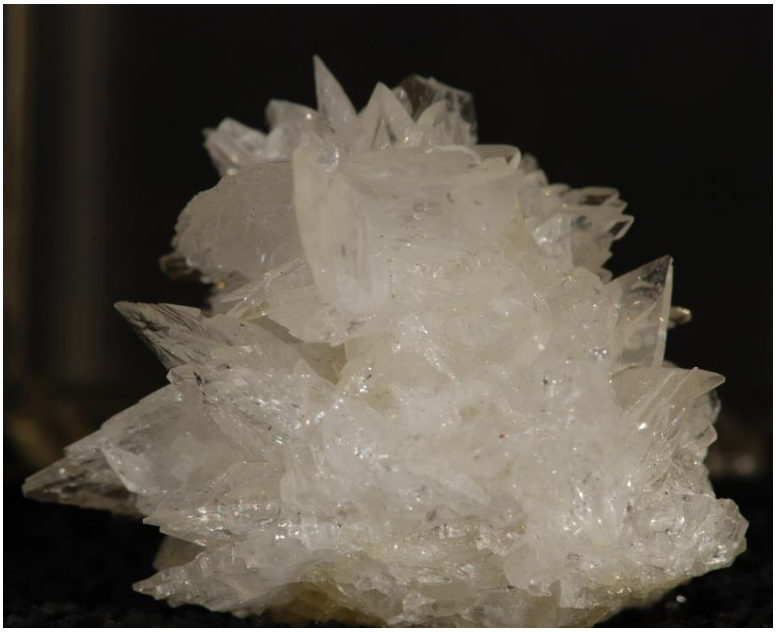
THE NORTHERN VIRGINIA MINERAL CLUB INC

The Mineral Newsletter

Meeting: March 23 Time: 7:30 p.m.

Long Branch Nature Center, 625 South Carlin Springs Road, Arlington, VA



Colemanite

Boron Mine, Kern County California

Photo: Bob Cooke.

Deadline for Submissions

March 30

Please make your submission by the 30th of this month!
Submissions received later might go into a later newsletter.

Volume 61, No. 3
March 2020
Explore our website!

March Meeting Program:

Spring Club Auction

details on page 6

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Mineral of the Month
Colemanite

by Sue Marcus

I don't think we've studied a borate mineral, so let's learn about colemanite. It is a mineral that I enjoy because it is one of the very few minerals I've self-collected with nice crystals.

Death Valley Samples

The original samples of this mineral came from a mine in Furnace Creek, CA (in the Death Valley area). The mine, operated by Harmony Borax Works and later by American Borate, was the source of borax for the famous 20-mule-team borax advertising campaign.

In the 1880s, when Harmony was owned by William Tell Coleman, teams on mules pulled wagons laden with partly refined boron minerals. When the new mineral that became colemanite was identified by A.W. Jackson and W.T. Evans in 1884, the name colemanite was proposed, honoring the mine owner. Coleman graciously suggested that the mineral be named "smithite" instead, after his partner Francis Marion Smith, but colemanite is the name that stuck.

I couldn't find the original name of the mine (perhaps the Harmony Borax Mine), although it was later the B-mine and then the Billie Mine. The Billie Mine, which extended under Death Valley National Park—to the consternation of both the mine owners and the park—closed in 2005. The 20-mule-team slogan lives on at U.S. Borax, still mining in California though not at the Billie Mine. Despite the harsh conditions of hauling rock through the hot desert over sand and rough terrain, no animals or people were ever lost, according to the company's website.

Formation

Colemanite is a sedimentary mineral that can form in a couple of ways.

The first way is in an arid closed basin, usually with volcanic activity nearby to provide a boron source. Fluids containing boron accumulate on the basin's floor and then evaporate. If the boron-bearing layer is capped by clay or by enough impermeable material to keep the borates from dissolving, they will be buried for future discovery.

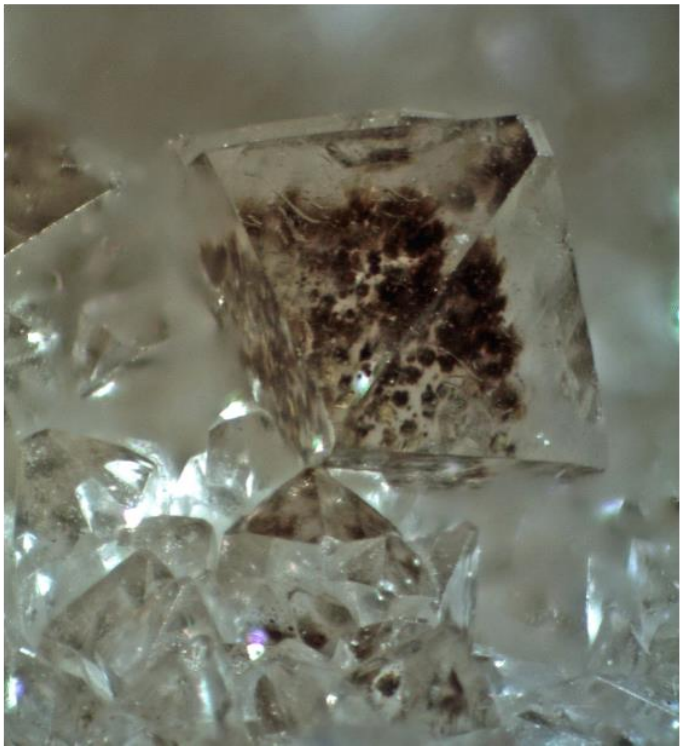
Happy St. Patrick's Day!

Northern Virginia Mineral Club members,

Please join your club officers for dinner at the Olive Garden on March 23 at 6 p.m.

Olive Garden, Baileys Cross Roads (across from Skyline Towers), 3548 South Jefferson St. (intersecting Leesburg Pike), Falls Church, VA
Phone: 703-671-7507

Reservations are under Ti Meredith, Vice-President, NVMC. Please RSVP to me at ti.meredith@aol.com.



Colemanite, Corkscrew Canyon Mine, Inyo County, California. Source: Mindat; photo: Peter J. Modreski.

Colemanite is not currently forming by evaporation of boron-rich surficial fluids, although I did not learn why.

Colemanite, Boron Mine, Kern County, CA. Photo: Bob Cooke.

The second way that colemanite can form is as an alteration product of myerhofferite and possibly ulexite when either of these minerals gain water in their chemical makeup by exposure to humidifying surficial air or subsurface ground water.

Localities

The Mojave Desert region of California hosts the major economic resources of colemanite and all but minor collecting localities. The Billie Mine was in Inyo County, the Boron Mine is in Kern County, and the Fort Cady deposit is in San Bernardino County. Colemanite deposits and collectible specimens also come from arid regions of Turkey and, to a lesser extent, from the Atacama Desert of Argentina as well as from Kazakhstan.

California is a major source of colemanite crystals. I was about to finish this column when, in checking one last technical source, I came across the phrase "beautiful pseudomorphs of colemanite after inyoite." Well, despite being ready to move on, this piqued my interest, so I checked Mindat (as I encourage you to do) for photos of colemanite from the Corkscrew Mine in the Furnace Creek Mining Distract. These are some of the most interesting colemanite photos I've seen.

The Billie Mine, located in the same mining district, also produced fine specimens, better ones than are portrayed on the Mindat site for that property. The Boron Mine, an open pit, has produced sharp, sparkling colemanite crystals, sometimes with contrastingly colored calcite crystals. Colemanite is also found at other California localities, though not in specimens of known interest to collectors. For example, large masses of colemanite mixed with limestone were intermittently mined in Ventura County from 1899 to 1907.

Turkish deposits produced darker brown, twinned, and zoned specimens from the Kurtpınarı and Kestelek Mines. The specimens from the two mines in Turkey are very different from most "typical" colemanite, including specimens from other deposits in Turkey. Specimens from deposits in the Emet Basin in Turkey form radiating light gray aggregates or nodules, somewhat similar to wavellite from Arkansas. Colemanite is the main ore mineral at the deposits in this region, although the specimens are not as attractive as those from other localities. Fluorescent collectors, take note: some specimens from Turkey fluoresce and phosphoresce, probably due to arsenic as an activator.

Blocky and dull but large (for colemanite) specimens have come from the Inder B deposit and salt dome in Kazakhstan. Colemanite is also found in a few other parts of the world. Argentina has economically exploitable (minable) deposits that contain colemanite, although the crystals are small and mainly significant to locality collectors or to those who want colemanite from every locality where it can be obtained.

Major Mining Operations

Rio Tinto is a large, multinational, multimineral mining company. Its subsidiary, U.S. Borax, operates the Boron Mine in California's Kern County. The mine is the largest open-pit operation in the state, measuring almost 2 miles long, 1.74 miles wide, and 755 feet deep at its deepest point, according to the mine website. Colemanite is one of the borates extracted here, along with richer kernite, ulexite, and tincal (tincalconite).

The company's website reports that the mine produces 1 million tons of refined borate per year, accounting for one-third of the world's refined borate supply. The property even has a visitors' center that includes a museum and old mining artifacts, along with a view of the pit.

Colemanite is the most significant borate mineral found at the American Pacific Borates, Ltd. deposit at Fort Cady, CA. This deposit has yet to developed. Unfortunately for collectors, although it is the largest colemanite deposit in the country, the mineral is either disseminated in lacustrine (lakebed) sediments or occurs in fine-grained layers.

Also not helpful for prospective collectors is the fact that, even though colemanite is not highly soluble, solution mining has been proposed at Fort Cady. No, I don't understand how this would work with a not-very-soluble material in a desert. The latest owners may have newer, improved ideas.

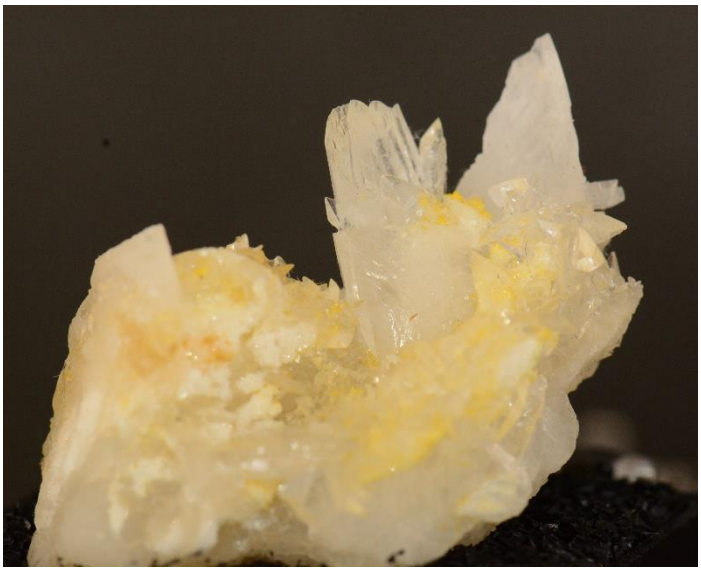
In any case, this deposit seems like an unlikely source of specimens.

Commercial Production

Colemanite was the primary boron ore until kernite was identified as a richer source in 1926. Since then, colemanite has probably dropped to fourth place as a borate ore (after tincalconite, kernite, and ulexite).

Borate minerals have many uses. They are particularly useful in glass, ceramics, and glazes by helping the finished product stand up to high temperatures. Borates are also used in fiberglass, as fire retardants, and in liquid crystal displays. In addition, they are used as pesticides and as laundry additives.

Although the United States imports boron products, we export more than we import. China has limited boron resources, and the Boron Mine in California is well placed to export to China, by far the largest importer of U.S. borates.



Colemanite, Boron Mine, Kern County, CA. The yellow is from microscopic realgar inclusions. Photo: Bob Cooke.

Lapidary Uses

Like other minerals we've examined, colemanite can and has been faceted, although it is neither a durable gemstone nor easy to facet. It is relatively soft and brittle and has a perfect cleavage, aside from the fact that large clear specimens are seldom found.

Colemanite, Boron Mine, Kern County, CA. Source: Brigham Young University, Department of Geology. Photo: Peter J. Modreski.

Some specimens fluoresce pale yellow under short- and longwave ultraviolet light, and some also phosphoresce green (sounds like fun to see).

Colemanite exhibits pyroelectricity, emitting a small electrical charge at low temperatures; it also exhibits piezoelectricity, generating a small electrical charge under low-temperature stress.

Technical Details

Chemical formula .....$CaB_3O_4(OH)_3 \cdot H_2O$ (International Mineralogical Association, 2020); formulas vary, but it's basically, calcium, boron, and a lot of water!

Crystal form.....Monoclinic

Hardness 4.5

Density.....2.42g/cm^3

Color .....Colorless (transparent); white to yellow or gray if containing impurities

Streak.....White

Cleavage .....1 perfect

Fracture.....Uneven

Luster.....Vitreous

Acknowledgments

I would like to thank Roberto Torres (a geologist with Rio Tinto, Boron, CA) and Dr. Javier Garcia Veigas (head of the department for the Scientific and Technological Centers, University of Barcelona, Barcelona, Spain) for generously sharing their time and expertise, helping me understand the geologic conditions of colemanite formation. Both sent me copies of publications that I used in writing this article, and I am deeply grateful to them for taking time from their busy schedules to help me.

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Colemanite, Rio Tinto's Boron Open Pit Mine, Boron, CA. Photo: Roberto Torres, Rio Tinto.

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Malachite acquired by a lucky buyer at a past NVMC club member auction. Photo: Sheryl Sims.

Club Member Rocks and Minerals Auction Coming Up!

March 23 Program

Our March club meeting will feature our Spring 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). We will quickly move through the business part of the meeting so we can get to the fun!

Sellers, come early to help set up the room and your items. Each auction item should be described on an individual bid slip (see page 24 for the forms—just print out as many pages as you need). 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).

Also, use the summary sheet on page 25 to list all of your items for sale so that the club treasurer can record the final sales price and give you your money after the auction.

Bring guests or invite nonmembers who might be interested in rocks and minerals! Although only current club members are allowed to sell, the meeting and auction are open to all.

Please consider volunteering. The auctioneers, accountants, and runners are all volunteers—so help us out here, folks!

Bring small bills, bid early and often, and help us move on to the next item. We need to be out of our meeting room by about 10 p.m.

**** 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 start with a silent auction to assess interest in each item for sale. So look carefully and start bidding. Items with multiple bids during the silent auction will be brought sooner to the actual (vocal) auction.

Winning bidders must pay for the item promptly with cash or check.

Meeting Minutes
February 24, 2020

by Sue Marcus on behalf of David MacLean, Secretary

President Tom Burke opened the meeting by recognizing former club presidents Barry Remer and Sue Marcus and welcoming guests.

Preliminaries

Kim Harriz, a geologist who is also interested in minerals, introduced herself. We were also joined a bit later by Orion and Abyssinia Jurkowski, who are interested in field trips.

Vice President Ti Meredith presided over door prize drawings for six winners, if the minute-taker-du-jour got it right: Kim Harriz, Rick, Tursan, Craig Moore, Celia Zeibel, Claire, Nykolyszyn, and Garret Kendall.

Business Meeting

After the program delivered by Thomas Hale of the Virginia Mineral Project, the meeting continued with the business session. Past president Sue Marcus conducted some old business carried over from last year. She announced that the club has bestowed honorary memberships on Hutch Brown and Tom Taaffe. Taaffe was honored for his continuing dedication to presenting our club show and Brown for the awarding-winning newsletter he has produced for many years. Although neither awardee was present, their achievements were gratefully acknowledged, and arrangements will be made to get them their plaques.

Certificates of appreciation were announced for those whose work made the 2019 club show possible: Linda Benedict, Tom Benedict, Germaine Broussard, Tom Burke, Robert Clemenzi, Carolyn Cooke, Bob Cooke, Almas Eftekhari, Roger Haskins, Mike Kaas, Jim Kostka, Ti Meredith, Diane Nesmeyer, Jeff Nesmeyer, Bill Oakley, Rick Reiber, Barbara Sky, Tom Taaffe, Celia Zeibel, Lyra Zeibel, and Jason Jeibel. Those present received their certificates, and others will obtain theirs later.

Treasurer Roger Haskins presented the 2020 budget. Since the treasurer is also responsible for memberships, Haskins noted that in 2019, the club had 26 individual memberships and 46 family memberships. In 2020, thus far we have only 23 memberships, mostly families.

JMU Mineral Museum: Grand Opening

The James Madison University Mineral Museum, which has been closed for relocation since last July 1, will hold its grand opening on **April 17**. ***[Note: The event is subject to cancellation due to the coronavirus pandemic, so check the museum website.]*** The new location is in the JMU Festival Conference & Student Center at 1301 Carrier Dr, Harrisonburg, VA 22807 (the latter is a Google Maps link).

It's an RSVP event, and museum curator Lance Kearns will soon be getting out invitations which I will pass along to club members.

Yes, it's a rather long drive from NoVa, but I think it will be well worth the trip.

Tom Burke

Annual GLMSMC Show Canceled

The 55th Annual Gem, Mineral, and Fossil Show, hosted by the Gem, Lapidary, and Mineral Society of Montgomery County, MD, was scheduled for March 21–22. The show was canceled for now due to the risk of conavirus transmission at public gatherings.

47th Annual Atlantic Micromounters' Conference Canceled

This year's Atlantic micromounters' conference, hosted by the Micromineralogists of the National Capital Area and scheduled for April 3–5, was canceled due to the risk of conavirus transmission at public gatherings.

Ti requested a correction to the budget, adding $200 for dinners with speakers. The members also agreed to add $100 for field trips, an amount that had been in

prior budgets but had been dropped from the 2020 draft due to lack of use.

Members discussed education outreach to underserved (Title I) schools; the 2020 budget has funds for it. Members suggested contacting the Virginia Earth Science Teachers' Association to coordinate or partner and to learn how best to direct our help and resources. It was also suggested that the club offer a presentation to the association's conference. Is anyone interested in coordinating this?

Possible collecting trips soon include Bay Front Park (aka Brownie's Beach) for sharks' teeth or possibly Scientists Cliffs, where a cliff fall has been reported. Your minute-taker didn't get who, if anyone, might be organizing this or when.

The 55th Annual Gem, Mineral, and Fossil show hosted by the Gem, Lapidary, and Mineral Society of Montgomery County, MD, was announced for March 21-22 in Gaithersburg, MD. Subsequently, the GLMSMC canceled the show due to the risk of conavirus transmission at public gatherings.

Thomas Hale

The 2020 Tucson Show and the Virginia Mineral Project

February 24 Program

by Sue Marcus

Thomas Hale.

Club members enjoyed going to the 2020 Tucson Mineral Show—actually, many shows—vis-a-vis the virtual experience of Thomas Hale's presentation on his trip there: his beautifully illustrated talk titled "The Tucson Report: A Guide for the First-Timer."

Hale is the mainstay of the Virginia Mineral Project (VMP). He connected that project with the Tucson shows by telling us about the vast mineral collecting, dealing, and interest community that comes together in Tucson. If you want to meet people in the hobby—or business—Tucson is the place to do it. Hale, on behalf of the VMP, made direct connections with at least 45 people who deserve follow-up contacts in support of VMP activity.

Dioptase from Tsumeb, Namibia, on display at the 2007 Tucson Show. Source: Wikipedia; photo: Tucson Show.

Multiple Shows

Hale gave a brief history of the shows, noting that they have grown to a recent count of 65,000 attendees at about 50 different shows or venues. Most shows are free, although the main show charges a fee; moreover, wholesale shows usually require attendees to show a business license. Venues range from bulk sales (by the kilogram or pound) to extremely high-end sales (with pricing labels that read POR—price on request!). There are tents and rooms with wine and canapes.

With his focus on Virginia minerals, Hale was pleasantly surprised to find an apophyllite/prehnite specimen—which he thought was from northern Virginia—at a dealer display. The specimen listed no locality, and the seller's assistant had a hard time believing it was from Virginia. When Hale asked her to check, the seller agreed on the northern Virginia location, but the quarry was unknown. Hale thinks the specimen was collected by Buck Keller or another known collector. It was priced in Tucson at $7,500!

Venues

The Mineral City venue includes about 50 vendors, mostly high end, along with options for specimen preparation (trimming—that is, making an okay piece look prime); laboratory analyses; and custom acrylic bases to show off your high-priced purchases.

Overview of the Tucson Show. Source: Wikipedia; photo: Tucson Show.

A more casual venue that Hale visited was the Elks Lodge, where people lined up long before the place opened, holding empty flats that they planned to fill with their treasures.

At the 22nd Street Show, Hale found objects made from minerals, like lamps, along with a mix of beginner specimens from around the world, both outside and inside the venue.

The Pueblo Show featured more bulk material, mostly sold by the kilogram. Nice specimens could be found through careful searching—the joy of the hunt!—despite the sellers' method of shipping the material without packing, thus causing abrasion and damage.

The Sino Sports Complex, like the Pueblo Show, had mine-direct material sold by weight. Hale found that, with persistence and luck, you could negotiate with most sellers, and even those selling bulk material might let you buy a few specimens if the price was right.

The Days Inn had fossils, which could also be found at some other shows. Hale warned that faked specimens, particularly "Moroccan fossils," were abundant: buyer beware! Moroccan vanadinite was also abundant and real—and varied widely in price, depending on dealer; timing (beginning of show versus end of show—they don't want to store it or take it home); and what the dealer thought you would be willing to pay.

And then there was the Westward Look Show. This is the show where most of us go just to look because we can't afford to buy. Museum quality specimens are shown in artful displays. Prices easily go into five digits, although there can be the occasional rare bargain.

The dealers who have exquisite display ads in the *Mineralogical Record* have rooms here to sell their wares, and they have specimens that they hold back for certain favored buyers (museums and private clients).

Tips for Buying

Hale shared tips and tricks for successfully surviving a Tucson Mineral Show experience:

- Make a game plan (what is most important and what can you skip?). Enjoy the show!
- Negotiate prices. Get to know dealers, who may then give you a price break because they know you.
- Remember to look for sales: keystone (50 percent off) and double keystone (75 percent off). If you are interested in something that a dealer is offering on sale, check back—prices may change if specimens don't sell.
- If you have a budget (and most of us should), stay focused on what you want most. Money runs out quickly when you are having fun!
- Are you collecting or selling? For example, a flat of vanadinite might cost $400. You don't want the whole flat but only one piece, yet the vendor won't sell it separately. So do you buy the flat (which you might be able to sell for about $600) to get the one piece you want?
- Look for specimens you can clean or trim, *if* you are interested in doing this—and will get it done!
- Look carefully and compare dealer prices before spending money. (It helps to write it down or take a photo of the booth so you can find it again!)

Virginia Mineral Project

Hale than presented an update of the VMP. He has logged about 2,500 miles across Virginia discussing the project with clubs, museums, and others. He will be speaking at the EFMLS conference this year, and he has become the federation's Virginia ambassador, connecting it with Virginia clubs and others.

The VMP's initial state directory of clubs, museums, and other resources is being prepared for public release. *The Virginia Rockhound* is the VMP's Facebook name (it's at https://www.facebook.com/VirginiaMineralProject/), although the name may soon change. Monthly VMP updates are available; please contact Hale directly to be on the distribution list.

Did You Know That …

Editor's note: *The item is adapted from* EFMLS News *(January 2020), pp. 5–6.*

… stalagmites in caves can help in determining whether and even when a region was struck by an earthquake? Some scientists surmise that stalagmite pairs were created when an earthquake(s) shifted the ground and altered the water drip flow. (Smithsonian Magazine, September 12, 2016)

… Betelgeuse, the bright star in the Orion constellation's shoulder, is dimming? It could be a sign that the star is about to explode into a supernova. However, this is not easy to know because the star is around 600 light years from Earth and most astronomers believe this will not happen any time in the near future. (National Geographic, December 26, 2019)

… *Rock and Gem Magazine* is the official magazine of the AFMS and its Senior Editor is none other than our spring Wildacres speaker, Bob Jones?

… special sensors are used to detect volcanic eruptions? Fifteen of the 150 most active volcanoes have gas sensors. Placing the sensors is risky due to exposure to heat and corrosive gases. (Smithsonian Magazine, October 13, 2016)

… the Smithsonian Global Volcanism Program has put together a visual record of the world's earthquakes and volcanoes? (Smithsonian Magazine, October 4, 2016)

-- a new type of dinosaur was discovered in Alaska—a duck-billed hadrosaur containing a large hollow crest on its head? It was found along the Colville River on Alaska's North Slope, an area known for duck-billed dinosaur fossils. (Smithsonian Magazine, April 3, 2019)

Behind the Scenes: Kids' Activities at the 2020 Tucson Show

by Mike Kaas

The annual Tucson Gem and Mineral Show was "hog heaven" for rockhounds of all types and levels of interest (not to mention pocket depths).

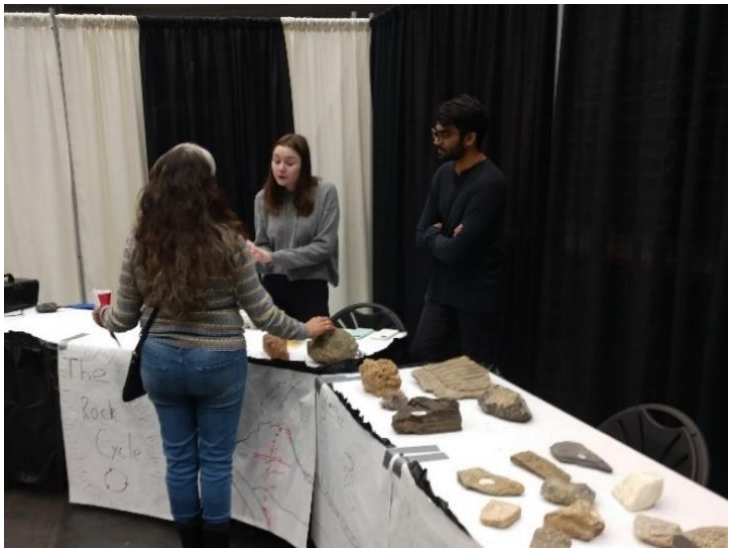
The show featured 2 weeks of individual retail and wholesale "shows" all over Tucson, involving dozens of displays. The grand finale was the public show at the Tucson Convention Center, sponsored by the Tucson Gem and Mineral Society.

There was one important part of the Convention Center show that out-of-towners might have missed. It was a large area of kids' Earth science activities located just off the main floor.

The Kids' Area was staffed by enthusiastic university students. Making your own "egg carton rock-and-mineral collection" was a big hit with the kids. They (and their parents) could also see demonstrations on such topics as the rock cycle, plate tectonics, mineralogy, things made from minerals, paleontology, and volcanos.

A good time was had by all!

Learning about the role of plate tectonics in Arizona. All photos: Mike Kaas.



Exploring the rock cycle and Arizona geology.

Seeing hands-on Earth science experiments of various types.

Making egg carton rock-and-mineral collections.

Letter to NVMC From Schaefermeyer Scholarship Recipient

To the Northern Virginia Mineral Club,

I am honored to have been selected as the recipient of a 2019 Fred Schaefermeyer Scholarship award.

The scholarship award helped me to develop my undergraduate research at James Madison University. I studied the mineralogy and chemical composition of an unusual sample of rock from Italy. During my undergraduate project, I used analytical techniques such as X-ray diffraction (XRD) and scanning electron microscopy (SEM). My research advisor, Dr. Chiara Elmi, and I set out to characterize the mineral morphology and composition of the rock so as to hopefully find out its geological origin.

We used the XRD to obtain the qualitative mineralogical composition of the sample; then we used the SEM to look at the general morphology of the minerals in the rock. Finally, we applied energy dispersive X-ray spectroscopy to obtain the chemical composition of the minerals.

I will present the preliminary results of my research at 69th Annual Meeting of the Southeastern Section of the Geological Society of America in Reston, VA, in March of this year.

Thank you again for selecting me for the Fred Schaefermeyer Scholarship award. This experience helped me build professionalism, confidence, and my resume for my future career. Your support has been greatly valued.

Rachel Patterson

Schaefermeyer Scholarship awarded to James Madison University student Rachel Patterson by Dr. Cynthia Kearns.

Humor

Story of the Side Hill Gouger

Editor's note: *The piece is adapted from Mindat Adventures: Humorous Mineral Stories.*

During a large youth science fair, I was a tour leader on a geology field trip in the Rockies. After many stops that students probably found dull (most were not Earth science inclined), I decided to lighten the mood.

I pointed out the numerous parallel side tracks in the grass on hillsides by the highway, and I attributed their origin to the extinct Side Hill Gouger, a beast that roamed in huge numbers before settlers arrived. The animal evolved to graze on steep hillsides by developing shorter legs on one side.

Warming to my topic, I said that the Side Hill Gouger had two subspecies: one had shorter legs on one side, the other on the opposite side. That way, each subspecies could graze facing the opposite way on the hill.

Unfortunately, the animal rapidly went extinct when the pioneers arrived. When the beasts turned to flee from hunters, their shorter legs were on the wrong side of the hill and they would tumble downhill to their deaths.

It took about 2 or 3 minutes before anyone raised a skeptical question!

Grazing cattle have gouged trails into a steep hillside.

EFMLS 2020 Convention Postponed

by Larry Huffman, EFMLS Liaison, Catawba Gem and Mineral Club

Editor's note: *The article is adapted from* EFMLS Newsletter *(October 2019), pp. 1, 6.*

The Catawba Gem and Mineral Club invited all delegates and guests to its 50th Annual Catawba Valley Gem and Mineral Show, which was to be held in association with the annual EFMLS Convention in Hickory, NC, on March 28–29, 2020.

Both the show and the EFMLS convention were canceled due to the risk of coronavirus transmission at public gatherings. Beverley Eisenacher, EFMLS secretary, offered the following explanation:

> Unfortunately, due to the COVID-19 [coronavirus disease 2019] outbreak, The Catawba Valley Gem & Mineral Club has requested that the EFMLS convention be held at the postponed date of October 23–25, 2020. Since two years ago the Board voted and accepted the invitation by Catawba Valley Gem & Mineral Club to host the 2020 Convention for the EFMLS, and since their show was postponed until October and not cancelled all together, then Catawba Valley Gem & Mineral Club remains as the host to the EFMLS Convention located in Hickory, NC, October 23-25, 2020.

This Month in Geology

by Lee Davisson

Editor's note: The article is adapted from Livermore Lithogram (newsletter of the Livermore Valley Lithophiles, Livermore, CA), March 2016, p. 1.

Some historical trivia for the month of March:

March 30, 1759 .....Giovanni Arduino proposed the four layers of Earth's crust, with three becoming the modern chronological sequence of the Paleozoic, Mesozoic, and Tertiary ages and the fourth being volcanic rocks.

March 23, 1769 .....William Smith was born. He was the first to produce a geologic map based on a definitive rock classification scheme. Unfortunately, he was never recognized for his contribution until late in life, after being plagiarized and driven into debt.

March 1, 1872..... Yellowstone National Park became the nation's first national park when President Ulysses S. Grant signed the corresponding legislation.

March 1913..... Arthur Holmes published his complete geological timescale based on radiometric age dating.

March 2, 1933..... A magnitude 8.4 earthquake off the coast of Japan caused a large tsunami that killed 3,000 people.

Links To Explore

Editor's note: *The item is adapted from* EFMLS News *(January 2020), p. 6.*

The following links contain information related to our hobby. If you have a favorite link, please send it to efmlsnews.editor@gmail.com.

American Federation of Mineralogical Societies: www.amfed.org

American Lands Access Association: www.amlands.org

American Geological Institute: www.americangeosciences.org

Gemological Institute of America: www.gia.edu

Mineralogical Society of America: www.minsocam.org

National Speleological Society: www.caves.org

Smithsonian Magazine Smartnews: www.smithsonianmag.com/smartnews

Society of American Silversmiths (care of silver, glossary of silversmithing terms and tools): www.silversmithing.com

U.S. Geological Survey (information on earthquakes, water, volcanoes, landslides, and so on): www.usgs.gov

WebSightings from the Maryland Geological Society (articles on paleontology and geology): www.ecphora.net/mgs/new_interesting_articles.html

Upstate New York Garnet Adventure: August 2019

by the Zeibels (Jason, Audra, Celia, and Lyra)

Situated west of the Hudson Valley near the town of Pottersville, in the Adirondack region of upstate New York, are a number of garnet mines that have been active on and off over the last 150 years.

Garnet is the January birthstone and the official state gemstone of New York. Garnets from the region have been known since antiquity to the Native Americans and subsequently to early European settlers.

Barton Garnet Mine

It wasn't until the 1870s, however, that the first large-scale mining operation was established. Mr. Henry Hudson Barton came to Boston from England in 1846 and worked as an apprentice to a Boston jeweler. While working there in the 1850s, Barton learned of a large deposit of garnet located in the Adirondack Mountains. The garnets were initially misidentified as rubies.

Subsequently, Barton moved to Philadelphia and married the daughter of a sandpaper manufacturer. Combining his knowledge of gem minerals and abrasives, he concluded that garnet would produce better quality sandpaper than what was currently available.

Barton was able to locate the source of the Adirondack garnet stones displayed at the Boston jewelry store years before. He procured samples, which he pulverized and graded. He then produced his first garnet-coated abrasive by hand, which was tested in several woodworking shops near Philadelphia. It proved to be a superior product, and Barton soon sold all he could produce.

Barton began mining at Gore Mountain in 1878. In 1887, he bought the entire mountain from the state of New York. The "modern" plant at Gore Mountain was constructed in 1924. Crushing, milling, and coarse grading were done at the mine site.

The mine, owned by Barton Mines Co., LLC, is roughly 2 kilometers (1.2 miles) by 150 meters (500 feet) in size. It is located in a hornblende-rich garnet amphibolite at the southern boundary of a metamorphosed olivine gabbro body that is in fault contact with charnockite.

Barton Garnet Mine at Gore Mountain in New York. All photos: Jason Zeibel.

In 1983, the Gore Mountain mining operation closed. Mining was relocated to the Ruby Mountain site about 6 kilometers (3.7 miles) to the northeast, where it continues to this day.

Although garnet does not normally exhibit cleavage, the garnets from Gore Mountain and the surrounding area show a tectonically induced "pseudo-cleavage" that yields sharp, angular fragments, greatly enhancing the cutting ability of the commercial garnet products from the region. The same feature reduces the likelihood of finding large gemological material or intact single crystals separated from the matrix.

After the Gore Mountain mine closed in 1983, Garnet Mine Tours opened on the site. Under staff supervision, visitors can collect garnet specimens for a modest fee per pound. After 45 minutes, you must return to the office for 15 minutes of perusing the garnet-based items available for sale. If you like, you can then do another 45 minutes of collecting, repeating the same pattern for as long as you like until closing time.

Self-Collecting Garnets

We visited the Barton Mine in late August 2019 on a bright but partly cloudy day. The trip from the mineral shop, where the tours are organized, to the mine itself was about a 5-minute car ride. Once at the mine, the staff gave a short presentation on the mine history and a short safety briefing, then turned us loose to collect.

Small shards of garnet around 2 to 5 millimeters (up to a fifth of an inch) in size were strewn everywhere and could be simply picked up with ease. Most of these shards were quite sharp, and you had to take care not to cut your fingers.

Countless larger garnet crystals were visible all around embedded in the local matrix. It was difficult or impossible to remove the crystals from the matrix without destroying them, so we brought back many good examples of matrix with embedded crystals.

The water level in the mine is variable with weather. While we were there, the water was relatively high but quite clear. It served to wash off the garnet material so that the pools glimmered in rays of scarlet reflections every time the sun emerged from the clouds.

After collecting five or six small buckets of samples, we returned to the mine office to weigh our finds. Altogether, the garnets that we collected set us back a little over $8, in addition to the mine entrance fee of $15

The Zeibel family collecting at the Barton Garnet Mine.

The Gore Mountain mineral shop and mine tour center.

Hand for scale, showing the size of the garnets at the Barton Garnet Mine.

Bottle of "garnet sand" from the Barton Garnet Mine.

Garnets shimmering in the water at the Barton Garnet Mine.

Top: Garnet Hill Lodge, North Creek, NY.
Bottom: Garnet-included boulders decorate the entrance to the Garnet Hill Lodge.

per adult and $10 per child. Overall, we were quite satisfied with the mine and the experience.

We also picked up a bottle of "garnet sand" made up of garnet shards sieved to varying diameters and then layered. We also bought some quite reasonably priced garnet jewelry for gifts.

Garnet Hill Lodge

The next stop on our Adirondack garnet adventure was the Garnet Hill Lodge. This was a lovely lunch stop located about 5 miles away from the Barton Garnet Mine.

Garnet Hill Lodge is a rustic hotel resort, primarily focused on winter sports and outdoor activities. The lodge itself is made from large axe-hewn beams and enormous granite hearth fireplaces.

As you walk into the lodge, you are struck by the garnet-included boulders placed at the entrance. Inside, the lodge's fancy restaurant is open year round, with a beautiful view of the surrounding countryside.

About half a kilometer (a third of a mile) southeast of the Garnet Hill Lodge is the Hooper Garnet Mine. The mine is located on what is now public land managed by New York state.

In 1898, Frank Hooper started excavating garnets from a hillslope 1 mile east of Thirteenth Lake in North River, NY. Unfortunately, his garnets were neither as large nor as concentrated as those in the nearby Barton Mine, and he could not compete. He reportedly ended up working at the more productive Barton Mine.

Although the garnet surfaces are typically altered and the large crystals themselves are internally fractured, they still make for attractive rocks, given the size and color of the garnet. Although one of the primary minerals in the Hooper Mine host rock is hornblende, the garnets at the Hooper Mine do not have the attractive black hornblende halo associated with large garnets from the Barton Mine.

Collecting at the Hooper Mine

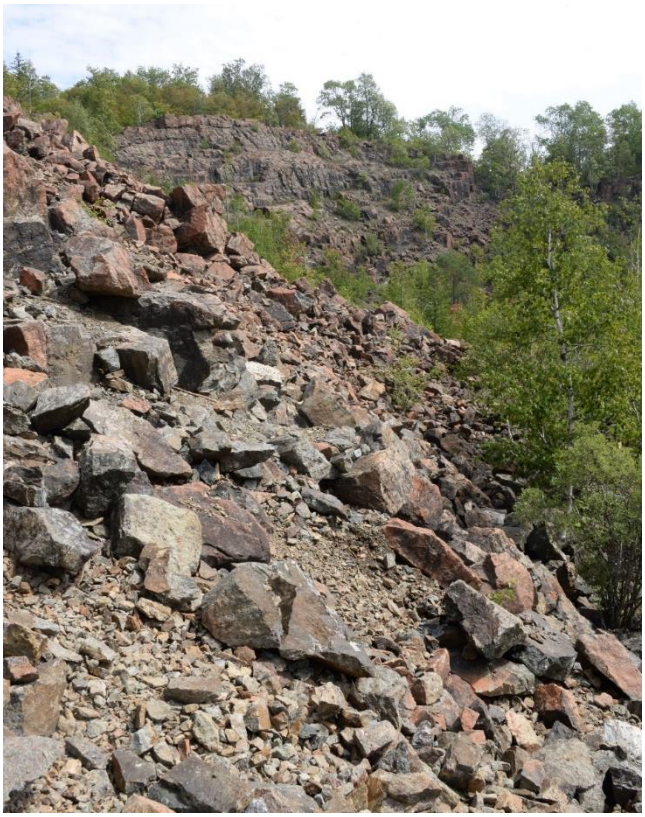
After lunch at the Garnet Hill Lodge, we asked for permission to park near the tennis courts and go collect garnets at the nearby Hooper Mine.

The mine is now an overgrown escarpment/quarry at the top of a hill—with an emphasis on *top*. It is about 250 feet in elevation higher than the parking area at the lodge. Bringing specimens back to the car was fortunately all downhill, but we still had to traverse about 1,500 feet of rocky trail.

Once at the Hooper Mine site, you can find many attractive garnets included in matrix. The entire cliff face that rings the site and all of the surrounding rock have large embedded garnets that are 1 to 10 centimeters (up to 4 inches) in size.

Trailhead and trail up to the Hooper Mine.

We arrived in mid-afternoon and spent a couple of hours with a variety of rock picks and hammers. In the end, we easily filled three 5-gallon buckets with garnet material. Although the garnets weren't as dense as at the nearby Barton Mine, the area from which they were recoverable was considerably larger. The mine site easily covers several acres, with a mix of light tree cover and exposed outcrops.



Top: View of the Hooper Mine from near the upper rim. Bottom: Hooper Mine garnets shown for scale.

Celia and Lyra Zeibel collecting garnets at the Hooper Mine.

Only a few of the garnets that we recovered exhibited crystal faces exposed from the native rock, but the size of the embedded crystals made up for any lack of definition. As at the Barton Mine, the underlying soil sparkled crimson red with the shards of garnet crystals that had either weathered or been broken out of the rock.

We collected samples at the Hooper Mine for about 3 hours and quickly realized that we had more than we could possibly carry back to the car. After some agonizing choices about which samples were really worth bringing back down the access trail and which were "leaverite," we headed back. The location where the trail meets the rim of the mine provides a vast panoramic vista overlooking the Adirondack Mountains, with fist size garnets beneath your feet. We took a group selfie there before heading off.

The Barton Mine and Hooper Mine were both fun and fascinating opportunities for mineral collecting, and both gave glimpses into the mining past of the Adirondack area of upstate New York. Their proximity makes them easily doable together in a day.

Some of the few Harper Mine garnets that we found that were at least partially free from the host rock.

Although the garnets from the two locations share similarities, the matrix rock is noticeably different. It was relatively easy to tell samples from the two sites apart even when they were mixed together, as long as some of the local matrix was present.

In the end, the young rockhounds among us gave it two thumbs up!

References

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GeoWord of the Day

(from the American Geoscience Institute)

Paleolithic

In archeology, the first division of the Stone Age, characterized by the appearance of humans and their implements. Correlation of relative cultural levels with actual age (and, therefore, with the time-stratigraphic units of geology) varies from region to region; however, the age generally given for the Paleolithic more or less coincides with the Pleistocene.

(from the *Glossary of Geology*, 5th edition, revised)

The Zeibel family at the Hooper Mine site.

Save the dates!

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 at the Field Studies in Geology—GOL 135 Website.

Geology of Great Falls, VA

April 18, 2020, 9 a.m.–5 p.m. Meet at the Great Falls Park Visitor Center and spend the day viewing exhibits and touring the park. You must be able to hike several miles on occasionally rocky trails. After the face-to-face activities, you will have 10 days to complete a set of related online assignments.

Geology of Washington, DC

April 19, 2020, 9 a.m.–5 p.m. This walking tour will focus on the geology of our capital and its effect on city design as well as building stone choice and structure. Also covered will be the origin of the diverse rock types used in building, monument, and memorial construction.

Audubon Naturalist Society

The ANS offers classes and nature programs, including short field trips. You can get more information and register at the ANS website.

Geology at Woodend

March 1, 2020, 1:30–4 p.m. The cost of this field trip, led by Joe Marx, is $36 for nonmembers. The ANS Woodend Sanctuary in Maryland's Piedmont has a tumultuous geologic history extending back half a billion years. We'll hike around the sanctuary grounds and down onto the floodplain of Rock Creek, examining the topography and underlying bedrock to see how they bear witness to the long-term story. Our walk, mostly uphill and downhill over rocky and muddy terrain, will be 1 to 1.5 miles in length.

Geology of Holmes Run Gorge

April 19, 2020, 12–4 p.m. The cost of this field trip, led by Joe Marx, is $36 for nonmembers. Alexandria sits atop a wedding cake of overlapping and intersecting terraces created by the Potomac River and its ancestral streams. Holmes Run, a relatively large upland

watercourse in the northwestern quadrant of the city, has sliced through the layers down to the bedrock on which they all rest. We will walk about 3 miles on good trails and mostly level ground through the Holmes Run Gorge, examining outcrops of granite, schist, and partially formed sedimentary rock. The discussion will focus on the ancient origins of the various rock types and on changes that have happened within the gorge in historical times. An added bonus will be a miniature magnolia bog! Note: The pace set and distance covered on our geology hikes will be faster and farther than our usual naturalist's shuffle.

Safety Matters

Is Safety Enough?

by Ellery Borow, AFMS Safety Chair

Editor's note: *The article is adapted from* AFMS Newsletter *(September 2019), p. 4.*

A question, if I may: Do you think just wearing eyeglasses is enough to protect your eyes?

The answer is maybe, maybe not.

Another question: Does wearing your seat belt make you feel safer or more confident about driving? And if you feel safer or more confident, will you drive faster or maybe less cautiously?

There is a discussion in safety circles as to whether additional risk taking might reduce the safety of using seat belts. It is not a question of whether or not to wear seat belts because seat belts are known to save lives and reduce injuries. It is a question how we feel about

relying on seat belts to get us out of any trouble that might befall us. In other words, seat belts are not the whole answer but rather complementary to our good driving practices.

Of course, there are folks who will not change their driving habits one iota while wearing their seat belts. They will remain as cautious and risk averse as they usually are. They will, as usual, mind the speed limit; they will drive just as carefully in snow even though they have snow tires, and they will be just as cautious in every respect.

So where do safety glasses enter his discussion?

When you wear safety glasses, are your hammering actions more dramatic on the chisel? Are you as careful as usual about other people in the area while chips are flying? Are you as fussy about large flying shards while striking a rock directly with your hammer?

Safety shoes: might wearing safety shoes make you less careful of your footing? You can still lose your footing even when wearing the best of boots.

Gloves: don't count on gloves to fully protect your hand during a hammer misstrike. Your fingers can still suffer a hurtful pinch right through a heavy glove.

The takeaway is to remain mindful even when wearing or utilizing every item of safety gear available. Try not to let using safety gear override good safety practices; you can do this!

Bench Tip

Cutoff Wheels

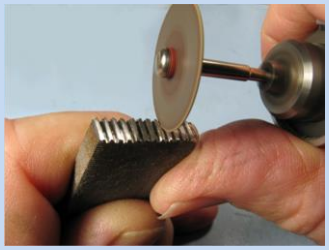
Brad Smith

Cutoff wheels are inexpensive and do a great job of cutting or shaping steel. You can use them to sharpen tool points, cut piano wire to length, make slots, and sharpen worn drills. Other uses include modifying pliers and making your own design stamps.

My preference is the 1-inch-diameter size. Be sure to hold the wheel firmly so nothing moves to break the disk, and definitely wear your safety glasses. Those are little flakes of steel coming off the disk.

By the way, cutoff wheels are poor at soft metals like copper, silver, and gold. Soft metals clog up the cutting edges.

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



A synonym is a word you use when you can't spell the other one.

Baltasar Gracián, Spanish philosopher (1601–1658)

March 2020—Upcoming Events of Interest in Our Area/Region (see details below)

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1 ANS field trip	2	3	4 MSDC mtg, Washington, DC	5	6	7 Show, Wilmington, DE
8 Show, Wilmington, DE	9 GLMSMC mtg, Rockville, MD	10	11	12	13 Symposium, PA	14 Symposium, PA
15	16	17 St. Patrick's Day	18	19 Spring begins	20	21
22	23 NVMC mtg, Arlington, VA	24	25 MNCA mtg, Arlington	26	27	28 Show, PA
29 Show, PA	30	31				

Event Details

1: Geology at Woodend—Audubon Naturalist Society field trip; 1:30–4; info, reg: ANS website.

6: Washington, DC—Monthly mtg; Mineralogical Society of the District of Columbia; 7:45–10; Smithsonian Natural History Museum, Constitution Avenue lobby.

7–8: Wilmington, DE—Annual show; Delaware Mineralogical Society; Double Tree by Hilton, 4727 Concord Pike (Rt 202); Sat 10–5, Sun 11–5; adults $6, seniors $5, kids 12–16 $4, under 12 free with adult; info: www.delminsociety.net or Elaine Kipp, 410-392-6826, kippekipp@msn.com.

9: Rockville, MD—Monthly meeting; Gem, Lapidary, and Mineral Society of Montgomery County; 7:30–10; Rockville Senior Center, 1150 Carnation Drive.

13–14: Richboro, PA—44th Annual Micromount Symposium; Leidy Microscopical Society; Advent Lutheran Church, 45 Worthington Mill Rd; Fri 12–6, Sat 9–6; info: Don McAlaren, 610-584-1364, donmcalarnen@outlook.com.

23: Arlington, VA—Monthly meeting; Northern Virginia Mineral Club; 7:45–10; Long Branch Nature Center, 625 S Carlin Springs Rd.

25: Arlington, VA—Monthly meeting; Micromineralogists of the National Capital Area; 7:45–10; Long Branch Nature Center, 625 S Carlin Springs Rd.

28–29: Wysox, PA—51st Annual Gem, & Mineral Show; Che-Hanna Rock & Mineral Club; Wysox Volunteer Fire Co. Social Hall, 111 Lake Road; Sat 9–5, Sun 10–4; info: www.chehannarocks.com. *Check the website to make sure the show has not been canceled!*

Colemanite from California.
Source: Wikipedia; photo: Bureau of Mines.

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

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AUCTION BID SLIP

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SUMMARY SHEET FOR AUCTION ITEMS SUBMITTED BY_____

Initials	Item #	Description	Minimum bid	Final sale price
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	11			
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	19			
	20			

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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Mineral of the Month: Colemanite

PLEASE VISIT OUR WEBSITE AT:

http://www.novamineralclub.org

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.*