THE NORTHERN VIRGINIA MINERAL CLUB INC

The Mineral Newsletter

Meeting: September 28 Time: 7:30 p.m.

The meeting will be remote due to risk from the pandemic. Details to come.

Torbernite

Musonoi Mine, Democratic Republic of the Congo

Source: U.S. Geological Survey Photo: Carlin Green.

Deadline for Submissions

September 20

Please make your submission by the 20th of the month! Submissions received later might go into a later newsletter.

Volume 61, No. 7
September 2020
Explore our website!

September Meeting Program:

Fall Club Auction (tentative)

details on page 5

In this issue …

Mineral of the Month
Torbernite

by Sue Marcus

With a color resembling malachite's green but with a different crystal form, torbernite, our Mineral of the Month, is a beautiful and unusual charmer. Just look at the cover photo!

Torbernite is usually tabular, with some specimens showing very thin, almost micaceous crystals while other specimens show crystals that appear to be square. Mindat describes the color as "siskin green" or "apple green" which I find unhelpful, since I don't know any siskins (a European bird related to goldfinches); and green apples come in many shades. Mindat also offers leek, emerald, and grass as hues applying to torbernite.

I'll stick with malachite.

Name

Torbernite was named in 1793 by Abraham Gottlob Werner for Torbern Olof (Olaf) Bergman. Werner was a famous German mineral collector and big-thinking geologist who was an inspiring university lecturer. He developed the Neptunist theory of the Earth's geologic formations, believing that rocks formed in aquatic environments. That proved untrue, though he correctly espoused the view that Earth's geology is dynamic, not constant. Bergman (or Bergmann) was a noted Swedish chemist and mineralogist who discovered or contributed to the discovery of at least eight chemical elements. He established fields of chemistry, such as physical chemistry and quantitative analysis.

Once again, I trapped myself into thinking that I'd chosen an easy mineral to describe. Torbernite is easier than many, but when I started my research, I stumbled onto a controversy. And I saw comments on a Mindat forum by our friend and fellow collector, Tom Tucker. The ideal formula for torbernite includes 12 water (H_2O) molecules; it is a hydrated copper uranyl phosphate. When hydrated minerals are exposed to air, they dehydrate, losing water and becoming "meta-(fill in mineral name)." So, with exposure to air, torbernite alters to metatorbernite., which has 8 molecules of water instead of 12.

How fast does it change? What about the museum specimens and the type specimen labeled as torbernite, not metatorbernite—yes, *that is the controversy*. I leave the upshot mostly to your research.

Fall is almost here!

Northern Virginia Mineral Club members,

No in-person social events for now!

Torbernite from the Musonoi Mine, Democratic Republic of the Congo. Photo: Bob Cooke.

Collectors can't tell the difference, chemically, without extensive testing, which most of us (1) don't have available to us and (2) aren't interested in pursuing due to cost and time. If you have a torbernite specimen (I

do), it is probably metatorbernite. I don't plan to relabel my specimen, though I have learned something.

Sources

Specimens from the Democratic Republic of the Congo (formerly Zaire) are, to me, the finest known. They can be lustrous, transparent, and are sometimes called "green wulfenites" in reference to the flat square look of the perky crystals. If you have a torbernite specimen from this region, check your specimen labels to see what country is shown; that can provide a hint about when the specimen was produced (pre-1960 = Belgian Congo; 1960–65 = Republic of the Congo; 1965–70 = Democratic Republic of the Congo; 1971–97 = Republic of Zaire; 1997–present = Democratic Republic of the Congo).

The most productive specimen producers are the Musonoi deposit near Kolwezi city in the Kolwezi region and the Shinkolobwe Mine, Katanga Copper District, Katanga Province.

Musonoi is a copper–cobalt–uranium deposit in a region that has been exploited for copper since prehistoric times. The current mine began production in the 1920s with forced labor. The Musonoi mine was opened by a Belgian company, with ownership followed by Canadian and (currently) Chinese companies.

The Shinkolobwe deposit was known for uranium, though extraction did not begin until the 1920s. The deposit is also rich in copper and cobalt, like Musonoi.

Torbernite from Cornwall, England. Photo: Bob Cooke.

Torbernite from the Musonoi Mine, Democratic Republic of the Congo. Photo: Bob Cooke.

Although the Shinkolobwe Mine shut down in 2004, local people, militias, and others seem to continue extracting and possibly enriching uranium from the site, along with some copper.

Micromounters and locality collectors are most likely to be interested in specimens from several torbernite-bearing copper deposits in Cornwall, England; the Piedmont region of Italy; and the Occitanie region of France. The former uranium mines of the Flinders Range in Australia also produced torbernite specimens. In the United States, torbernite has been found in the Spruce Pine area of North Carolina and in Tushar Mountains of Utah. In all but the African deposits, crystals are millimeters in size, rarely reaching more than a centimeter.

Torbernite is a secondary mineral, forming from the breakdown of copper and uranium minerals in faulted, brecciated dolomite in the Congolese deposits and in granitic rocks and pegmatites in alpine European, Australian, and U.S. deposits. Uraninite (pitchblende) is the major uranium ore mineral in the Democratic Republic of the Congo deposits. Malachite is also abundant in those deposits.

Uses

Although torbernite contains uranium, it is not a primary source of uranium ore. The uraninite it is found with in the African deposits is mined for uranium. The Shinkolobwe Mine produced uranium for the Manhattan Project.

Torbernite from Entraygues-sur-Truyere, Aveyron, Occitanie, France. Photo: Bob Cooke.

Don't even consider torbernite in jewelry! It is soft, brittle, and radioactive. I seldom quote extensively from other sources, but I cannot phrase it better than this, from Wikipedia:

> As torbernite is radioactive and outgases radon (^{222}Rn), collectors are urged to take proper precautions in the handling and storage of any specimens. An adequate ventilation of the rooms and the cabinets in which the specimens are stored is essential to evacuate the radioactive radon gas responsible for lung cancer, but it could increase the dehydration rate of the specimens. To limit radon inhalation, naked specimens should never be stored in rooms in which one spends much living or working time. An alternative is to store specimens in gas-tight transparent containers in which radon will accumulate and decay to secular equilibrium. In addition, collectors should ideally measure a sample with a Geiger counter before purchase and use this to help inform their purchase decision, as some samples can reach over 100 becquerels.

Technical Details

Chemical formula ..... $Cu(UO_2)_2(PO_4)_2 \cdot 12H_2O$

Crystal form ..... Tetragonal

Hardness 2–2.5

Specific gravity 3.2

Color ..... Malachite green

Streak ..... Pale green

Cleavage ..... One perfect, one distinct

Fracture ..... Brittle, flat flakes

Luster ..... Pearly, vitreous

Radioactive

Sources

Amethyst Galleries. N.d. (no date). The mineral torbernite.

Crystallography365. 2014. Decorative but a little deadly—torbernite.

Encyclopedia Britannica. 2020. Abraham Gottlob Werner.

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Mindat. 2020. Torbernite.

The Mineralogical Record. 2020. Bergman, Torbern Olof.

PorterGeo. N.d. Shinkolobwe.

U.S. Geological Survey. Torbernite. Media images.

Webmineral.com. N.d. Torbernite mineral data.

Wikipedia. N.d. Abraham Gottlob Werner.

Wikipedia. N.d. Musonoi Mine.

Wikipedia. N.d. Torbernite.

Wise Uranium Project. 2017. Decommissioning projects—Africa.

Torbernite from the Musonoi Mine, Democratic Republic of the Congo. Photo: Bob Cooke.

Club Member Rocks and Minerals Auction Coming Up!

September 28 Program

Our September club meeting—***if*** we can manage it by remote means (a ***big*** if)—will feature our Fall Club Auction. Proceeds from the auction go into the Fred Schaefermeyer Scholarship Fund, which supports students in the field of geology.

The meeting will start promptly at 7:30 p.m. (*note:* this is 15 minutes earlier than usual). Details on how to connect remotely will be sent by email before the meeting. We will move through the business part of the meeting, then get to the fun!

We normally use individual bid slips that sellers use to describe auction items (see page 15 for the forms). Information on the bid slip should include:

- item number (your initials or other unique code followed by a sequence number);
- description;
- from (locality); and
- starting bid amount (the lowest bid you will accept for sale—if not stated, the minimum bid is $2).

Sellers also normally use the summary sheet on page 16 to list all items for sale so that the Treasurer can record the final sales price and give sellers their money after the auction. Depending on the arrangements we make for remote sales, we might or might not use the bid slips and summary sheet.

Guests or nonmembers who might be interested in rocks and minerals are invited to join the fun. Although only current club members are allowed to sell, the meeting and auction are open to all. We might need volunteer auctioneers, so please consider helping out.

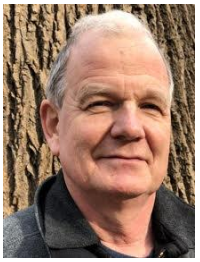
**** Note Current Club Auction Rules ****

- Any member may offer up to 20 specimens or up to 4 flats for auction.
- Each flat is one auctionable item.
- The club gets 15 percent of the purchase price; the remainder goes to the seller.
- Anyone may donate items to the auction to fully benefit the club (no money goes back to the donor).
- The minimum bid is $2 on any item. The minimum increase is also $2. Bids higher than $20 increase by $5.
- We normally start with a silent auction to assess interest in each item for sale. We might or might not do that this time too, depending on what works.

We still need to figure out how to transmit items purchased and payment. Stay tuned for the details.

If holding a remote auction turns out to be too difficult, we will arrange for another program and let everyone know by email.

President's Collected Thoughts



by Tom Burke, President

As we move into September, we have now had three successful and fun online meetings, in June, July, and August. This is likely to be the only way we'll be able to meet through at least the end of 2020, so if anyone has been having trouble getting connected please let me know so that we can help make it work for you. One big benefit of meeting this way is that it allows folks from far away to join our meetings, and I think we should consider doing this at least occasionally even after we can again meet in person. Our next online meeting will be on Monday, September 28 at 7:30 pm. As we approach that date, I will email to everyone the info needed to join the meeting.

It's getting to be that time of year when we elect new club officers. Sue Marcus and I, presidents for 2019 and 2020 respectively, have been discussing this, and we agree that for 2021 we need to see someone new take on the role. So, neither Sue nor I will accept the job for 2021. Since the club must have a president, that means that someone else needs to step up if the club is to continue to exist beyond the end of this year. It would be great if we could have several contenders, and I really hope that you will let me know ASAP if you could take on the task. Sue and I will always be available if you need help getting up to speed.

Tom

Summer Meeting Programs
July/August 2020

by Sue Marcus

This has been a novel year, and our club is learning to swing with it. We usually give ourselves time off for field collecting, vacations, and other summer activities, with no meetings in July and August. You may have noticed that this year has been different. We had no meetings from March through May, so when we had the opportunity to try a virtual meeting via Zoom in June, we decided to try it.

After three of these sessions, we have learned that virtual presentations work for many of us. They can attract members who cannot readily attend our regular meetings. However, there are technological challenges for those who do not have Internet connections or sufficiently powerful connections; and even those who have the electronic capability can face other challenges (my family knows that I'm challenged by my electronic device!).

July Program: Sand Casting

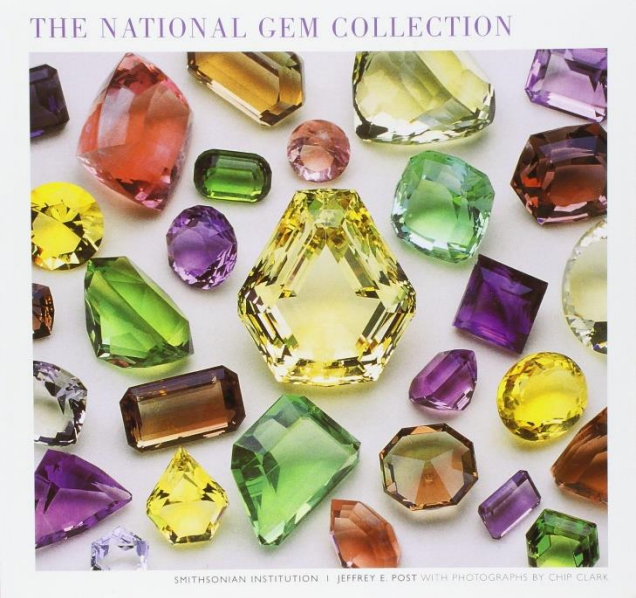
Brad Smith, President of the Culver City Rock and Mineral Club, was our inaugural Zoom presenter for our July meeting. Unlike the NVMC, his club has a dedicated space with a fully equipped lapidary setup for members to use.

Brad explained how sand casting is done. Sand casting techniques can produce beautiful, detailed, and complex shapes and designs, either from nature or from the artist's imagination. The method must be used carefully so that the items are removed from the molds without damage.

Brad demonstrated how sand casting can be done in a relatively small space at low cost with simple tools and can be completed quickly. Some members expressed interest in trying this themselves. There was also interest in creating the "sand" used in the process.

August Program: Smithsonian Acquisitions

Dr. Jeffrey Post brought us a fascinating presentation for our virtual August 24 meeting. Dr. Post treated us to closeup views of the newest acquisitions of the Smithsonian Institution's National Museum of Natural History's Gem and Mineral Collections. Specimens were obtained at the 2019 Denver shows, the 2020



Tucson shows, and elsewhere. You can view his presentation online by clicking here; I have indicated the locations of particular specimens by time (minutes: seconds) in parentheses below.

Dr. Post spoke about the museum's groups of donors who supply the funds and may assist in making the final selection, and he explained how the Smithsonian scientists identify materials, specimens, and gems of interest for the collections. He also noted the generosity of individuals. For example, a beautiful blue 6-carat faceted Montana sapphire was deemed priceless when Dr. Post inquired about it and was not for sale, but the owner donated it to the Smithsonian because he felt it belonged there.

We are lucky to have such a renowned museum nearby. Other standout new specimens include a 3-plus-inch emerald (beryl) crystal from North Carolina (7:30); aggregates of hollow multicolored spheres of bornite-coated chalcopyrite from Hubei, China (9:16); and a huge twinned diaspore specimen from Turkey (27:16–29:23 to see the gorgeous color change).

My favorite is a "basket handle" of circular fluorite globules from Pune, India (8:16), a locality from which they also obtained a 13-inch fluorapophyllite "branch" that had coated mordenite. How about a 1,377-carat morganite (beryl) (30:35) half the size of a baseball! There are also an 896.62-carat faceted golden calcite from India (10:30) and a lovely antique Yolo (MT) sapphire brooch (23:15), with stones that fluoresce red under longwave ultraviolet light due to traces of chro-

mium. Another fun specimen is a hunk of highly fluorescent diopside and sodalite from Pakistan. They also have a bizarre "hoppered" aquamarine beryl from Pakistan (26:41).

Dr. Post showed the collection of specimens from the Republic of the Congo bought with a donation from the Gem, Lapidary, and Mineral Society of Montgomery County. He also showed the Picasso Kunzite (spodumene) necklace and a case of minerals from the Roebling and Canfield collections, including specimens purchased with the endowments from those gifts.

Dr. Post recounted the fun of the shows he visited—the weird stuff like skulls carved from rocks, "gem trees," and the small to huge amethyst geodes, among many other things.

During the last week of February 2020, the mineral and gem curators closed the Smithsonian display halls to the public from Monday to Friday for cleaning. The entire staff, along with exhibits personnel, updated the lighting, fixed labels, exchanged specimens, scrubbed the "pothole" and the Bisbee exhibit, and cleaned the jewelry. With the hall closed, the scientists took the opportunity to do some research on some of the gems and minerals, including having fun fluorescing the diamonds and other gems (44:12). Then COVID-19 forced the museums to close. We're all hoping that nice, clean, improved exhibits await us—something (else) to look forward to!

Several diamonds were donated to the Smithsonian last year (54:00), including the Uncle Sam (at 12.42 carats, the largest faceted Arkansas diamond) and the Colorado/Freedom (at 16.87 carats, the largest faceted diamond found in the United States). These will be eventually exhibited as the Great American Diamonds exhibit.

Although Dr. Post is a mineralogist at the Smithsonian Institution and is the Curator-in-Charge of the National Museum of Natural History's Gems and Minerals Collections, he informed us that under the museum's current safety rules, even curators must be approved to enter the museum, and then only for limited reasons. We were introduced to new curatorial staff, including Dr. Gabriela Farfan, who joined us via Zoom; and, in photos, Drs. Ioan Lascu and Mike Ackerson.

We are grateful to Jeff Post for many reasons. Among them are the engaging talk he gave us. And perhaps more importantly, he encouraged the younger members in our club and made us, as hobbyists, feel included in the museum community.

In Memoriam

by Sue Marcus

2020 has been a novel year. With all the calamities, we also mourn the passing of two long-time club members. Here's a bit about them. As we look back, let's also look forward to gathering, even via Zoom. Our virtual meetings draw members who might not otherwise attend.

Lois Dowell was one of our lapidarists, who—along with Marie Brown and Karen Lewis—were deemed the "Ladies of Lapidary." At our club meetings and at shows, many of us had the opportunity to view many pieces of the beautiful jewelry that Lois made. She was a member of our club since the 1950s.

She was very generous with her time and talents before age slowed her down and limited her ability to join us. Lois had planned to take an adult education class in china painting, but when that was canceled, she switched to one on making jewelry. There she met Karen Lewis. They continued learning—and teaching—lapidary classes. They were regulars at Wildacres sessions sponsored by the EFMLS. In the casual atmosphere there, beloved by those who have attended, they got to know John Sinkankas, mineral and gem book author, on a first-name basis.

Along with making jewelry, Lois enjoyed field collecting at well-known sites like Amelia and the state-line quarries along the Maryland–Pennsylvania border. She recounted some of her collecting tales in an interview with Sheryl Sims, published in *The Mineral Newsletter* in October 2011.

(The first story is about a trip Lois took with the Ross sisters in search of unakite near Syria, VA. The Ross sisters were friends from work who lived near Syria and had a neighbor, Mrs. Smith, who sold unakite. They told Lois that Mrs. Smith's adult sons were bootleggers who had taken unakite from federal land and from President Hoover's retreat.)

> We bought a few choice pieces and headed back. We stopped at a creek to look for unakite when suddenly bullets began to whiz near us. Then an old model-T came rumbling toward us, nearly boxing us in. We managed to make a fast exit out of there and headed back to civilization.
>
> On our way back, we stopped at a filling station. The proprietor said there was a still near the creek and the operators wanted to frighten us away, thinking we were scouts for federal revenuers.

And then there's this one:

> The early 1960s found a small group, including myself, at Steele's Tavern down in Virginia. After gloating over our finds, we were confronted by a bull coming full steam ahead. Buckets and treasure became airborne as we all headed for the fence.

Some us remember when local mineral dealer Herb Duke started the International Gem Show back in the 1960s. Lois was a "hostess" at an early show, where she registered out-of-town guests and dignitaries. She proudly wore a Virginia unakite necklace that she had made. A registrant commented approvingly, "You are wearing Virginia Rose River unakite." When she looked at his signature, she was pleasantly surprised to see that the compliment came from Frederick Pough.

Lois was born on July 30, 1915, and died on May 3, 2020. When she was a mere 102, our club awarded her an honorary membership. She wrote to thank us, noting that she enjoyed her six grandchildren, including Kirsten, who was learning lapidary arts in Lois's workshop. I want to be like that at that age!

We will give her the final say:

> I believe that we do not own the land, the land owns us, and the Creator scattered a few gems around so we would appreciate His creation. Luckily, I accidentally took the right turn. Want to enrich your life? Just join in.

Frank Hissong was an engaged and ebullient member of our club for many years. Roger (Haskins) and I were honored to help introduce Frank to our hobby. The three of us commuted from Lake Ridge to the Main Interior Building in Washington, DC, where we all worked together for the Bureau of Land Management. There were up to five of us in the carpool, sometimes in a Mazda hatchback. You can picture the smooshed people in the back! Way back then, when we were young—and Frank and Roger had hair, and mine wasn't gray—we'd even share a six-pack of beer on the Friday commute home—after all, that was before express lanes and the southbound Metro, back when it took hours to get from downtown to Lake Ridge (no telecommuting in those days).

Lois Dowell doing lapidary work. Photo: Kirsten Dowell.

Frank was an avid field collector. Frank, Barry Remer, and I went on what was my best ever collecting trip. Frank and I drove to Kentucky in my quarter-ton pickup truck with a camper shell on it. (Roger wasn't interested in the trip—too hot.) Frank and I met Barry there. Barry knew the area well and was willing to share a great spot in a limestone quarry with us—a place where a fault had brought in fluids that deposited fluorite and sphalerite crystals. Oh, and they were also in barite, which, for those who don't know, is incredibly heavy. We all happily whacked and collected all day, then divided the spoils by rotating turns.

The next day, Joe Murter told us about a roadcut where we might find millerite, those beautiful fine golden needles in vugs of tough limestone, tough enough that Joe brought an electric saw that could be used on the rock face. In our hands, it worked sort of okay. We didn't get much … the specimens that got away. Sometime in there, we also stopped by a creek bed where we collected some quartz-crystal-filled geodes.

On the drive home, on the way north on I–83, the little truck's radiator overheated. We limped into a Howard Johnson's. I called AAA, to no avail; they didn't have service anywhere nearby. Next, I called Roger, who advised us to wait, patiently or not, until it cooled down, then carefully take the cap off and fill it with water—and then to gently, not hot-rodding (my style), drive the rest of the way home. Frank and I had to have ice cream while we waited. We followed Roger's instructions and arrived home safely. I still have a piece

of the fluorite and sphalerite on barite displayed in our living room. It weighs more than 15 pounds.

Frank and I shared another interesting fluorite-and-sphalerite experience, this time in Virginia. We had some Franklin fluorescent material, and somehow I'd heard about a guy in Roanoke who might swap for Elmwood specimens. Off we went. We saw this fellow's superb collection—amazing museum-quality stuff, not what we were able to trade for. But we did pretty well. Frank was the negotiator, much better at it that I am, and we each came back with boxes of specimens. I've now traded mine off but kept the best, including a fluorite at least 3 inches on a side and a doubly terminated calcite at least 7 inches long. Frank accumulated a lovely collection of mineral specimens, mostly by patiently swapping for better and better pieces. He was a dealer at our club shows for several years.

Though Frank enjoyed minerals, his heart belonged to his family. His wife Sherrel, like other rockhound spouses, suffered his hobby gracefully. They raised their children well, with their daughter Ellen getting a degree in geology before moving on to other fields and their son Nathan becoming a teacher of Earth sciences. Frank and Sherrel moved to Harrisonburg several years ago to be closer to Nate and his wife Regina and their kids. Frank did substitute teaching in the local schools there as well as coaching his grandchildren's sporting events when they were younger. He volunteered at the mineral museum at James Madison University (JMU) under the guidance of Lance Kearns. His collection has been donated to JMU. If club members would like to make memorial donations as requested by the family, please contact Sue Marcus.

Field Trip Opportunities

Northern Virginia Community College Geology Field Trips

NOVA's Annandale campus offers 1-day weekend courses—essentially, field trips—related to our hobby. You can get more information on each of the field trips listed below at the Field Studies in Geology—GOL 135 website.

Note: The events are planned for the coronavirus pandemic with masks and social distancing. However, the organizers might decide to cancel, so please check the website before going. You need to register anyway.

Building Stones of the National Mall

October 10, 9 a.m.–6:30 p.m. Visit 20 different sites on the National Mall, examining geologic history and architecture and the rocks used to construct buildings and monuments. Face-to-face activity is contingent upon the status of COVID at the time of the class and DC policy on public gatherings. Students and faculty will be required to wear masks that cover nose and mouth and practice social distancing according to the public healthy guidelines at the time of the class.

Geology of Holmes Run Gorge

November 7, times to be determined. Holmes Run Gorge is a canyonlike area less than 2 miles from NOVA in Alexandria. Our instructional day will consist of a 4-hour class at the college, followed by a 4-hour geologic tour of the gorge. Face-to-face activities are contingent upon the status of COVID at the time of the class and whether Holmes Run is open. Students and faculty will be required to wear masks that cover nose and mouth and practice social distancing according to the guidelines at the time of the class. After the face-to-face activities, you will have ten days to complete a set of related online assignments.

66-Million-Year-Old "Crazy Beast" Marooned on Madagascar

by University of Louisville

Editor's note: *The article is in SciTechDaily (April 30, 2020). Thanks to Sue Marcus for the reference!*

In evolutionary terms, islands are the stuff of weirdness. It is on islands where animals evolve in isolation, often for millions of years, with different food sources, competitors, predators, and parasites … indeed, different everything compared to mainland species. As a result, they develop into different shapes and sizes and evolve into new species that, given enough time, spawn yet more new species. Such is the case with the discovery of a new 66-million-year-old mammal in Madagascar. … *Read more.*

Member Profile

How I Became Interested in Rocks

by Bob Cooke

Editor's note: *All of us have a back-story, so why not share a few paragraphs (up to 500 words or so)? A photo of you would be nice too! Just send your contribution to editor@novamineral.club.*

In the 1970s, I was assigned to an Army unit in Pirmasens, Germany (then West Germany). One of my fellow officers, Mike Pace, had a degree in geology and enjoyed showing off his collection of thumbnail-sized mineral crystals. He also tried telling us about a radical new theory in geology: plate tectonics. But none of us believed him about anything so strange.

A couple of Army assignments later, Carolyn and I were living in Salinas, CA, where I got to play games with the 7th Infantry Division. One weekend, we went to a mineral show. We found the minerals to be quite intriguing and remembered the excitement Mike had had for his collection.

Carolyn and I debated for over an hour that day about whether we really wanted to start a new hobby and whether we could do it on terms of equal participation. Because we were subject to frequent moves with Army reassignments, we thought we should limit ourselves to small pieces (thumbnails).

We finally broke down and bought four specimens that afternoon: an amethyst from Las Vigas, Mexico; a rhodochrosite from Santa Eulalia, Mexico; a dioptase with wulfenite from Tsumeb, Namibia; and an azurite from Bisbee, AZ. We spent almost $100 and were convinced we had ruined our bank account forever.

Our mineral purchasing continued over four more military assignments and then for 20 years with the U.S. Department of Energy. We have finally retired but are still collecting minerals. And I am still plucking cotton fibers from crystals—remnants of the cotton balls that we placed in perky boxes to protect the crystals during transcontinental and transoceanic moves.

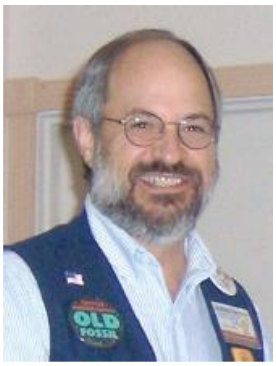
Over time, my interests have expanded to include mineral photography, crystallography, paragenesis, pseudomorphs, and micromounts, as well as geology in general. Carolyn has expanded her collection to include faceted gems and polished spheres/eggs of many rocks and minerals.

We still don't have that "granite" countertop, though.

Herr Doktor Klaus Fuhrberger, from the Schneeberg Institute fur Mining und Technology, is on the third level of the Kelly Mine in Socorro County, NM, investigating the little-understood procreation of "Peeps." Herr Doktor states that the shy little creatures beget their young underground; due to a lack of eggshells, they produce offspring in the same way as mammals. Herr Doktor further states that Peeps hibernate underground for most of the year, venturing onto the surface for a short period in springtime, mostly at Easter.

March 25, 1969(?) by an anonymous photographer.

(Thanks to Patrick Haynes at Mindat.)



Junior Activities

Instill a Sense of Wonder Before Imparting Knowledge

by Jim Brace-Thompson, AFMS Juniors Program Chair

Editor's note: *The article is adapted from* A.F.M.S. Newsletter *(June 2019), p. 3.*

I recently attended a one-man concert by Noel Paul Stookey (the Paul of "Peter, Paul and Mary"). As he performed a crowd-pleasing rendition of "Puff, the Magic Dragon," it reaffirmed in me the need to appeal to the imagination and to the sense of endless wonder inherent in young, developing children.

Normally, in my experience, when we do school presentations as part of our mandate for educational outreach, we're talking to kids between second and fifth grade. And we treat them like mature young scientists, eager to soak up imparted knowledge in the form of facts, figures, and such, whether it be about the three rock types, fossils and the tree of life, the Mohs scale and mineral identification, or similar topics that we're often asked to bring to the table when making school presentations.

But I urge you to go back and relisten to "Puff, the Magic Dragon." At the time of Stookey's performance, I was scheduled to give a preschool group of 4- and 5-year-olds a tour of our local Ventura Gem & Mineral Society museum rooms. Rather than even attempt to talk in dry detail about dinosaurs and fluorescent minerals and other specimens on display, I thought of the song's message about the innocence and wonder and sense of limitless adventure in very young minds.

Thus, instead of "dinosaurs," we all had fun exploring the time when Earth was ruled by magical dragons. Instead of trying to explain the science behind fluorescence, I used my "sorcerer's wand" (a fluorescent flashlight) to magically command bright colors from a dull gray rock. And—except for a couple key moments—rather than demand attention, we simply let the kids roam, explore, touch, and ask spontaneous questions.

Did it work? Will it leave a lasting impression?

Well, I don't know, but I did get a very nice hug from one little girl as the group departed.

Especially for kids at such a young age, is it not better to engage their imagination, to spark their enthusiasm, and to key into their sense of wonder? Let's wait until they hit the jaded old age of, oh, say, ten or eleven before smothering them with knowledge.

Meanwhile, let's keep it fun!

Safety Matters

The Speed of Safety

by Ellery Borow, EFMLS Safety Chair

Editor's note: *The article is adapted from* EFMLS Newsletter *(March 2020), p. 5.*

*W*hen I ask folks about the speed of safety, I usually receive odd looks. Indeed, the question may be divided into two parts.

The first part of the issue is about the time it takes to set up an accident. How long does it take to assemble all the necessary bits of an accident?

Let's see. Get the coffee; place the coffee by the cabbing machine; turn the machine on; crack the cooling water drip line valve; let the machine reach working speed; touch the dopped stone and the first wheel—and boom, your elbow knocks the coffee into your lap. You're not amused because the coffee is piping hot; the accident is over and it is mostly pride that is hurt, clothes to launder, and your wallet emptier because that was an expensive latté.

Elapsed time is perhaps 10 minutes. There is no standard timetable for accident preparation. Assembling all the bits might take seconds or years.

The second part of the issue is about the speed of safety. In our example, knocking the coffee into your lap took perhaps a second. A misdirected hammer strike landing on a knuckle, the necktie caught in the elevator door, the trip you make on an electrical cord running along the gem show floor, the spill of rock cleaning chemistry on your clothes, the breaking of the rock-collecting bag strap—they all take mere seconds. The speed of safety (the accident part) is usually rather short, in the blink of an eye.

But when you look at the separate parts that make up the accident, they might or might not actually lead to an accident. Instead, the accident often takes one additional ingredient—the catalyst. The reaction time with any of the preceding parts is usually not an issue, but the reaction time to the catalyst is vital.

Suppose the coffee cup could have been caught with the spill of nary a drop, the hammer strike could have been quickly redirected, or the trip could have been recovered from without a fall. Although good reaction times might not prevent the accident, they can mitigate the worst effects.

True, it is best in matters of safety to evaluate potential hazards, questionable situations, and likely outcomes regarding safety. It might also be wise to be aware of your own abilities, limits, and fatigue. Moreover, the reaction times in common activities such as driving have been extensively studied. Many of those studies show that we often think we are more capable than we are.

One particular area of concern is fatigue. Being tired frequently contributes to breakdowns of proper safety measures.

So please remain vigilant about being safe in every respect because your safety matters.

Bench Tip
Inexpensive Electric Wax Pen

Brad Smith

You can make your own wax pen from a small soldering iron plugged into a light dimmer switch for heat control. Both components are easily found at a big hardware store or at Harbor Freight. For an example of the components, see items #43060 and #47887.

File the tip of the soldering iron into the shape you prefer or, even better, get a soldering iron with replaceable tips. Then you can make several tip shapes for different tasks. Set the dimmer control just hot enough to melt the wax without producing any smoke.

A tip design that I find ideal for some work is a length of small gauge wire that lets me reach in around the model to melt some wax. The wire is 18 gauge and about 15 millimeters long. I use Sterling wire to conduct heat easily to the tip, and I silver-solder it into a hole on the end of a copper or brass rod that fits into the soldering iron.

See Brad's jewelry books at
amazon.com/author/bradfordsmith

A Different View on the Internet

by Eric Brosius

Editor's note: *The article is adapted from* A.F.M.S. Newsletter *(June 2020), p. 6.*

Every now and then, something comes along that is extremely useful to our hobby, especially if you collect specimens in the field. If you own a Smartphone, tablet, or laptop with Internet access in the field, the University of Wisconsin (UW) Macrostat Lab, with funding from the National Science Foundation and UW Geoscience, has produced an absolutely fantastic app called ROCKD. Available for free from the Apple App Store or Google Play, the application gives you instant access to more than 155 geologic maps, specific information on rock formations you might be standing on, a digital Brunton compass, a place to record your observations, and more. You can check it out for yourself at https://rockd.org/.

Earthquakes in the United States

by Bill Beriger, Livermore Valley Lithophiles (Gem and Mineral Society of Livermore, CA)

Editor's note: *The article is adapted from a piece submitted by Bob Cooke, with the author's permission.*

An earthquake measuring 5.1 on the Richter scale struck the border area between North Carolina and Virginia on August 9, 2020, about 90 miles south of Blacksburg, VA. Since then, I have put together a little history of earthquakes in the United States.

Most people in the United States know about earthquakes that have caused destruction, injuries, and deaths in areas of California and Alaska, but there have been many other parts of the United States that have had moderate to major earthquakes as well.

Earliest Recorded Quakes

On January 26, 1700, a very large earthquake estimated at 8.7–9.2 on the Richter scale occurred in the Cascadia subduction zone that runs from Cape Mendocino, CA, north to Vancouver Island, Canada. The epicenter for the quake was located off the coast near Lincoln City, OR.

Two major earthquakes occurred in December 1811 and March 1812, with an epicenter near New Madrid, MO; their magnitudes were 7.3 and 7.7, respectively. More then 100 strong aftershocks lasted for several months, with shaking felt throughout most of the United States, especially in Arkansas, Illinois, Kentucky, Missouri, and Tennessee and as far away as Quebec, Canada. The area near the epicenter had a limited population, so the damage was mainly to forests; the quakes caused some rivers to flow uphill.

A 7.9-magnitude earthquake occurred in April 1868 on the Big Island of Hawaii. The quake killed 77 people, and it is still ranked as the largest earthquake to hit the Hawaiian Islands.

In 1886, a 7.3-magnitude earthquake occurred in Charleston, SC. The quake destroyed or damaged most of the buildings in Charleston and killed more then 60 people. The quake caused damage in five nearby states and was felt in Boston and Chicago.

20th-Century Quakes

The 1906 San Francisco earthquake had a magnitude of 7.9. Major shaking was felt across much of central and northern California, from the Salinas Valley north to Eureka, but some shaking was felt from Oregon to Los Angeles, a distance of 296 miles, and inland to Nevada. There was major destruction of buildings and other infrastructure throughout the area, including large fires throughout the city when gas lines broke. More then 3,000 people died from the quake and the fires.

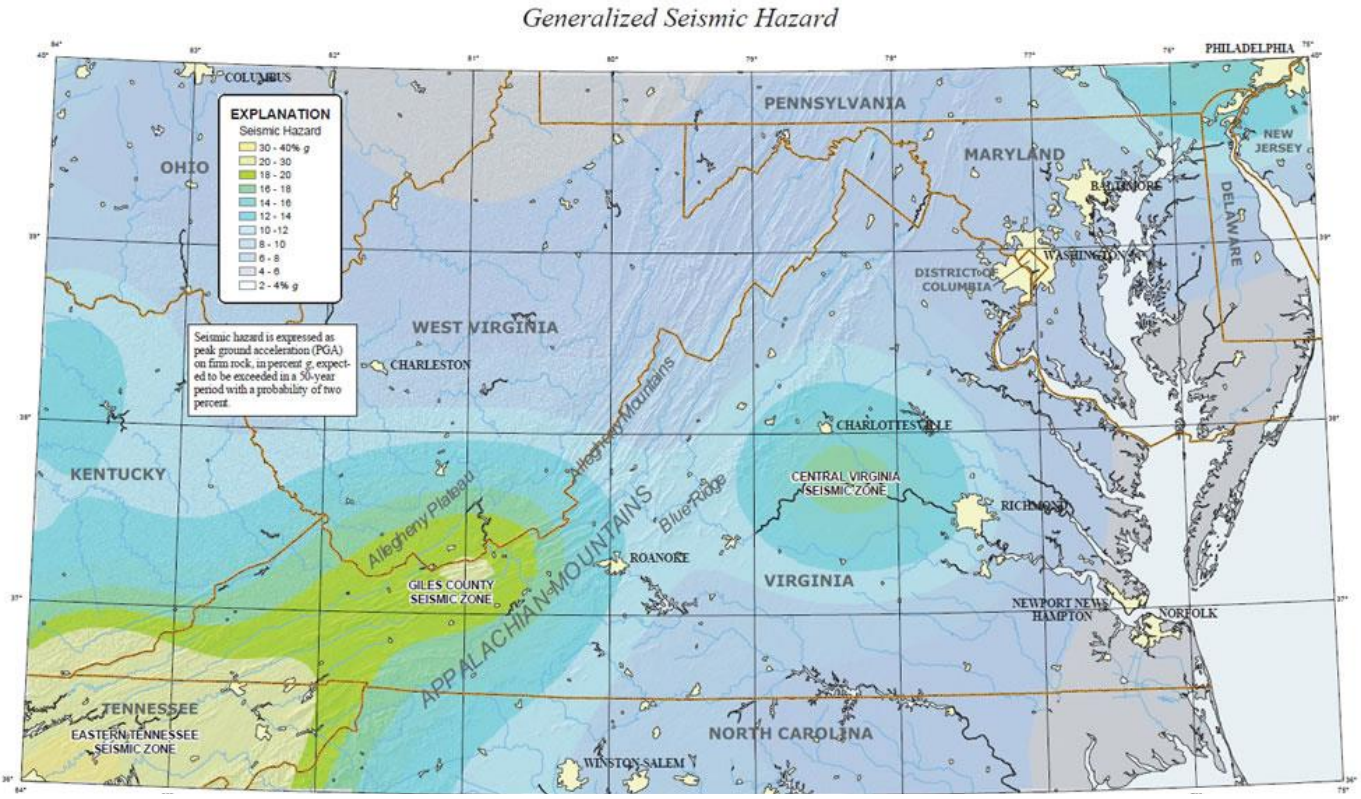
Crowds watching fires set off by the 1906 San Francisco Earthquake. Photo: Arnold Genthe.

On September 27, 1909, a 5.1-magnitude earthquake occurred on the Wabash River in Indiana west of Indianapolis. A few chimneys and a couple of walls toppled, but little other damage and no deaths were reported.

In 1931, a 6.5-magnitude earthquake occurred in Valentine, TX. There were no deaths, but a school was destroyed and many chimneys and walls fell. Most of the damage in the area was from landslides. This quake still ranks as the largest recorded in Texas.

In 1940, two 5.6-magnitude quakes struck east-central New Hampshire at Ossipee. They were felt in Maine, New York, New Jersey, Pennsylvania, Delaware, Massachusetts, Vermont, Rhode Island, and Montreal in Canada. No deaths or major injuries occurred, but there was minor damage to structures.

On August 17, 1959, a 7.2-magnitude earthquake occurred on the northwestern corner of Wyoming, just outside of Yellowstone National Park. It caused a large landslide that blocked most of the Madison River, forming Quake Lake, 6 miles long and 190 feet deep. This quake killed 35 people in Montana, Idaho, and Wyoming; minor effects were felt as far away as Hawaii and Puerto Rico.



Virginia has two seismic zones. The 2011 Mineral earthquake, felt in Washington, DC, had an epicenter in the Central Virginia Seismic Zone, near Richmond. The August 2020 quake in Virginia was on the southern edge of the Giles County Seismic Zone in southwestern Virginia. Map: U.S. Geological Survey.

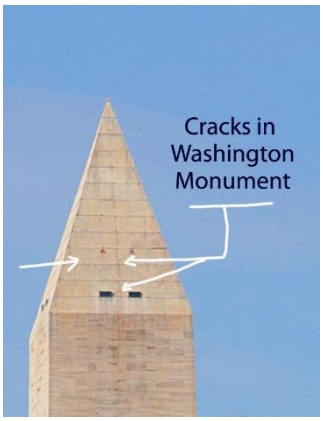
Another large quake occurred at 5:36 p.m. on March 27, 1964, in Alaska, known as the Good Friday Earthquake. This quake, measuring 9.2 on the Richter scale, was the largest to hit North America, another major earthquake originating in the subduction zones along the western United States. The fracture zone ruptured for 600 miles, and in some areas the ruptured fault moved up 60 feet. The epicenter was 78 miles east of Anchorage, AK. The total number of deaths is believed to be 131, most from tsunamis. Areas affected ranged from Anchorage as far south as Crescent City, CA.

Recent Quakes

Since 2009, wastewater byproducts of oil-and-gas extraction in and around Oklahoma have been injected underground below aquifers. Such "wastewater disposal" has caused many small to moderate earthquakes in the Oklahoma area.

On August 23, 2011, a 5.8-magnitude earthquake centered in Mineral, VA, damaged buildings in the Washington, DC, area. It was the largest earthquake in the area since 1897 and the strongest east of the Mississippi River since 1944, felt in 12 states and several Canadian provinces. The quake damaged the Washington Monument and the National Cathedral, with some damage to government buildings, churches, and historic buildings extending to parts of Delaware, Maryland, West Virginia, and several other states.

The Mineral earthquake came as a surprise because the Richmond-area epicenter (in the Central Virginia Seismic Zone shown on the map above) is a thousand miles away from the edge of a plate, where earthquakes usually occur. The cause seems to lie far underground, with pieces of the uppermost portion of the Earth's mantle breaking off and sinking. That can disrupt the overlying crust, causing slippage along preexisting faultlines—and earthquakes. For more on the story, click here.



Cleaning Your Minerals

by Mary P. Allen

Editor's note: *The article is adapted from* AGMC News Nuggets *(newsletter of the Albuquerque Gem and Mineral Club), July 1989. For the full article, click here. Thanks to Sue Marcus for the reference!*

My experience is with the state of Colorado's Bureau of Mines mineral collection, which has over 11,000 specimens. It was necessary to go over the entire collection to clean and rearrange the specimens and correct labels.

We found that 90 percent of the specimens could be cleaned with plain ***soap and water***. I would recommend using detergents, which make many specimens brighter. Dissolve the detergent by swirling it in hot water to keep it from sticking to the specimen.

Wash one specimen at a time, and immediately rinse and dry it thoroughly so that it is wet a minimum amount of time. Use lukewarm water, just warm enough to dissolve the accumulated soot but not hot enough to make the specimen crack. I never had one crack but was told of very nice large pyrite specimens cracking after plunging them suddenly into very hot hater.

Don't let your soap solution get grimy; change it to a clean solution often. Running water is the best rinse, carrying off any scum sticking to the specimen.

Detergents are especially good to use on silica specimens, including any of the quartz family, clear calcite, topaz, selenite, and nearly all glassy specimens.

Many specimens should not be cleaned in water, but this is quite apparent from their appearance. They include very fine fibrous materials or "hairy" specimens, such as mesolite, chalcotrichite, jamesonite, millerite, and velvet malachite. The water packs the fibers, and even after drying they no longer have their furry appearance.

These specimens can often be cleaned in ***alcohol, ether, or dry-cleaning compounds***. An especially soiled velvet malachite we had in the collection could be cleaned by gently sudsing up and down and rinsing thoroughly. The small fibers in this particular specimen were short and very tightly packed and so could not mat down.

So, before plunging your favorite specimen into a suds bath, try a small piece or just a corner of it and see what reaction you get.

Some specimens should not be washed because of their chemical composition or if they are of the clay or crumbly types. Such specimens include carnotite, some of the aluminum-bearing minerals, salts, and any that dissolve in water. These can be brushed with a ***soft or stiff brush***, depending on the texture.

A brush can be used on most specimens. My favorite is the common vegetable brush. When a very small brush is necessary, use a stiff toothbrush. Keep in mind that the toothbrush handle is usually made of plastic; do not put it into acid or alcohol because the plastic will dissolve and adhere to the specimen, and it is very difficult to remove.

Gold responds especially well to a good sudsing, but often a film forms over a specimen from material in the matrix. This can usually be removed by the use of ***nitric acid***. Carefully remove all nitric acid immediately or you will have an even worse film forming.

Gold nuggets can be brightened in nitric acid. Wire gold cleans best in a soap solution by sudsing up and down. Do not use a brush because the wires are easily disturbed and broken.

Oxalic acid diluted in hot water will remove the iron oxide from such specimens as microcline, quartz, and fluorite. Place the specimen in a good enamel pan, free of cracks and breaks, and completely cover with a saturate solution of oxalic acid. Place a cover on the pan, and heat to just under the boiling point for about an hour and a half. If the specimen is heavily covered with iron, remove it from the solution and scrub in clear water with a stiff brush, removing as much of the iron as

possible. Then, if there are still stained places, return to the solution and repeat the process.

Aragonite and calcite that are covered with an iron oxide stain can be cleaned with a weak solution of ***hydrochloric acid***. Care must be taken because the hydrochloric acid can dissolve the calcium carbonate. Make sure the specimen remains in the solution only long enough to loosen the iron. It should be thoroughly rinsed and soaked in clear water to remove all the hydrochloric acid. Barite can also be cleaned in hydrochloric acid, which loosens the clay and iron on the specimen.

Algae and lichens can be removed from specimens with a dilute ***ammonia*** solution.

A mixture of ***acetic acid (vinegar)*** and cigar ashes made into a paste and used as a scouring powder will often brighten copper. The same results will not be obtained with cigarette ashes.

Under the Weather?

Everybody talks about the weather, but nobody does anything about it.

Mark Twain

"Some things you just accept when you move to San Andreas."

Old Mineral Cleaning Tips

Larry Huffman

Editor's note: *The article is adapted from* EFMLS Newsletter *(November 2019), pp. 7, 9; it was originally in* Tar Heel Rockhound *(August 2019).*

I found these tips in an old "How to Clean Minerals" booklet published by the West Essex Mineral Club in 1968. I have checked, and all the products listed are still available.

Crystals (Not Water Soluble)

Use a solution of "Dip-it," a coffee pot cleaner. Cover the mineral with the solution, then heat it and allow to cool. Scrub the crystals and rinse in clear water.

"Polydent," a dental cleaner, can also be used. Add one teaspoon of the Polydent to each cup of water.

To clean fragile crystals, or those hard-to-reach recesses in some mineral specimens, use "Crew," a product of Johnson Wax Company. Just spray it on so the foam covers all the area. Let it set for a few minutes and then rinse with water. Works on fluorite and calcite and other nonwater-soluble crystals.

A detergent bath does not always remove all saw oil. Use "Fuller's Earth;" place a slab or specimen in it—it absorbs all oil.

Acid for Cleaning Quartz

Oxalic acid—mix with warm water, then immerse the specimen and allow to stand overnight, then rinse in clear water after removing the solution.

Tartaric acid—in crystal form, mix in warm water, then immerse in solution overnight. Then rinse in clear water after removing from the solution. (Tartaric acid is stronger than oxalic acid but milder than hydrochloric acid.) Tartaric acid in powdered form is "cream of tartar" used in baking. Look for it in the baking section of your grocery store.

Remember: No chemical injury is due to "accident" or "bad luck." It is caused by carelessness!

AUCTION BID SLIP

ITEM # ______________________________

DESCRIPTION _________________________

FROM ________________________________

Starting bid amount: _________________

Bidders: You need to bid on this item if you want it to be auctioned! Place bid below.

NAME/BID

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AUCTION BID SLIP

ITEM # ______________________________

DESCRIPTION _________________________

FROM ________________________________

Starting bid amount: _________________

Bidders: You need to bid on this item if you want it to be auctioned! Place bid below.

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AUCTION BID SLIP

ITEM # ______________________________

DESCRIPTION _________________________

FROM ________________________________

Starting bid amount: _________________

Bidders: You need to bid on this item if you want it to be auctioned! Place bid below.

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AUCTION BID SLIP

ITEM # ______________________________

DESCRIPTION _________________________

FROM ________________________________

Starting bid amount: _________________

Bidders: You need to bid on this item if you want it to be auctioned! Place bid below.

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AUCTION BID SLIP

ITEM # ______________________________

DESCRIPTION _________________________

FROM ________________________________

Starting bid amount: _________________

Bidders: You need to bid on this item if you want it to be auctioned! Place bid below.

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AUCTION BID SLIP

ITEM # ______________________________

DESCRIPTION _________________________

FROM ________________________________

Starting bid amount: _________________

Bidders: You need to bid on this item if you want it to be auctioned! Place bid below.

NAME/BID

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SUMMARY SHEET FOR AUCTION ITEMS SUBMITTED BY_____

Initials	Item #	Description	Minimum bid	Final sale price
	1			
	2			
	3			
	4			
	5			
	6			
	7			
	8			
	9			
	10			
	11			
	12			
	13			
	14			
	15			
	16			
	17			
	18			
	19			
	20			

Prospecting for Beer

While metal detecting for silver in Cobalt, ON, we got into a real hot spot through pure luck and a little skill. Because we left obvious signs of digging, anyone following us would know that something had been found there. It was a very hot summer day, and I downed several cans of American beer. (I am still waiting for the buzz.) I carefully buried these where we had been digging, and next time we went there, several cans were neatly lined up on the ground. … You snooze, you lose.

Source: https://www.mindat.org/forum.php?read,6,404256,405217

September 2020—Upcoming Events in Our Area/Region (see details below)

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2 MSDC mtg, Washington, DC	3	4	5
6	7 **Labor Day**	8	9	10	11	12
13	14 GLMSMC mtg, Rockville, MD	15	16	17	18	19
20	21	22 Fall begins	23 MNCA mtg, Arlington, VA	24	25	26
27	28 **NVMC mtg, Arlington, VA**	29	30			

Disclaimer

All meetings are tentative during the coronavirus pandemic, and club meetings might well be remote. Check the website for each organization for more information.

Event Details

1: Washington, DC—Mineralogical Society of the District of Columbia; meetings via Zoom until further notice; http://www.mineralogicalsocietyofdc.org/.

14: Rockville, MD—Gem, Lapidary, and Mineral Society of Montgomery County; meetings via Zoom until further notice; https://www.glmsmc.com/.

23: Arlington, VA—Micromineralogists of the National Capital Area; meetings via Zoom until further notice; http://www.dcmicrominerals.org/.

28: Arlington, VA—Northern Virginia Mineral Club; meetings via Zoom until further notice; https://www.novamineralclub.org/.

sur-Truyère, Aveyron, Midi-Pyrénées, France. Source: Wikipedia; photo: Parent Géry.

Hutch Brown, Editor
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THE NORTHERN VIRGINIA MINERAL CLUB INC
Crystals are the flowers of the Mineral Kingdom

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show.chair@novamineral.club
Webmaster: Casper Voogt
webmaster@novamineral.club

Mineral of the Month: Torbernite

PLEASE VISIT OUR WEBSITE AT:
http://www.novamineralclub

The Northern Virginia Mineral Club

Visitors are always welcome at our club meetings!

Please send your newsletter articles to:
hutchbrown41@gmail.com

RENEW YOUR MEMBERSHIP!

SEND YOUR DUES TO:
Roger Haskins, Treasurer, NVMC
4411 Marsala Glen Way, Fairfax, VA 22033-3136

OR

Bring your dues to the next meeting.

Dues: Due by January 1 of each year; $20 individual, $25 family, $6 junior (under 16, sponsored by an adult member).

Purpose: To encourage interest in and learning about geology, mineralogy, lapidary arts, and related sciences. The club is a member of the Eastern Federation of Mineralogical and Lapidary Societies (EFMLS—at http://www.amfed.org/efmls) and the American Federation of Mineralogical Societies (AFMS—at http://www.amfed.org).

Meetings: At 7:45 p.m. on the fourth Monday of each month (except May and December)* at **Long Branch Nature Center**, 625 Carlin Springs Road, Arlington, VA. (No meeting in July or August.)

**Changes are announced in the newsletter; we follow the snow schedule of Arlington County schools.*