THE NORTHERN VIRGINIA MINERAL CLUB INC

The Mineral Newsletter

Next meeting: March 4 Time: 7:30 p.m.

Dunn Loring Fire Station, 2148 Gallows Road, Dunn Loring, VA



Semseyite *with sphalerite*

Herja Mine, Baia Mare, Romania

Source: Mindat. Photo: Eugene & Sharon Cisneros.

Deadline for Submissions

March 24

Please make your submission by a week before the last day of the month. Submissions received later might go into a later newsletter.

Volume 64, No. 3
March 2024
Explore our website!

March Meeting Program:

Spring Auction

Details on page 9

In this issue …

Mineral of the month: **Semseyite** ..... p. 2
President's collected thoughts..... p. 7
March Program: Spring Auction ..... p. 9
Field trips coming up ..... p. 10
Fossils at the Tucson show ..... p. 11
Junior Geologist Lab report ..... p. 13
Hybrid quartz in a local stream ..... p. 14
Why's it called quartz? ..... p. 22
"Dolomite Problem" solved ..... p. 23
Arkansas diamond found ..... p. 23
Upcoming events..... p. 24
Auction bid slips ..... p. 25
Auction summary sheet..... p. 26

Mineral of the Month
Semseyite

by Sue Marcus

Semseyite is our Mineral of the Month for March because I happened to have a specimen label for it in front of me. Semseyite is a lead antimony sulfosalt. In 1881, Hungarian mineralogist Jósef Krenner described the mineral and named it for Andor Semsey. The original description was in Hungarian, and Semsey was an amateur Hungarian mineralogist. The Baia Sprie ore deposit in Romania was the source of the type specimens.

Since semseyite forms in hydrothermal fluids, it can occur in brecciated volcanic rocks and in geologic environments in which hot magma from plutons never reached the Earth's surface yet drove mineralized fluids into the country rock (the rock preexisting in an area). Semseyite is a relatively rare mineral that forms visible crystals even more rarely. However, most collectors will be able to find a specimen to add to their collections.

For many localities, Mindat reports semseyite but posts only one or two images, usually of microcrystals. Since most collectors are unlikely to run across these rarities, I will mention some but without delving into the geologic environments in which they were found. Who knows, maybe you want to search a site yourself.

Sources

United States. The lone specimen shown on Mindat from the Jetty-Balkan Mine in Deer Lodge County, MT, shows fine-grained semseyite forming in a matrix of barite and minor litharge (lead oxide, PbO).

Canada. Among the little-known specimen localities is the Rogers Mine near Madoc, Ontario, Canada, where fine-grained semseyite was found intergrown with galena.

Scotland. Massive to poorly crystalized semseyite occurred in the antimony ore extracted from the Louisa (or Glendinning) Mine near Lockerbie. Subhedral sphalerite was mixed in with the semseyite.

England. The mines of Devon and Cornwall are most noted for tin—and, for collectors, rare tin minerals. The Emily Mine in Devon was primarily a lead-antimony mine. The semseyite found there appears to be massive to subhedral, showing parallel crystals; because the crystals are grown together, there are no terminations or three-dimensional forms.

France. About 30 separate mines exploited antimony ores in the Brioude-Massiac Antimony District. One of the most significant is the La Rodde Mine near the

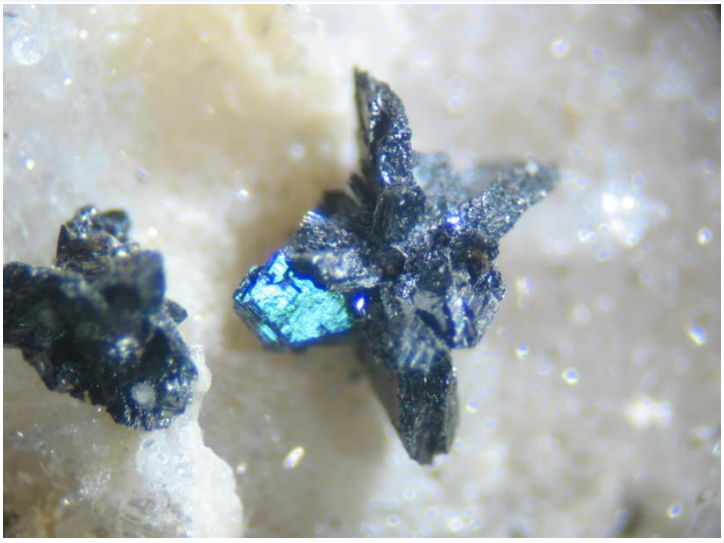
Happy St. Patrick's Day!

Northern Virginia Mineral Club members:

Please join your club officers for dinner at the Olive Garden at 6 p.m. before the club meeting.

Olive Garden, Tysons Corner (near the shopping center), 8133 Leesburg Pike, Vienna, VA
Phone: 703-893-3175

Reservations are under Craig Moore, Vice President, NVMC. Please RSVP to Craig at vicepresident@novamineral.club by noon on the day of the meeting.



Semseyite on quartz (blue is not true color). Silver tunnel, Van Silver Property, British Columbia, Canada. Source: Mindat; photo: Ty Balacko.

hamlet of Ally; the nearest town is Brioude in the Haut-Loire Department. The mine explored several antimony-bearing veins through underground diggings. The best semseyite was found in the Sainte-Cécile Vein.

According to Thomas (2009), semseyite was "abundant" at La Rodde though regionally rarer than stibnite. Silver was not a primary ore mineral, but it was a valuable byproduct. Silver may have occurred in galena, stibnite, and semseyite in trace amounts that were recoverable through processing.

Romans may have begun underground mineral extraction from these deposits a couple of millennia ago. The mines were intermittently productive until the early 20th century, with the mine depth reaching 728 meters (2,388 ft). Parts of the mine are flooded, but guided public tours may be available in areas close to the surface. Specimens recovered were up to 8 centimeters (3 in) in size, with semseyite crystals of up to 0.5 centimeters (0.2 in).

The Les Anglais Vein is part of a larger deposit of antimony ore in the Brioude-Massiac District. Mining began as early as the 1600s. Most semseyite occurred as massive ore, although collectors are grateful for the crystalline exceptions. Specimens of semseyite, from micros to a large 13-centimeter (5-in) sample, were found at an old silver mine near Lubilhac in central France. Quartz and barite were the main accessory minerals, with bournonite, sphalerite, and pyrargyrite also present.

Although the focus of this column is semseyite, I must share an interesting observation about this deposit: "Note also that it is this [Vernieres] vein which contained abundant geodes that display most outstanding and beautiful crystals of stibnite (in beautiful long sheaves of crystals and needles) in the Massif Central" (Le Boutillier 2014).

The BRGM (French Geological Survey) explored the region in the 1970s, finding semseyite but not enough antimony resources to warrant mining.

Slickensides are structural features in rocks that form when rocks slide past each other during faulting, resulting in a smooth, often shiny and grooved surface. Semseyite was found in such faulted surfaces at the Les Cougnasses "mine" in Provence-Alpes-Côte d'Azur, France. The mine is a small adit with dumps. Semseyite and boulangerite occur along with siderite in specimens that may appeal to micromounters.



Semseyite, Les Anglais Vein, Lubilhac, Haute-Loire, France. Source: Mindat; photo: Michel Bretheau.

Microscopic crystals of semseyite were reported from the La Mure Mine, Isère, France. Oddly, a specimen on Mindat that is identified as coming from the La Mure Mine is posted on the site for the Villaret Pit. The locations are less than 5 kilometers (3 mi) apart in the Grenoble region and are likely to be in the same geologic environment. Both localities are coal deposits with unusual sulfide and sulfosalt minerals.

Spain. The best Spanish semseyite crystals come from the Nueva Virginia Mine near Lanzuela in Aragon. However, even the best crystals are microcrystals and tiny rosettes, with the largest being about 2 millimeters (0.08 in) in size.

Microcrystalline semseyite was found at the Mina Casualidad near Almeria, Spain. A wide range of minerals have been identified in this old iron deposit. Semseyite occurred with plagionite and fülöppite. All three minerals were usually microscopic grains, though small tabular crystals and spherical clusters of semseyite crystals were also reported.

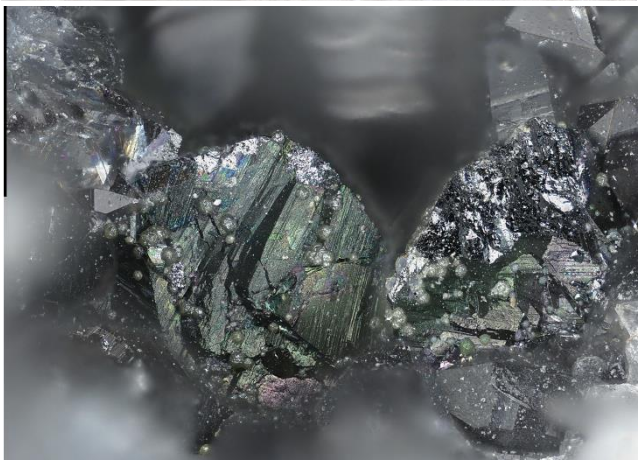
Italy. Microcrystals of semseyite with bournonite were found in the Borgofranco Mines near Borgofranco d'Ivrea. Veins were worked there through crude tunnels by miners seeking silver, antimony, and lead minerals.

Germany. German silver deposits are famous for large, fine native silver specimens. Semseyite was found at a few of the mines, including the Clara and Ludwig Mines in the Ortenaukreis district.

The Clara Mine is a renowned locality for minerals, with more than 200 species occurring there. The mine is still active, and collecting may be possible for a fee on the regularly refreshed dumps. Fluorite and barite are the best-known minerals, although semseyite microcrystals have also been found.

Mindat states that the Ludwig Mine is "(n)otable for the relative abundance of semseyite." Yet Mindat shows only one photo of semseyite, a single crystal less than 1 millimeter (0.04 in) across. Specimens of a fine-grained, silvery mineral from the Ludwig Mine were offered for sale as semseyite online on February 12, 2024. The specimens had no distinct cleavage, so verification of them as semseyite would be wise.





Semseyite. **Top:** *Borgofranco Mines, Piedmont, Italy.* **Bottom:** *Clara Mine, Ortenaukreis, Germany. Source: Mindat; photo (top): Matteo Chinellato; photo (bottom): Joy Desor.*

Romania. Mining began in the first century BC in the Baia Mare region, where semseyite was originally identified. By the Medieval era, metal smiths had realized that antimony could be used to harden lead. It seems likely that ore containing semseyite, a lead-antimony sulfosalt, was used along with galena and other lead-bearing minerals without being recognized as something new or different.

Semseyite was described by Krenner (1881) from the Baia Sprie deposit centuries or possibly more than a millennium after mining commenced. Tectonism occurred 9.4 to 7.9 million years ago, creating faults that formed a graben (a down-dropped area between two faults). Ore-bearing fluids were probably related to the volcanism that created the igneous rocks in the graben. The lead ores formed relatively large veins along the faults and smaller veins within the graben.

Evolving understanding of geologic ore-forming processes informed mineral exploration and subsequent mining in the 1970s and 1980s. At Baia Sprie, semseyite was found with tetrahedrite, bournonite, geocronite, and sphalerite in the middle and upper reaches of the deposit.

The best crystals may come from the Herja deposit, about 7 kilometers (4.3 mi) from Baia Sprie. In 2010,



Semseyite, Herja Mine, Baia Mare, Romania. Source: Mindat; photo: Eugene and Sharon Cisneros.



Semseyite, Baia Sprie Mine, Baia Sprie, Romania. Source: Mindat; photo: Michael C. Roarke.



Semseyite with siderite on galena, Herja Mine, Baia Mare, Romania. Source: Mindat; photo: Philip Bluemner.

Iancu and others reported radiating semseyite crystals up to several centimeters long. Lovely rosettes of semseyite on siderite matrix form specimens up to 6.3 centimeters (2.5 in) long (including matrix). Sphalerite, marcasite, galena, calcite, and (less frequently) boulangerite and pyrrhotite are other accessory minerals found with semseyite at this locality.

One Mindat image shows a 7-centimeter (2.8-in) specimen covered with cockscombs of lustrous metallic semseyite. Another specimen on the same website is 24 centimeters (9 in) long, with a surface covered by a mix of semseyite, sphalerite, and calcite. Micromounters can also find attractive semseyite specimens from Herja for their collections. Miners were bringing out semseyite specimens at least as recently as 2008.

A lesser known semseyite locality is the Săsar Mine. Mineralization was emplaced about 11.5 to 10 million years ago at both the Săsar and Herja deposits. Semseyite from the Săsar Mine forms radiating crystals that resemble flowers in some specimens.

Unfortunately, I know neither Hungarian, the language in which semseyite was first described, nor Romanian, spoken in the country hosting the deposits. I tried to educate you, dear readers, along with myself by seeking the meaning of Baia in Romanian. A few websites indicate that it means bathroom, leading me to caution all of us about using internet sources.

Austria. Several adits explored a mineralized zone near Obernberg in upper Austria (near the German border). Mining goes back to Roman times here, with intermittent exploration and mining until about 1920, when activity ceased. Lead-zinc mineralization can be seen in surface cuts into the hillside. Semseyite specimens consisted of a few microcrystals and blebs. Semseyite also occurred at a small silver mine near Zeltschach in Carinthia.

China/Russia?

Semseyite, in sufficient quantities, can be an antimony ore. China produces most of the world's antimony, more than twice as much as the next largest producer, Russia. These two countries also have the largest antimony ore reserves; China has almost twice as many antimony reserves as Russia. Together, these countries can control U.S. access to critically needed mineral resources.

It seems odd, geologically, that semseyite specimens are unknown from China, despite large orebodies in China containing stibnite, silver, galena, boulangerite, and other minerals commonly associated with semseyite.

The Xikuangshan mining district in Hunan is the world's largest antimony deposit. No semseyite has been reported from any of the ores there. Semseyite has been reported, though not confirmed, from the Yaogangxian Mine in Hunan's Yaogangxian tungsten-tin ore field.



Semseyite, Herja Mine, Baia Mare, Romania. Source: Mindat; photo: Rob Lavinsky.

Similarly, semseyite is not reported from any of the Russian antimony mines, despite the large size of several antimony deposits there. The lack of known semseyite from China and Russia may be because there are no published research papers in English on the antimony deposits in those countries. In addition, collecting mineral specimens is probably quite restricted in both countries.

Uses

The United Stares does not mine any antimony ore. Production of antimony in this country comes from recycling and from processing the small amount of ore that is imported. Antimony is used to make ammunition and other lead alloy products, flame retardants, and some ceramic and rubber products.

Semseyite is extremely rarely faceted or used in jewelry. I found a few faceted stones online, ranging from 1.43 carats to 4.90 carats. The stones were opaque and black, looking like faceted hematite. Most came from France's Les Anglais Vein.

A large (10-centimeter (4-in)) specimen from Herja, Romania, covered with fans of well-crystalized semseyite was listed for $850; a thumbnail from the same locality was offered for $20. A sample of massive semseyite from Wales was valued at $40. (Prices were found online February 13, 2024.)

Acknowledgment

Our editor, Hutch Brown, improved the draft of this article, for which I am grateful. His expert touches make what I (and others) write much clearer.

Technical Details

Chemical formula .....$Pb_9Sb_8S_{21}$

Crystal form .....Monoclinic

Hardness.....2.5

Specific gravity.....6.08

Color .....Dark metallic gray to silver

Streak .....Black

Cleavage.....1 perfect

Luster .....Metallic

Sources

Buzatu, A.; Damian, G.; Dill, H.G. [and others]. 2015. Mineralogy and geochemistry of sulfosalts from Baia Sprie ore deposit (Romania): New bismuth minerals occurrence. Ore Geology Reviews 65: 132-147.

Christian, R.; Hochleitner, R.; Fehr, Karl. 2019. Casualidad Mine Baños de Alhamilla, Almeria, Spain (part I). Mineral Up 5(4}: 8-32.

Klochko, K. 2024. Antimony in mineral commodity summaries. U.S. Geological Survey.

Krenner, J. 1881. Semseyite. Magyar Tudományos Akadémia Értesítője 15: 111-118.

Iancu, O.G.; Kovacs, M. (eds.). 2010. Ore deposits and other classic localities in the Eastern Carpathians: From metamorphics to volcanics. Acta Mineralogica-Petrographica, Field Guide Series, vol. 19: 1-55.

Le Boutillier, N. 2014. The Brioude-Massiac Antimony District, Massif Central, France. A report for Tri-Star Resources.

Mindat. N.d. Semseyite.

PorterGeo. 2018. Baia Mare District: Ilba, Nistru, Sasar, Herja, Baia Sprie, Suior, Cavnic, Romania.

Thomas, P. 2009. Mine of antimony, lead and silver from La Rodde, Ally (Haute Loire).

Wikipedia. N.d. Baia Mare.

Wikipedia. N.d. Semseyite.



President's Collected Thoughts

by Jason Zeibel

March is upon us, and soon we will be thinking about green leprechauns and springtime. As I write this, however, we are again waiting for a snowstorm. Maybe the groundhog Punxsutawney Phil, who predicted a swift start to springtime, requires a realignment and recalibration? While we wait for warmer weather and St. Patrick's Day, you can come to our spring auction on Monday, March 4, and bid on some green rocks, keeping an eye out for peridot, malachite, tourmaline, tsavorite, autunite, and more. If you don't score one of them to put some green in your collection, the leprechauns may come after you!

I hope that all of you who were able to join us for Dr. Barbara Berrie's talk "Rocks, Minerals, and Artists' Pigments" enjoyed it as much as I did. Figure 1 shows Dr. Berrie with some of us who were there. Dr. Berrie started out as a geologist and chemist and ultimately found her way into art conservation. Most of us have taken winding paths from what we initially started studying to what we wound up doing in our adult lives. Some of the most interesting of us still are trying to figure out what we want to do!

At our last meeting, I also really enjoyed the Rock-N-Talk segment at our last meeting on the enormous Moroccan trilobite (fig. 2). Please feel free to bring something to talk about to any nonauction meeting—any of our young geologists can get credit for it! It doesn't have to be a long speech or cover the entire geological history of the region—just a cool rock, mineral, or fossil and where/when you found it!

For those of you who are new to the club, our twice-a-year club auction is a great opportunity to find some new treasures and maybe pass on some specimens that would be better loved by new eyes. Anyone can bid, but you need to be a club member to sell. Sample bid slips and a sellers' sheet are at the end of this newsletter, so you can print them out and come ready to buy and sell. The club gets a percentage of the proceeds for its scholarship fund, so bid early and often. In addition, we have had some specimens donated to the club over the last 6 months, and 100 percent of the proceeds from those sales go to the club.



Figure 1—*Dr. Barbara Berrie of the Smithsonian Institution's National Gallery of Art at the February NVMC meeting with Jason and Celia Zeibel.*



Figure 2—*Club members enjoyed hearing about an impressive trilobite from Morocco during Rock-n-Talk at the February NVMC meeting.*

Due to the nature of the auction, we won't have a virtual attendance option in March. However, look for a return to hybrid meetings on April 1, when Dr. Victor Zabielski from the Northern Virginia Community College Geology Department comes to give a talk.

Then, on May 6, our own Kathy Hrechka will give a very entertaining talk about her experiences trying to

get rich at Crater of Diamonds State Park in Arkansas. Since I didn't see her on the news, I'm guessing that she didn't find any 10-plus-carat diamonds while there, but I am still very much looking forward to her presentation.

As always, I big thanks to our club VP, Craig Moore, for coordinating all of our speakers. If you have a topic that you are excited about and feel motivated to present on it, then let Craig know!

As many of you know, I tend to travel here and there for work, typically to more "normal" places than those visited by geologists in the club. This past month, I found myself in the southwestern French city of Bordeaux (fig. 3). Since it was winter, many wine museums and attractions were closed.

However, I did take an afternoon to go shopping and look for something geologically relevant to the region. I discovered that Bordeaux is on an alluvial plain without much around except sand, clay, and limestone.

I did find the one rock-and-mineral shop in town, La Maison des Deux Fèes (The House of Two Fairies) (fig. 3). I was disappointed to learn that there was not a single specimen in the entire shop that came from anywhere near Bordeaux.

My next work adventure comes in a week or so when I head down to Orlando, FL, for a conference. I doubt I will find much geologically relevant there outside of the Seven Dwarfs Mine Train experience at Walt Disney World.

Please do make an effort to bring a check for dues to the March auction if you haven't already paid your annual dues. Also, consider bringing a friend or two!

Until then, keep an eye out for leprechauns—and make sure to add something green to your collection during this new and exciting year with the club!

Jason







Figure 3—*Top:* *Bordeaux, France, from the left bank of the Garonne River and the roof of the Cite Mondiale Congress Center.* ***Center/bottom:*** *La Maison des Deux Fées (The House of Two Fairies), the only rock-and-mineral shop open in wintertime in Bordeaux, France. Unfortunately, its offerings lack anything related to the Bordeaux region.*

Club Member Rocks and Minerals Auction Coming Up!

March 4 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.

Sellers should come early to set up. The meeting will start promptly at 7:30 p.m. 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 xx 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 xx 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 9 p.m.

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

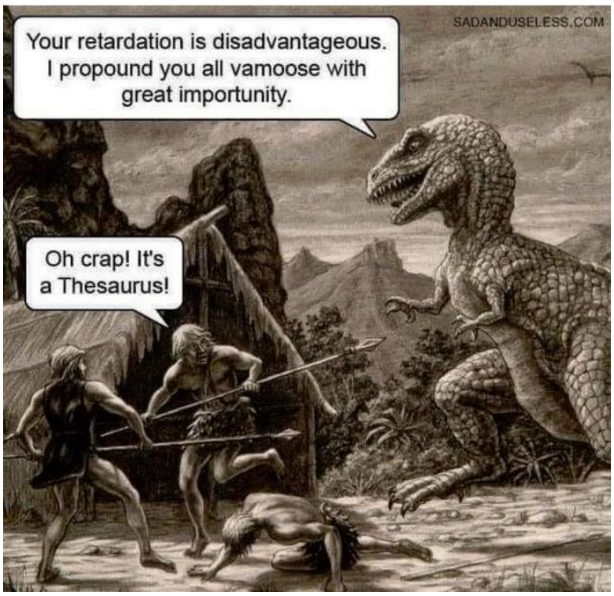
- Any member may offer up to 20 specimens or up to 4 flats for auction.
- Each flat is one auctionable item.



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

- 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.



Field Trips Coming Up!

By Katy Johnson, NVMC Field Trip Co-Chair

I hope you enjoyed Valentine's Day! In case you forgot to get your Valentine a gift, you can tell them you have arranged a near-private viewing of some remarkable dinosaur prints!

Luck Stone Quarry: Culpepper Dinosaur Prints

We are confirmed for March 28 at 1:00 p.m. This is not a collecting trip but a super opportunity to see some really cool dinosaur prints—you can find out more here.

Please let me know if you plan on joining us as soon as you can so we can give the quarry an accurate head count!

You can reach me at fieldtrips@novamineral.club.

No protective equipment is needed because our group will be limited to the dinosaur tracks area. The tour is open to all ages.

On the day of the tour, we will meet up in the parking lot of the plant office. Our guides will meet us there, give a safety briefing, and escort us into the quarry.

While on the tour, the group must stay together; no wandering off, climbing, or horseplay. The dinosaur track area is uneven and can be difficult for some visitors. However, any ongoing quarry activity will be at a safe distance.

Geology of the Piedmont

This isn't an official NVMC field trip, but it's a free opportunity from the Clifton Institute: a Geology of the Piedmont Driving Tour on March 9 from 9 a.m. to 5 p.m.

Over the last 2 years, the Clifton Institute featured trips to take a close look at the rocks of the Piedmont Plateau, where huge mountain ranges rose up several times over the past billion years or so.

Where did those mountains go? The sands and silts washing down from those soaring peaks must have gone somewhere, and this field trip is going to find it!

The journey starts at the western edge of the Blue Ridge anticlinorium and explores one of the world's great thrust/fold belts, the Valley and Ridge Province. You will be looking at layers of ancient sediments laid out in a vast river delta. Like the pages of a book, these layers have a fascinating story to tell about life in the Paleozoic Era.

The tour will start in Front Royal and make its way into Fort Valley (within Massanutten Mountain), with stops along the way. A few of the stops will involve a short hike but nothing too strenuous.

Participants can either meet at Clifton at 9 a.m. and carpool to Front Royal or meet in Front Royal around 10 a.m. The trip is free for adults and children ages 12 and up. ***Registration is required.***

Willis Mountain

We will be joining the Gem and Mineral Society of Lynchburg on its annual collecting trip to Willis Mountain in October. Our host will be the Kyanite Mining Corporation. We will share dates and details as they become available.

Please let us know if you have ideas for locations that you would like to visit. We will add events as they are coordinated. And please let us know if you have any questions!

GeoWord of the Day

(from the American Geoscience Institute)

stockwork

A mineral deposit consisting of a three-dimensional network of planar to irregular veinlets closely enough spaced that the whole mass can be mined. Syn: network deposit; stringer lode.

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



Fossils at the Tucson Show

Tom Taaffe, who attended this year's Tucson Gem & Jewelry Show in January/February in Tucson, AZ, sent these photos of fossils on display and for sale at the show. (The photos are by Tom or by Beth Smith.)



A Pachycephalosaurus or close relative found in Eastern Europe (previously known only from North America); red parts in the image were reconstructed. The German dealer who offered this specimen for sale for $160,000 said that skulls like this could have given rise to the ancient belief in dragons.



Megalodon jaws, with Beth Smith for scale. The cartilage in the jaw frame is resin/reconstructed/reimagined. Reconstructed Megalodon jaws usually have real teeth, but the teeth in this jaw might be incomplete teeth restored for the display.



Eocene fish, Green River Formation, Wyoming.



A Stereophallodon from the upper Carboniferous Period, found in Texas, with Beth Smith for scale.



Claudiosaurus germaini*, a Diapsid reptile from the upper Permian Period (more than 250 million years ago), found in Lower Sankamena, Madagascar.*



Fossil ferns from the upper Carboniferous Period, found in León, northern Spain.

Junior Geologist Lab Report

by John Weidner

Editor's note: *The article is adapted from* Mineral Minutes, *newsletter of the Mineralogical Society of the District of Columbia, February 2024. Thanks to Germaine Broussard for the reference!*

Kings Park Library's first Junior Geologist Lab, held on January 25, was beyond successful. Define success? Success means everyone had fun.

Our primary activity was to talk to the kids about rocks they brought in. "Us" included members of the Mineralogical Society of the District of Columbia (Craig Moore, Germaine Broussard, Dave Nanney, Bob Cooke, and Susie and John Weidner), along with Kendall Hall from the library staff. We were there to talk to the kids, look at their rocks, show them how to use the microscope, and talk about the display rocks and whatever else occurred to us.

We had no formal program and no presentation. Just a bunch of rock lovers of all ages standing around and talking about rocks. Can you think of a better way to spend an afternoon?

Thirty-three people came, including kids and parents. We had a display of library books on geology available, and about a third of them got checked out. Our coloring station had pictures of fossils, dinosaurs, and rocks, with crayons and colored pencils for the kids (and parents), and we also had quizzes and puzzles. We had one of the new microscopes that sends the image to a computer screen. We had rocks and fossils on display, including granite, our rock of the month.

But the heart of our event was identifying rocks the kids brought in. Any kid who brought in a rock and filled out the description sheet got a Junior Geologist Badge.

We also passed out Junior Geologist Passports that kids can get stamped for attending monthly meetings and participating in activities such as collecting rocks, visiting a museum, and checking out a book about geology.

So here's a challenge for you: set up an event like this, which your local library would love to sponsor (they are always looking for STEM activities). You have the rocks to show and the expertise to share—and the kids want to talk about their rocks. Even if you don't know what a rock is, they love it. You don't have to be able to give absolute authoritative answers about each rock. That's not how science works!





Let's get more of these rock identification events going, all over the country!

The Rocks Beneath Our Feet

Hybrid Quartz in a Local Creek Bed

by Hutch Brown

Quartz, the second most common mineral on Earth (after feldspar), is highly visible in our local creeks. Most rocks on our local gravel bars are pieces of quartz in various hues—white, gray, orange, and so on. Where our local metamorphic bedrock is exposed, you sometimes see veins of solid quartz, usually white in color (caused by tiny gas bubbles trapped in the quartz, which would otherwise be colorless).

Such intrusions of quartz in our local bedrock are the source of the angular quartz in our creeks. Exposed by erosion to freeze/thaw cycles, the quartz veins and outcrops break off in pieces. Carried downhill by gravity and stormwater runoff into rivers and streams, the quartz further breaks up and is gradually reduced by abrasion into rounded cobble—which is mostly what I see in streams where I live in Arlington, VA.

Unusual Find

So I was surprised when NVMC Vice President Craig Moore showed me angular pieces of quartz from a creek in a park near his home in Annandale, VA. One piece was translucent gray with orange stains (fig. 1), apparently smoky quartz stained by iron oxide (rust). A larger piece had a white crystalline center edged with orange quartz.

Last fall, guided by Craig, I explored the area where he found his specimens. Pine Ridge Park slopes down from a ridge overlooking the valley of Accotink Creek, a major watershed in Fairfax County. The 42-acre park contains the headwaters of a small and nameless stream that flows through a neighborhood called Camelot into Accotink Creek. The headwaters comprise two brooks that join together in the park before passing into a pipe that carries the stream underground through Camelot and releases it in the greenway corridor for Accotink Creek. Craig found his specimens in one of the two headwaters brooks.

Both brooks contain rocks that appear unusual for our area (fig. 2), at least to me. For one thing, the alluvium (including the rocks) in each stream bed is almost entirely quartz, with very little bedrock mixed in. The bedrock for Pine Ridge Park, according to the USGS geologic map for the Annandale Quadrangle (fig. 3), is Accotink schist, a metamorphic rock. Schist, an



Figure 1—*Quartz from a small creek in Annandale, VA. Collected by Craig Moore, the specimen shows translucent smoky quartz stained orange, perhaps by iron leached from pyrite. All photos (except the last): Hutch Brown.*



The small creek in Annandale, VA, where Craig found his quartz specimens. The photo shows the two headwaters brooks joining before passing into a storm drain leading underground to an outfall at the head of the greenway corridor that leads to Accotink Creek, the principal stream for a major watershed in Fairfax County.



Figure 2—*Typical quartz alluvium in a leaf-covered stream bed in Pine Ridge Park. Both rocks seem to show admixtures of smoky quartz (black/gray/brown) and yellow/orange quartz.*

assemblage of minerals, weathers far more easily than quartz, a single mineral (silicon dioxide) that is quite hard (7 of 10 on the Mohs scale of mineral hardness). Like elsewhere in our area, I expected to find crumbling pieces of bedrock intermixed with quartz in the creek beds, but I saw almost nothing but quartz.

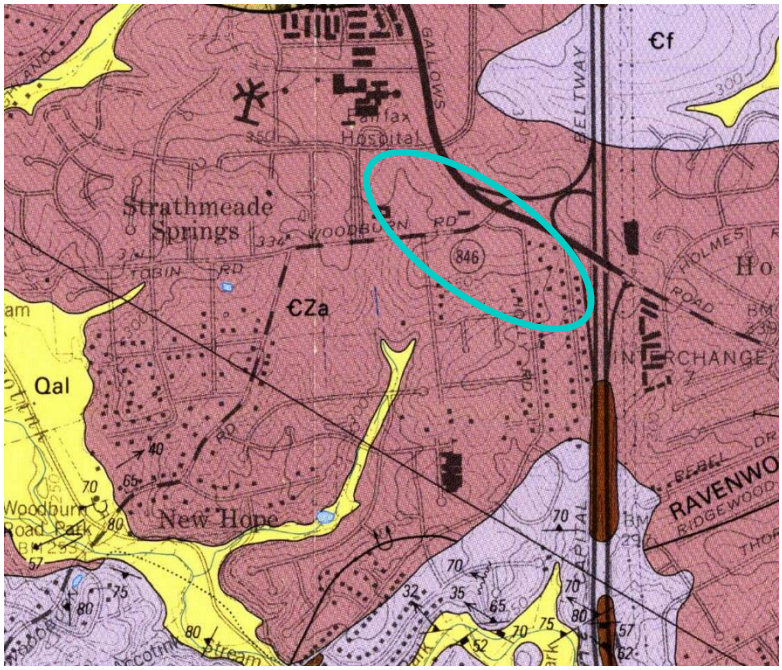


Figure 3—*Geologic map detail showing the location of the Pine Ridge quartz alluvium in an Annandale creek with eastern and western branches (teal arrows). Black dots are houses; black lines are roads, including Gallows Road (white arrow), which marks the Accotink watershed boundary; the oval contains likely location(s) of the quartz alluvium source rock. Yellow (***Qal***) is alluvium; rose (***CZa***) is Accotink schist; and lilac (***Cf***) is tonalite from the Falls Church/Ilda Pluton. Source: Drake and Froelich (1986).*

The Pine Ridge rocks are also surprisingly (to me) angular rather than rounded (fig. 4). Many are also unusually large (fig. 2), and some are embedded in steep clay stream banks. All this suggests that the source rock for the alluvium was exposed to the elements only recently (in geologic time)—and that the alluvium itself has been exposed neither to the elements nor to heavy streamflow for very long. With so little rounding and reduction of the rocks through abrasion, the source rock must be nearby (fig. 3).

Another unusual characteristic is the color of the alluvium (figs. 2, 4). Most massive quartz in our area—the quartz you see in veins and outcrops—is milky (opaque white), some of it grading into opaque hues of yellow, orange, and reddish brown from iron, manganese, and other trace elements replacing silicon in the mineral makeup. By contrast, the Pine Ridge quartz appears to be translucent black, gray, or brown grading into shades of orange, often in the same rock.

What is going on?

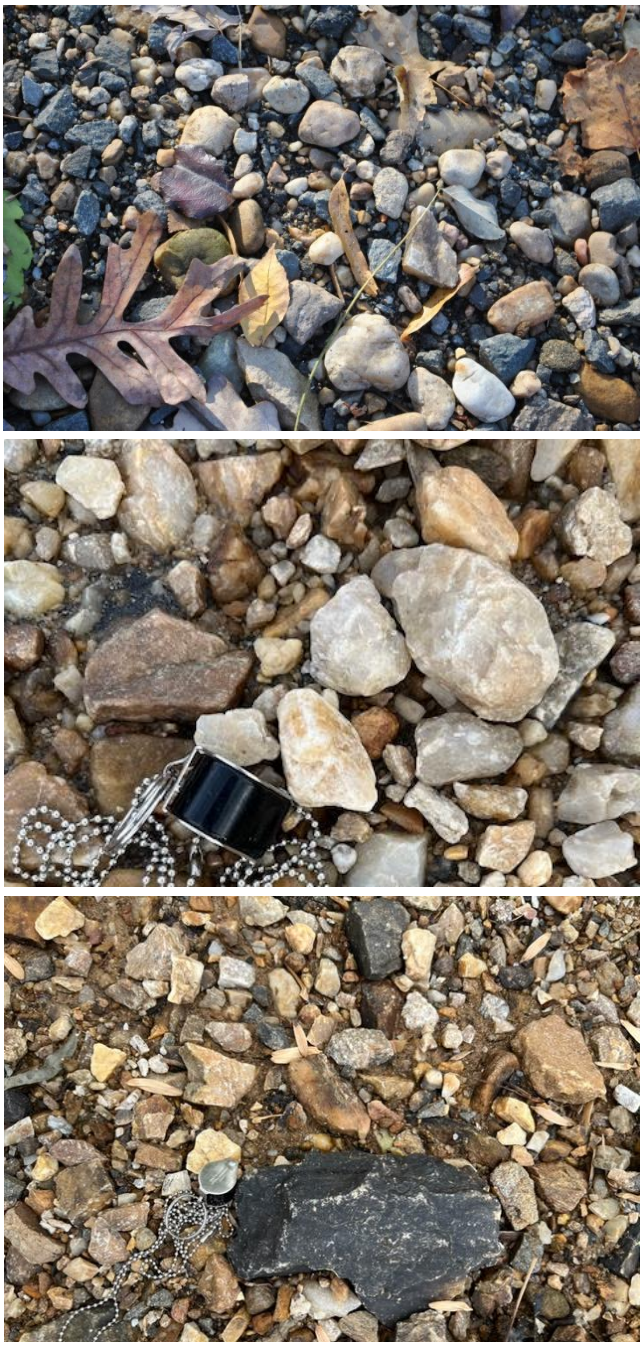


Figure 4—*Contrasting quartz alluviums.* ***Top:*** *Rounded cobble along Lubber Run in Arlington, VA. The alluvium contains quartz, sandstones, quartzite, and plenty of dark bedrock (Indian Run sedimentary melange).* ***Center:*** *A gravel bar along Accotink Creek in Annandale, VA, containing mostly light-colored angular quartz.* ***Bottom:*** *Angular cobble in Pine Ridge Park. The alluvial rocks—including the large pieces shown here—are entirely quartz, with no visible bedrock. The quartz ranges in color from dark gray-black to light orange-yellow.*

Contrasting Alluviums

The Piedmont geologic province in our area adjoins the Coastal Plain, where a wedge of ancient riverine sediments, thickening towards the sea, covers the metamorphic bedrock. The sediments, laid down during the early Cretaceous Period about 100-140 million years ago, are collectively known as the Potomac Formation (usually shaded green on geologic maps). Though tightly packed and hard to pick apart, the sediments are not solid rock, and they often contain rounded river rocks in various sizes.

Streams flowing over these sediments, such as Lubber Run in Arlington, pluck its river rocks from eroding stream banks. The rocks include quartz, sandstones, and quartzite from as far away as the Blue Ridge Province. Exposed for tens of millions of years to abrasion in ancient rivers, rocks from the Potomac Formation tend to be well rounded (fig. 4, top). The alluvium in Lubber Run also contains lots of dark metamorphic bedrock exposed by erosion.

The Annandale geologic map shows no Potomac Formation in the upper Accotink drainages (fig. 3). Accordingly, most rocks in upper Accotink Creek are quartz derived from local veins and outcrops (fig. 4, center); the quartz is more angular than in the Lubber Run alluvium, with less rounding through abrasion. The Accotink alluvium also contains less metamorphic bedrock, making it lighter in color overall.

The Pine Ridge alluvial rocks are even more angular, with large pieces of quartz mixed in (fig. 4, bottom). Except in rare spots, they are entirely quartz. Although the colors range from light to dark, the alluvium has a distinctive yellow-orange hue overall.

Buried Source Rock

I searched Pine Ridge Park for sources of the local quartz alluvium (such as veins in the bedrock) but found none. However, Craig explained the lay of the land to me, and the Annandale geologic map shows contour lines (fig. 3), indicating the courses of both Pine Ridge brooks and the probable location(s) of the quartz alluvium source rock (fig. 3, oval).

Based on the maps I used and what I saw, part of the western brook originates in the park on slopes near the top of the ridge. The ridgetop is a terrace that was truck-farmed for produce as recently as the 1960s and now has sports fields and small garden plots on an artificially flattened surface. Another part of the

western brook appears to originate north of the park at the boundary of the Accotink watershed on the grounds of Inova Fairfax Hospital on Gallows Road (fig. 3, white arrow).

The eastern brook emerges from a storm drain on a heavily riprapped eastern edge of the park. It appears to originate a few hundred yards uphill at the boundary of the Accotink watershed in stormwater pipes under suburban housing (fig. 3, oval), again near Gallows Road, a high point in the drainage.

So the quartz source rock and some of the alluvium appear to be buried, partly by sediments but mainly by artificial fill for suburban housing, medical facilities, and sports fields. For example, the upper parts of the western brook within the park have eroding beds of clay, with no rocks in evidence (other than riprap). Land clearing and farming on the terrace above would have released sediments, burying the upper creek beds. Artificial fill brought in later to level the terrace for sports fields would also have run off in rainstorms, further burying the original alluvium.

Across our area, some of the quartz in our creeks came from massive quartz intrusions into the bedrock. Some intrusions are huge, large enough to appear on geologic maps, usually as lenses in shades of purple marked **Cq**—"C" for the Cambrian Period (about 505-545 million years ago) and "q" for quartz.

The Annandale geologic map shows no quartz lenses anywhere near Pine Ridge Park (fig. 3), so the source rock for the Pine Ridge quartz must be too small for geologic mapping; it is probably a vein (or veins) in the bedrock. Figure 3 shows that the bedrock for the Pine Ridge creek is entirely Accotink schist, so the source rock is likely one or more quartz veins in the schist. The source rock might comprise a single vein across the entire upper headwaters (fig. 3, oval) or else a series of connected veins that furnished the same alluvium for both brooks. The size of some of the alluvial quartz (fig. 5) suggests that the vein(s) would be large, up to several feet thick.

So how did a vein (or veins) of quartz in a distinctive mix of colors intrude the ancient Accotink schist?

Accotink Schist

Located in the Piedmont, Accotink schist is part of what author John McPhee called "suspect terrain"—a land mass that was not part of the original continent but added later on through plate tectonics. The ancient continent of Laurentia, precursor of North America, ended at the ocean in what is now the Blue Ridge Province, which has granitic rocks that are more than a billion years old.



Figure 5—*A quartz boulder in the leaf-strewn bed of the western Pine Ridge brook. This 2-foot-thick specimen shows the distinctive "hybrid" coloration of the Pine Ridge quartz, here ranging from orange to grayish brown.*

The Accotink schist arrived much later. It is part of a two-member series of Piedmont rock layers known as the Annandale Group, with the schist grading upwards into the coarser Lake Barcroft metasandstone. Both members overlie the older Indian Run sedimentary melange and underlie the younger Sykesville Formation. Accotink schist is thought to be Cambrian or Proterozoic in age, formed from sediments possibly first laid down in pre-Cambrian times. The schist is marked **CZa** on geologic maps to reflect the uncertainty ("C" for Cambrian, "Z" for Proterozoic, and "a" for Accotink) (fig. 3).

Accotink schist originated in an ocean trench formed by offshore volcanic islands in the Iapetus Ocean (precursor of the Atlantic), much like the Mariana Islands in the Pacific and other oceanic island arcs around the world today. Driven by tectonic forces, the Taconian (or Taconic) Terrane approached Laurentia more than half a billion years ago (fig. 6, top center), scraping up seafloor materials and forming a deep-sea trench at its leading edge. Volcanic activity would have caused earthquakes and submarine landslides of rocks and sediments into the trench. Some of the hardening sediments would have formed siltstones, a likely source rock for the Accotink schist.

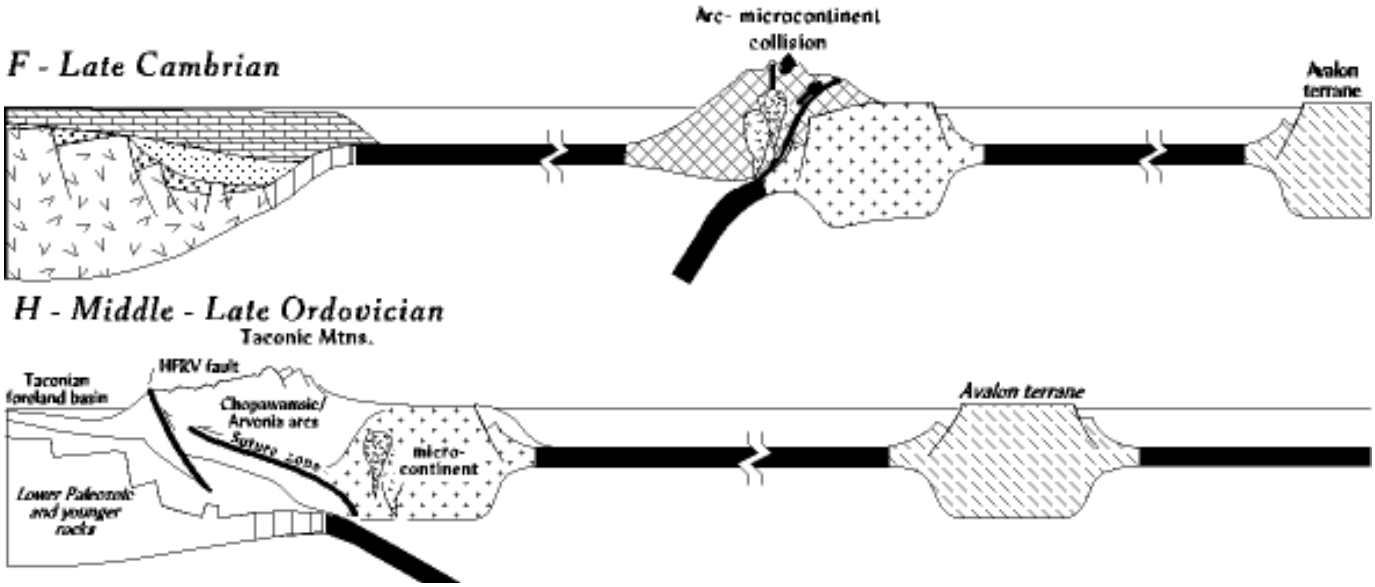


Figure 6—*The Taconian Terrane approaching the proto-North-American continent (Laurentia) about 500 million years ago (top center), followed by the Taconian Orogeny about 450 million years ago (bottom left). The collision sutured the Piedmont bedrock onto proto-North America. The Taconian Mountains weathered away within a few tens of millions of years, exposing Accotink schist and other Piedmont rocks. Source: Fichter and Baedke (1999).*

As the Taconian Terrane collided with Laurentia during the Ordovician Period, it rode up over the continent (fig. 6, bottom), depositing rock from the trench and gradually forming a mountain range over the suture zone. The tremendous heat and pressure of the orogeny (mountain-building event) would have transformed sedimentary rocks from the trench into slate, phyllite, schist, and other metamorphic rocks.

The Taconian Orogeny started about 450 million years ago and lasted for about 15 million years. Geologists believe that the Accotink schist, based on its high grade of metamorphism, also underwent an earlier orogeny in a collision between offshore islands and a microcontinent (fig. 6, top center). Though rich in quartz, Accotink schist also contains muscovite, biotite, chlorite, plagioclase, and other minerals.

I myself found no bedrock exposures in Pine Ridge Park, but Craig led me to a 30-foot stretch along the eastern Pine Ridge brook where stormwater runoff has gouged an 8-foot chasm down to the bedrock, exposing it in the stream bed and in an adjacent vertical outcrop (figs. 7, 8). Weathered by groundwater, much of the schist outcrop has turned into what geologists call saprolite, which retains the appearance of rock but has become soft as clay (fig. 8, top).

Just downstream from the bedrock exposure is the only place in Pine Ridge Park where I saw crumbling



Figure 7—*Accotink schist exposure in Pine Ridge Park. The upended bedrock bridges the eastern Pine Ridge brook. Note the typical schistose foliation in contrast to the angular light gray quartz nearby.*

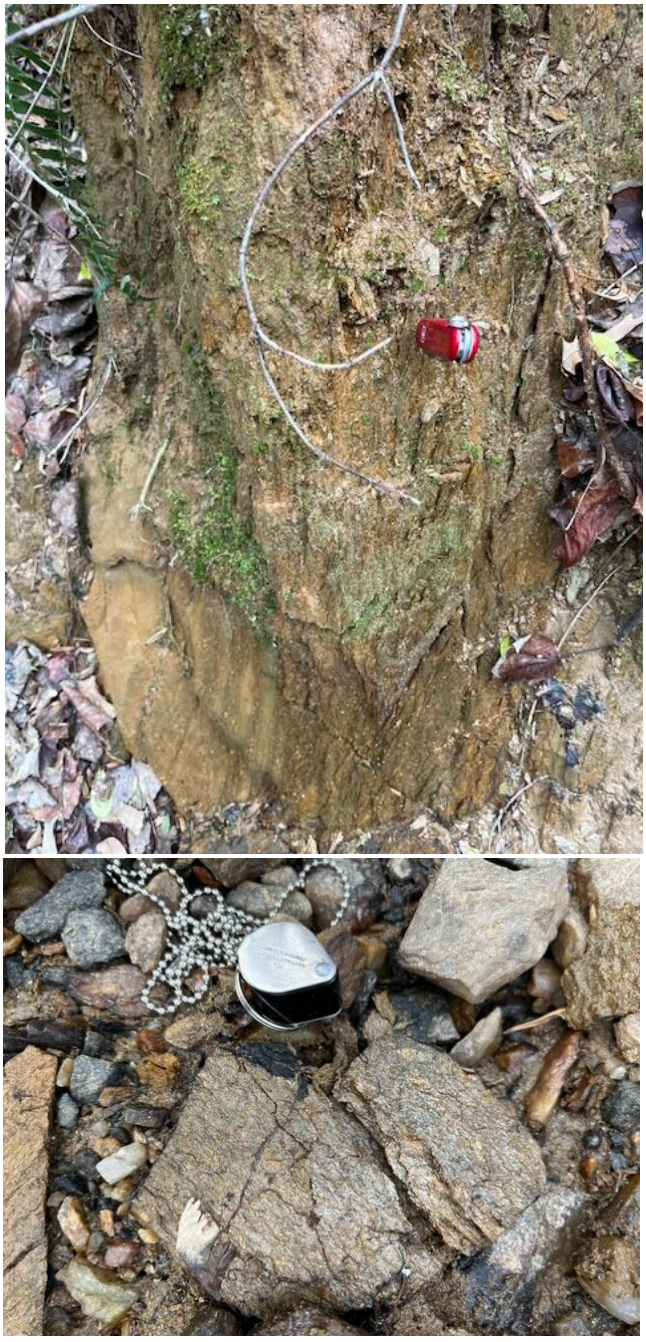


Figure 8—*Accotink schist exposures in Pine Ridge Park.* ***Top:*** *Vertical schist outcrop along the eastern Pine Ridge brook. The schist looks like solid rock (note the typical schistose foliation), but it weathered underground into saprolite before being exposed by erosion; a knife easily slides into it.* ***Bottom:*** *Crumbling pieces of gray-brown schist on a gravel bar just downstream from the schist outcrop. Note the foliation and the typical schist sheen (from mica in the rock).*

pieces of schist in the alluvium (fig. 8, bottom). Elsewhere, the source rock (now buried) no longer resupplies the alluvium, so its schist component has apparently weathered away, leaving nothing behind but sands and erosion-resistant quartz.

Vein Emplacement

Quartz veins can form in two ways, both driven by tectonic forces. Mountain building, whether during the Taconian Orogeny or before, would have placed tremendous pressures on the parent rock (in this case, the Accotink schist). Under pressure, the quartz-rich schist would have secreted silica to form veins and lenses in cavities within the buckling rock. Quartz veins formed in this way, ranging from small to large, intrude much of the metamorphic bedrock in our area. The process is called lateral secretion, and the result is known as segregation quartz.

Another possibility is a quartz intrusion associated with hydrothermal processes during mountain building. Surface water seeping through cracks in the rock percolates deep underground, and porous rock layers can contain lots of groundwater. During mountain building, rising magma can heat the water underground, saturating it with silica and other minerals. Under tremendous heat and pressure, the country rock (again, the Accotink schist) would have buckled to form cracks and fissures for the superheated fluids to fill. As the fluids cooled, minerals would have precipitated out, including silica in veins of massive quartz.

If cavities in the schist were incompletely filled by the silica-rich fluids, then quartz crystals would have formed. If the crystals broke free when exposed, they (like other rocks) would have washed downhill into streams. Creek beds are good places to look for them.

Figure 3 shows nearby tonalite (**Cf**), a granitic rock from the Falls Church Pluton, which (according to the geologic map for Annandale) intruded the Accotink schist and contributed to its metamorphism. Accordingly, hydrothermal processes associated with rising magma (the source of the pluton) might have influenced vein formation in the schist.

Quartz Coloration

The effects of the Falls Church Pluton on quartz vein formation in the nearby schist might also help to explain the blend of colors in the Pine Ridge quartz.

According to Mindat, the color of smoky quartz (ranging from black to grays and browns) is due to "gamma irradiation" and "traces of aluminum built into its crystal lattice" (replacing some of the silicon). Granitic rock is a common natural source of irradiation, which might be why "quartz grains in granites and related rocks are often smoky," according to Mindat.

The color of citrine (ranging from deep gold to light yellow) is due to traces of iron in its mineral makeup. According to Mindat, citrine's color is also partly due to the same "aluminum-based and irradiation-induced color centers" as in smoky quartz. Both types of quartz are found in the same geologic environments, and citrine "is often associated with smoky quartz and intergrown with it" (fig. 9, top). The Pine Ridge quartz appears to be similar, with smoky and yellow/orange quartz intergrown (fig. 9, bottom).

Gentle Uplift

If, as it appears, smoky quartz intergrown with yellow/orange quartz forms almost all of the alluvium in Pine Ridge Park, then the buried source rock must have been exposed at some point. Moreover, the quartz vein(s) must be near a high point in the Accotink watershed (fig. 3, oval), where gravity and runoff could carry the quartz pieces downhill into the Pine Ridge brooks. How did that happen?

After the Taconian Mountains formed and then weathered away during the Ordovician Period, the biggest tectonic event to follow was the formation of a supercontinent (Pangaea) in connection with what geologists call the Alleghanian Orogeny (about 320-250 million years ago). Once as high as the Himalayas today, the great Alleghanian Mountains eroded away within a few tens of millions of years.

About 230 million years ago, Pangaea began to break up. Continental rifting lasted until about 175 million years ago, followed by a long period of tectonic calm. Leveled by erosion, our entire area became a flat and featureless plain, with none of the relief (hills and dales) we see today.

Beginning about 5 million years ago, gentle uplift resumed due to shifts in the Earth's mantle, possibly in connection with what geologists call isostatic adjustments: freed from the enormous weight of the Alleghanian Mountains, the mantle has rebounded, lifting the continental crust from the Piedmont in the east to the Allegheny Plateau in the west.



Figure 9—*Intergrown smoky and yellow/orange quartz.* ***Top:*** *Intergrown smoky and citrine crystals from Madagascar.* ***Bottom:*** *Quartz specimen in a Pine Ridge Park creek bed. Source (top): Mindat (photographer unknown); photo (bottom): Hutch Brown.*

In response, our local rivers and streams, including Accotink Creek and its tributaries, have reshaped our local landscapes, forming both the topography and the watersheds we know today.

In the process, uplift and stream downcutting would have exposed the schist bedrock, along with the vein(s) containing intergrown orange and smoky quartz, at a high point in the Accotink watershed (fig. 3, oval). The exposed vein(s) would then have yielded the quartz alluvium. In recent centuries, human activities have buried the schist/quartz source rock, along with some of the alluvium, under sediments and artificial fill.

But you can still find plenty of translucent smoky and yellow/orange quartz in the remaining alluvium downstream. All it takes is a bit of bushwhacking to reach the streams in Pine Ridge Park, best done in spring. If you're lucky, you might find some lovely quartz specimens!

Acknowledgments

I wish to thank Craig Moore for inspiring this article by showing me his quartz specimens from Pine Ridge Park and by taking me to his collecting spots. Thanks also to Sue Marcus for reviewing and improving the article. As always, any errors are mine.

Sources

Annandale Today. 2016. New historic marker commemorates a vanished black community. 18 Oct.

Annandale Today. 2021. Explore a park: Pine Ridge Park displaced a small Black community. 27 Apr.

Brown, H. 2019. Joe Marx—Making Sugarloaf. The Mineral Newsletter 60(10): 11-15.

Drake, A.A., Jr.; Lyttle, P.T. 1981. The Accotink schist, Lake Barcroft metasandstone, and Popes Head Formation. Geol. Surv. Prof. Pap. 1205. Washington, DC: Government Printing Office.

Drake, A.A., Jr.; Froelich, A.J. 1986. Geological quadrangle map, Annandale Quadrangle, Fairfax and Arlington Counties, and Alexandria City, VA. GQ-1601. Reston, VA: U.S. Geological Survey.

Fairfax County. N.d. (no date). Stormwater infrastructure map.

Fairfax County. N.d. Watersheds & RPAs map.

Fichter, L.S.; Baedke, J.K. 1999. The geological evolution of Virginia and the mid-Atlantic region. Harrisonburg, VA: James Madison University.

Karam, A. 2021. Naturally occurring radioactive materials (NORM). Blog. 21 Jun. American Council on Science and Health.

McPhee, J. 1981. In suspect terrain. New York: Farrar, Straus, and Giroux.

Mindat. N.d. Citrine.

Mindat. N.d. Quartz.

Mindat. N.d. Smoky quartz.

Plummer, C.C.; McGeary, D. 1996. Physical geology. Dubuque, IA: Times Mirror.



The Pines

A century ago, Pine Ridge Park in Annandale, VA, was farmland owned by families in a small Black community called The Pines. On October 15, 2016, descendants gathered to dedicate a historical marker commemorating their lost community.

The community dated to 1893, when the Collins family (which included Civil War veterans) purchased 10 acres of land. The Johnson, Robinson, Sprigg, and other families soon bought lots too. They operated a sawmill and truck farms, selling their produce in Washington, DC. The families tended their gardens, fished in a farm pond, went on sleigh rides, sang gospel songs together after church, and enjoyed Sunday dinners of baked chicken, greens, mashed potatoes, ice cream, and four-layer cake. Their descendants remembered a vibrant and happy community.

All that ended in 1965, when Fairfax County took most of the land by eminent domain to build a new high school. The school was never built, and the land became Pine Ridge Park. All that's left of the community is the small Liberty Lodge Cemetery and a single private property jutting into the park.

WordPress. N.d. The Taconian Orogeny. Historical Geology.

Why's It Called Quartz?

by Hutch Brown

According to Mindat, the moniker for silicon dioxide (SO_2) comes from German, just as it does for some of the other terms in mineralogy (such as feldspar).

Early German mineralogists borrowed the ancient Greek term κρύσταλλος (*kristallos*) for quartz. Its root words in Greek mean "ice cold" and "solidify," reflecting the ancient belief that clear quartz (rock crystal) was lithified ice. The German term for colorless quartz—*Bergkristall* (literally, "mountain crystal")—derives from *kristallos*.

In the 1500s, German mineralogists used not only the Latinized term *crystallum* for quartz but also *silicum* and *silex* based on their knowledge of the mineral's silicon component. We still refer to "silica," especially for a rock's quartz content or for SO_2 dissolved in fluids.

According to some scholars, later German mineralogists borrowed the term *Quertz* from miners in the *Erzgebirge* (Ore Mountain Range) of central Germany, known for its silver mines. Miners called large quartz veins *Gänge* (corridors) and the smaller connector veins *Querklüfte* (cross-fissures). Silver ore (*Silberertz* or just *Ertz*) was found mainly in the smaller veins, so the miners called the ore *Querkluftertz* (cross-fissure ore), a clumsy term shortened over time to *Querertz* and then to *Quertz*.

By the late 1700s, the term had become *Quarz* in German (pronounced "kvahrts"), from which comes "quartz" in English. Only the English term retains the superfluous "t" in *Ertz*; the German term for ore is now *Erz* (pronounced "airts"). ⛏



Clear quartz crystals, Minas Gerais, Brazil. Source: Wikipedia; photo: Didier Descouens.

GeoWord of the Day

(from the American Geoscience Institute)

doublet

A gem substitute composed of two pieces of gem material or one of gem material and a second of glass or synthetic fused or cemented together; e.g., a glass imitation with a thin layer of natural garnet fused on top. Cf: triplet; assembled stone.

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







The "Dolomite Problem"—Scientists Resolve 200-Year-Old Geology Mystery

by Derek Smith

Editor's note: *The article is from SciTechDaly, 6 January 20243. Thanks to Tom Burke for the reference!*

To create mountains from dolomite ($CaMg(CO_3)_2$), a common mineral, it must periodically dissolve. This seemingly paradoxical concept could help make new defect-free semiconductors and more.

For 2 centuries, scientists have failed to grow a common mineral in the laboratory under the conditions believed to have formed it naturally. Now, a team of researchers from the University of Michigan and Hokkaido University in Sapporo, Japan, have finally pulled it off, thanks to a new theory developed from atomic simulations.

Their success resolves a longstanding geology mystery called the Dolomite Problem. Dolomite—a key mineral in the Dolomite Mountains in Italy, Niagara Falls, and Utah's Hoodoos—is very abundant in rocks older than 100 million years but nearly absent in younger formations.

The secret to finally growing dolomite in the lab was removing defects in the mineral structure as it grows. When minerals form in water, atoms usually deposit neatly onto an edge of the growing crystal surface. However, the growth edge of dolomite consists of alternating rows of calcium and magnesium. In water, calcium and magnesium will randomly attach to the growing dolomite crystal, often lodging into the wrong spot and creating defects that prevent additional layers of dolomite from forming. This disorder slows dolomite growth to a crawl, meaning that it would take 10 million years to make just one layer of ordered dolomite.

Luckily, these defects aren't locked in place. Because the disordered atoms are less stable than atoms in the correct position, they are the first to dissolve when the mineral is washed with water. Repeatedly rinsing away these defects—for example, with rain or tidal cycles—allows a dolomite layer to form in only a matter of years. Over geologic time, mountains of dolomite can accumulate. … *Read more*.



Arkansas Crater of Diamonds: Eighth Largest Diamond Found

By Emily Van de Riet

Editor's note: *The article is adapted from WKYT, 23 January 2024. Thanks to Sue Marcus for the referral!*

Julien Navas, while visiting from France, found a 7.46-carat brown diamond on January 11 at Crater of Diamonds State Park near Murfreesboro, AK.

The diamond has a deep chocolate brown color and is rounded like a marble. It is about the size of a gumdrop. Park officials said it is the largest diamond found at the park since 2020, and it is the eighth-largest diamond found there since the area became a state park in 1972.

The park is one of the only places in the world where the public can search for real diamonds on the volcanic site where they were deposited. Navas plans to keep his find and have it cut into two diamonds, one for his fiancée and one for his daughter. *Read article.*

March 2024—Upcoming Events in Our Area/Region (see details below)

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2 Show, Wilmington, DE
3 Show, Wilmington, DE	4 NVMC mtg	5	6 MSDC mtg	7	8 Show, Richboro, PA	9 Show, Richboro, PA
10 Daylight savings begins	11 GLMSMC mtg	12	13	14	15	16 Show, Montgomery Co., MD
17 Show, Montgomery Co., MD	18 St. Patrick's Day	19 Spring begins	20	21	22 Show, Virginia Beach, VA	23 Shows: PA, VA
24 Shows, PA, VA	25	26	27 MNCA mtg	28	29	30
31 Easter						

Event Details

2-3: Wilmington, DE—Annual show; Delaware Mineralogical Society; Sat 10-5, Sun 11-5; DoubleTree, 4727 Concord Pike (Rt 202); seniors (60+) $5, adults (18-59) $6, Juniors (12–17) $3; info: Christine Verdi, 1DMS.President@gmail.com; www.facebook.com/DEMineralShow.

4: Washington, DC—Mineralogical Society of the District of Columbia; info: http://www.mineralogicalsocietyofdc.org/.

6: Arlington, VA—Northern Virginia Mineral Club; info: https://www.novamineralclub.org/.

8-9: Richboro, PA—Annual show; Leidy Microscopic Society; Fri 12-6, Sat 9-6; Advent Lutheran Church, 45 Worthington Mill Rd; visitors $5 Fri, $10 Sat (includes lunch); info: leidymicroscopical.com.

11: Gaithersburg, MD—Gem, Lapidary, and Mineral Society of Montgomery County, MD; info: https://glmsmc.com/index.shtml.

16-17: Gaithersburg, MD—Annual show; Gem, Lapidary, and Mineral Society of Montgomery County, MD; Sat 10-6, Sun 11-5; Montgomery County Fairgrounds, Bldg 6, 16 Chestnut St; $6 adults, kids 11 and under free; info: GLMSMC - Gem, Mineral and Fossil Show.

27: Arlington, VA—Micromineralogists of the National Capital Area; info: http://www.dcmicrominerals.org/.

22-24: Virginia Beach, VA—Retail show; Treasures of the Earth, Inc.; Virginia Beach Conv Ctr, 1000 19th St; Fri 12-6, Sat 10-5, Sun 10-5; adults $8, 16 & under free; info: Ellen White, 804-642-2011, Ellen.White@TreasuresOfTheEarth.com, www.TreasuresOfTheEarth.com.

23-24: Plymouth Meeting, PA—Annual show; Philadelphia Mineralogical Society and The Delaware Valley Paleontological Society; Lu Temple, 5140 Butler Pike; Sat 10-5, Sun 10-4; $7 adults, $2 kids 12 and under; info: dklieger@verizon.net, phillyrocks.org.

23-24: Wysox, PA—Annual show; Che-Hanna Rock & Mineral Club, Inc; Wysox Vol. Fire Hall, 111 Lake Road, PO Box 224; Sat 9-5, Sun 10-4; $3 adults, $1 students, kids under 8 free; info: Bob McGuire, 570-928-9238, uvbob1942@gmail.com, www.chehannarocks.com.

AUCTION BID SLIP

ITEM # _____
DESCRIPTION_____
FROM _____
Starting bid amount:_____
Bidders: You need to bid on this item if you want it to be auctioned! Place bid below.
NAME/BID

_____
_____
_____
_____
_____
_____

AUCTION BID SLIP

ITEM # _____
DESCRIPTION_____
FROM _____
Starting bid amount:_____
Bidders: You need to bid on this item if you want it to be auctioned! Place bid below.
NAME/BID

_____
_____
_____
_____
_____
_____

AUCTION BID SLIP

ITEM # _____
DESCRIPTION_____
FROM _____
Starting bid amount:_____
Bidders: You need to bid on this item if you want it to be auctioned! Place bid below.
NAME/BID

_____
_____
_____
_____
_____
_____

AUCTION BID SLIP

ITEM # _____
DESCRIPTION_____
FROM _____
Starting bid amount:_____
Bidders: You need to bid on this item if you want it to be auctioned! Place bid below.
NAME/BID

_____
_____
_____
_____
_____
_____

AUCTION BID SLIP

ITEM # _____
DESCRIPTION_____
FROM _____
Starting bid amount:_____
Bidders: You need to bid on this item if you want it to be auctioned! Place bid below.
NAME/BID

_____
_____
_____
_____
_____
_____

AUCTION BID SLIP

ITEM # _____
DESCRIPTION_____
FROM _____
Starting bid amount:_____
Bidders: You need to bid on this item if you want it to be auctioned! Place bid below.
NAME/BID

_____
_____
_____
_____
_____
_____

SUMMARY SHEET FOR AUCTION ITEMS SUBMITTED BY_____

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

The Northern Virginia Mineral Club

Visitors are always welcome at our club meetings!

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

Please send your newsletter articles to:
Hutch Brown, editor
4814 3rd Street North
Arlington, VA 22203
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).

You may reprint the materials in this newsletter, but if you use copyrighted material for purposes beyond "fair use," you must get permission from the copyright owner.

2024 Club Officers

President: Jason Zeibel
president@novamineral.club
Vice President: Craig Moore
vicepresident@novamineral.club
Secretary: Almas Eftekhari
secretary@novamineral.club
Treasurer: Roger Haskins
treasurer@novamineral.club
Communication: Vacant
Editor: Hutch Brown
editor@novamineral.club
Field Trip Co-Chairs: Katy/Mickey Johnson
fieldtrips@novamineral.club
Greeter/Door Prizes: Vacant
Historian: Kathy Hrechka
historian@novamineral.club
Show Chair: Tom Taaffe
show@novamineral.club
Tech Support: Tom Burke
tech@novamineral.club
Webmaster: Casper Voogt
webmaster@novamineral.club

Club 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 7:30 p.m. on the first Monday of each month (except January and September) at the Dunn Loring Fire Station, 2148 Gallows Road, Dunn Loring, VA.* (No meeting in July or August.)

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

This publication may contain copyrighted material for the noncommercial purpose of advancing the understanding of subjects related to our hobby. This "fair use" of copyrighted material accords with section 107 of the U.S. Copyright Law.