers, devices designed to measure the weak magnetic fields in rocks. One magnetometer will be for measuring large samples in bulk. The other was developed by Harvard physicists over the last ten years for imaging very small magnetic sources – quite literally a magnetic microscope! At the heart of this state-of-the-art instrument is a small chip of synthetic diamond, which is placed in contact with a sample of interest. Dousing the diamond in green laser light causes it to fluoresce red, and the brightness of the fluorescence directly corresponds to the magnetic field strength on the sample. Mounting an optical microscope to the diamond thereby allows us to photograph features in the sample's magnetic field at a resolution of one micron (1/1000th of a millimeter). This is a factor of ten better than any competing technologies can offer, so naturally we're very excited to test it out! I'll continue to keep you updated as we publish our results.



The innards of a prototype Quantum Diamond Magnetometer, a microscope that photographs tiny magnetic fields preserved in rocks.



In a scene out of heaven and hell, wildfires light up the skies with the Milky Way.

Acknowledgements

Again, I have to thank your newsletter editor, Kathy Hrechka, for spending so much time to work with me to schedule a talk and follow it up with articles. In addition, Roger Fu has been a demanding yet excellent Ph.D. advisor thus far, and made possible all the exciting research I just discussed. Thanks also to Ben Weiss (MIT) and Adam Maloof (Princeton) for letting Roger and I tag along on their own field season. Finally, I thank the MNCA for allowing me to speak at the June meeting, plus the readers of this article – without engaged and informed members of the public like yourselves, science like this can't happen.

Photo on left: Alec's new Ph.D. advisor, Prof. Roger Fu (Harvard), hammers out a sample. He's tough on rocks, and tougher on grad students.

50th Anniversary: Part II of III Personal Origins of Micromounters

Robert (Bob) Cooke, Virginia

Profession: Retired (2012). Previously physicist and Team Leader of Weapons Branch, Office of Classification, Department of Energy.

Began micromounting: 2012

Inspired by: Jim Kostka, Dave Hennessey, Michael Pabst, Tom Tucker

Why micromount: I got my first binocular microscope in 1980 to enjoy the detail of crystal forms on thumbnail-size minerals. Micromounts are just thumbnails which have been optimized for microscopic viewing.

Something unique: I buy every geology and mineral book I can find but never have the time to read them. My basement is a mess. I intend to catalogue and photograph all my mineral collection but I acquire new minerals faster than I can log the old ones. Hopeless addict.

Jim Prentiss, Tennessee

I have been collecting rocks and minerals since I was a child. I was not very active, just a little piece here or there. I am a helicopter mechanic by trade, and the first few years I worked in the “field” it was with geologist doing field work. I managed to add more specimens to my collection. Collected a lot of wad and greywacke during that time.

Later, in 1989, I expanded my interest and collection when I took a geology course. Having learned the basics of mineral identification I was hooked. My collection started to grow.

In 2007 My late wife and I moved down to “America” from Alaska (it’s a cultural thing). We moved about and for the first few years I was working all over the country 21 days at a time. I’d go to rock shops everywhere I could and busted rocks in road cuts. By 2010 I had accumulated around 450 specimens of some 130 different minerals.

In October of 2010 I was living in Wooster, Ohio, and heard on the radio that there was going to be a Micromounting Symposium in Cleveland the first weekend in November. I went, and found to my surprise that these folks talked about minerals and other related subjects. I joined that day. Then there was the free exchange of specimens. I went to several of those symposiums even after I moved out of the area.

I have been a member of both the Micro Mineral Society of the Cleveland Museum of Natural History and the Micro Mounters of New England. I jumped right into micromounting primarily because of the availability of good specimens. My collection is in excess of 5000 specimens and some 908 different minerals now. Everything fits in an old Library card file cabinet. Admittedly, had I followed convention on the mounting “containers” I might have even more room in the afore mentioned cabinet, which is nearing capacity. When I started, I had around the house some ¼ ounce plastic jars with screw on lids that were left from a project a few years back. Over 270 left. I started using those for my micro’s. I was once told there are no rules in micromounting so I continue to use those jars today.

I have a small stand I made from PVC pipe mounted on a bearing that I set them in, that allows me to rotate and tilt the specimen for optimum viewing. I use an elderly Zeiss Opton stereo microscope, with a 150w halogen dual fiber optic light source. That’s how I got started, and where I am at now in micromounting.

50th Anniversary MNCA 1967-2017

As part of our 50th Anniversary please write a paragraph or two on how, and when you began “Micromounting.” Simply include:

- * Your profession / retired
- * Year you began micromounting
- * Who inspired you?
- * Why you are a micromounter?
- * Something unique about you

Submit to Kathy kshrechka@msn.com

Review of the 2017 Collecting Season Part I of II

By David Fryauff, Vice President

The mineral collecting season opened on April 18th with a visit to the well-known Teeter's quarry in Gettysburg, PA. The quarry is currently known as the Gettysburg New Enterprise Stone & Lime Quarry at 1575 Baltimore Pike, Gettysburg, MD 0700-1100. The geology and minerals of this quarry have been nicely reviewed by Jeri L. Jones & Larry E. Eisenberger in the May/June 2006 issue, Vol. 81 of *Rocks & Minerals*.

Teeter's Quarry in Gettysburg, PA: The site produces three mineral "suites": 1) hornfels-epidote-albite-zeolite, 2) skarn-magnetite zone, and 3) weathering minerals such as chalcantinite, chrysocolla, cuprite, diopside, goethite, gypsum, malachite, montmorillonite, opal, and pyrolusite. Low temperature minerals include calcite, chabazite, heulandite, laumontite, natrolite, stilbite, and stilpnomelane. Steve Weinberger, a friend and well-known micromounter from the Baltimore Mineral Society must like this spot because he produced most of the photos used in this article.

I look forward to seeing Steve at this month's Paul Desautels Symposium and his collection of micromounts from this quarry. My specimens from this quarry include heulandite, stilbite, natrolite, hematite, epidote, orthoclase, chalcopyrite, stilpnomelane, chabazite, and possibly djurleite.



Early morning crew for the first field trip in 2017
Teeters



Teeters quarry, Gettysburg, PA view from bottom



Teeters Quarry Gettysburg, PA Nice epidote crystals

Medford Quarry New Windsor, MD: Three days later we were in the Medford Quarry on 1111 Medford Rd., New Windsor, MD. This quarry, currently known as the Redland Genstar Quarry, Mindat lists only 7 mineral species for this site but it is a favorite place for easy collecting of Calcite crystals. Moreover, the calcite from here gives a very nice pink-orange fluorescence under short wave UV. The calcite from here forms both pointed and squat scalenohedral crystals and some collectors have found huge boulder-sized clusters of crystals to grace their yards or front steps.

Sterling Hill Super Dig in Ogdensburg, NJ: The month of April closed out with the annual Sterling Hill Super Dig on the weekend of April 29th & 30th in Ogdensburg, NJ. This is touted each year as our club's "official" EFMLS field trip but the 4.5-hour driving time from the DVM area reduce our attendance to only the most passionate collectors--guys like me and Kenny Reynolds. For silver pick collectors, the annual Franklin NJ Mineral Show was staged in the high school just up the street from the Franklin Mineral Museum and the beloved Buckwheat dump.

Continued next page

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National Limestone Quarries #1 (Middleburg), and #2 (Mount Pleasant Mills): On May 13th we headed north to Adams County, PA and the site of the National Limestone Quarries #1 (Middleburg), and #2 (Mount Pleasant Mills). We love this place and its wonderfully devout host, Erick Stahl. Sparkling crystalline calcite was super abundant at Middleburg in colors that ranged from butterscotch to milky and then water clear. Some lucky ones found tiny dark purple Fluorite crystals in pockets of the calcite. The Wavellite pit up at the back of Nat. Limestone Quarry #2 was deeper than I had ever seen it, with evidence that it was done by backhoe and at some expense. Our gang this day was quite happy with that state of affairs and many took to the bottom of the pit in search of "good stuff" (chartreuse colored botryoidal Wavellite with individual balls >1 cm).

Alas, I did not see any museum quality specimens emerge from the pit that day. I spent my time searching for, and finding, I believe, specimens of planerite the Cu-deficient tourquoise. Specimens of planerite were far less common and occasionally chalky but I made several good finds that demonstrate porcelaneous, pale blue glassy botryoidal masses with good hardness (H 5).

I Also found a few good cacoxenite and strengite specimens, but these consisted of such tiny little balls that only dedicated micromounters would be content to search and find. Although the large green wavellite balls are a nice find, the tiny divergent sprays of clear, bladed wavellite crystals are quite beautiful under 20X magnification.



National Limestone Quarry #1, Middleburg, PA



National Limestone Quarry #1, Middleburg, PA
Nice calcite crystals and lots of it



National Limestone Quarry #1, Middleburg, PA
Fluorite in calcite



National Limestone Quarry #2 The wavellite pit



Planerite from the wavellite pit



National Limestone Quarry #2 thick strontianite over calcite

Next month I will continue to share my mineral collecting stories at the following collecting sites:

*Vulcan Materials Quarry, 8537 Vulcan Ln., Manassas, VA.

*Vulcan Garrisonville Quarry, 1012 Garrisonville Rd., Stafford, VA

* Gem Miner's Jubilee at the Lebanon Expo Center, Lebanon, PA

Willis Mountain Mine at Sprouses Corner, VA

Friends of Mineralogy of PA: I am informed that they be holding their annual Symposium on the weekend of Nov. 4-5. The Saturday symposium will be at the Hackman Physical Sciences Building at Franklin & Marshall Univ. from 9-4. Go to www.rasloto.com/FM/ for details. Sunday, Nov. 5th will be a field trip to the Haines-Kibblehouse Penn-MD Quarry, Peach Bottom, PA. Participation in this collecting trip is limited to participants attending the Symposium. The HK Penn-MD Materials quarry may be the only quarry still open to collectors that exposes minerals of the serpentinite rock making up the famous "State Line Chrome District".

From the late 1700's to 1864 there were dozens of mines in MD and PA mining chromite for use in the tanning industry. Interestingly Mindat lists only 14 mineral species from the HK Penn-MD Quarry but lists 41 mineral species including the Type Locality mineral Desautelsite. Owing to the fact that the two quarries are situated side by side, I suspect that the mineral species found in the HK Penn-M quarry is probably the same as that of the Cedar Hill quarry. I will be working to get permission from HK Penn-MD quarry for a chance to collect before bad weather sets in this year. Wish me luck!!!



GeoWord of the Day and its definition:

All terms and definitions come from the

[Glossary of Geology, 5th Edition Revised.](#)

GeoWord of the Day is brought to you by: Rayfract! Check them out at rayfract.com.

daughter mineral A crystalline mineral in a *fluid inclusion* of a phase different from that of the walls. The most common is halite, but carbonates and sulfates are also found (Roedder, 1979, p.700).

vertumnite (ver-tum'-nite) A colorless monoclinic mineral related to strätlingite and hexagonal hydrated gehlenite, but with a Si:Al ratio double that of those phases: $\text{Ca}_4\text{Al}_4\text{Si}_4\text{O}_6(\text{OH})_{24}\cdot 3\text{H}_2\text{O}$.

sérandite (ser-and'-ite) A rose-red triclinic mineral of the *wollastonite* group: $\text{Na}(\text{Mn}^{2+}, \text{Ca})_2\text{Si}_3\text{O}_8(\text{OH})$. Cf: *pectolite*.

Baltimore Micromount Conference October 13-15, 2017

The Baltimore Mineral Society is pleased to announce the 61st Annual Paul Desautels Micromount Symposium on October 13-15, 2017 at the Friends School of Baltimore, 5114 North Charles St. Baltimore, MD 21210

Micromounter's Hall of Fame Induction Ceremony:
Henry Barwood and Betsy Martin

Presentation by Betsy Martin, "Then and Now at the Morefield Mine"

Presentation: Adam Barwood, "Curiosity, Life and Times of Dr. Henry Barwood"

Presentation by Michael Pabst, "British Minerals: Close-up photos from the Natural History Museum in London"

Details, open link below

http://www.baltimoremineralsociety.org/uploads/1/6/6/3/16636366/desautels_17_registration.pdf

Micromineralogists of the National Capital Area, Inc.



American Federation of
Mineralogical Societies

(AFMS)
www.amfed.org



Eastern Federation of
Mineralogical Societies

(EFMLS)
www.amfed.org/efmls

AFMS Scholarship Foundation News: **\$4,000 to students in a Masters or Doctorate degrees in the earth sciences.**

By Lauren Williams, Scholarship Found. President

Over the past few months I've received several inquiries asking for information about how the Scholarship Foundation works. Briefly here's the process. Currently six of our seven regional federations participate in the Scholarship Foundation program. Southeast has their own Scholarship program and therefore does not participate in ours. Shortly after the 1st of November, I send e-mails to each of the participating regional federation presidents outlining the criteria for selecting their honoree and asking that they notify me who that individual is by a certain date. The honoree from each federation is the person who selects the two students who are studying to obtain either their Masters or Doctorate degrees in the earth sciences. Once I have the information, I send a letter of congratulations to each honoree and then outline the procedure for them to select their two student scholarship recipients. The students selected must be U.S. citizens and must be working towards either their Masters or Doctorate degrees in the earth sciences. Checks are then sent to someone at the University where the students attend so that we can be certain that the students are enrolled for the fall semester. A congratulatory letter is sent to each student's recipient indicating that they will receive their \$4,000 grant during August. Complete details are located on AFMS website.

Slate of officers nominated for 2017-18. They included: President – Sandy Fuller, MWF President Elect – Doug True, NFMS First Regional Vice President – David Wayment, SFMS Second Regional Vice President – DeLane Cox, RMFMS Third Regional Vice President – Margaret Kolaczyk, CFMS Fourth Regional Vice President – Carolyn Weinberger, EFMLS Fifth Regional Vice President – Roger Burford, SCFMS Treasurer – Pat LaRue. She was elected to a two-year term in 2016. Secretary – Donna Moore

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

Geology Events:

October

13-15: Paul Desautels Micromount Symposium at the Friends School of Baltimore, 5114 North Charles Street, Baltimore, MD 21210

21-22: 45th Annual Gem & Mineral Show and 67th Eastern Federation Convention. Beals Community Center, 240 Stafford Ave., Bristol, Connecticut. Info: amfed.org/efmls

22: Bristol, CT - 45th Annual Gem & Mineral Show and 67th Eastern Federation Convention. Beals Community Center, 240 Stafford Ave., Bristol, Connecticut. Info: amfed.org/efmls EFMLS Annual Meeting: Friday, October 20.

22: NVMC Meeting Long Branch Nature Center in Arlington, VA 7:45 – 10 pm

25: MNCA Meeting Long Branch Nature Center in Arlington, VA 7:45 – 10 pm

November

1: MSDC Meeting Natural History Museum 7:30pm

8: GLMSMC Meeting

11-12: Fall New York City Gem & Mineral Show hosted by the New York Mineralogical Club. Watson Hotel (formerly Holiday Inn at 57th St), 440 West 57th Street, New York, NY. Contact: Tony Nikischer: www.excaliburmineral.com

11-13: West Springfield, MA Annual East Coast Gem & Mineral Show

18-19: 26th Annual Gem, Mineral & Fossil Show sponsored by the Northern Virginia Mineral Club. NEW LOCATION: George Mason University Dewberry Hall, Johnson Center, Braddock Rd & Rt.123; Fairfax, VA. Contact: www.novamineralclub.org

15: MNCA Meeting – early due to Thanksgiving

**45th Annual Gem & Mineral Show
and 67th Eastern Federation
Convention / Show Schedule**

Friday, October 20th

**Convention activities are at the Doubletree Hotel;
42 Century Drive in Bristol, CT**

Convention Registration: 1:00 – 4:00 pm

Cracker Barrel: 4:00 – 5:00 pm at the Doubletree

Annual Meeting: 7:00 – 9:00 pm at the Doubletree

Competitive Case Exhibit Setup: 3:00 – 7:00 pm at
the Beals Community / Senior Center

**Saturday, October 21st the show is at the Beals
Community / Senior Center; 240 Stafford Ave,
Bristol, CT**

Show hours: 9:30 am to 5:00 pm

Speaker: 12:00 – 1:00 pm at the show (room 109) -
Bob Jones: *The Bristol Copper Mine*

EFMLS Auction Preview: 1:00 – 2:30 pm at the
show (room 100)

EFMLS Auction: 2:30 – 3:30 pm at show room 100

Bristol / Meriden Clubs Lapidary Center open for
tour: 3:30 – 5:30 at the **Barnes Nature
Center; 175 Shrub Rd, Bristol, CT**

Pre- Banquet Open Bar: 6:00 – 7:00 pm Doubletree

Awards Banquet: 7:00 – 9:30 pm Doubletree

**Sunday, October 22nd the show is at the Beals
Community / Senior Center; 240 Stafford Ave,
Bristol, CT**

Editors Breakfast: 8:00 – 9:30 am at the Doubletree

Show hours: 10:00 am to 4:00 pm

Speaker: 11:00 am – 12:00 pm at the show (room
109) - **Bob Jones: *The Bristol Copper Mine***

Field Trips:

*Mining Museum: **31 Kent Cornwall Rd, Kent,
CT 06757**. Hours are 10:00 am – 4:00 pm. Drive
time is about one hour from the hotel to the Mining
Museum.

*Collecting Trip to the Hewitt Quarry in Haddam,
CT: A map will be provided for the registered col-
lectors in their registration packets. The quarry will
be open from 9:00 am until dusk. The fee for collect-
ing at the quarry is \$20 and will be collected in ad-
vance during registration.

**Atlantic Micromounters' Conference
April 6-7, 2018**

**Featured speaker; Herwig Pelckmans
from Antwerp, Belgium**

Herwig Pelckmans was born in the summer of '62 and grew up on the outskirts of Antwerp (not Antwerp, New York, but Antwerp in Belgium). When he was 10, his parents gave him a comic book, on the evolution of life on earth. One section dealt with paleontologists finding dinosaur remains in Mongolia. It did not take long for Herwig to find large bones and teeth himself. The fact that they later turned out to be whale bones and shark teeth, instead of dinosaur fossils, did not really turn him down; the collecting bug had already taken over.



Ever since, his travels and collecting trips have brought him and his family all over Europe and the United States, and even to some countries in Africa and Asia. Besides, he loves to write mineralogical articles and give talks for mineral clubs. Since last year, he is the president of the "MKA" (= the Mineralogical Society of Antwerp; one of the most vivid mineral clubs in the world). Herwig is also promoting the use of the polarizing microscope and the spindle stage as inexpensive and reliable tools for mineral collectors who want to identify their unknowns in a scientific way.

He retired from his job as an officer and a database administrator for the Belgian Army in 2013 and soon realized life is even more hectic when you are retired. He lives with his loving wife and three kids in the small town of Hasselt in Belgium.

Programs: 1. The Many Faces of Fluorite 2. Belgium and Mineralogy 3. Schoep, from Fred Flintstone to Bob the Builder

Location: Holiday Inn, Richmond Hwy, Alexandria, VA (same location as last year)

Micromineralogists of the National Capital Area, Inc.

Jim F. Hurlbut Year 96

By Kathy Hrechka

James Hurlbut passed away mid-September in Denver, Colorado. I am sorry that I was unable to locate any personal details. He had joined the Colorado Mineral society in 1947, and taught "Rocks and Minerals of Colorado" at the University of Colorado for twenty-two years. He spent most of his retirement years volunteering at the Denver Museum of Nature and Science since 1984, and was acting curator of the museum's micromount collections, including Paul Seel's diamond collection. James was inducted in the Paul Desautel's Micromount Hall of Fame.

I last visited Jim at the Denver Museum in 2016 while visiting Fred Schaefermeyer. Jim and his friend Larry invited me to view some of Paul Seel's micro diamonds. I was impressed at the dedication Jim had to the museum, considering his age in retirement. Also, Jim's daughter was busy digitizing data from Paul Seel's diamond collection.



Photo: Kathy, Larry, and Jim in the micromount collection. Jim's daughter, photo below



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: Bob Cooke, rdotcooke@verizon.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 Affiliation

Dues: MNCA Membership Dues for 2016
\$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 5th of each month.
The Mineral Mite will be emailed on 10th.
No newsletter July/August

EFMLS Editor's Award
First Place 2016 - Small Bulletins



Member inputs:

- * Bob Cooke
- * Dave MacLean
- * Michael Pabst
- * Alec Brenner
- * Jim Prentiss
- * David Fryauff

