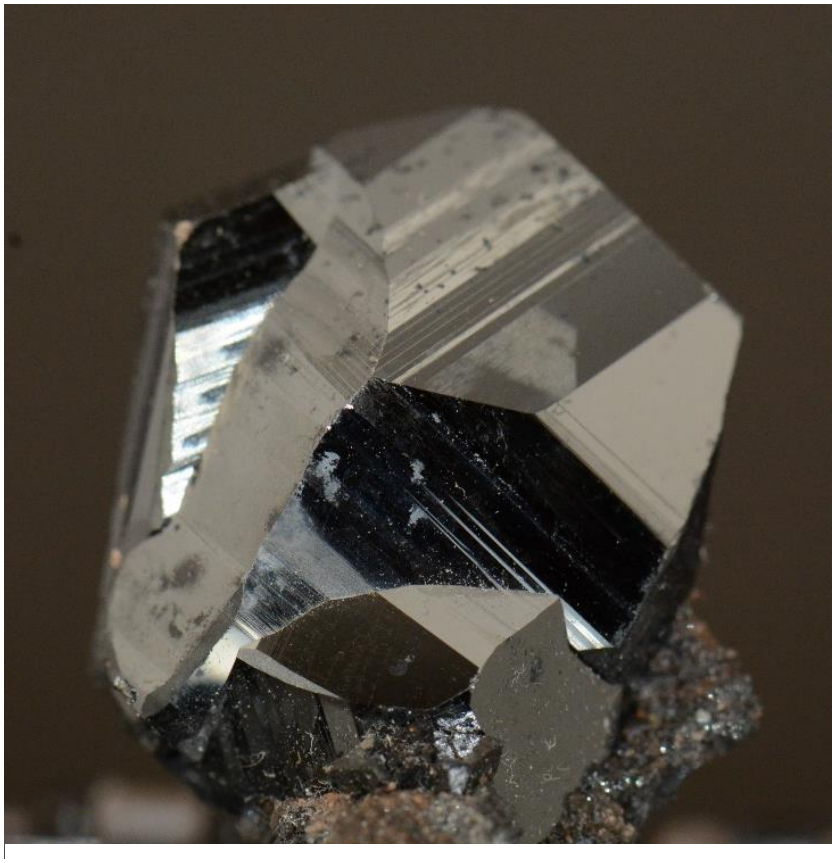
THE NORTHERN VIRGINIA MINERAL CLUB INC

The Mineral Newsletter

Meeting: October 28 Time: 7:45 p.m.

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



Hematite

Black Rock Mine, South Africa

Photo: Bob Cooke.

Deadline for Submissions

October 20

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

Volume 60, No. 8
October 2019
Explore our website!

October Meeting Program:
Virginia Mineral Project
(details on page 5)

In this issue …

Mineral of the Month
Hematite

by Sue Marcus

October's Mineral of the Month is hematite, a major ore of iron that comes in diverse morphologies. Let's explore it together.

Ancient Uses and Etymology

Hematite has been used since prehistoric times. Think of the red "paint" used in cave drawings. That was ocher, a powdered material containing 20- to 70-percent hematite. A Wikipedia article states that ocher was used 164,000 years ago "for social purposes."

Hematite was mined on the Mediterranean island of Elba by the Etruscans, so this mineral has a long history of use. That is reflected in the evolution of its name, which derived from the red types of this mineral. Mindat credits Theophrastus with its first name in 300–325 BCE, αἱματίτης λίθος which translates to *haimatitēs lithos* or "bloodstone." Then sources differ, with Mindat giving Pliny the Elder credit for translating the name in 70 CE to *haematites* ("blood-like"), thus giving this mineral name the distinction of being the first with -ite as its suffix.

Other sources conclude that, in the 15th century, the original ancient Greek became Latin *lapis haematites*, which was revised to Middle French *hématite pierre* ("bloodstone"). Some European sources may still prefer spelling it haematite.

There will not be a quiz on all this!

Forms

The reddish streak of hematite is a good indicator, and its lack of magnetism is also a useful clue. Remember that hematite can become magnetic upon heating or if the material is intermingled with magnetite.

The red nonmetallic types of hematite can be used as pigments and are softer and easier to work than the more interesting collectible types of hematite, which are black and metallic to submetallic. There are mammillary or botryoidal masses that form interesting shapes, including stalactites and stalagmites and beautiful rosettes of lustrous metallic crystals.

Happy Halloween!

Northern Virginia Mineral Club members,

Please join our speaker Thomas Hale for dinner at the Olive Garden on October 28 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.

Kidney ore hematite, a reddish form of the mineral, from Cumberland, England. Photo: Bob Cooke.

The rosettes are the most highly prized by collectors. Add one or more sparkling, contrasting tiny quartz crystals and you have a stunning specimen. Of special interest to collectors who specialize in pseudomorphs (minerals replacing other minerals or materials) are hematite pseudomorphs after magnetite. "Kidney ore" is a term for lumpy botryoidal masses of hematite.

Banded Iron Formation

The relatively simple chemistry of hematite (Fe_2O_3) and the significance of oxygen in the formula help us

Botryoidal hematite from the Red Mountain Mine, Augusta County, VA. Photo: Bob Cooke.

Hematite rose on quartz from the Massif du St. Gotthard, Switzerland. Photo: Bob Cooke.

understand that hematite usually forms in low-temperature environments with water present. Hematite forms in all three major rock types.

Banded iron formation is the sedimentary and most economically important form of hematite. These formations were laid down billions of years ago. Fine-grained massive hematite with magnetite comprises the dark bands and stains the silica-rich red bands.

Most U.S. iron production is in the banded iron formation in the Iron Range of Minnesota and, to a lesser extent, in Michigan. There is (or was) a huge hunk of banded iron formation outside the south entrance of the Smithsonian's Natural History Museum.

Hematite in banded iron formation is the production source for most of the ore extracted at the Carajás Mine in Brazil, the world's largest iron mine, with deforestation as a significant byproduct. Weathered iron-rich material above the unweathered hematite is the easiest ore to mine. The site is so large that it can readily be identified from satellite images.

Igneous and Metamorphic Sources

In igneous rocks, hematite can be found in granites or as a hot-springs precipitate (volcano-sedimentary?) in places like Yellowstone. Granites host vugs favoring formations of the rosettes coveted by collectors. Granitic iron deposits are smaller than the sedimentary banded iron formations, but they were more easily identified and worked in antiquity.

What about hematite in metamorphic rocks? Well, the banded iron formation is metamorphosed from sedimentary rocks, so it can count for both rock types.

Hematite can also form during contact metamorphism, when magma or tectonism cooks other rocks.

Wait—there's a uniquely rockhound twist to the metamorphic-hematite part of this story. Iridescent hematite occurs naturally in Brazil (and therefore probably elsewhere in the world) in metamorphic rocks. See the section below on uses of hematite for jewelry for more information.

Oolitic iron ore is another economically important form of hematitic iron. "Oolite" means a rounded or egg-shaped object, usually with concentric rings. It forms when hematite chemically precipitates (the conditions are not understood).

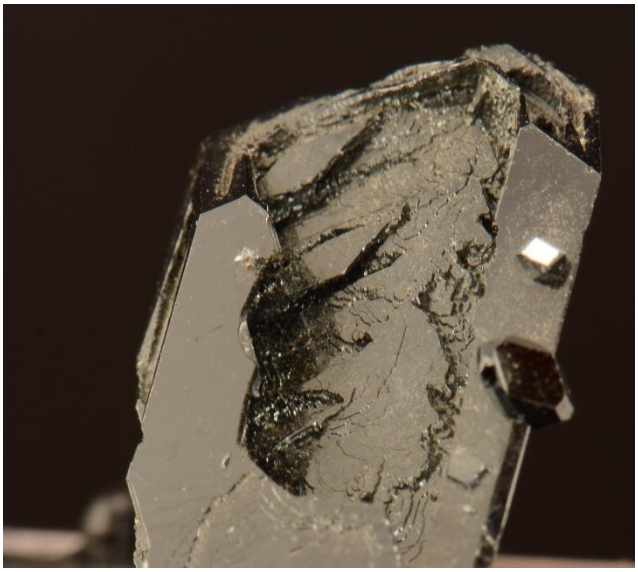
Collecting

Because hematite is relatively common, collectors can visit many noted specimen localities. With the diversity of forms, you could end up with a collection of hematite-specific specimens and a fine assemblage to show.

Elba, Italy, is a classic source, as are the Swiss Alps. Both have produced iron ore and hematite crystals for as long as there have been collectors. But specimens are also readily available on the market.

Specularite is a micaceous form of hematite, usually not as interesting to collectors. But if you want English specimens, you might find this type of hematite from Cumbria (in northwestern England).

Brazil is another producer of hematite specimens, including some rosettes. China is now a powerhouse for lovely and lustrous rosettes. These are the prettiest I've seen.



Hematite from Ures, Sonoma, Mexico.
Photo: Bob Cooke.

Morocco has produced various forms of hematite—mammillary; single crystals; and odd, flattened "skeletal" crystals from numerous localities. The flattened crystals from Nador are an interesting addition to any collection. South Africa's Wessels Mine has produced stunning hematite crystal groups and even more beautiful individual silver-black hematite crystals with deep red andradite (garnet) overgrowths. Moroccan mines and the Wessels Mine are still producing, so we hope for new discoveries.

Hematite is found in many U.S. localities, although attractive specimens are not abundant or well known. Perhaps the best U.S. specimens came from Chubb Lake in St. Lawrence County, NY, in the late 1990s. Like many other showy hematites, these are submetallic and associated with quartz.

Uses

Hematite is mined for iron, which is used for steel production. Australia is the world's largest iron producer. Iron (hematite) mining on Elba began by the 8th century BCE, when the Etruscans operated furnaces 24 hours a day. Mining on Elba only ceased in 1980, and some areas are now a historic mining district.

Powdered hematite is used as a polishing compound known as jeweler's rouge and an additive to brass and silver polishes. Look at the ingredients in solid makeup. If iron oxide is listed, it might be hematite, adding a reddish hue.

Naturally occurring iridescent hematite, also called rainbow hematite, came from the Andrade Mine in Minas Gerais, Brazil, in the 1990s. This brittle, splintery material is of little interest to mineral collectors but a boon to jewelry designers—and buyers. The iridescence comes from nanoscale replacements and alignments, with gorgeous results. This shows hematite in ways most of us never expect from plain old iron oxide.

Harking back to the origin of hematite's name, some rockhounds are familiar with bloodstone, an agate-like form of quartz with green "moss" and red blood-like specks. The red is caused by hematite.

Lustrous silvery-black hematite, notably from Brazil, is used in jewelry and carving. Buyer beware! Many novelty items that are labeled "hematite," if magnetic, are synthetic composites of ground hematite and magnetite.

Hematite has even been detected on Mars! Not as the red in the Red Planet but as "blueberries" (see the photo below). These are rounded hematite concretions that are believed to have been formed with water.

Technical Details:

Chemical formula...Fe_2O_3

Crystal form .....Hexagonal/Trigonal

Hardness.....5–6.5 (sources vary)

Specific gravity 5.3

Color.....Metallic black to gray, nonmetallic red

Iridescent hematite from Elba, Italy.
Source: Ma and Rossman (n.d.).

Streak ..... Brick red
Cleavage ..... None, though may show parting
Fracture ..... Uneven to subconchoidal
Luster ..... Metallic, reflective black

Acknowledgments

I would like to acknowledge the helpful review and additions by my husband, Roger Haskins, and supreme editor Hutch Brown for his skillful editing.

Sources

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Hematite "blueberries" on Mars. Source: NASA, Wikipedia.

Thomas Hale

Virginia Mineral Project

October 28 Program

Thomas Hale will present a program on the Virginia Mineral Project, an initiative to preserve Virginia's mineral legacy for future generations to enjoy.

Virginia has many famous and unique mineral occurrences, with more than 425 individual species reported. The Virginia Mineral Project will use the latest technologies to bring Virginia's mineral heritage to life through collaborative projects, community programs, social media, and photo databases. The project will also collect and revitalize old records and publications, sharing the knowledge with anyone interested in Virginia minerals and geology.

Mr. Hale is recent graduate of Virginia Polytechnic Institute and State University, better known as Virginia Tech. Despite obtaining a degree in security studies in South Asia, Mr. Hale has continued to pursue his passion for minerals and geoscience.

Over the last 5 years, Mr. Hale has collected hundreds of minerals across Virginia and has worked to understand Virginia minerals and the stories behind some of the most famous locations and collectors in the state. For years, he ran an educational outreach page on Facebook called *The Geology Man*, gaining

Kyanite, a Virginia mineral. Source: Virginia Department of Mines, Minerals, and Energy; photo: Rob Lavinsky.

over 6,000 followers, with tens of thousands of views. He was also the founder of the Virginia Rockhounding community group on Facebook, which now has around 600 members who post daily.

Mr. Hale has worked for the Geoscience Museum at Virginia Tech curating a Virginia minerals display. He gives a talk each year to graduate students on engaging youth with minerals and supporting the Virginia standards of learning.

Mr. Hale has now decided to get back into geology and work on his biggest passion: updating the 1990 book *Minerals of Virginia* by R.V. Dietrich. He plans to pursue graduate work in the same area and develop a program for science communication and STEM education based on geoscience.

President's Collected Thoughts

by Sue Marcus, President

These columns look back and look forward.

Looking back to September, we had a terrific club picnic on an overcast though warm day at the home of Vice President Ti Meredith. About 20 people participated in eating and sharing stories.

Jim Kostka brought rocks for educators, spread over six or eight tables, which he generously shared with all. They were nice, labeled specimens. If you couldn't make it, contact Jim to see if he still has samples to share.

I enjoyed the Denver mineral shows in September (plural because, like in Tucson, they are spread out over several venues). Club members George Loud and Barbara Sky also attended the events. Barbara was helping with judging at the main club show, and I ran into George and his lovely wife a few times, notably at the Colorado School of Mines Museum soiree.

Former club member and ex-U.S. ambassador Bill Dameron ("Baryte Bill") was there too, as usual.

Jeff Post, Mike Wise, and Tim Rose were responsible for the Smithsonian's exhibit in the main show. However, they were also browsing for possible new acquisitions. So was I, but on a different price level!

Holiday Party

Please join us for a fun-filled evening on Monday, December 16, at 6:30 p.m. to celebrate the holiday season!

The NVMC and the Micromineralogists of the National Capital Area will provide turkey, ham, and drinks for our holiday party. Please help round out our menu by bringing a side dish. We would appreciate salads, sides, desserts, and more.

Please click on the URL below for the app to sign up if you are coming—and to sign up for a bringing a dish. It really is very easy! Just click and follow the directions!

Thank you. Looking forward to seeing everyone at this wonderful holiday celebration!

Holly Perlick

P.S.: If you would like to participate in the gift exchange, please remember to bring a gift valued between $5 and $20.

https://www.signupgenius.com/go/20F094AADAF2AA46-northern1

Did you go to the Willis Mountain field trip for kyanite? Thanks to Steve Parker for allowing our members to be part of that opportunity! Steve's connections served us all very well once again!

September also brought club fun in the form of the club auction. I hope you were there and bidding high! If not, you will get another chance in March—or in November at the show auction. To the sellers, bidders, auctioneers, and volunteer bankers, your support is truly appreciated!

Let's now look forward. And there is so much coming up. The show's the main thing: mark your calendars for November 23–24 at George Mason University. This is **Your Club Show**, so *you* need to help make it happen! Being part of the event is part of the fun.

We'll also need help setting up on November 22. (For details, see the article by Show Chair Tom Taaffe

below.) Bob Cooke will be asking people to sign up to help in various ways.

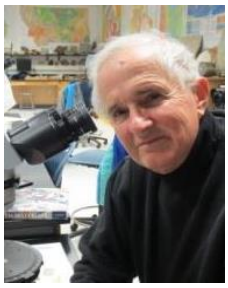
Sign up early before the assignment(s) and time slot(s) you want are gone! Truly, many hands make light work.

Everyone should grab a bunch of show flyers from Tom Taaffe to hand out to friends and folks you meet. We found that our veterinarian and a carpet salesman had kids who were interested. If you run out of flyers, direct people to the club website—or print out and copy the flyer on the next-to-last page of this newsletter.

December brings our holiday party (more fun!) and club officer elections (not so much fun). Volunteers to help organize the holiday party are most welcome!

I'm not planning to run for president. Again, this is *your* club, so it is *your* time to help make it happen! I'll be appointing a nominating committee, encouraging people to step up to run and accepting self-nominations—just let me know what position you want!

Sue



Meeting Minutes
September 23, 2019

by David MacLean, Secretary

President Sue Marcus called the meeting to order at 7:45 p.m. at the Long Branch Nature Center, Arlington, VA.

The minutes of the March 26, 2019, meeting were approved as published in *The Mineral Newsletter*. The president recognized in attendance past presidents Barry Remer and Rob Robinson. The president also recognized one guest and one new member.

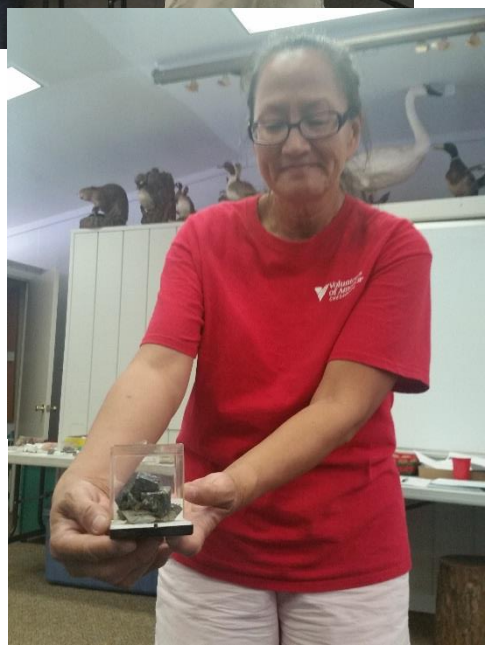
The upcoming annual club show was discussed. The show is scheduled for November 23–24, with hours from 10 a.m. to 6 p.m. on Saturday (November 23) and 10 a.m. to 4 p.m. on Sunday (November 24). The show will be located in George Mason University's Dewberry Hall. For details, see the article on page 10.

Show chair Tom Taaffe asked members to submit new kids' quizzes of 6 to 10 questions each. For giveaways in the kids' activity room, he also asked for contributions of nontoxic rock and mineral specimens from 3/4 inch to 2 inches in size and without sharp edges or points.

Show setup will be on Friday afternoon (November 22) and show takedown on Sunday afternoon (November 24). Lots of volunteer help is needed for setup and takedown, the admissions table, the kids' activity room, and other show activities.

The president announced that NVMC T-shirts are on sale for $15 at club meetings. Elections of officers will take place at the December meeting, and the slate of nominees will be announced at the November meeting.

The rules for the auction included a minimum bid of $2 and bid increments of $2 up to $20 and of $5 from $20 up. The business meeting was adjourned and the club auction followed.



The fall club auction followed the September 23 business meeting. Photos: Pat Flavin.

Nominations for the 2020 Club Officer Elections

by Sue Marcus, President

At the December club meeting, we will elect club officers for 2020. I will be stepping down as club president.

We have many club officers (see the list on the last page of this newsletter), but only four positions are elected each year:

- The ***president*** presides over club meetings and helps to coordinate club activities ranging from auctions and the annual club show to field trips and the club newsletter.
- The ***vice president*** assists the president and coordinates programs and speakers for the monthly club meetings.
- The ***secretary*** takes minutes at club meetings for the club newsletter and summarizes presentations at club meetings, again for the newsletter.
- The ***treasurer*** collects club dues, keeps records of club members, and handles all club financial transactions.

We need volunteers for each position!

President ..... Your Name HERE!

Vice-President .... Ti Meredith??

Secretary ..... David MacLean

Treasurer..... Roger Haskins

Self-nominations are nominations! Fresh ideas from newer members and the experience of valued longer term members are all welcome in officer positions for the leadership we will need in the future. Former club officers are willing to mentor new officers as needed. Please send your nomination(s) to me (Sue Marcus) at r1haskins@verizon.net.

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.

Save the dates!

Desautels Symposium

63rd Annual Paul Desautels Micromount Symposium

October 11–13, 2019

Friends School of Baltimore
5114 N. Charles Street
Baltimore, MD 21210

Giveaway tables, silent auction, voice auction, sales, mineral talks, trading, lots of friends

For program and registration forms, contact:
Mike Seeds, mseeds@fandm.edu

Building Stones of the National Mall

October 12, 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.

Geology of Holmes Run Gorge

November 9, 9 a.m.–5 p.m. 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. Then you will have 10 days to complete a set of related online assignments.

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 of Soapstone Valley, DC

October 26, 1–4 p.m. The cost of this field trip, led by Joe Marx, is $36 for nonmembers. Soapstone Valley, in the Van Ness section of the District of Columbia, provides a pleasant hike through deep woods. Extending about a mile from Connecticut Avenue to Broad Branch, the valley cuts across no less than four

geological formations, all related to the Taconic Orogeny. We will walk about 2 miles. The trail is wide and relatively easy, but there are seven crossings of the little stream, none with bridges. Ups and downs are gentle, but the trail drops several hundred vertical feet on its way to Broad Branch and, of course, the altitude must be regained on the return. The pace set is faster than our usual "naturalist's shuffle."

Kids' Quizzes Needed for Club Show!

For our 28th Annual Gem, Mineral, and Fossil Show coming up in November, we invite club members to design new kids' mineral quizzes. Quizzes should have 6 to 10 questions and be neither too easy nor too difficult.

We also invite you to donate specimens for the Kids' Minimines. Donated specimens should have nice color and/or interesting crystal formations. Donated specimens should be neither very large nor very small, nor should they be dangerously sharp, toxic, or fragile.

If you can contribute, Tom Taaffe at rockcllctr@gmail.com.

Save the date!

Auction

Chesapeake Gem & Mineral Society

Friday, October 11, 2019, 7:30 p.m. (7 p.m. viewing)

Westchester Community Center
2414 Westchester Avenue
Oella, MD 21043

Gemstones, cutting rough, jewelry, minerals, fossils, books, lapidary equipment, and more

For directions and information:
chesapeakegemandmineral.org

There's a Lost Continent Hiding Beneath Europe

by Yasemin Saplakoglu

Editor's note: *The piece is adapted from* LiveScience.

There's a lost continent hidden below southern Europe, and researchers have created the most detailed reconstruction of it yet. The lost continent "Greater Adria" formed about 240 million years ago after it broke off from Gondwana, a southern supercontinent made up of Africa, Antarctica, South America, Australia, and other major landmasses. Greater Adria was large, extending from what is now the Alps all the way to Iran, but not all of it was above water. … *Read more*.

28th Annual Show Coming Up!

November 23–24, 2019

by Tom Taaffe, Show Chair

The NVMC holds its 28th Annual Gem, Mineral, and Fossil Show on November 23 and 24 at George Mason University (GMU).

We have held our annual event at GMU for 21 years. Dr. Julia Nord of GMU's Department of Atmospheric, Oceanic and Earth Sciences has been our facilitator and welcoming host since 1999.

Our show is once again moving two buildings over from The Hub to the Johnson Center. We held a successful show here in 2017, and we expect the Johnson Center to hold all future shows. Dewberry Hall will hold all our dealer booths, and the kids' activity area, exhibits, and demonstrations will be in the adjacent Prefunction Hall and the Gold Room. We expect the floor plan to be much the same as in 2017.

Show volunteers needed!!

We will need a host of club volunteers to help with setup on Friday night, November 22, and to fill various positions over the course of Saturday and Sunday. We encourage volunteers to sign up for shifts of at least 2 hours—more, if you can manage it. We are very grateful to all the volunteers who have so generously helped out at past shows, and we hope that many of you will return to help us again with the 2019 show.

We need volunteers for the tasks and activities summarized below. If you can volunteer or have any questions, please feel free to contact me (Tom Taaffe) at rockcllctr@gmail.com. You are welcome to call or text me at 571-345-5310. You can also volunteer by contacting Sue Marcus at akumaldreams@gmail.com or Bob Cooke at rdotcooke@gmail.com.

Friday Night Setup (A): Volunteers bring materials from the club's storage unit to the Johnson Center, meeting at the storage unit at about 4 p.m. and delivering supplies to GMU at about 5 p.m. Materials include exhibit cases, electrical cords, table coverings, miscellaneous supplies, and mineral specimens for the auction and the Kids' Mini-mines. If we have not already done so, we will also need to bring all the campus directional signs.

This task typically requires two to three vehicles and their drivers, depending on the size of the vehicles. The club storage unit is conveniently located a few miles from GMU.

Friday Night Setup (B)—Loading Dock Procedures: The Johnson Center has an elevated loading dock with three bays. *Note:* The Johnson Center does not have a parking lot, so loading in and out will be quite different from the Hub. We will ask permission to use nearby parking lot A on Friday night; otherwise, volunteers will need to park in the closest GMU parking garage (Mason Pond or Shenandoah). We will hopefully have a system worked out so that those unloading will not all arrive at the same time. Club

Annual Gem, Mineral, and Fossil Show
Participating Dealers

Alan's Quality Minerals, Mount Laurel, NJ

Arrowwood Minerals, Dick Ertel, Lexington, VA

Crystal Luxe Lighting, Aldeane Josephs, Bethesda, MD

Ethiopian Gems, Mubarek Allumani, VA

Jonathan Ertman, Rockville, MD

Bob Farrar, Bowie, MD

Jon Feigin, Sewell, NJ

The Garnet Group, Casper Voogt, Sterling, VA

Geosol Imports, Rob Evans, Hawley, PA

Hartstein Fossils, Gene Hartstein, Newark, DE

Dave Hennessey, Woodbridge, VA

Jan Minerals, Jehan Sher, Stafford, VA

George Loud, Hilton Head, SC

KBT Minerals & Fossils, Tom Taaffe, Vienna, VA

The Mineral House, Tom & Pam Kottyan, Bucyrus, OH

The Prospector Shop, Marianne Cannon, Ligonier, PA

Don Soechting, Agates, Charlottesville, VA

Yinan Wang, Fossils, Arlington, VA

Williams Minerals, Keith Williams, Rio, WV

volunteers as well as student volunteers will be needed to help unload club materials (which we hope to have finished by 6 p.m.).

Starting at 6 p.m., we will need some of the same volunteers to help incoming dealers unload their goods at the three bays on the loading dock and help carry the goods into Dewberry Hall. Dealers will have assigned times (staggered) to prevent a logjam. Most dealers will be scheduled to arrive on Friday night and a few will be scheduled for Saturday morning.

Friday Night Setup (C): Starting at about 5 p.m. at Dewberry Hall in the Johnson Center, volunteers will help arrange and adjust tables for the dealers, then for exhibits. Volunteers will assemble any exhibit cases and help set up the kids' activity area, arranging the quizzes, Mini-mines, and workstations.

Admission Desk: During show hours, volunteers at the admission desk greet show attendees, collect admission fees, and issue door prize tickets. You can sign up for slots on Saturday from 10 a.m. to 5:30 p.m. and on Sunday from 10 a.m. to 3:30 p.m.

Kids' Activities: Volunteers administer quizzes related to minerals and fossils, manage the Kids' Mini-mines, and do what they can to help kids learn. Hours are Saturday from 10 a.m. to 6 p.m. and Sunday from 10 a.m. to 4 p.m. Peak times, when help with kids is needed most, are on Saturday from 11 a.m. to 5 p.m. and on Sunday from 12 p.m. to 3 p.m.

Silent Auction: Volunteers organize donated specimens, create bid slips, monitor 1 hour of the actual auction, collect winning bids, and distribute specimens. Hours are on Sunday from 1 to 2 p.m. We currently have two volunteers, and we need two more.

Floaters: These club volunteers attend the show and help as the need arises. Often, the kids' activity tables or admission tables get overwhelmed, and our floaters step in to help out during the rush. When things calm down, they go back to enjoying the mineral show.

Door Prize Announcer-Manager: A club volunteer pulls hourly winning door prize tickets for kids as well as for adults, announces the winners, escorts winners to the door prize table, and supervises each winner's prize selection.

Floater/Security: Volunteers attend the show and rotate from room to room to make sure everything is running smoothly and that exhibits, activities, and demonstrations are not being overrun and volunteers are not overstressed. We ask for 2-hour to 4-hour shifts for these trouble-shooting positions. For example, you might work on Saturday from 10 a.m. to 2 p.m. or from 2 p.m. to 4 p.m. We will happily accept whatever a volunteer can do.

Display at the annual club show in November 2015. Photo: Sheryl Sims.

Sunday Takedown: This is the reverse of the Friday night setup, starting at 4 p.m. at the show's close on Sunday. Volunteers carefully take apart exhibit cases and packing them away, gathering up all club materials: the Kids' Mini-mines and kids' specimens, the electrical cords, and everything else. Volunteers deliver these items to the club's storage unit and put them away. Additionally, we need someone with a vehicle to gather all the campus directional and shuttle signs and make them ready for returning to the club's storage unit. Sunday night takedown goes pretty fast if numerous people help and volunteer their vehicles for the return trip to the storage unit. You don't need a vehicle to help out, but a few (perhaps three) people with vehicles will be needed.

Mineral Show Parking: We anticipate that designated parking will be in parking lot A on Saturday and Sunday, just as it was in 2017 and 2018. It will be a shorter and easier walk to the Johnson Center than to The Hub. We anticipate that our shuttle route stop and pattern will change a little to fit our new venue. Our GMU sponsor (the Department of Atmospheric, Oceanic and Earth Sciences) will have directional signs placed around campus to point the way to show parking and the shuttle stops.

2019 Award-Winning Articles

by Hutch Brown, Editor

Each year, the regional and national club federations hold a contest for newsletters from the previous year. The contest is organized by the Bulletin Editors' Advisory Committee, better known as the BEAC.

The contest is for newsletters overall (first place, second place, and so on) as well as for articles in various categories (technical/educational, nontechnical, and so forth). Volunteers, usually club editors, do the judging.

The Mineral Newsletter for September 2019 contains the results for our club in this year's contest. You can find the overall AFMS results here and the overall EFMLS results here.

One advantage of the contest is to flag articles in the newsletters of other clubs that might be of interest to our members. In this issue, I am starting a series of "Award-Winning Articles." One of them follows.

Award-Winning Article

The Extraordinary George Frederick Kunz

by Shannon Phillips

Editor's note: *The article, awarded 1st place for original adult technical/educational articles by the EFMLS in the 2019 Bulletin Editors' Contest, is adapted from* Crack 'n Cab *(newsletter of the Gem and Mineral Society of Syracuse, NY), January 2018, pp. 1–2.*

One of my favorite Christmas gifts this year was 320 carats of raw kunzite. I have several pieces of the pale pink stone in jewelry. Although I don't usually gravitate toward that color, this parcel contains rough pieces of the mineral that are colorless, violet, and green, in addition to pink.

Technically, only the pink and lavender varieties are correctly identified as kunzite, named for the self-taught and wildly successful mineralogist George Frederick Kunz (1856–1932). Like many of us, Kunz began collecting at an early age. His father, a German immigrant, was a baker with an interest in natural history. His mother, originally from Switzerland,

Top: *George Frederick Kunz, ca. 1900.* ***Bottom:*** *Kunzite, Konar Valley, Nuristan, Afghanistan. Source: Wikipedia.*

raised George and his five younger siblings, first on the island of Manhattan and later in Hoboken, NJ.

While Kunz was living in New York, major excavations for buildings and subways were underway. There were ample opportunities for a boy to scramble down into the diggings and come away with a pocketful of treasure. After the family moved to New Jersey, Kunz became especially interested in collecting

zeolite minerals from the Palisades and Watchung Mountains.

It is difficult to determine how, but Kunz is reported to have begun trading minerals with European collectors; perhaps his parents had contacts in that part of the world. By the age of 14, Kunz had a collection of over 4,000 specimens, labeled and identified. He sold his collection to the University of Minnesota in the 1870s.

Kunz would go on to build several more important collections during his lifetime. Although he had little formal schooling in mineralogy, geology, or gemology, his unwavering dedication was all he needed to make a career of his passion for gemstones.

Kunz acquired a 27-1/2 carat green tourmaline, probably from Augustus C. Hamlin, M.D., whose family had been mining tourmaline in Maine for decades. Around 1875, Kunz took the stone to the most prominent jeweler in New York and, allowing the stone's beauty to speak for itself, sold Charles Tiffany, founder of Tiffany & Company, his first tourmaline. After several other sales of semiprecious stones, Kunz was offered a position as a gemologist for the most prominent jeweler in New York. He was 23 years old.

Kunz continued to work for the company for 53 years, eventually becoming its vice-president. During his time with Tiffany, Kunz changed the gemstone market forever by introducing colored gemstones to the company's upscale clientele. Although colored stones were, and remain, far less expensive than diamonds, Kunz (1937) knew his clientele:

> [M]any ladies, even those who could afford the gesture of diamond tiara and pearl choker, would be happy to array themselves in the endless gorgeous colors of these unexploited gems. As I looked over a collection of them, with the sunlight imprisoned in the seagreen depths of the tourmaline, lapping at the facets of the watery-blue aquamarine, flooding the blood-red cup of the garnet, glancing from the ice-blue edges of the beryl, melting in the misty nebula of the moonstone, entangled in the fringes of the moss agate, brilliantly concentrated in the metallic zircon, forming a milky star in the heart of the illusive star sapphire-bow, I thought, could a woman ever resist their appeal?

Kunz traveled the world to bring an array of previously unseen gemstones into public view. In 1902, Kunz was the first to identify pink colored crystals as a unique variety of spodumene, subsequently named in his honor.

Fashions change over the years. Nevertheless, and despite the diamond industry's heavy influence on the market (particularly for engagement rings), colored stones are more popular than ever for everyday wear and for bridal jewelry.

In addition to his contribution to the world of gemology, Kunz was also a prolific writer who published over 300 books and articles during his lifetime, offering his knowledge, perspectives, and adventures for amateurs and professionals alike to enjoy and study to this day. Many of Kunz's books and articles are no longer limited by copyrights and are available online free of charge.

Kunz's legacy is secure through his publications, the many collections he helped to build, and—most importantly—the popularity of scores of semiprecious stones we still enjoy.

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Bench Tip

Ring Size Variations

Brad Smith

The numerical sizes marked on ring gauges and ring mandrels are often not the same across different manufacturers. If you're using a ring gauge to measure, be sure to compare the markings on the gauge with the markings on the mandrel you use to make the ring. They might not be the same.

Also, you might have to adjust a little for the width of the ring shank. If you're making a wide-shank ring, the ring generally has to be a little bit larger in diameter than the ring gauge size in order to get a comfortable fit.

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

EFMLS Annual Business Meeting

by Bill Stephens, Regional Vice-President, EFMLS Region IV (Virginia, Maryland, Delaware)

Editor's note: *The article is adapted from a report by the author to NVMC President Sue Marcus on the business meeting at the annual EFMLS convention for 2019.*

As your regional representative, I attended the EFMLS Cracker Barrel Session and annual business meeting on Friday, May 31, 2019.

The Cracker Barrel Session focused on electronic publication of the EFMLS directory on the EFMLS website, including home addresses and phone numbers. Listing personal information electronically can allow bad actors to better spoof club officers, getting (for example) the treasurer to pay a bogus bill.

During the subsequent business meeting, the Board voted to remove unnecessary personal information from public-facing electronic media. Only the hard-copy directory will contain all contact information.

The Board also voted to spend up to $5,000 on developing a more secure website. I have been appointed the ad hoc committee chair for website development.

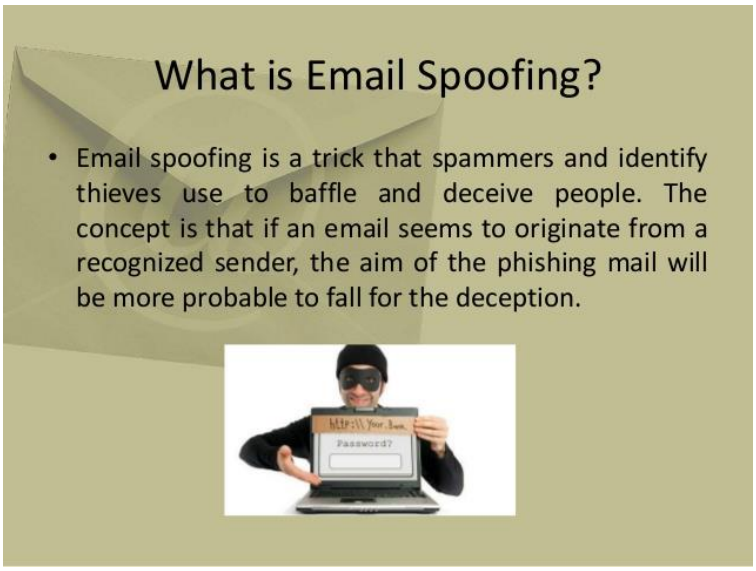
The issue of the EFMLS President serving a second term came up. The bylaws permit it, but some argued that it would abrogate the time-honored tradition of advancing officers after 1 year and that some officers might drop out in response. EFMLS President David Nock said that no president can accomplish anything meaningful in a single term. Doug True, President of AFMS, observed that none of the federations with the 1-year turnover rule were able to accomplish much and that the rule encourages "do-nothing" leadership. I for one have no interest in doing nothing or perpetuating a situation that prevents us from getting things done.

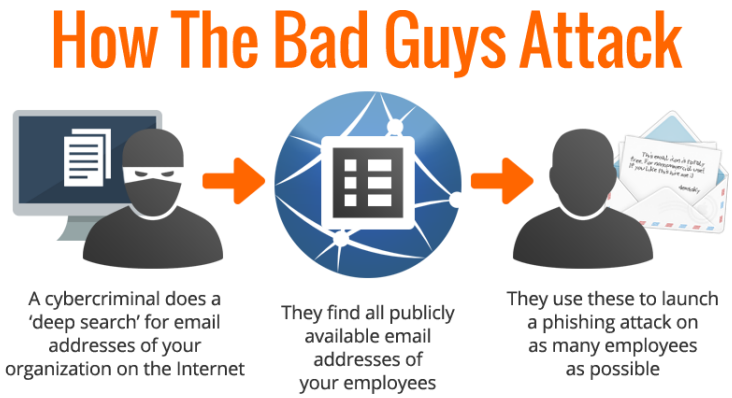
EFMLS officers for 2020 were elected as follows (they will assume or continue their positions on November 1, 2019):

EFMLS President .....David Nock
1st Vice-President.....Ellery Borow
2nd Vice-President.....Laura Simmons

We also discussed new and ongoing business matters of general interest:

- Our librarian indicated that all of our programs available on loan to clubs for programs are now on DVD! The "slides and videos" characterization, which suggests outdated media format, is an artifact of bylaw wording. We agreed to change the wording.
- The EFMLS has no historian and a large backlog of records, newsletters, and so forth. The materials should be scanned, and we are working on how to get that done.





The folks from the Orange County Mineral Society who hosted the EFMLS conference were wonderful. They did a great job, and their hospitality was fantastic!

I was lucky to get the opportunity to join their show at the Museum Village in Monroe. That's what it's really all about—meeting likeminded people and enjoying our hobby.

Next year's annual meeting will be in Hickory, NC, hosted by the Catawba Valley Gem and Mineral Club.

AFMS Code of Ethics

A large measure of the enjoyment of our hobby consists of collecting in the field. For that reason, the members are proud to endorse the following:

1. I will respect both private and public property and will do no collecting on privately owned land without permission from the owner.
2. I will keep informed of all laws, regulations, or rules governing collecting on public lands and will observe them.
3. I will, to the best of my ability, ascertain the boundary lines of property on which I plan to collect.
4. I will use no firearms or blasting material in collecting areas.
5. I will cause no willful damage to property of any kind, such as fences, signs, buildings, etc.
6. I will leave all gates as found.
7. I will build fires only in designated or safe places and will be certain they are completely extinguished before leaving the area.
8. I will discard no burning material—matches, cigarettes, etc.
9. I will fill all excavation holes that might be dangerous to livestock.
10. I will not contaminate wells, creeks, or other water supplies.
11. I will cause no willful damage to collecting material and will take home only what I can reasonably use.
12. I will practice conservation and undertake to utilize fully and well the materials I have collected and will recycle my surplus for the pleasure and benefit of others.
13. I will support the rockhound project H.E.L.P. (Help Eliminate Litter Please) and will leave all collecting areas devoid of litter, regardless of how found.
14. I will cooperate with field trip leaders and those in designated authority in all collecting areas.
15. I will report to my club or federation officers, the Bureau of Land Management, or other authorities any deposit of petrified wood or other materials on public lands that should be protected for the enjoyment of future generations or for public educational and scientific purposes.
16. I will appreciate and protect our heritage of natural resources.
17. I will observe the Golden Rule, will use good outdoor manners, and will at all times conduct myself in a manner that will add to the stature and public image of rockhounds everywhere.

Safety First

Safety Matters—A Numbers Game

by Ellery Borow, AFMS Safety Chair

Editor's note: *The article is adapted from* A.F.M.S. Newsletter *(June 2019), pp. 1, 3.*

Perhaps you've heard about the question of vaccinations and having sufficient coverage to insure the safety of the "herd." Being safe is sometimes a matter of numbers.

What is the likelihood of a particular tree being struck by lightning? Or the likelihood of a mailbox being taken out by a car careening out of control on a slippery road? Or the likelihood of toast landing on the floor—butter side up?

What are the odds? What are the numbers?

With respect to rockhound safety, an important number is the number 1. One person is usually alone working in the basement lapidary workshop, using hazardous rock-cleaning chemicals out in the garage, or going on that field trip to a new site.

How do you protect yourself?

Well, maybe you've been puttering around upstairs in your house when you've noticed how quiet it's gotten in your basement shop.

"Hmm, sure seems quiet! I think I'll go down and see how things are going for her!"

In this case, the number has become 2. Another person has gotten involved!

But what if there isn't anyone else?

Well, you can always rely on workshop safety parameters, have a cell phone handy in case of emergency, have a first aid kit nearby, and so on.

Still, getting another person involved is a great backup! When using chemicals, for example, you can easily breathe too many fumes—and having someone else nearby to help can be critical.

One way to be safe is to understand that pilots, surgeons, astronauts, and rockhounds use checklists. Why would a thoroughly trained professional use a checklist? Because they know what they are doing! Please give serious consideration to using a checklist when working with hazardous chemicals.

You can be safe by yourself on a field trip if you're prepared. But it's better to involve a "number two." The number two in this case would be someone who knows about your destination, your route if there are several ways of getting there, your expected time of return, your cell phone number, and any other information that might be useful in an emergency, such as your meds.

A herd is not necessary for most rockhound activities, but you should make doubly sure to do everything possible to be safe. And it isn't only a matter of numbers. It's a matter of guidelines, understanding, patience, practice, commonsense, thoughtfulness, care, attention, and preparedness.

Is that all? Well, almost.

One more thing: you also need to respect your abilities and limits. By all the numbers, your safety matters!

Possible Relocation of Volcano Observatory Raises Concerns

Editor's note: *The source is* U.S. News and World Report *(April 6, 2019). Thanks to Sue Marcus for the reference!*

Some have voiced concerns about the Hawaiian Volcano Observatory potentially moving off of the Big Island to Oahu. The Observatory confirmed last week that Oahu is one option under consideration for a new home since the headquarters inside Hawaii Volcanoes National Park remains badly damaged from Kilauea volcanic crater collapses, the Hawaii Tribune-Herald reported on Friday. Other options include a new site within the park or on the University of Hawaii at Hilo campus. … *Read more*.

Field Trip Report—June 1, 2019

Vulcan Quarry, Manassas, VA

by Hutch Brown

I joined our club in 2012 through my son Alex, who started collecting rocks at about age 12. Now in college, he was home for the summer and wanted to go mineral collecting at the Manassas quarry. So, bright and early on a Saturday morning, off we went.

It was a multiclub field trip on June 1 from 7:30 a.m. to 11:45 a.m., and the weather was perfect—clear and warm. Some 20 to 30 members from various clubs assembled for a safety briefing in the quarry parking lot. Then a long line of cars headed into the quarry.

The quarry is operated by the Vulcan Materials Company for crushed rock. Vulcan geologist K.T. held a safety briefing, then led us down into the quarry. K.T. has been doing this for many years, offering up his Saturdays to our clubs. So before we left, the Gem, Lapidary, and Mineral Society of Montgomery County presented K.T. with a plaque in appreciation for his many years of service to our hobby.

By 8 a.m., our cars were parked where K.T. directed us to—along a line of freshly blasted boulders. Most of us headed up into the boulders, and the ring of hammers on rock soon echoed from the quarry walls.

Alex and I left our collecting bucket next to the road and spent the next few hours climbing through the boulders. I spent most of my time flipping over rocks in hopes of finding hidden crystals. I also broke off pieces of boulder or broke up rocks with my hammer, which worked pretty well.

I enjoyed pounding the rock, and my eyewear this time was better than the cheap Home Depot goggles I'd used before, which constantly fogged up. Unfortunately, my enthusiastic hammer-wielding techniques yielded no large crystals, even though Mindat lists "40 valid minerals" for the Manassas quarry. Mindat shows 15 Manassas quarry minerals in photos, including nice specimens of apophyllite, chalcopyrite, hematite, prehnite, pyrite, and stellerite.

I later learned (from Sue Marcus) that the trick is to look for cracks in the rock and to split the rock along the cracks. The cracks indicate weaknesses in the rock and possible cavities ("vugs") where minerals precipitated out from the original molten stew, cooling slowly enough to form crystals.

Top: *View of the Manassas quarry from the parking lot.*
Center: *Field trip participants assembled in the parking lot.*
Bottom: *Vulcan geologist K.T. (right) receiving a plaque thanking him for organizing years of field trips to the quarry.*
All photos: Hutch Brown.

The line of freshly blasted boulders we searched through inside the quarry, some more than 8 feet high.

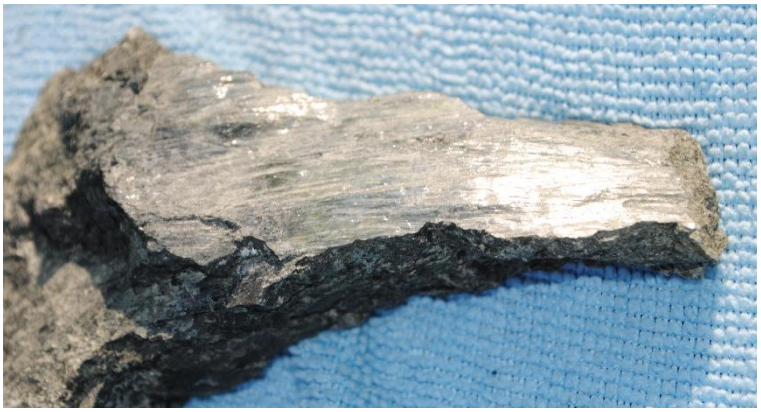
I had a wedge strapped to my belt, and I used it on several cracks, yet I found no crystal-lined vugs—nothing but fine-grained gray rock. The bedrock in the Manassas quarry comprises both diabase and hornfels; the freshly blasted boulders we searched through could have been either (I can't tell the difference).

Alex was having the same bad luck. We finally settled for collecting rock containing microcrystals—maybe quartz? Something else?

Still, it was a memorable experience!

Source

Mindat. 2019. Vulcan Materials Company crushed stone quarry (Manassas quarry).



Slickensides on a piece of rock from the Manassas quarry, where tectonic forces pushed slabs of rock past each other in a fracture, leaving striations on a smooth and gleaming surface.

Not much to look at but all we found. ***Top:*** *A crust of tiny gray and white crystals (quartz?) on matrix.* ***Center:*** *A white crystalline crust with a pearly luster on the edge of matrix. Calcite?* ***Bottom:*** *A tiny (2-centimeter) vug with gray and white crystals, possibly quartz.*

The Rocks Beneath Our Feet

Geology of the Manassas Quarry, part 1

by Hutch Brown

I am more interested in the geology of our area than in its minerals, so for a field trip on June 1, 2019, to the Vulcan quarry in Manassas, VA, I went with a question in mind: Why is the quarry even there?

Geologic Setting

One clue is Bull Run Mountain looming in the distance. Like most large landforms in our area, it is actually a ridge running from southwest to northeast, parallel to (and closely related to) the Blue Ridge Mountains to the west. Bull Run Mountain's metamorphic rock layers, with Cambrian origins about 540–570 million years ago, hint at our area's early tectonic history.

The Vulcan Materials Company operates the Manassas quarry for crushed rock. The quarry is in traprock, a construction industry term for nongranitic igneous rock. The traprock is hundreds of feet thick and much younger in age than the Bull Run rock.

The rock looked to me like the diabase I have seen elsewhere in our area, such as at Old Rag Mountain in the Blue Ridge, where it forms fine-grained veins in the pre-Cambrian granite. Sure enough, the Manassas quarry rock is diabase—but only in part. Another type of rock forms many quarry walls, a metamorphic rock known as hornfels (fig. 1).

How did the hornfels get there?

Diabase forms from magma welling up through fractures in the existing rock (what geologists call the country rock) and cooling underground. The tremendous heat from the magma alters the adjacent country rock in a process known as contact metamorphism. The country rock in the area of the quarry is a sedimentary formation called Balls Bluff Siltstone. Contact with the upwelling magma transformed the Balls Bluff shales and siltstones into hornfels.

I can't tell the difference between the hornfels and the diabase in the Manassas quarry, but an experienced geologist can. Dr. Callan Bentley, professor at Northern Virginia Community College's Annandale campus, has photographed zones of contact in the quarry between the diabase and the hornfels (fig. 1).

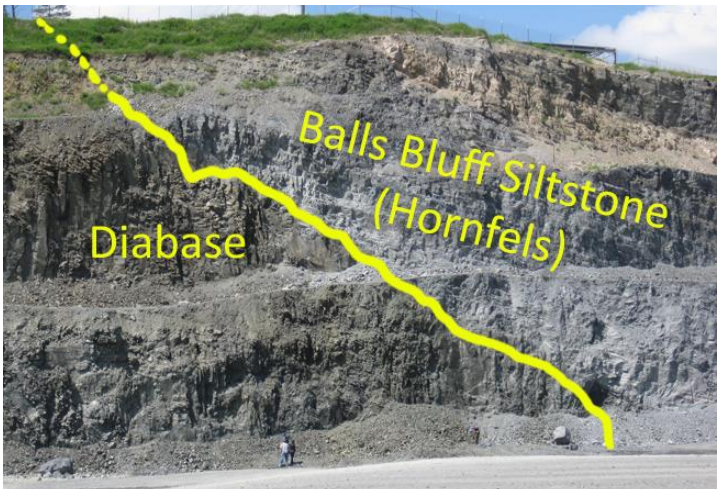


Figure 1—*Contact zone in the Manassas quarry between diabase and hornfels. Tremendous heat from the intruding magma altered the shales and siltstones of the Balls Bluff formation into metamorphic hornfels. Source: Bentley (2014).*

What Is Hornfels?

German (which I have spoken since a child) was the native tongue of many early mineralogists, who gave us terms like feldspar and hornfels. *Hornfels* first appeared in German in the mid-1800s; *Horn* means "horn" (no surprise—English is a Germanic language) and *Fels* means "cliff." *Hornfels* denoted the hornlike hardness and fine granularity of metamorphic rock in direct contact with granite, which German naturalists like Johann Wolfgang Goethe had noticed and studied in places like the Harz Mountains of Saxony.

White granite contact with dark gray hornfels, collected in the Sierra Nevada in the 1980s. Photo: Hutch Brown.

According to Bentley (2014), the diabase forms spherical (rounded) shapes along vertical joints as it weathers, whereas the hornfels retains the layering and dip of its sedimentary parent material (fig. 1). (The diabase also looks a little darker gray than the hornfels in figure 1, at least to me.)

Contact Zone

A geologic map of the area confirms that the quarry lies in a contact zone between the country rock (fig. 2, shades of green) and an intrusion of diabase in two units (fig. 2, shades of pink, **Jdg**/**Jdh**). In the contact zone between the Balls Bluff rock and the diabase lie relatively thin bands of metamorphosed shales and siltstones, the hornfels (fig. 2, white, **JTRtm**).

Like most geologic formations in our area, the Balls Bluff Siltstone comprises bands of rock running from southwest to northeast (fig. 2), parallel to Bull Run Mountain. The Balls Bluff rocks originated from a wedge of sediments beginning just east of what is now Manassas and gradually thickening westward towards Bull Run Mountain, becoming up to 5,000 feet thick. Near the quarry, the Balls Bluff formation comprises a "lacustrine shale and siltstone member" (Lyttle and others 2017), suggesting that it was laid down in ancient lakebeds in a broad valley below Bull Run Mountain. The formation is late Triassic in age, with origins about 210–230 million years ago.

The intrusive diabase (**d**) dikes and sills in the Balls Bluff formation are younger in age, having formed during the early Jurassic (**J**) Period about 190–210 million years ago. The dikes and sills attest to tectonic activity in connection with upwelling magma, which found fractures in the overlying Balls Bluff Siltstone. Figure 2 shows two such fractures (faults) in or near the contact zone between traprock and country rock.

The **Jdh** unit of diabase is a "crystalline mosaic of calcic plagioclase and pyroxene," whereas the **Jdg** unit comprises "late-stage granophyric differentiates containing sodic plagioclase, potassium feldspar, quartz, hornblende, biotite, and pyroxene" (Lyttle and others 2017). For both units, the diabase dikes can be up to 500 feet wide and the sills up to 2,000 feet thick.

The metasedimentary hornfels (**JTRtm**) is Jurassic (**J**) in age. (**TR** reflects the Triassic age of the Balls Bluff parent material; **tm** stands for "thermally metamorphosed.") The hornfels ranges from about 200 to

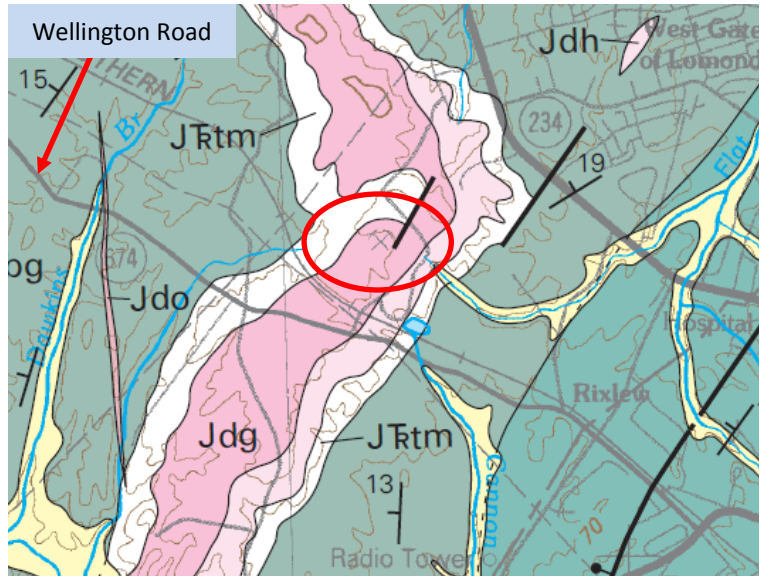


Figure 2—*Detail from a geologic map showing the site of the Manassas quarry (circled, crossed hammers) and the main access road (arrow). Green shades = Balls Bluff Siltstone (lacustrine and fluvial); pink shades = diabase (**Jdg/Jdh/Jdo**); white = hornfels (**JTRtm**); buff = alluvium; black bars = faults; thin bars/numbers = strike/dip. The quarry straddles a contact zone between diabase and sedimentary rock. The general orientation of strike, faults, and formations is from southwest to northeast, typical for our area. Source: Lyttle and others (2017).*

Cordierite hornfels from Chantilly, VA. The hornfels formed from the same Balls Bluff parent material as in the Manassas quarry. Source: USGS (2016).

400 feet thick and from "cordierite-spotted" to "epidote- and chlorite-rich" (Lyttle and others 2017).

Metamorphic rocks form at various grades of heat and pressure. The presence of cordierite in hornfels indicates a relatively high temperature grade of metamorphism, whereas epidote and chlorite in the rock imply a lower temperature grade.

Although hornfels is metamorphic rather than igneous, the Manassas quarry uses it together with diabase to produce crushed rock. The toughness and durability of the hornfels in the quarry apparently make it as suitable for traprock as the diabase.

So traprock can sometimes be metamorphic!

The ages and types of bedrock in the Manassas quarry reflect a regional geological anomaly: the Piedmont physiographic province originated from metamorphic rock that is much older (Cambrian or Ordovician) in age. In the area of the Manassas quarry, the Piedmont basement rock is overlain by much younger sedimentary and intrusive rocks. Apparently, the basement rock sank to form a valley that filled with sediments.

How and why did that happen?

Next: Formation of the Triassic rift valleys, including Culpeper Basin.

Acknowledgment

I would like to thank NVMC President Sue Marcus for reviewing the draft article and furnishing some of the materials that went into it. For years, Sue has reviewed and improved my articles in the newsletter, and I am constantly grateful for her knowledge and expertise. As always, any errors are mine alone.

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What Is Traprock?

On my first field trip to a quarry, I learned that the bedrock was called traprock. I'd heard of basalt and diabase before—but traprock?

Traprock is a construction industry term for any dark-colored igneous rock used to produce crushed stone. It is a term of convenience for when the exact kind of rock makes no difference for commercial purposes. Examples include basalt, diabase, and gabbro.

About 8 percent of the crushed stone produced in the United States comes from traprock. Virginia is one of the nation's largest producers. Crushed stone from traprock is used as a road base material and as an aggregate for concrete and asphalt.

The term traprock comes from Swedish *trappa* (akin to German *Treppen*), meaning "stairs." The term derives from the stairstep appearance of stacked basalt flows across large landscapes.

Flood basalts form a stairlike landscape overlooking the Columbia River (view from Rowena Crest Viewpoint, Oregon). "Traprock" comes from Swedish trappa*, meaning "stairs." Source: King (n.d.).*

October 2019—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 GLMSMC, Rockvle, MD	8	9	10	11 Symposium, Baltimore; Auction, Oella, MD	12 Symposium, Baltimore; **NOVA field trip**
13 Symposium, Baltimore	14 **Columbus Day**	15	16	17	18	19 Show: S Charleston, WV
20 Show: S Charleston, WV	21	22	23 MNCA mtg, Arlington, VA	24	25	26 Show: E Rochester, NY **ANS field trip**
27 Show: E Rochester, NY	28 **NVMC mtg, Arlington, VA**	29	30	31 **Halloween**		

Event Details

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

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

11: Oella, MD—Chesapeake Gem & Mineral Society Auction; 2414 Winchester Ave; preview 7, auction 7:30; info: chesapeakegemandmineral.org.

11–13: Baltimore, MD—Annual Desautels Micromount Symposium; The Friends School of Baltimore, 5114 N Charles St; info: Mike Seeds, mseeds@fandm.edu.

12: Washington, DC—Geology field trip, National Mall bldgs; 9–6:30; NOVA; info, reg: GOL 135.

19–20: S Charleston, WV—47th Annual Jewelry, Gem, Mineral & Fossil Show and Sale; Kanawha Rock & Gem Club; S Charleston Community Center, 601 Jefferson Rd; Sat 10-6, Sun 10-5; admission $3.50, kids 12 & under free; info: Robbin Maxwell, 304-695-1586, mystical.gifts@hotmail.com.

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

26: Geology of Soapstone Valley, DC—Geology field trip; 1–4 p; Audubon Naturalist Society; info, reg: ANS website

26-27: E Rochester, NY—Rochester Gem, Mineral, Jewelry and Fossil Show & Sale; Total Sports Experience, 435 West Commercial Street; Sat 10–6, Sun 10–5; adults $6, kids 12 & under free; info: www.Facebook.com/ROCGemShow.

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

Hematite from Minas Gerais, Brazil. Source: Wikipedia.

28th Annual

GEM, MINERAL AND FOSSIL SHOW

Presented by The Northern Virginia Mineral Club, Inc. www.novamineralclub.org
Sponsored by the Dept. of Atmospheric, Oceanic and Earth Sciences at GMU

Date: November 23 & 24, 2019

Place: Dewberry Hall, Johnson Center
George Mason University Campus
Braddock Rd. & Route 123, Fairfax, VA

Hours: Saturday 10am-6pm, Sunday 10am-4pm

Admission: Adults: $6, Seniors: $4, Teens (13-17): $3
Children 12 & under & Scouts in uniform are FREE
GMU Students w/valid ID are FREE.

$1 OFF
Adult admission with this card (applies to all adults + seniors in your group)

Demonstrations, Exhibits, Kids Activities, and Door Prizes.
Mini-mines for children to dig in and get free fossils and minerals.
Over 20 Dealers with Fossils, Minerals, Crystals and Gems for sale.

Use Parking lot A, enter Lot A from Nottaway River Lane.
Look for our Courtesy Shuttle & Designated Walking Path to Mineral Show

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Please help get the word out!
Print out and distribute the flyer!

Hutch Brown, Editor
4814 N. 3rd Street
Arlington, VA 22203

THE NORTHERN VIRGINIA MINERAL CLUB INC
Crystals are the flowers of the Mineral Kingdom

2019 Club Officers

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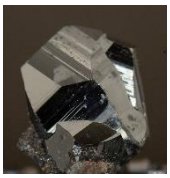

Mineral of the Month: Hematite

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.*

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