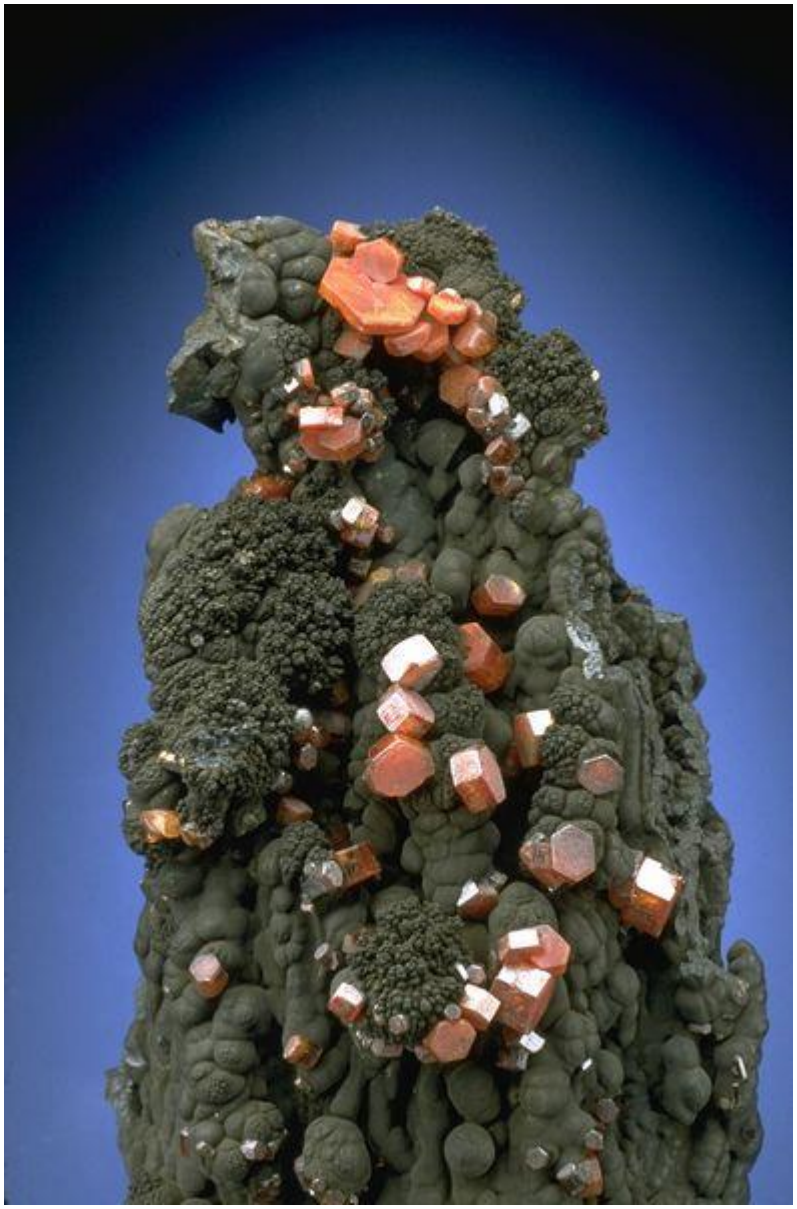
THE NORTHERN VIRGINIA MINERAL CLUB INC

The Mineral Newsletter

Meeting: February 22 Time: 7:45 p.m.

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



Smithsonian National Mineral Collection. Photo: Chip Clark.

Volume 57, No. 2
February 2016
Explore our Website!

February Meeting Program:

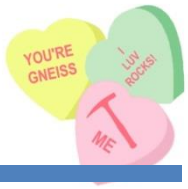
"Fossicking" in Australia

In this issue …

Vanadinite

with romanechite

(from Taouz, Morocco)



Mineral of the Month
Vanadinite

by Sue Marcus

Vanadinite is a showy mineral—just look at the cover!

Vanadinite was first reported in Mexico by Professor A.M. del Río in 1801 even before the element vanadium had been discovered. Professor del Río taught chemistry and mineralogy at the School of Mines of Mexico in Zimapán. He tested the new mineral and revealed that it contained an apparently new element that came in different colors, so he named the element panchromo (or panchromium, meaning many colors).

Del Río later changed the name to eritrono (or erythronium, after the Greek word for red). Unfortunately, a French chemist incorrectly discredited del Río's discovery, purporting that the element we now know as vanadium was impure chromium. This went unchallenged.

In 1830, a Swedish scientist isolated what became vanadium from Swedish iron ore and named it after the Scandinavian goddess of beauty, Vanadis (better known in Norse mythology as Freya, whose "day of the week" we now know as Friday).

The type locality where vanadinite was first found is Zimapán, Municipalidad de (municipality of) Zimapán, Hidalgo, Mexico (Hidalgo is a state in the central part of the country). Some of us have Mexican specimens in our collections. More recently, Morocco has become the source of the world's finest vanadinite specimens (see the cover).

Technical details (source mostly Mindat):

- Crystal form ..... hexagonal
- Hardness 2.5–3
- Density ..... 6.88 g/cm^3 (measured); 6.95 g/cm^3 (calculated)
- Color ..... brown, red, orange, yellow; less frequently pale yellow, white, or colorless
- Streak ..... white to light yellow
- Cleavage ..... none
- Fracture ..... irregular
- Luster ..... resinous, subadamantine

Happy Valentine's Day!

Northern Virginia Mineral Club members,

Please join our February speaker, Steve Hill, for dinner at the Olive Garden on February 22 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.

Chemically, vanadinite ($Pb_5[VO_4]3Cl$) forms a solid solution series with mimetite ($Pb_5[AsO_4]3Cl$) and less often with pyromorphite ($Pb_5[PO_4]3Cl$). All of these minerals are members of the apatite group. Vanadinite is commonly found with other lead minerals, or molybdates, such as anglesite, cerussite, wulfenite, and mottramite, as well as with mimetite and pyromorphite.

Have you found vanadinite? It is reported from Moss Mine, Tabscott, Goochland County, Virginia (click on the links for Mindat information on all three), although this is an obscure locality, at least for vanadinte. Several locations in Arizona are better known, like the Red Cloud Mine (famous for wulfenite) and the Apache Mine. Vanadinite is even reported from the U.S. Army Proving Grounds in La Paz County, AZ (limited collecting opportunities anticipated!).

The flashiest, most spectacular specimens of vanadinite have been mined in Morocco. *The Mineral Record* produced several full-color editions on the Moroccan mines, some featuring vanadinite and others featuring sites where vanadinite is found with other stellar minerals. The Moroccan vanadinites are unusually attractive because perfect orange-red vanadinite crystals are sprinkled on a matrix of white barite crystals (as on the next page) or on black manganese oxides (such as the romanechite on the cover); either

Vanadinite on barite, from Mibladene, Midelt, Khénifra Province, Meknès-Tafilale, Morocco. Source: Wikipedia.

condition shows a superb color contrast. You can buy specimens for relatively small sums ($15), although you can also pay as much as you want for specimens of great size or with large, perfect crystals.

Vanadium, the economically important material in vanadinite, is combined with titanium in aerospace engines. It is also combined with gallium to make superconducting magnets. In addition, vanadium pentoxide is used in ceramics and in producing sulfuric acid.

Most vanadium is a byproduct or coproduct from titaniferous sands, phosphate mines, and other geologic sources. Recycled materials and foreign sources meet most U.S. needs.

Sources

Mindat. 2016. Vanadinite.
The Mineral Record 44(3) (May–June 2013).
Chemicool. 2016. Vanadium element facts.
U.S. Geological Survey. 2015. Mineral commodity summaries. Reston, VA: USGS.
Wikipedia. 2015. Vanadinite.

Steve Hill

Australia's Gems, Minerals, Meteorites, and Fossils: An Overview

February 22 Program

Club member Steve Hill will recount some of his favorite adventures based on his 4 years of fossicking in the Australian Outback. ("Fossicking" means prospecting for fun.) Steve will show off many of his specimens, including:

- zircon from Mud Tank, Northern Territory (NT);
- garnets from Mt. Riddoch, NT;
- meteorites and tektite from the Henbury meteorite fields, NT;
- sapphires from Sapphire, Queensland;
- opals from Mintabie and Coober Pedy, South Australia;
- Ordovician fossils (brachiopods, cephalopods, gastropods, and trilobites from about 480 million years ago) from Maloney Creek, NT;
- fossilized stromatolite from near Mt. Benstead Creek, NT (rocks in the region range in age from the Cryogenian to the Devonian Periods, with origins from about 850 million to 400 million years ago);
- iolite from the Entire Valley, NT; and
- many more!

Steve is an engineer who recently retired after serving 20 years as an officer in the U.S. Air Force. Throughout his career, Steve has been involved in and led various space-related engineering projects. His last assignment found him stationed in the middle of the Australian Outback, where he quickly found himself exploring the region's amazing geology and minerals. He went on many fossicking expeditions with the Northern Australian Gem and Mineral Club.

Steve holds a bachelor's degree in mechanical engineering from Arizona State University and a master's degree in space systems from the Air Force Institute of Technology. He currently lives in Ashburn, VA, with his wife and two kids.

Smithsonian News

Thanks to Sue Marcus for the references!

Angelina Jolie Necklace

Film actress and humanitarian Angelina Jolie Pitt has made a gift of an extraordinary citrine necklace to the Smithsonian's National Gem Collection. The piece is from the Style of Jolie jewelry collection, a collaboration between Jolie Pitt and distinguished American jewelry designer Robert Prokop. The 18-karat yellow gold necklace features 64 graduated bezel-set cushion-cut citrine gems highlighted by a 177.11-carat pear-shaped citrine drop. The new piece, named the Jolie Citrine Necklace, is on display in the Janet Annenberg Hall of Geology, Gems, and Minerals, and will remain on view indefinitely.

Hope Diamond Will Be Off Display during Renovation

The Hope Diamond will be off display from January 4 through March 15, 2016. It will be back on exhibit every day from March 16 through April 17. It will be available only on Fridays and weekends from April 18 through June 30, then return to permanent display on July 1.

The Prez Sez

by Bob Cooke

Last month's snowstorm didn't work any wonders for the productivity of the NVMC's new administration.

Great plans for a program on the geology of Corridor H were overtaken by events when everyone in northern Virginia decided to collect a generous supply of what is normally a rare mineral: the well-crystallized hydrogen oxide, Dana mineral number 04.01.02, also known as snow. Ti is working on re-scheduling Shelley Jaye's presentation on Corridor H for a future meeting, hopefully without the snow.

As most of you know, Jim Kostka has been the "Eveready Bunny" of NVMC. His work on the annual club mineral show, on the Boy Scout outreach program, as the club Communications officer, and as overall go-to guy has been nothing short of stupendous. Unfortunately, he has taken a new job that is very demanding of his time and energy. He is no longer able to support the club as much as he did. I hope that, as his job stabilizes, he will be able to rejoin more of our activities. Until then, however, we must somehow continue everything he did without him. We'll need a lot of club members to step forward and accept a piece of the action.

Hutch Brown has written a thought-provoking article (see page 11) about the AFMS/EFMLS newsletter contest, officially known by its acronym as the BEAC contest. Historically, our newsletter has not fared well in this competition.

I am biased; I like our newsletter. Unfortunately, we just don't conform to the AFMS judging criteria. You can find the criteria and weighting factors on the newsletter judging form on the BEAC Website.

Please read some of the winning newsletters, cited in Hutch's article, and let Hutch and me know what you think. If we can improve the newsletter, we'll certainly make an effort to incorporate your recommendations. I don't see the value, however, in changing our newsletter just to make it "competitive." Any changes should be what you want, not what the AFMS/EFMLS think is good.

I have appointed Wayne Sukow as chairman of a committee to review the club's constitution and bylaws. Actually, Wayne volunteered for this, but since the current bylaws state that the president must appoint committee chairs, I guess I can take credit. All those interested in participating, please contact Wayne at d8olite@fastmail.fm.

In recent years, the club has flipped back and forth in the way it conducts meetings. I intend to flip once more. We will have the program first, then the business meeting. Guest speakers are our guests; let's not intrude on their valuable time by delaying their presentation while we discuss unrelated matters.

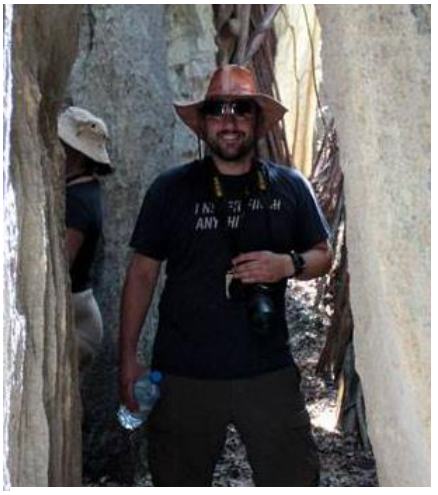
January Meeting
January 25, 2016

The January meeting of the NVMC was canceled due to inclement weather (the January 2016 snow-storm nicknamed "Snowzilla").

Ted Carver, Field Trip Coordinator

Meet Your Club Officers and Volunteers

Editor's note: *Our club has two new officers, along with volunteers who work behind the scenes. President Bob Cooke suggested showing their pictures in our newsletter to help you recognize who's who. You will see many of the same people over and over again, serving our club in various roles—too many to show them all here.*



Casper Voogt, Webmaster

Bob Cooke, President

Rick Reiber, Treasurer and Past President

Jim Kostka, Communications

Ti Meredith, Vice-President

affe

Sheryl Sims, Photographer

Sue Marcus, Newsletter Consultant and Past President

Barry Remer, Facilities Liaison and Past President

David MacLean, Secretary

Wayne Sukow, Past President

Club Show Chair Tom Taaffe and family

Newsletter Editor Hutch Brown and family

Two Student Presentations

by David MacLean

Two longstanding club members who are both now in college came to our club meeting and holiday party on December 16, 2015. Both are studying subjects related to our hobby, and our club has supported them in the past through the Fred C. Schaefermeyer Scholarship Fund. Both gave talks related to their studies, summarized below.

Conrad Smith

Conrad, an Eagle Scout, is majoring in mineral engineering at the New Mexico Institute of Mining and Technology. He showed slides of his visits to various quarries and to open-pit and underground mines in New Mexico.

Conrad visited the El Segundo Mine in northwestern New Mexico. Operated by Peabody Energy, the El Segundo is one of the most productive coal mines in the Southwest.

Conrad also visited the Chino Mine in southwestern New Mexico. The Chino is an open-pit copper mine that is 3 by 5 miles wide and 2,000 feet deep.

In addition, Conrad described one of the largest underground mines in the United States, located near Carlsbad, NM. Operated by Mosaic, this potash mine is 1,100 feet deep, with stalactites of halite and minerals such as longbenite and sylvite.

Vice-President Kathy Hrechka holding an issue of Rock & Gem *magazine with an article acknowledging the accomplishments of Conrad Smith (standing). All photos: Sheryl Sims.*

Alec Brenner with his father, Paul.

Alec Brenner

Alec, a student at the California Institute of Technology, gave a presentation with the title, "Spectroscopic Quantification of Structurally Bound Water in Pyroxenes and Olivine, With Application to Meteorites."

Alec noted widespread interest in quantifying structurally bound water in both terrestrial and extraterrestrial rocks. Structurally bound water in rocks consists of a hydrogen ion (H^+) and a hydroxyl ion (OH^-) that occupy tiny spaces within the rocks.

Water makes rocks more plastic (or readily deformable). Water bound into, squeezed from, and altered in deforming rocks facilitates plate tectonics. Hydrous minerals assist in rock deformation by lowering melting temperatures. As the water is expelled, the rock volume shrinks and the released water lubricates the fault zone, increasing slip rates and accelerating the pace of movement.

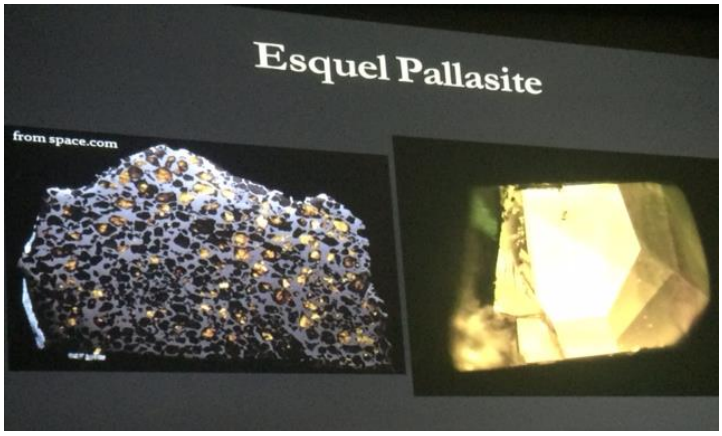
Infrared (IR) spectroscopy is a technique for estimating structurally bound water in rocks. Bound hydroxyl ions absorb IR at a wavelength of 3,500 cm^{-1}, quite different from the absorption wavelength of the silicon–oxygen bond (1,900 cm^{-1}) and its overtone (3,200 cm^{-1}).

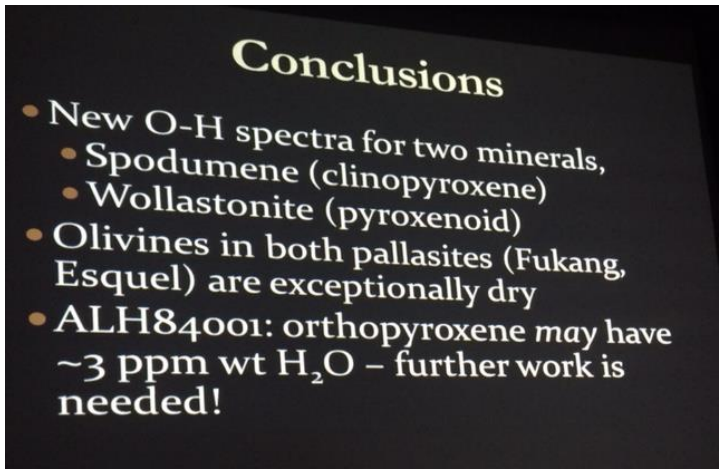
Alec Brenner's research focuses on meteorites, as this image shows.

The olivine grains adjacent to Fe,Ni grains in the contact zone of the mantle and core in the Esquel Pallasite meteorite (pictured at right) showed no detectable bound water. Another meteorite consisting of enstatite also showed no bound water. However, the Martian meteorite ALH84001 consisting of orthopyroxene ($(Mg,Fe)Si_2O_6$) showed some IR absorption at 3,700 cm^{-1}, as did terrestrial orthopyroxene.

Standardizing the IR spectrophotometer requires a particle accelerator to shoot nitrogen nuclei at a mineral containing a known amount of water. The nitrogen nuclei combine with the hydrogen to create carbon and a gamma ray with an intensity proportional to the concentration of the hydrogen present. The analyst can then correlate the intensity of the IR absorption to the concentration of water.

Alec's analyses and their interpretation will be published in a refereed scientific journal. Alec thanked his mentor Dr. George R. Rossman, a professor of mineralogy at Caltech, for supporting his research.





It's All in the Name: The Controversy Over Negro Mountain

by Sheryl E. Sims

I couldn't have been more shocked when I first saw the name "Negro Mountain." I had to catch myself, because the name caused me to flinch!

Never in my 50-plus years or my 7-plus years of involvement in mineral clubs and geology-related activities had I ever heard of such a mountain. Had I seen the sign while driving by, I would have either driven off the road or come to a screeching halt because I would have been in such shock!

Sign at the crest of Negro Mountain in Garrett County, MD. Source: Kent (2015).

Okay, I asked myself, why does this name make you feel so uncomfortable? And why does the mere sight of it strike you as so offensive?

I dared to read on and wasn't the least bit offended. Here's why.

The article I was reading about Negro Mountain turned out to be quite interesting. According to the article:

> [I]f you drive west on Interstate 68 from Cumberland, Maryland, you will cross over several tall, steep ridges. These ridges were formed by the Alleghenian Orogeny during the late Permian Period, when the African continent slammed into what is now North America. On the summit of one of these ridges there is a sign that has sparked a good deal of controversy. "Negro Mountain," the sign reads.

The article goes on to tell the story of a politician who attempted to change the name of Negro Moun-

tain because he thought that the name was "embarrassing and offensive." Although not an African American himself, he almost succeeded in changing the name.

Ironically, however, a group of African American historians were totally against it! Their cries of "Don't you dare!" are why the name remains unchanged.

Here's the back story. You are probably wondering who, in fact, named the mountain in the first place. (Actually, like most landforms with origins in the Alleghanian Orogeny, it's really a ridge.) It is said that the mountain was named around 1756 by an early settler whose name was Thomas Cresap. Cresap lived on the western frontier of Maryland, where he built a trading post and fort. He traded with the Native Americans and was famous for feeding anyone who happened by. Cresap was a welcome guest at many tribal meetings and celebrations.

Unfortunately, when the Seven Years War (1756–63) broke out between France and Great Britain, the French sent their Indian allies to attack western frontier settlements. The British weren't much help, so the settlers were left to defend themselves.

Colonel Thomas Cresap was in charge of an elite group of 40 colonial rangers, who were considered to be the best of the best and used guerrilla tactics to defeat their enemies. Ironically, one of Cresap's 40 rangers was a freed African slave! Many of the early settlers on the frontier were English; but quite a few were Swiss, Dutch, German, French, Welsh, Huguenot, Irish, and Scots. Reportedly, people were judged on the frontier by their merits and not by their ability to speak English or by the color of their skin.

It's said that the lone black ranger was a huge man who was extremely strong. He won the respect of his fellow rangers, who showed it by never calling him by the common derogatory name for Negroes. However, he refused to tell anyone his real name. Therefore, they called him Nemesis or Goliath, because no one could stand against him.

That is, until the day that he succumbed to a fatal injury while trying to create a diversion to save others who were being attacked by Indians.

In honor of his fallen comrade's memory, Cresap thought about naming the ridge after him and calling it by his nickname, Nemesis. But "Nemesis" sounded too negative. Therefore, it was decided that they would call the ridge "Negro Mountain," a name that has stuck ever since.

Top: *Negro Mountain marker.* ***Right:*** *View west from the high point of the ridge. Sources: Prats (2006); Wikipedia.*

Because the name is so unusual, the 260-year-old story of the brave freed slave has lived on. There is an unmarked grave on the mountain where Nemesis is buried.

In February 2011, nine Maryland state senators introduced a bill to rename Negro Mountain and Polish Mountain. All four western Maryland representatives testified against the proposed bill, which was voted down in committee.

Sources

Kent, J.W. 2015. No title. Facebook.

No author. 2015. Negro Mountain. Wikipedia.

Prats, J.J. 2006. Negro Mountain: The highest point on the National Road. HMdb.org: The Historical Marker Database.

Field Trip: February 13

Mineralogy Laboratories at James Madison University

by Tom Tucker

Dr. Lance Kearns and his wife, Cindy, both professors of geology and mineralogy at James Madison University (JMU) in Harrisonburg, VA, have once again invited our clubs (the Micromineralogists of the National Capital Area, Mineralogical Society of the District of Columbia, and Northern Virginia Mineral Club) to come visit the laboratory facilities at JMU and the very special JMU Mineral Museum.

If you're a new club member, ask any oldtimer who has made these trips before and they will tell you, "Don't miss it!"

We'll gather at 9:00 a.m. at the mineralogy classroom on the lower floor of Memorial Hall on the JMU campus. Memorial Hall is located in the old Harrisonburg High School on Virginia Route 42 (South High Street) at its junction with Cantrell Avenue (MLK Boulevard). You can find the campus map by clicking here.

Harrisonburg is about 130 miles from the Beltway. Go west on Interstate 66 and then south onto Interstate 81. Take Exit 245. Turn right, go maybe three-quarters of a mile, and turn right onto South High Street. Proceed north one-half mile to Memorial Hall, which will be on your left, just past the WWI cannon.

At the intersection with Cantrell Avenue (MLK Boulevard), turn left into the large parking complex. Because it's a Saturday, we won't need to get parking permits.

Go left to the south end of the building and enter any of several doors. Signs inside will direct you to the Mineral Museum; look for the mineralogy labs on the lower floor of the building.

Lance will have coffee and buns ready. Please be prepared to make a modest donation to recompense Lance for his efforts; the funds will be used to support field trips and related activities by JMU students of mineralogy.

Lance will examine and perhaps identify any specimens we might have questions about, so bring your unknowns. Lance might use the Ramen spectrometer and X-ray diffractometer to help confirm identifications. After lunch, anyone interested can go across campus and visit the Scanning Electron Microscope lab, especially useful for identifying microminerals.

Dr. Lance Kearns at the JMU Mineral Museum with visiting NVMC member Pat Flavin in January 2014. Photo: Kathy Hrechka.

The Mineral Museum is the finest in Virginia, and Lance will give us a personal tour. There's lots to photograph; just don't bump into any of the cases—the security alarm is really loud!

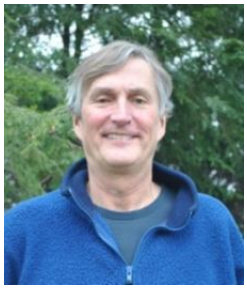
Lance has many flats of various mineral specimens, including micromounts, donated to him to raise money for student field trips. Select any and all you like, and make an appropriate donation. There will also likely be mineralogy-related books available in exchange for donations.

In order to plan ahead for coffee and buns, I'd appreciate it if you would contact me, Tom Tucker, at threedogtom@earthlink.net and let me know how many folks you will bring.

Don't miss this trip—it is always a highlight of our mineralogy year. Lance will be retiring in August, so this may well be our last opportunity to take advantage of this great resource.

See you there—Saturday, February 13 (Washington's Birthday weekend), the day before Valentines!

2015 BEAC Contest Newsletter Winners



by Hutch Brown, Editor

Editor's note: *Thanks to President Bob Cooke for suggesting the piece.*

Early each year, the Eastern Federation of Mineralogical and Lapidary Societies' Bulletin Editors' Advisory Committee (BEAC) holds a contest for club newsletters. Our club submits articles and sample issues of our newsletter for the competition.

Results are announced each spring. The first-, second-, and third-place winners in each category are then judged in a followup contest by the American Federation of Mineralogical Societies, with the results announced in the fall.

The Newsletter Judging

Newsletter editors volunteer to judge the competing newsletters. They judge the newsletters in four categories: mini (5 pages or less); small (6 to 11 pages); large (12 pages or more); and "new editor."

In each category, the judges use a standard list of 29 evaluation criteria, such as "News of members" and "Eastern Federation news." For each criterion, the judges give points; for "Spelling and grammar acceptable," for example, they give up to 5 points. They can give up to a total of 100 points overall, and the newsletter with the highest number of points wins.

Maybe you've wondered what winning newsletters look like compared to our own. For the 2015 BEAC competition, the first-place winners are listed below. For those that are posted online (not all are), you can click on each one to go to the newsletter Website.

EFMLS Trophies

- **Mini newsletters:** none (no submissions?)
- **Small newsletters:** *Crack 'N Cab* (Gem and Mineral Society of Syracuse, NY)
- **Large newsletters:** *Gem & Mineral Journal* (Gem & Mineral Society of Lynchburg, VA)
- **New editors:** *The Virginia Pen* (Gem & Mineral Society of the Virginia Peninsula)

AFMS Trophies

- **Mini newsletters:** *Cowtown Gem, Mineral & Glass Club News* (Cowtown Gem, Mineral & Glass Club of Fort Worth, TX)
- **Small newsletters:** *The Golden Frog* (Calaveras Gem & Mineral Society of Angels Camp, CA)
- **Large newsletters:** *Gem & Mineral Journal* (Gem & Mineral Society of Lynchburg, VA)
- **New editors:** *Rockhound Record* (Mineralogical Society of Arizona)

Second-Place Winner

Incidentally, the second-place winner for small newsletters in both the EFMLS *and* the AFMS competition was *The Mineral Mite*, edited by Kathy Hrechka for the Micromineralogists of the National Capital Area.

Congratulations, Kathy!

Humor

True Geologists …

Take pictures of family members mainly for scale.

Can date extinct species but need reminding about birth dates in their own families.

Actually expect their families to understand that every one of the rocks spread all over the house is important.

Can't refrain from scratching their own home windows with pieces of rock.

For all the above reasons, need very understanding families.

During a walk in nature, will always let you know that they see more than you do. Especially if you don't care.

Are people you don't want to tell that "Diamonds are forever" because they might prove you wrong, just for science's sake.

Won't feel comfortable with people who can't tell the difference between a rock and a mineral.

Weren't impressed by entering the second millennium because it's still plain old Cenozoic.

The Rocks Beneath Our Feet
Getting the Big [Geologic] Picture

by Mike Kaas

In reading Hutch Brown's recent "A Cross-Section of the Coastal Plain" (in the January 2016 issue of *The Mineral Newsletter*), I was reminded of an experience that may ring a bell with other NVMC members.

Nearly 20 years ago, I drove one of our daughters to Virginia Tech. While crawling along Interstate 81 in one of its frequent traffic tieups, we had plenty of time to observe rocks in the roadcuts.

It dawned on me that the rock formations and structures along the highway appeared to be much more complex than those near Penn State, where I had taken the physical and historical geology courses required for future mining engineers. I realized that I really didn't know very much about the geology "under my feet" in our part of the planet.

But how could I proceed to plug that knowledge gap?

In the late 1990s, there were plenty of U.S. Geological Survey publications and maps, as well as those of the Virginia Division of Geology and Mineral Resources, Maryland Geological Survey, and West Virginia Geological Survey. Internet resources were beginning to be plentiful, although they were nothing like the extensive geology and mineralogy offerings we enjoy these days.

I started digging through the literature, both hardcopy and electronic. It seemed like a college course might be a possibility, but none focused on our local geology, nor did they fit my work and travel schedule.

It wasn't long before I realized that the best way to really learn about our regional geology was to get out of the house and see the rocks firsthand. The Maryland Geological Survey Website had an online geologic cross-section that stretched from the Atlantic Ocean shoreline to the border with West Virginia (see figure 1 for part of it). I'm sure that there are comparable cross-sections for Virginia and West Virginia, but Maryland was the first one I found.

The 270-mile-long cross-section helped me begin to get the "big picture," but the sheer diversity of rock formation types and structures was pretty mind-boggling. And I was sure that it missed many important geologic features in Virginia and West Virginia.

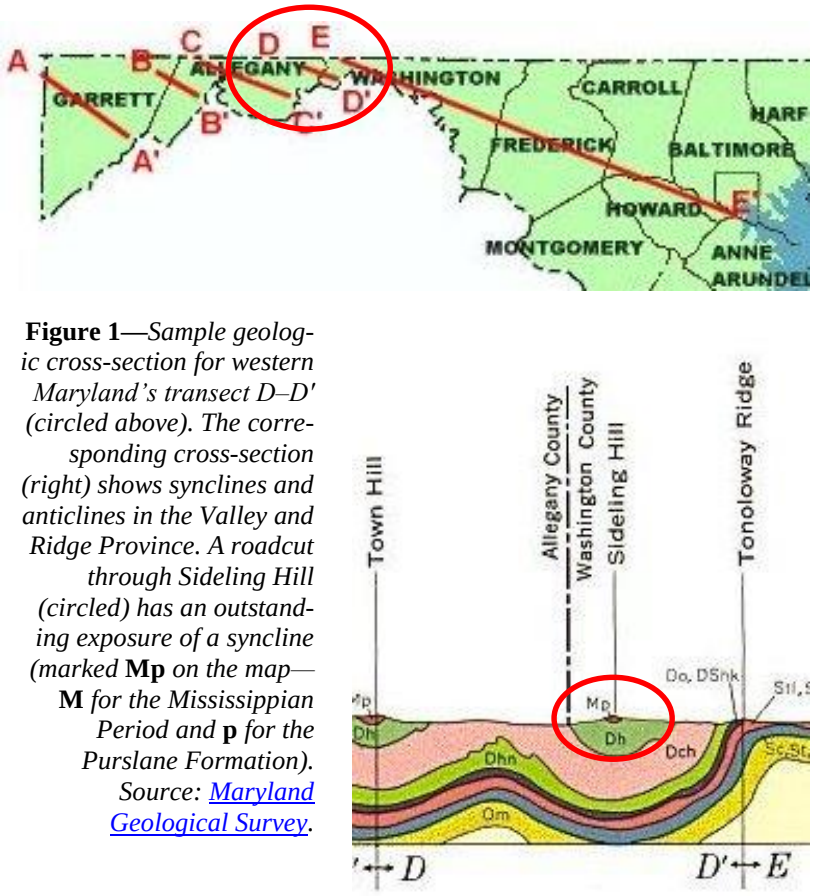


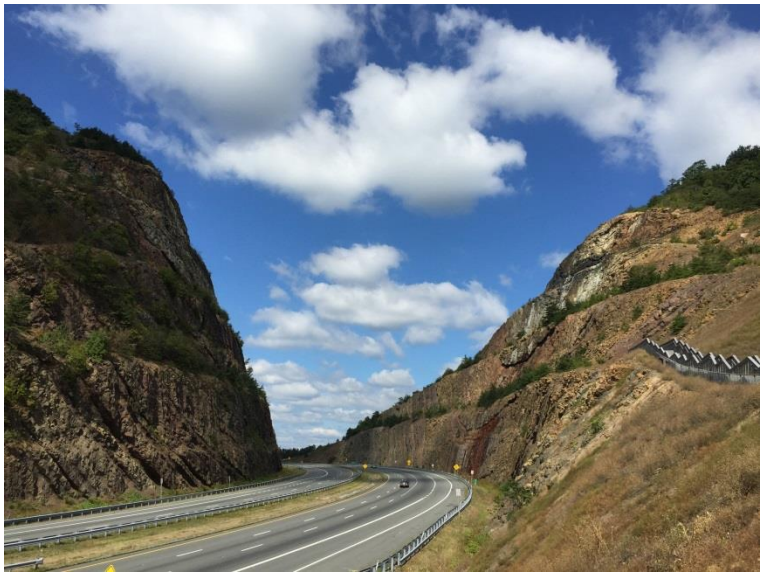
Figure 1—*Sample geologic cross-section for western Maryland's transect D–D' (circled above). The corresponding cross-section (right) shows synclines and anticlines in the Valley and Ridge Province. A roadcut through Sideling Hill (circled) has an outstanding exposure of a syncline (marked* **Mp** *on the map—***M** *for the Mississippian Period and* **p** *for the Purslane Formation). Source: Maryland Geological Survey.*

How was I to understand it all?

Then I found an answer to my dilemma when a catalog from Northern Virginia Community College (NOVA) arrived in our mailbox. It listed a series of 1-day, 1-credit courses held on weekends. Geology (GOL) 135, Field Studies in Geology, had a number of specific offerings, each covering the geology of a particular area. The course offerings varied from semester to semester and from campus to campus in the NOVA system.

Over the next 3 years, I took 10 different GOL 135 courses from a number of instructors. The courses were professionally presented and visited excellent field locations (see sample photos on the next page).

There are several advantages of traveling with an expert. You get a comprehensive explanation of the geology at each stop in the field and how it fits into the bigger regional picture. You also get easy and effi-



Sideling Hill roadcut through the Purslane Formation on I–84 west of Hancock, MD. All photos: Mike Kaas.

Dinosaur track (12 inches long) in sandstone at Oak Hill, VA.

cient access to many locations that would be either hard to find on your own or closed to the public.

The students were from across the map, ranging from refreshing young undergrads needing to pick up just one more science credit for graduation to working folks like myself (some approaching geezerdom) who were looking to fill some geo-intellectual need.

Best of all, the courses were great fun. Over time, I began to understand some of the finer points about the geologic features along the entire set of Maryland cross-sections.

NOVA 1-Day Geology Courses

Building Stones of the Mall, Washington, DC

Geology of Great Falls Park, VA

Geology of Harpers Ferry, WV

Geology of Massanutten Mountain

Geology of the National Zoo, Washington, DC

Geology of Point Lookout State Park, MD

Geology of Sideling Hill and Paw Paw Region

Geology of Washington, DC

Geology of Shenandoah National Park, VA

Miocene Geology of Calvert Cliffs, MD

Paleozoic Geology of Virginia and West Virginia

Triassic-Jurassic Valley of Northern Virginia

Cockeysville marble quarry in Texas, near Baltimore, MD. Marble for the Washington Monument came from the Beaver Dam Quarry just to the north.

The good news is that the GOL 135 courses are still going strong. Some of the courses offered in recent semesters are listed in the sidebar above. Check the NOVA website (www.nvcc.edu) for the current courses and give one a try!

AFMS News

Update on the Modoc Obsidian Collecting Area

by Shirley Leeson, California Director, American Lands Access Association

Editor's note: *The article is adapted from the* A.F.M.S. Newsletter *(November 2015), p. 8. It is a reprinted letter from a U.S. Forest Service district ranger about collecting rules for obsidian on the Modoc National Forest in the Cascades of northeastern California. The letter illustrates (1) that the Forest Service can be responsive to the concerns of rock collectors and lobbyists like Ms. Leeson; and (2) that decisions by the Forest Service that affect rockhounders are made, within broad agency guidelines, at the local ranger district level. That is why Ms. Leeson took her concerns straight to the district ranger.*

Ms. Leeson,

Earlier this summer, I approved a new policy and plan to manage the collection of obsidian from the four approved areas in the Warner Mountains [of northeastern California]. The old policy had been in place since 1992.

Primarily due to the increased demand and use of the approved areas by commercial obsidian collectors, there was a need to review the old policy and make needed changes. This review was conducted under the requirements of the NEPA [National Environmental Policy Act of 1969, which requires environmental impact studies of proposed activities] and included public involvement.

We did the best we could with public involvement [required by NEPA], but it was not possible to get the word out to everyone who has used or had an interest in obsidian collection. Over the years, there have been hundreds of users from a diverse audience. We sent out information about the NEPA review to many of the clubs we were aware [of] that used the areas, published notices in the local paper, and put information on the [Modoc National] Forest's Webpage.

Actually, the change from 500 pounds to 100 pounds per personal use certificate [the amount of obsidian that rockhounders are allowed to collect each year] occurred several years ago, and my recent decision just affirmed that change. That change was made by my predecessor on the advice of the [Modoc National] Forest's minerals specialist. There was a concern with some unsafe collection practices, such as tunneling, and it was thought that a reduced collection limit would allow for better management of the collection areas.

Yours has not been the only question about the collection limit associated with personal use. I appreciate the fact that many collectors come from a considerable distance and because of that need to collect enough material to last for at least a few years. I have told others that I want to see if the 100-pound collection limit is effective in meeting management objectives before I consider any changes. The limit is part of the collection plan, which is subject to a review every year and *can be changed by me*. [Italics added.]

I appreciate your question and interest in obsidian collection. I would like to hear additional feedback, as that will help inform any modifications to the collection plan.

I also want to let you know that, while there is the 100-pound limit per personal use certificate, there is *no limit on the number of certificates that can be issued to an individual*. [Italics added.] And there is no limit per group, so each member of a party can be issued a certificate. It is also possible to get certificates issued by mail, which would allow more than one certificate to be issued to an individual.

As I stated before, the reduction in collection amount per certificate was made to allow for better management of the resource. If I find this is not effective and there are better ways to achieve our goals, I am willing to make changes to the collection plan. Thank you again for your inquiry. I value hearing from people like you.

Timothy Davis

District Ranger, Forest Service
Modoc National Forest
Devil's Garden/Warner Mountain Ranger Districts
225 W. 8th St., Alturas, CA 96101

Caring for the land and serving people

EFMLS News
Safety Matters—Tough Guy

by Ellery Borow, AFMS Safety Chair

Editor's note: *The article is adapted from the* EFMLS News *(November 2015), pp. 4–5.*

Quite a few folks know I write safety articles for the *AFMS News* and other newsletters. So it was no surprise when a fellow came up to me at a gem and mineral show and posed a question about field trip safety. His question pertained to a trip he had taken to a working mine.

The fellow had seen a situation at the mine that he thought could have been more of a safety hazard than the mine representative thought. The representative might not have noticed the potential hazard and certainly did not know the physical abilities of the club members on the field trip. In effect, the fellow, a club officer, thought a situation was more hazardous to his club members than did the mine representative.

It is rather unusual for a club officer to impose greater safety limits than required by a mining company. How does one approach an issue involving a potential hazard in a particular situation? Even though instances such as this are rare, I'm a firm believer in having a plan for every situation.

So here are some considerations:

1. Safety is paramount.
2. The field trip is usually at the request of the club, not the mine owners.
3. Mine and quarry workers are specially trained to observe stringent safety guidelines. Such workers are ever watchful and constantly monitor safety issues in their work areas. Club members, on the other hand, are generally not trained to evaluate every potential safety issue in a working mine. Members are usually given only instruction specific to a particular site or mine.
4. Of several sets of safety guidelines that can apply to a given situation, the strictest set of rules should apply. Member safety must be paramount.
5. Field trip leaders should be aware of club members' weaknesses: who is likely to dehydrate fastest, who has a heart condition, who might have frailties that need monitoring, who might have balance issues, and so on. True, ultimately folks have to take responsibility for themselves, but things such as dehydration can sneak up on anyone. Trip leaders need to be ever watchful; it's part of the job.
6. Safety instructions by mine representatives, as I have personally witnessed on numerous occasions, consist of an arm wave indicating "stay away from there," another arm wave indicating "collect over here," and entreaties to wear hardhats, safety shoes, gloves, and goggles at all times. Such general guidelines are enough for most, but some people tend to stretch the limits of "there" and "here." My own preference is to have a distinct or physical barrier between "there" and "here." Barriers can include wooden stakes and flagging, fences, a line of boulders, or painted lines on the ground. It's harder for wanderers to ignore a distinct or physical limit.
7. It's one thing if the representative gives the safety specifics to everyone on the field trip at the same time. It quite another thing if the mine representative gives a field trip leader the safety specifics to pass on to the club members, because the trip leader can make the guidelines more restrictive without club members knowing. If the mine representative gives the specifics directly to club members and then the trip leader makes them more restrictive, club members might want to know why, which can be difficult to explain. Members must have a high level of confidence in the trip leader's judgment to accept additional restrictions. There will always be members who want to stretch the mine representative's original instructions, regardless of any restrictions the trip leader might add.
8. What happens if a field trip leader sees the need to impose greater restrictions? Might the company see it as calling its judgment into question—maybe even rethink the advisability of allowing visits to its facility? Such instances call for communication that the trip leader knows the needs and abilities of the club members, understands their collecting interests, will keep folks from wandering outside designated areas, and so on. Good negotiating skills, good communication skills, good safety backgrounds and judgments, and good people skills are important.

9. One helpful guide in deciding limits is the club's own field trip guide. Your club does have a field trip guide, doesn't it? An actual printed guide can help make a case for "no" meaning "no." A general field trip safety guide can help, as can specialized guidelines to apply when necessary—especially in instances when the field trip leader uses judgment to add site restrictions.
10. Speaking of judgment, let's say a club member sees a collecting treasure just a foot or two beyond the line where collecting is permitted. The member should not just cross the line and pick up the treasure. That said, it might be possible to seek permission from the mine representative to cross the line by those 2 (or 3–4) feet. Field trip leaders should always be aware of the potential for over-the-line collecting. The key is to avoid jeopardizing future trips or collecting on slippery slopes.

Adding restrictions to a particular mine's guidelines for collecting carries both possibilities and pitfalls. Club member safety comes first—even if the field trip leader has to be the tough guy. All the official positions in a club have constitutional, bylaw, or other authority. Field trip leaders should be no less authorized to do their job—after all, safety rules.

Be safe; you deserve no less. Please mind your field trip leaders.

Agate Classifications (Part 1)

by Ron Gibbs

Editor's note: *The piece is adapted from a series on agates in* Goldrush Ledger *(newsletter of the Gem and Mineral Club, Charlotte, NC), November 2007, pp. 4–5; and December 2007, pp. 4–5.*

The structure of agate is cryptocrystalline, meaning that many small silica crystals are cemented together with more silica.

Formation

Molten magmas grow large crystals if cooled slowly and random small crystals if cooled rapidly. However, the patterns in most agates don't fit either scheme. Accordingly, agate likely forms in a solution or gaseous process and not through simple melt cooling.

Fortification agates. Top: Laguna agate nodules (Mexico); bottom: Piranha agate (Brazil).

The bulk material that cements the agate is a silica called chalcedony. Pure chalcedony can be collected for gemstone use under various names:

- Green chalcedony containing nickel is known as chrysoprase.
- A red variety has the name of carnelian.
- Brown chalcedony is called sard, and there are also purple and bluish colors.

These materials are usually found in seams or narrow lenslike openings.

Agates form in rounded nodules or in seams, supporting the theory of liquid or gas crystallization. Lava often traps gases in bubbles as it cools, providing an ideal nursery for agate growth.

Many high-silica lavas with entrapped gas spheres can be leached by rainwater, which dissolves some of their silica content as it seeps through lava pores and

Seam agate (rainbow agate from Indonesia).

fills the spheres. Repeated wetting and drying of the spherical chambers might produce a pattern of periodic precipitation. As the silica changes chemistry, it might carry differing amounts of dissolved metals into the growing agate, leaving bands of different color.

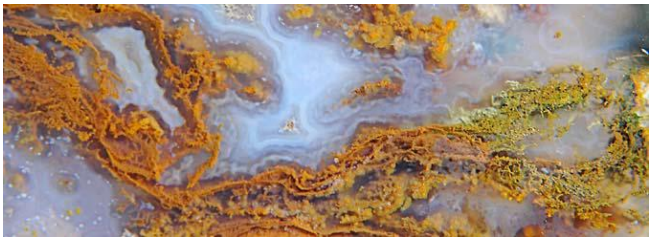
Varieties

There are many varieties of agate, and it is unlikely that a single method of growth accounts for all. ***Fortification agate*** (preceding page) forms in nodules containing concentric bands of alternating or repeating colors. The concentric rings resemble fortifications—hence the name. The bands might follow the general shape of the nodule, or they might form straight parallel bands across the nodule. Sometimes they do both in the same agate.

In ***seam agate*** (preceding page), the banding usually follows the edges of the seam or crack, forming roughly parallel lines along the length of the agate.

In some nodules, the lines form parallel stripes that are aligned with the bottom of the nodule. These so-called ***water-level agates*** can contain both fortification and level banding. This phenomenon is also known as Uruguay bands.

Another popular variety is called ***moss agate***, a name that comes from the mass of mosslike strands trapped



Moss agates. ***Top:*** *Needle Peak moss agate (Texas);* ***middle:*** *Maury Mountain moss agate (Oregon);* ***bottom:*** *moss agate from southwestern Texas.*

Water-level agate (Brazil).

in the silica matrix. The "moss" can be of nearly any color, and many moss agates have more than one type of moss.

Periodic precipitation is not likely the origin of moss agates. The cementing mass probably formed a gel, with color channels created by precipitating metal hydroxides and oxides along grain boundaries or flow channels.

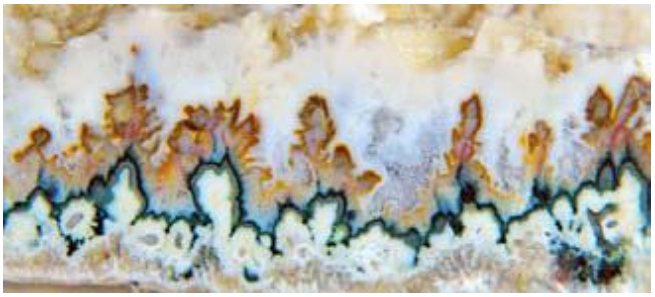
The color of the moss is related to the metal hydroxide or oxide in the agate. Most yellow, orange, and red mosses come from iron.

Black moss comes from manganese minerals. The black varieties are mostly made up of mixed metal oxides, often with an amorphous structure.

White mosses tend to form in the chalcedony as phase change in the silica. The white material tends to be one or more forms of opal.

Another well-known variety is called ***plume agate***. Its characteristic feature is an apparition that floats in transparent to translucent chalcedony and looks like a tree, plant, or feather duster.

Again, the "plumes" are mostly metal oxides and hydroxides formed after partial solidification (or gelling) of the silica media. Under basic (as opposed to acidic) conditions, many metal salts will produce flocculent oxyhydroxy precipitates. When these are produced in a gel with limited migration, they might appear to be trapped as plumes or flow structures.



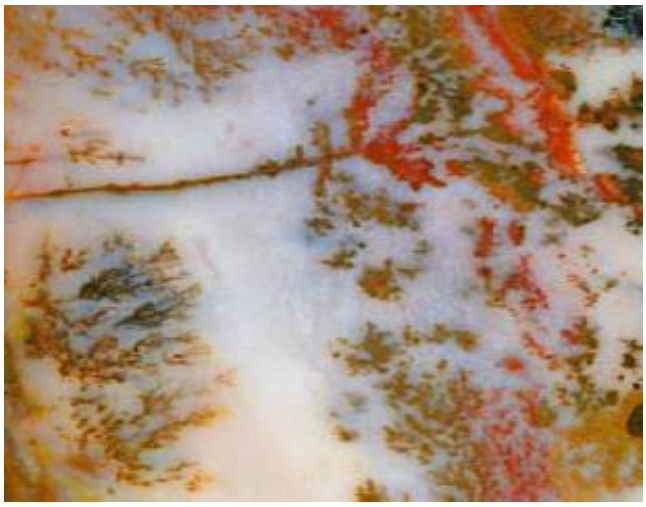
Sheep Creek plume agate (Oregon).

Prudentman plume agate (Idaho).

Although plumes are found in nodular agates, they are also found in seam or vein agates. The plumes often seem to be anchored to the edges of the vein. Perhaps the sides of the vein offered a point of nucleation for crystal growth, or perhaps the plumes started along the edges because that is where the solution seeped into the vein and began to form the agate.

Thundereggs are a great source of plumes. Thundereggs likely form in high-silica rhyolitic welded tuffs, where frozen gas bubbles fill with silica solutions.

Like most plumes, the brownish varieties are usually some form of oxy-hydroxide, such as Goethite or limonite. The black varieties consist of mixtures of manganese, such as romanechite or vernadite. White plumes appear to contain no metals; they are likely various phases of silica (likely hydrated) in chalcedony.

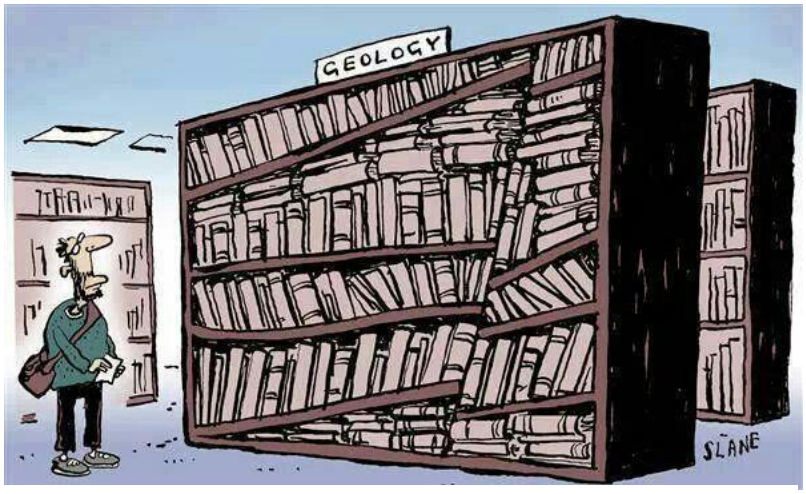


Paiute Creek dendritic agate.

Dendritic agate is similar, with encapsulated material that looks like feathers or ferns. Dendrites are often found in conjunction with other types of agate, as in Sheep Creek plume agate (preceding page).

The colored elements are usually made up of manganese or iron oxide. They might have formed through slow precipitation and metal migration caused by slow pH change in the silica gel. They probably formed after the bulk of the chalcedony was in a semi-rigid state or perhaps in a way similar to moss agate, but with more limited mobility or fewer fractures.

Forest green plume agate (Oregon).



Source: Pinterest.

Upcoming Events
(of interest in the mid-Atlantic region)

February

19–21: Indianapolis, IN—GeoFest: 14th Annual Indiana State Museum Fossil, Gem and Mineral Show; Fri/Sat 10–5, Sun 11–4; museum admission: adults $13, seniors $12, children $8.50; info: Peggy Fisherkeller, 650 West Washington Street, Indianapolis, IN 46204; 317-232-7172; pfisherkeller@indianamuseum.org; Website: www.indianamuseum.org.

March

5–6: Newark, DE—53rd Annual Earth Science Gem and Mineral Show; Delaware Mineralogical Society, Inc.; Delaware Technical and Community College, 400 Stanton-Christiana Road (I-95 Exit 4B); Sat 10–6, Sun 11–5; adults $6, seniors $5, kids 12–16 $4, 11 and under free; info: www.delminsociety.org or contact gene@fossilnut.com or call Wayne Urion at 302-998-0686.

11–13: Augusta, GA—28th annual Aiken-Augusta Gem, Mineral & Fossil Show; sponsors: Aiken Gem, Mineral and Fossil Society, Augusta Gem and Mineral Society; Fri/Sat 10–7, Sun 11–5; Julian Smith Casino, 2200 Broad Street, August, GA; adults $3/$5 weekend pass, children under 12 free with an adult; info: Chris Glass, 706-284-9239, www aikengmfs.org.

19–20: Sayre, PA—47th Annual Che-Hanna Rock & Mineral Club show; Athens Twp. Volunteer Fire Hall, 211 Herrick Ave; Sat 9–5, Sun 10–4;. info: Bob McGuire at 570-928-9238 or uvbob@epix.net.

19–20: Chambersburg, PA—38th Annual Gem, Mineral & Jewelry Show; Franklin County Rock and Mineral Club; Hamilton Heights Elementary School, 1589 Johnson Road; Sat 10–5, Sun 10–4; admission $5, kids under 12 free with adult; info: Matt Elden at fcrmc1978@gmail.com or 717-331-0526.

19–20: Gaithersburg, MD—52nd Annual Gem, Mineral and Fossil Show; Gem, Lapidary, and Mineral Society of Montgomery County; Montgomery County Fairgrounds, 16 Chestnut Street; Sat 10–6, Sun 11–5; age 12 and up $6, children 11 and under/Scouts in uniform free; info: http://www.glmsmc.com/show.shtml.

April

1–3: Hickory, NC—46th Annual Show; Catawba Valley Gem & Mineral Club; Hickory Metro Convention Center; 1960 13th Ave Dr, Interstate 40-exit 125; Fri/Sat 9–6, Sun 10–5; adults/seniors $5, students/children free; info: Baxter Leonard, 2510 Rolling Ridge Dr, Hickory, NC 28602, 828-320-4028, gailandbaxter@aol.com.

1–3: Raleigh, NC—Annual show; Tar Heel Gem & Mineral Club; Kerr Scott Bldg, NC Fairgrounds, Blue Ridge Road; Fri 3–8, Sat 10–6, Sun 10–5; free admission; info: Cyndy Hummel, 919-779-6220, mchummel@mindspring.com; tarheelclub.org.

2–3: Johnson City, NY—47th Annual Gem, Jewelry, Mineral & Fossil Show; NY Southern Tier Geology Club; Johnson City Senior Center, 30 Brocton St.

16: Severna Park, MD— Annual Jewelry Gem and Mineral Show; Patuxent Lapidary Guild, Inc., Earleigh Heights VFC, Rte. 2, Severna Park, MD; Sat 10–5; over 10 years old $2.00, under 10 free.

12–13: Clifton, NJ—27th Annual Show; North Jersey Mineralogical Society; Pope John II Center, 775 Valley Road; Sat 10–6, Sun. 10–4; adults $5, seniors $4; info: buckwood4@yahoo.com, www.nojms.webs.com.

May

9–15: Little Switzerland, NC—Wildacres; $400 plus materials fee; registration starts Jan 1; information at http://efmls-wildacres.org/

June

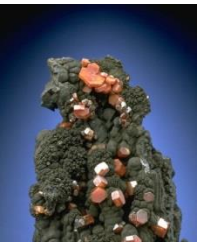
4: Macungie, PA—2016 Spring Mineralfest, 66th Semi-Annual Show; Pennsylvania Earth Sciences Association; Macungie Memorial Park; info: Don Pitkin, pitkind@earthlink.net or www.mineral.com.

October

22–23: Rochester, NY—Rochester Gem, Mineral, Jewelry & Fossil Show & Sale and **66th Annual EFMLS Convention**; EFMLS Annual Meeting, Friday, October 21; hosted by Rochester Lapidary Society; Main Street Armory, 900 E Main St; info: www.rochesterlapidary.org/show.

THE NORTHERN VIRGINIA MINERAL CLUB INC

Crystals are the flowers of the Mineral Kingdom



Mineral of the Month: Vanadinite

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

The Northern Virginia Mineral Club

You can send your newsletter articles to:

news.nvmc@gmail.com

Visitors are always welcome at our club meetings!

RENEW YOUR MEMBERSHIP!

SEND YOUR DUES TO:
Rick Reiber, Treasurer, NVMC
PO Box 9851, Alexandria, VA 22304

OR

Bring your dues to the next meeting.

Purpose: To promote and 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, http://www.amfed.org/efmls) and the American Federation of Mineralogical Societies (AFMS—at http://www. amfed. org).

Dues: Due by January 1 of each year; $15 individual, $20 family, $6 junior (under 16, sponsored by an adult member).

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 22204. (No meeting in July or August.)

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