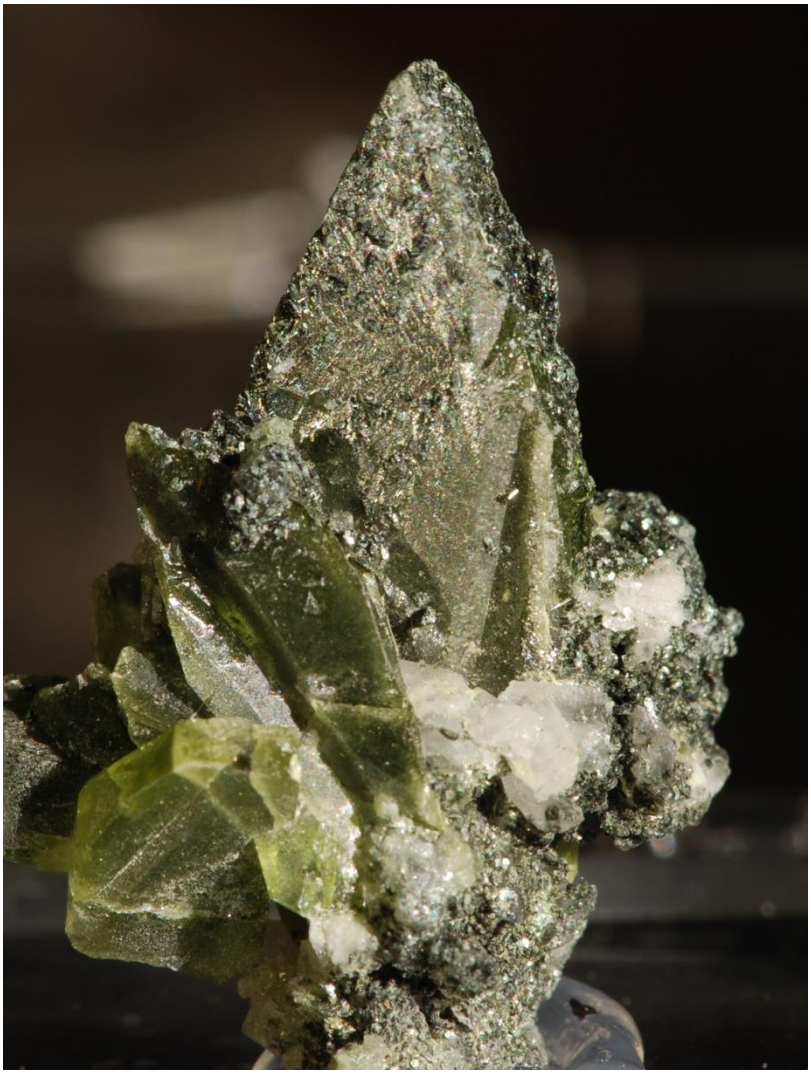
THE NORTHERN VIRGINIA MINERAL CLUB INC

The Mineral Newsletter

Meeting: April 24 Time: 7:45 p.m.

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



Titanite

Photo: Bob Cooke.

Volume 58, No. 4
April 2017
Explore our Website!

April Meeting Program:

Studying Paleoclimatology

In this issue …

Mineral of the Month
Titanite

by Sue Marcus

Titanite was named for a principal component, titanium. Although recognized in 1787 as a new—or at least unknown—mineral, it was not formally described and named until 1795.

Most minerals have a type locality, a place where the material that was initially described (the "type") was first found. Mindat lists three co-type localities for titanite: Hauzenberg, Bavaria, Germany; Philipstown Township, Putnam County, New York; and Rossie, St. Lawrence County, New York. The Putnam County locality is the source of a red-brown variety of titanite known as lederite.

I grew up with specimens of sphene in my mineral collection. This mineral name was introduced by the famous mineralogist and crystallographer René Just Haüy in 1809. Sphene is now a discredited name for titanite, a decision made by the International Mineralogical Association in 1982, so those of us of a certain age may date our labels by the names they show for our specimens. Similar changes have occurred for the names of countries, so cataloguing and labeling minerals can be an ongoing exercise.

Titanite is an unusual mineral in that it commonly forms twinned crystals. I like the galleries.com/sphene description of the twins as "shaped like a deflated, caved-in football, only with flatter surfaces."

Brazil is noted for light green twinned crystals up to several centimeters in size, with broad flat sides and a sharp V along the twinned plane along the center. Austria and Switzerland also produce olive green to yellow-green crystals. Gem-quality green titanite from the pegmatites of Pakistan has come on the market more recently. Emerald green crystals are reported from the Ural Mountains of Russia, along with more mundane brown specimens. Italy produces titanite in unusual colors, like yellow-orange and blue. Morocco and Madagascar are sources of green and brown crystals. Ontario is a primary producer of red-brown specimens, sometimes with large crystals.

Chromium can give titanite its green color, whereas traces of manganese create pink or red specimens. According to Gemdat.org, titanite is trichroic, meaning that its color may change in each of the three crystal axes. Some titanite contains traces of thorium in the crystal structure. The thorium makes the titanite slightly radioactive, and it can also make it degrade or become metamict, with the crystal faces growing slightly rounded.

Titanite twin. Photo: Bob Cooke.

Titanite occurs in all rock types—sedimentary, igneous, and metamorphic—but it is most commonly found in metamorphic rocks. Pegmatites probably host the most atheistic specimens because they allow the slow growth that leads to the formation of euhedral crystals (showing all crystal faces).

The main ores of titanium, used as a metal for alloys or as titanium oxide for whiteners, are rutile and ilmenite. Titanite itself is not a useful ore mineral.

Technical details:

Chemical formula .....$CaTiSiO_5$
Crystal form.....Monoclinic
Hardness.....5–5.5 (Mindat)
Density .....3.48–3.6 g/cm^3 (measured)
Color.....Green, yellow, red, mauve, brown, black

Happy Easter!

Northern Virginia Mineral Club members,

Please join our April speaker, Hunter Hughes, for dinner at the Olive Garden on April 24 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.

Streak:..... White to slightly reddish
Cleavage ..... Perfect in one direction
Fracture..... Subconchoidal
Luster..... Adamantine, resinous
Fluorescence..... May have weak brown shortwave fluorescence

Sources

Amethyst Galleries. 2014. The mineral sphene.
Gemdat.org. 2017. Titanite (sphene).
Mindat.org. 2017. Titanite.
Minerals.net. 2017. The mineral titanite.
Webmineral.com. N.d. Titanite.
Wikipedia. 2017. Titanite.
Wikipedia. 2017. Titanium.

Hunter Hughes

Studying Paleoclimatology: A Personal Journey

April 24 Program

My talk will summarize my journey from an English and Journalism major in college to a graduate program in paleoclimatology. I will describe my experiences as a young scuba diver and, after college, in teaching and sales before going back to school (and remote islands) to study marine science—and finally to be admitted into a graduate program in paleoclimatology.

I will include elements of personal growth and development in the course of my studies at Northern Virginia Community College, including my extensive work with the marine and geological environment of the Little Cayman microatoll in the Caribbean Sea. I will end by talking about my upcoming research at the University of Maryland's Chesapeake Bay Biological Laboratory and how the support I've had throughout this transitional period has kept me focused on my passion.

I am a student and teaching assistant at NOVA's Annandale campus. After receiving a B.A. in English and Journalism from Emerson College in Boston, MA, I went on to work in the sales industry for 2 years. In spring 2014, I returned to school to complete a variety of math and science courses, with the goal of being admitted into a Master's program for geological oceanography.

Since then, I spent a year working as a research technician at the Central Caribbean Marine Institute on Little Cayman, where I studied the biological and geological nature of coral reefs. At the 2016 Benthic Ecology Meeting, I gave a presentation on the surprising recovery rate of the Little Cayman coral community in the wake of the 2016 El Niño event.

I subsequently moved to this area to work at NOVA and complete my prerequisite courses in science for graduate school. I have worked with NOVA Professor Ken Rasmussen, who nominated me for a grant from the NVMC's Fred Schaefermeyer Scholarship Fund.

Recently, I was admitted into a Master's program with the University of Maryland's Chesapeake Bay Biological Laboratory working with coral skeletons as paleoclimate proxies. I am due to begin as a research assistant in fall 2017.

The Prez Sez

by Bob Cooke, President

After last month's club auction, I am now cognizant of one more thing I don't want to do for the rest of my life: be an auction recordkeeper. In past auctions, Barry Remer always made that function look so easy. I don't know how he did it! I was a nervous wreck and definitely less than coherent by the time the auction ended.

I now have, however, a couple ideas for changes to the September auction. Those of you in the audience, both buyers and sellers, had a different perspective and will have different ideas of how to improve the operation. Please send me those ideas. We can make the auction better, but only if we work together at it.

Our club has revitalized the Fred Schaefermeyer Scholarship Fund with an expanded list of recipients and increased monetary awards. This year, the club has awarded six scholarships, totaling $2,300. We encourage each recipient to be a program speaker at one of our meetings or to submit an article for the newsletter.

That effort is paying dividends. In February, Carlin Green (a student at George Mason University) spoke to us about his work in characterizing the threat of asbestos in amphiboles found in Michigan's banded iron formations. This month, Hunter Hughes (a student at the Annandale campus of Northern Virginia Community College) will speak to us about his personal journey on the course to studying paleoclimatology. And in June, our own Alec Brenner will give a presentation on determining the history of the Earth using zircons from the Jack Hills of Australia. I am looking forward to all these presentations!

But what interests you? What would you like to hear, see, and do at our monthly meetings? Do you have a guest speaker in mind on a topic of interest to you?

Any information you can provide to Ti Meredith or me will help us steer the club in the direction you want. But you have to let us know!

And don't forget that the club budgets $100 to subsidize first-time participants in the Wildacres weeklong programs in spring and fall. Expand your mineral or lapidary skills and come back to share your experience with us!

Bob

Name Tag Contest

by Bob Cooke, President

This is your final reminder that the NVMC is having a contest to select a design for new name tags. The trophy shop that previously produced our name tags has gone out of business and taken our old name tag template with it to Never-Never Land.

The old design (see above) will be one of the candidates in the contest. However, I believe someone can improve upon that basic design. Make up a sketch of what you like, but don't include color. For the name tag, we need a simple black-and-white line drawing.

The banners we display at our annual mineral show feature the old motif. We can tweak the design and continue to use the banners or we can create a whole new design for name tags and retain the old design for the Website, newsletter, and banners. We have options!

Final selection will be by popular vote at the NVMC April meeting. If you can't be there, have a friend bring your design. Or you can email your proposal to me at rdotcooke@verizon.net.

Deadline for Submissions

April 20

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

Meeting Minutes

March 27, 2017

by David MacLean, Secretary

President Bob Cooke called the meeting to order at 7:20 p.m. at the Long Branch Nature Center in Arlington, VA.

The minutes of the 27 February 2017 meeting were approved as published in *The Mineral Newsletter*.

There was no treasurer's report because the treasurer was absent due to a family emergency.

Recognitions

The president recognized past presidents Sue Marcus, Barry Remer, Rob Robinson, and Wayne Sukow and AFMS past president Matt Charsky.

The president recognized mew members Steven and Amanda Parker. Attending as guests were Tom and his young son, who declared an interest in black opals.

Announcements

Pat Flavin described the fossil-hunting field trip on March 24 to Flag Ponds Nature Beach on the west shore of Chesapeake Bay in Calvert County, MD. Several sharks' teeth were found. Craig Moore described and photographed a nearby bald eagle's nest.

Pat will lead another fossil-hunting field trip to Flag Ponds Nature Beach on April 17 (see the article on page 8). At a 2015 or 2016 NVMC meeting, Pat showed a video of her wading in shallow water on the west shore of Chesapeake Bay to hunt marine fossils from the Tertiary Period.

The president said that there were 20x illuminated and 10x nonilluminated loupes on sale.

Auction

Following adjournment of the business meeting, the spring auction began. Each year, the NVMC conducts two auctions (in spring and fall) of minerals, fossils, lapidary material, and jewelry. The 15-percent NVMC commission on all sales goes into the Fred Schaefermeyer Scholarship Fund.

Matt Charsky and Rob Robinson served as auctioneers, Sue Marcus and Ti Meredith as runners, and Bob Cooke and Barry Remer as bankers.

During the bidding, the endemic whispering became a noisy chatter that made the bids almost inaudible. Sue Marcus assumed the role of sergeant-at-arms, banging on a table or whistling to get people to be quiet.

Speaking of sergeants, the NVMC owes special thanks to Jane and Phil Sargeant for donating so many specimens and books to our club members. They also donated to the auction, benefiting our scholarship fund.

Thank you so much, Jane and Phil!

2017 Spring Club Auction

Thanks to Pat Flavin for the great photos!

Good turnout for the show put on by the auctioneers, Matt Charsky, Sue Marcus, and Rob Robinson.

Thank you, Sargeants!

Top: Jane and Phil Sargeant, who donated specimens and books to club members. They also contributed generously to our Spring Club Auction this year, including the specimens shown above.

Middle: Two onyx bookends with smoky quartz on top of one and angel-wing calcite on the right.

Bottom: Sand selenite.

Some nice acquisitions for Andrew You (left) and Celia, Jason, and Alexis Z. (right).

Sad News…

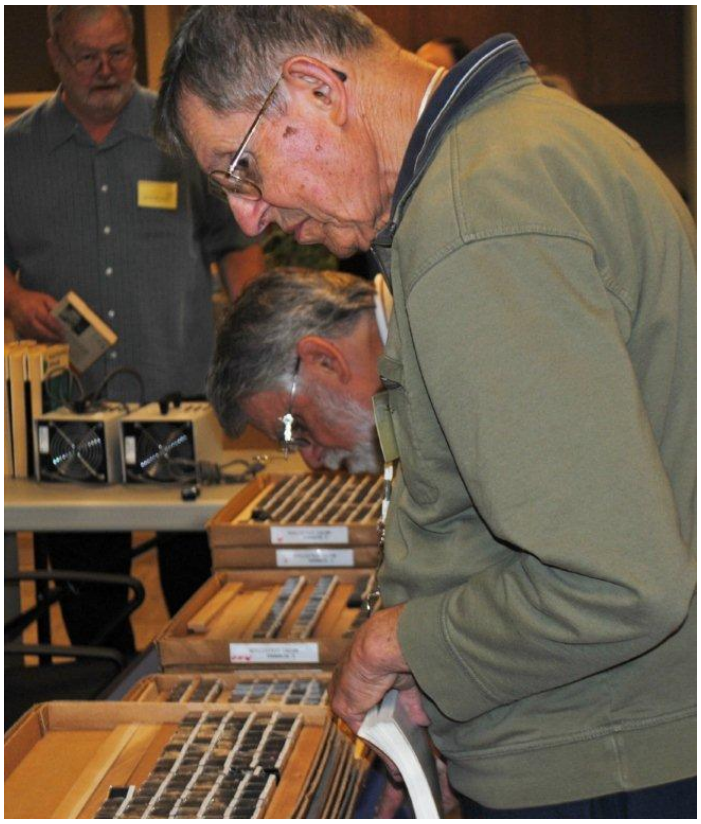
George Reimherr passed away at home on Friday, March 31.

George was a longstanding and very active member of mineral clubs in our area, including ours. He promoted our hobby by giving club members free specimens—nice ones—that he'd collected.

The visitation will be on Sunday, April 9, from 4 to 6 p.m. at the Demaine Funeral Home, 5308 Backlick Road, Springfield, VA.

George's funeral mass will be at 10:30 a.m. on Monday, April 10, at St. Bernadette Catholic Church, 7600 Old Keene Mill Road, Springfield, VA.

Cards and condolences can be sent to Helen Reimherr, 7944 Jansen Drive, Springfield, VA.



Gem, Lapidary, and Mineral Society of Montgomery County, MD
53rd Annual Show

by Sue Marcus

One of the many joys of our mineral, fossil, and lapidary hobby is sharing the fun. Some of us belong to multiple clubs, and many of us can be seen at the events of other clubs—like shows and field trips.

The March 18–19 show put on by the Gem, Lapidary, and Mineral Society of Montgomery County, Maryland, was one such hobbyist get-together.

Ken Reynolds was everywhere! He helped set up and take down the show, and he displayed two lovely cases, one of Franklin, NJ, minerals (in daylight) and another of gypsum specimens.

Joe Murter's famous miniatures were on display, in cooperation with Robert Clemenzi. Jeff Cessna had a mineral display in the fluorescent room. Kathy Hrechka and Dave MacLean were busy sharing their love of micromounts at the micromounters' demonstration table.

I spent a day at the USGS table talking about the topic "What Good Are Rocks?" Dave Hennessey was a dealer upstairs. Leslie and David Nanney were there, although we didn't have a chance to chat. Sheryl Sims was spotted enjoying the show with a friend.

There were probably other club members whom I failed to see. My apologies, although glad you went! And please spread the fun!

Scenes from the Show

Above left: Sue Marcus at the USGS table showing benefits people get from minerals. Photo: Kathy Hrechka.

Above top/center: Ken Reynolds with his display of minerals from Franklin, NJ; micromounts on display. Photos: Kathy Hrechka.

Above/left: Kids enjoying the show; spectacular display of mineral orbs. Photos: Sheryl Sims.

Save the date!

Fossil Collecting at Flag Ponds, MD

by Pat Flavin

H*i*, everyone!

It's almost here, the much anticipated second fossil-collecting trip of the year, on Monday, April 17! (The first one was on March 24.)

Once again, our group will be small, so there will be plenty of ancient fossils to be found from the Miocene Epoch—that's 8 to 22 million years ago. We might find sharks' teeth (maybe a megalodon), coral, shells, whale and animal bones, and more.

Megalodon shark's tooth. Photo: Pat Flavin.

When: Monday, April 17, 8:30 a.m. to 3:30 p.m. Arrive whenever you like. Seriously!!!

Where: Flag Ponds Nature Center Beach, Route 4, Calvert County, MD. Best in the country for megasharks' teeth. Forget Venice Beach, FL.

VERY IMPORTANT NOTE: The entrance fee is waived on Mondays! You will drive past an unmanned ranger station. Just drive through and park in the lot. There is a handicap parking lot if you need it (all the way down the park road near the beach). YOU WILL BE WALKING ABOUT A QUARTER MILE DOWN A ROAD TO GET TO THE BEACH.

The beach is huge, which is unusual for the Chesapeake Bay. We are on our own and can arrive at our own leisure. We will not have a ranger meet us, as in the past.

This is a perfect way to hunt for the big sharks' teeth without the competition of the weekend hunters or classes of 60 children!!!

Info: http://www.calvertparks.org/fpp.html

Directions: Flag Ponds Nature Park is located off Route 4, just south of Prince Frederick, MD, near Solomon's Island. Once you are on Route 4, stay on it all the way to Flag Ponds. You will see a brown road sign near the entrance. You will travel through towns with services for gas, food, and so forth. There is a restroom at Flag Ponds.

It is about 1-1/2 hours from Tyson's Corner, VA, to Flag ponds. Rush hour traffic could add extra driving time. If you are serious about arriving at 8:30 a.m., you will probably beat rush hour traffic. I will try to get there at that time.

There are police along Route 4, since everyone drives 70 miles per hour. OOPS! So be careful.

What to look for: Sharks' teeth, bone fragments from every kind of critter, shells, coral, arrowheads, you name it. You can find them on the beach in the sand or in the water.

How to dress: You will be out on a beach and could be exposed to winds, depending on the weather. It can be 10 degrees colder on the beach than inland. We will keep our eye on the weather. Google it!

Dress in layers. Wear a hat and a jacket that has good windbreaking features. Most importantly, wear rubber boots and even WADERS, if you have them. Many fossils are found in the first several feet offshore. Plus, it's fun to walk in the water. The water should be crystal clear.

What to bring: Bring a strainer scoop, backpack, plastic baggies, water, lunch, snacks, sunscreen, and a kite. You probably won't need sunglasses to find the fossils, since sunglasses make it harder to see. Fossils are black and shiny. They are enamel teeth, for the most part.

Hints on finding fossils: The Dollar Store has a nifty white plastic food strainer that works very well when scooping the teeth out of the bay.

I will stick with you and encourage you to ROAM THE ENTIRE SHORELINE TO FIND THE MOST TEETH AND FOSSILS. DON'T STAY IN ONE SPOT. BECOME A BEACHCOMBER AND ROAM FREELY. Many teeth are just lazy and lying on the beach for you to find.

Call me on my cell phone when you get there: 703-915-1883. The tide should be low. Walk all the way NORTH once you get on the beach to find the best stuff. It will be an adventure, I promise!

Save the dates!

More Field Trip Opportunities

Northern Virginia Community College *Geology Field Trips*

NOVA's Annandale campus offers 1-day weekend courses related to our hobby. You can sign up on the Field Studies in Geology—GOL 135 Website.

Paleozoic Geology of Virginia and West Virginia. One-day field trip via college van on Saturday, April 1, 7 a.m. to 9 p.m. This field trip will let you explore the late Silurian and Devonian geology of western Virginia and West Virginia, considering ancient depositional settings (tropical marine reefs, lagoons, shelves, deep basins, and terrestrial flood plains) and fossils, as well as later deformation (faulting and folding) associated with the Valley and Ridge Province.

Cretaceous Geology of Maryland and Fossil Hunt. One-day field trip starting at 10 a.m. on Sunday, April 23. Well-known dinosaur expert and paleontologist Dr. Peter M. Kranz will lead this fun outdoor expedition to nearby fossil sites, where you can discover many exciting fossils to take home.

Geology of Great Falls Park, Virginia. One-day field trip on Saturday, June 3 (rain date: Sunday, June 4), with a posttrip meeting on Saturday, June 10. Study the modern and ancient forces that created Great Falls National Park, including some easy to moderate hiking. Meet in front of the main Bisdorf entrance on campus at 9:00 a.m., returning by 6:00 p.m.

Audubon Naturalist Society

The ANS offers classes and nature programs, including 1-day field trips. You can get more information and register here.

Geology of Seneca Creek, Maryland. Four-hour field trip on Saturday, April 8 (10 a.m. to 2 p.m.), led by Joe Marx. The cost is $34 for nonmembers. The location is Seneca Creek State Park in central Montgomery County. Dramatic rock outcrops tell the story of an ancient ocean that was consumed during the formation of Pangaea. We will hike from Darnestown Road to Black Rock Mill and then back, for a total of around 3 miles. Our geology hikes move at a faster pace than our usual naturalist's shuffle.

Editor's Corner

Portal into the Past: Glimpse of Club History

by Hutch Brown

Webmaster Casper Voogt has posted a list of club officers and others going back almost to the beginning of the NVMC in the 1950s. I compiled the list from files maintained by NVMC Historian Kathy Hrechka, and Casper then formatted the list for our Website. You can go to the list by clicking here. Thanks, Casper and Kathy!

Although the club began in the late 1950s, the exact year is unknown, at least to me. The first newsletter on file is volume 7(1) from January 1966, suggesting that the newsletter began in 1960. The earliest club meeting notes on file are from January 1961, and I took some of the information for the list from the notes; for 1966 and subsequent years, the information is entirely from past newsletters.

The NVMC has four club officers: president, vice-president, secretary, and treasurer. Other positions, though important, are not club officers. Newsletters did not regularly list club officers until 1979, and other positions were not regularly listed until 1983; newsletters from 2008 to 2011 listed only club officers, not other positions. Some positions were temporarily vacant, filled by "acting" club members, or held in sequence by multiple people (in which case the name listed is for the person who held the position longest that year).

So much for the technical details.

Interested in shows? Our club had a member responsible for mineral shows as early as 1971! So how come the first actual NVMC mineral show wasn't until 1992, organized by Show Chair George Loud?

Before 1992, the NVMC maintained showcases and exhibits displayed at other clubs' shows. The "show" position was responsible for maintaining club exhibits.

Beginning in 1994, the club had an exhibit coordinator alongside the show chair. Presumably, the coordinator was responsible for managing the club's various showcases and displays, whether at our own annual club show or elsewhere. After 2006, the exhibit function vanished from the list, presumably handled from then on by the actual show chair.

Jet: A Gemstone Made of … Coal?

Mary Sue Bucker

Editor's note: *The piece is adapted from* Livermore Lithogram *(newsletter of the Livermore Lithophiles, Livermore, CA), May 2011, p. 6.*

In the year 1861, Prince Albert, husband to Queen Victoria of England, died of typhoid fever. For the remainder of her life, which numbered 40 years, the queen remained in mourning and dressed only in black.

Mourning Attire

Black mourning attire included beads fashioned from jet—a strange but beautiful gemstone that is a form of lignite (a kind of coal). A fossil mineraloid, jet is sometimes called black amber, agstein, scorpion stone, and witch's amber.

Most jet originated in the Jurassic Period about 182 million years ago from the remains of Araucaria conifers. We call their living relatives monkey puzzle trees.

Jet is lightweight and flammable; has a distinctive coal smell to it; and, like amber, takes on a static charge when rubbed. It is soft, with a Mohs hardness of 2 to 4, and can be polished to a luster resembling black velvet.

Victorian mourning jewelry had a distinctive look; the black beads were usually faceted. Long ropes of these faceted jet beads were common, and they remained popular well into the 1920s, when they were worn by young "flappers" with their short, straight dresses.

Imitation Jet

After jet beads became popular, imitators appeared, such as ebonite, also called vulcanite (hardened rubber). Unlike jet, vulcanite was molded rather than cut and, if heated, smelled like rubber instead of coal. It also bleached out with age to an olive-brown color.

"French Jet," "Paris Jet," and "Faux Jet" are glass, the most common imitator of jet. Glass is easy to tell from jet because it's heavy and cold.

Bakelite is a vintage plastic tinted black to resemble jet. Bakelite has become valuable in its own right. About 10 years ago, a friend asked me to pick up a Bakelite bracelet for her at an antique show. Most of the good ones I saw were being offered for around $500. Needless to say, she didn't get her bracelet.

"Jet-black"—ever wonder where the phrase comes from?

Another jet imitator is bog oak, a type of black wood found in Irish peat bogs. Jewelry makers have also used channel coal, shale, horn, and a few other things that aren't around anymore. Then, of course, there's onyx (or black chalcedony); obsidian; schorl (a type of tourmaline); coral; and any stone that's been dyed or enhanced with dye.

Source in England

Naturally, Queen Victoria could afford the real thing, and the only jewelry that was allowed at court during the mourning period was real jet, preferably mined in Whitby, a town on the Yorkshire coast of England. Whitby still yields the finest jet in the world.

Interestingly enough, Whitby is also a source of ammonite fossils. An old legend tells of St. Hilda of Whitby, who hundreds of years ago was credited with turning a plague of snakes into stone. They do some beautiful jet carvings in Whitby, and jet is not all they've carved. As proof of St. Hilda's miracle, local artisans carve snakes' heads onto the ammonite fossils and sell them as a cottage industry. The coat-of-arms of Whitby is adorned with three of these "snake stones."

Jet brooch, 19th century. Source: Wikipedia.

Safety Matters
Be Safe—Be Well

by Don Monroe, SFMS Safety Chair

Editor's note: *The article is adapted from* A.F.M.S. Newsletter *(May 2009), p. 7. It was originally in the* SMFS Newsletter *(February 2009).*

Time to check your house!

For most of us, it is early spring, a time when we may not be teaching or taking extensive field trips. It should be a good time to take a critical look at our house and how safe it may be.

We all know that many accidents happen in the home and that a little planning might minimize the hazards of everyday living. Studying our home will not prevent us from being stupid and doing stupid things. On my list of stupid things, I include ignoring the obvious; failing to check smoke detectors and other systems; climbing onto chairs and stools; and failing to keep steps, ramps, porches, and walkways clear.

Exiting our back deck requires going down a ramp. That is not a problem unless we have snow, ice, or rain, when it can really get exciting. Besides, visitors may not recognize just how much fun it is to skid down the ramp on their backsides.

We have a long ramp in front of our Birmingham house with algae that is slick when wet. Recently, a visitor was talking and gesturing rather than holding the hand rail when she lost it in grand fashion, falling flat on her derriere. The result was a long, wide, black streak on her white stylish slacks and a look of shock on her face. Her husband reported that the bruise was "impressive."

Routine maintenance of your home covers many things, and you may be willing to tolerate conditions that visitors may not. Ask yourself such questions as: How is your lighting? Do you have any rickety furniture? Do you have any slick floors, showers, or tubs? Do you have any scatter rugs or power cords in walkways? Are your medications all up to date, and is your makeup old enough to grow bacteria? What is hiding in your pantry or under sinks and lavatories? When others approach your home, is it a welcome sight and is your drive user-friendly?

We tell all new visitors that our driveway is gravel and can be a challenge after rain or snow. The driveway is steep and very curvy and at times requires four-wheel drive. We have even gone down the hill and picked up guests and ferried them up.

Finally, consider your pets. Our life is enhanced by our Jack Russell Terrorist (Terrier), who loves everybody, but not everyone loves dogs. Some have had a bad experience or have an allergic reaction to cats or dogs.

For the benefit of your family and all who may visit, study your house and look for any and all potential problems.

Notes From the President
What Is the Health of Your Club?

by Dave Korzendorfer, EFMLS President

Editor's note: *The article is adapted and abridged from* EFMLS News *(January 2017), pp. 2, 3.*

About 10 years ago, Bob Livingston wrote a three-part series in the *EFMLS Newsletter* about assessing the health of your club. In his article, he wrote about the life cycle of a club from its inception, to its growth years, to its sustainable healthy activities, to its eventual decline.

So what are the clues that your club has a problem?

The obvious ones are the trend of your club membership; the average age of your club members; whether you meet in a public location; and whether you have a newsletter, bulletin, or some other means of communication.

Another sign of health is your club treasury. Is it large enough to support the ongoing needs of the club as well as some growth ideas? My understanding is that having onhand about 1 year's worth of your annual club revenue is a safe level to support ongoing club activities; amounts above that can be used to support new activities to build growth.

One of the ideas Bob put forward as an indicator of a healthy club was a "rallying-point activity" for keeping members involved in the club. Many clubs would consider their show to be that "rallying point," but it could also be a picnic, swap, kids' day, annual trip, or something else. What's important is that it is supported by most club members.

Bob also wrote about the importance of youth for sustaining a healthy club. By youth, many of us think of kids who are future enthusiasts, but it can also be members who bring energy and new ideas to your club, regardless of their age. It is vital to grow your core group of members who volunteer and make things happen.

Another critical factor is the core group of volunteers in your club. Relying too much on one or two individuals to assume responsibility for getting things done is a recipe for ultimate decline.

A club can do many things to breathe new life into the organization, and the third part of Bob's series offers some ideas. One is to take full advantage of help from the federation. Your club has a regional vice-president available to work with you one-on-one, bringing you ideas that have worked for other clubs.

In fact, one of the ideas from a recent teleconference call with the regional vice-presidents was to put together a list of successful ideas for helping clubs grow. The list will go into an upcoming issue of the *EFMLS Newsletter*.

GoComics

Hooded Topaz

Hooded topaz from Minas Gerais, Brazil, in the Smithsonian Mineral Gallery. Photo: Chip Clark.

This bluish topaz, a silicate mineral of aluminum and fluorine ($Al_2(SiO_4)(F,OH)_2$), is covered with lepidolite, a gray- to rose-colored phyllosilicate member of the Mica Group that also contains aluminum and fluorine. Lepidolite is a secondary source of lithium and a major source of the rare alkali metals rubidium and cesium. Blanketed with lepidolite as it is, this specimen is called a hooded topaz.

Topaz is associated with igneous rock, crystallizing in granitic pegmatites or in rhyolitic vapor cavities. Clear topaz in Brazilian pegmatites can reach boulder size, weighing hundreds of pounds.

Used as gemstones, topaz has an orthorhombic dipyramidal crystal structure. It defines the Mohs hardness level of 8. Usually thought of as yellow-orange, it comes in a range of colors, including blue, green, and pink. It has a vitreous luster and a white streak.

Source: Wikipedia.

Website Review

Virginia Places

by Hutch Brown

In writing articles about the geology of our area, I draw on a few regular sources. One of them is Virginia Places. (Its home-page features a portrait of Captain John Smith, shown above, one of the founders of Jamestown in 1607.)

The Website is extensive, covering hundreds of different topics. Charles Grymes, who teaches at George Mason University, began developing the site in 1998 for a course called Geography of Virginia. He continues to expand and update the site, which is sponsored by GMU.

I have found useful information related to our hobby on three major parts of the site: Physiographic Regions of Virginia; Rivers and Watersheds; and Rocks and Ridges—The Geology of Virginia. These three sites together feature scores of Webpages on geology-related topics ranging from the Fall Line, to Natural Bridge, to Virginia minerals, to wind gaps and stream piracy.

The individual Webpages are rich sources of information. The narratives are well written and easy to understand, and they seem to cover the topics well, albeit not always in great detail. But they include extensive lists of sources with links, which are invaluable resources in and of themselves.

The Webpages also have plenty of illustrations, many from historical sources (fig. 1). For example, you can find early maps of the Great Dismal Swamp in southeastern Virginia, along with links to the corresponding sources.

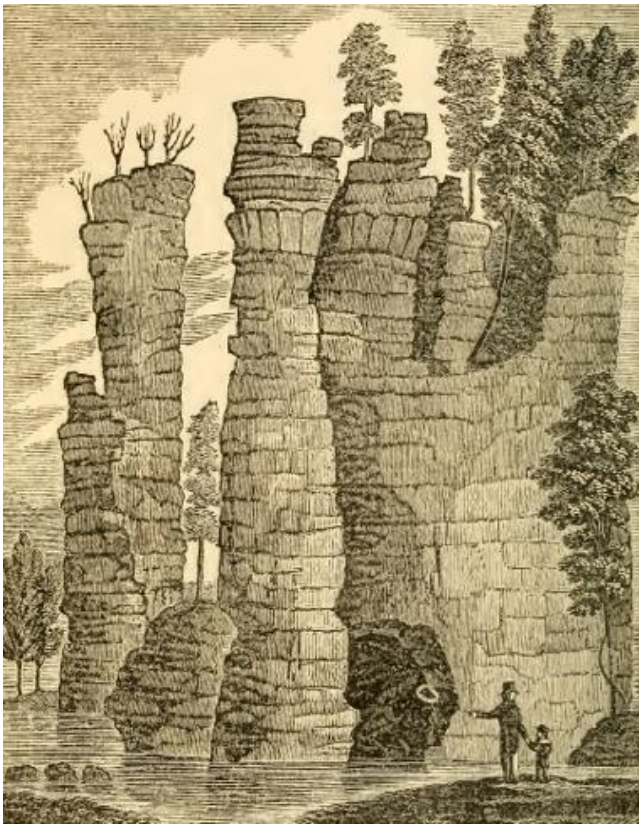


Figure 1—*The Virginia Places Website shows a 19th-century engraving of Natural Chimneys, a popular tourist attraction. Located in the Shenandoah Valley, Natural Chimneys reflects the area's karst topography, with chert-capped limestone towers eroded by precipitation.*

So if you are doing any kind of research on topics related to Virginia, including its minerals and geology, this Website is a good place to go.

It's also fun just to go there and browse!

GeoWord of the Day

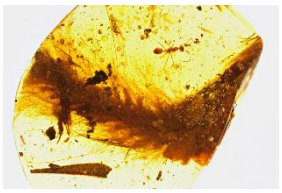
(from the American Geoscience Institute)

plutonism

The concept of the formation of the Earth by solidification of a molten mass underground. The theory was promulgated by James Hutton in the eighteenth century.

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

Dinosaur Tail Found in Amber



Thanks to Sheryl Sims for the reference!

A segment from the feathered tail of a dinosaur that lived 99 million years ago was found preserved in amber. Cretaceous-era plant debris was also trapped in the resin, along with an ant. A team of researchers found the sample in a well-known amber market in northern Myanmar. *Read more.*

Purple Fluorite

by Andrew A. Sicree

Editor's note: *The piece is adapted from* West Seattle Petroglyphs *(newsletter of the West Seattle Rock Club, Seattle, WA), January 2014, pp. 7–8. It originally appeared in* Rocky Trails, *December 2013.*

Fluorite occurs in a rainbow of colors, but purple is perhaps its most characteristic color. We've all seen beautiful deep-purple fluorite cubes from the CaveIn-Rock District in Hardin County, IL.

What causes this color?

Analyses of natural purple fluorites have shown no consistently present trace element impurities that can explain the purple color. In fact, if you take a clear, colorless lab-grown fluorite crystal of the highest purity and irradiate it (that is, bombard it with atomic radiation), you can induce the same purple coloration.

Purple coloration in fluorite is often attributed to "F centers," and indeed this is correct. But the "F" simply stands for *Farbe*, the German word for color. Saying that the color is due to a color center gives only very limited information.

The fluorite crystal (Ca_2F) is a regular cubic lattice of positive calcium cations (Ca_2+) and negative fluoride anions (F–). However, in even the most perfect crystal there are defects, typically at the 0.01-percent level.

Some of these defects occur when a fluoride anion is displaced; instead of being in its proper position, the ion is caught in an interstitial site. This leaves an empty site where the fluoride anion should have been. If an electron becomes trapped in this vacant site, it creates what is called an electron color center. This gives the otherwise colorless fluorite the ability to absorb light in the green–red portion of the spectrum, and the crystal appears purple.

Energetic radiation (such as from a nuclear reactor or from the decay of uranium or potassium-40 in nature) bumps electrons into the fluorite crystal's vacancies and thus turns a colorless crystal purple. It takes only about a hundred F centers for every million fluoride ions to create a deep purple fluorite specimen. No trace impurities are needed.

One should also note that it is possible to reverse this process. If you heat a purple fluorite sufficiently, you can change it back to its colorless state.

Source

Nassau, K. 1983. The physics and chemistry of color. New York, NY: Wiley.

Bench Tips

Templates

Brad Smith

Whenever I have to make more than two or three exact copies of anything, I think of making a template. A template lets me easily draw the shape of an item. Art stores sell templates for common shapes like circles, ovals, and hearts. Other sources include cooltools.us and kingsley-north.com.

For nonstandard shapes, it's easy to make your own template. Simply cut the shape out of sheet plastic or thin sheet metal. My preference is brass. I carefully lay out the shape using a steel ruler, a set of dividers, a scribe, and a fine center punch.

One example is the brass template in the picture below, which lets me quickly trace the design of ginkgo leaf earrings onto silver sheet. Another is the nickel template, which makes it easy to drill a pattern of holes for pin inlay into wooden handles.

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

The Rocks Beneath Our Feet
The Mystery of Lake Drummond

by Hutch Brown

Editor's note: *This is the first in a five-part series on the origins of Virginia's Lake Drummond. This part is on the area's underlying geology; the rest are on how the lake might have formed. (Hint: No one knows for sure.)*

Virginia has only two natural lakes. The Pleistocene glaciers never reached our area, so they carved no basins for our rivers to fill. The scanty depressions that have naturally formed in our area have long since filled with sediments carried in by streams.

An exception is Mountain Lake, near Roanoke, VA. The 50-acre lake lies in one of Virginia's two seismic zones (the other is near Richmond). The lake formed when an earthquake shook sandstone boulders loose from Salt Pond Mountain, damming the outlet for a small creek. The natural dam leaks, so currents have drained the lake of sediments, never allowing it to fill in. You can read about it in the April 2015 issue of *The Mineral Newsletter*.

Swampy Origins

The other natural lake had very different origins. It lies in the Great Dismal Swamp, which straddles the border between Virginia and North Carolina on the Coastal Plain (fig. 1). Lake Drummond is much bigger than Mountain Lake—about 3,100 acres—but it is also much shallower, with a maximum depth of 6 to 7 feet. Interestingly, it is roughly circular in shape.

The lake's persistence has to do with the surrounding swamp, one of the largest on the Atlantic seaboard—and originally much larger than today. In 1607, at the time of the first permanent English settlement in America (at Jamestown), swampland extended for about a million acres from what we now call Virginia's Hampton Roads south into what is now North Carolina, all the way to Albemarle Sound.

Exploited for timber and drained for cropland and urban development, the wetlands gradually declined to a remnant that includes Lake Drummond (fig. 1). In 1974, Congress designated what was left—about 115,000 acres—as the Great Dismal Swamp National Wildlife Refuge, managed by the U.S. Fish and Wildlife Service, with the drainage ditches and canals managed by the U.S. Army Corps of Engineers.

Figure 1—*Lake Drummond in the Great Dismal Swamp on Virginia's Coastal Plain. Source: Grymes (2014)—top, National Oceanic and Atmospheric Administration (photo: Rob Bruner); bottom, U.S. Fish and Wildlife Service.*

At about 18 feet above sea level, Lake Drummond is a high point in the swamp. The lake is largely fed by ground water welling up in the swamp. Outflows are far larger than surface inflows, very unusual for a water body of this size.

And that explains why the lake is still there: It never had a chance to fill in. Normally, a lake has feeder streams that bring in sediments, gradually silting it up. The reeds you see along the margins of your favorite mountain lake, often near the inflow, are signs of its inevitable demise. And the outflow stream is carving through the natural dam at the lower end of your lake, so the inflow sedimentation and outflow erosion seal the lake's doom.

Not so with Lake Drummond. Fed mainly by ground water, the lake has minimal inflow sediments; and because it is at a high point in the swamp, it has no dam to cut through. Instead, it overflows into natural (and not-so-natural) outflow channels.

And that brings us back to the swamp. Quite aside from the fact that it has a huge hole in it (Lake Drummond), how did a swamp of this size ever get there?

Marine Transgressions

Over the past 100 million years, sea levels have repeatedly risen enough to cover parts of the Coastal Plain all along the Atlantic seaboard, including the area of the Great Dismal Swamp. The Atlantic Ocean has advanced and retreated numerous times, a sequence that geologists call marine transgressions and regressions.

On the Coastal Plain, you can see traces of ancient shorelines in the region's multiple "scarps," where crashing waves left lines of deposition (fig. 2). The scarps formed as sea levels rose and fell with the advance and retreat of glaciers during the Quaternary Period beginning about 1.6 million years ago. The scarps are essentially lines of ancient sand dunes, with marine deposits between them called terraces.

The youngest scarp, the Suffolk Scarp, formed about 70,000 years ago. Lying just to the west of Lake Drummond, the Suffolk Scarp demarcates both an ancient shoreline and the edge of the young and poorly drained hydrogeologic subregion called the Coastal Lowlands (fig. 2). A high point on a flat landscape, the Suffolk Scarp is 28 feet above sea level—about 10 feet higher than Lake Drummond.

Marine Deposits

The Suffolk Scarp borders the Great Swamp Terrace to the east, which underlies both the swamp and the lake. The terrace dips gently toward the east at the rate of about 1 foot per mile—and to the south at an even gentler rate in what is called the Deep Creek Swale. The geologic formations that comprise the Great Swamp Terrace explain why soils in the area get so wet. Four formations in particular are important: the Yorktown, Norfolk, London Bridge, and Sandbridge.

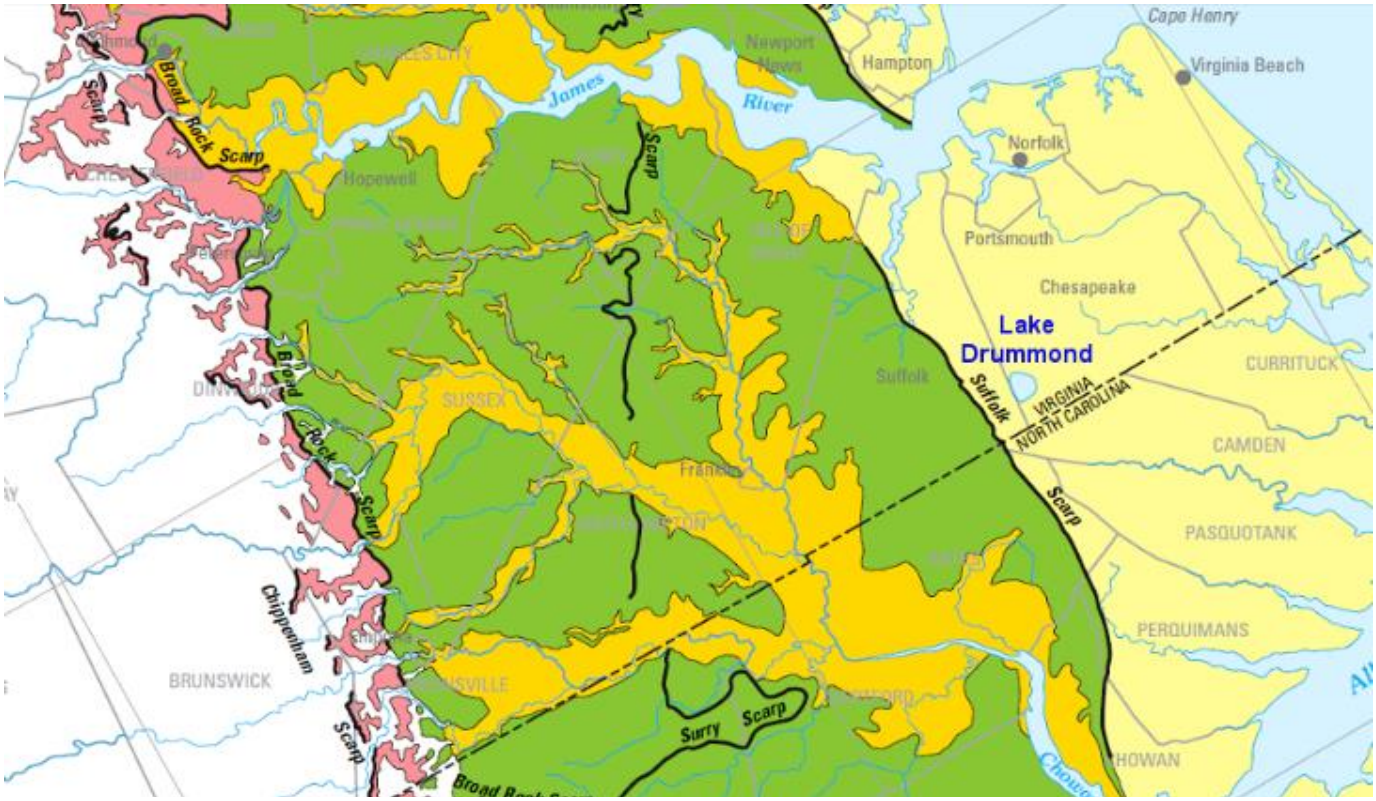


Figure 2—*Scarps demarcate the shorelines of ancient seas and form the borders of hydrogeologic subregions of the Coastal Plain. Buff = Coastal Lowlands; green = Middle Coastal Plain; pink = Inner Coastal Plain; deep yellow = alluvial and estuarine valleys. Source: U.S. Geological Survey.*

The oldest and deepest formation is called the Yorktown. It consists of impermeable clay laid down during a marine transgression at the end of the Pliocene Epoch, more than 1.6 million years ago. The Yorktown Formation is buried 15 to 25 feet beneath the surface of the Great Dismal Swamp. Known to hydrologists as a confining unit, the Yorktown clays trap ground water, forming a base for the overlying aquifer and swamp.

The Yorktown confining unit should not be confused with the shell-containing sands in exposures of the Yorktown Formation to the north, along the James River and elsewhere. Those shellaceous sands are absent from the Yorktown Formation under the Great Dismal Swamp, which has only the dense clays.

Overlying the Yorktown confining unit are younger formations that originated during Pleistocene marine transgressions associated with global glaciation during the Quaternary Period. The oldest, the Norfolk Formation, is mostly sand: It grades from coarse sand in the west (along the Suffolk Scarp) to fine sand in the east. Carrying water downslope from the Suffolk Scarp over the confining Yorktown clays, the Norfolk Formation regularly recharges the ground water that wells up in the Great Dismal Swamp—and in Lake Drummond. The Norfolk sands, supported by the Yorktown clays, form the aquifer that underlies the swamp and the lake.

Overlying the Norfolk Formation are mixed layers of clay and sand in two formations called the London Bridge and Sandbridge. Thickening to the east, their sediments and the underlying finer Norfolk sands are less permeable than the sands over the Yorktown confining unit under the Great Dismal Swamp. All three units keep ground water from welling up as much to the east of the swamp as it does in the swamp itself.

The less soggy soils to the east, though also poorly drained, have been successfully diked and ditched for farming. The Dismal Swamp Canal (fig. 3), which borders the eastern edge of the swamp, is crucial for keeping farmlands to the east well drained.

Swamp Formation

The underlying geology created the potential for swampy conditions in the area of the Great Dismal Swamp ever since the last marine regression about 70,000 years ago left the Suffolk Scarp high and dry, exposing the Coastal Lowlands. From about 22,000 to 13,000 years ago, however, the climate in what is now

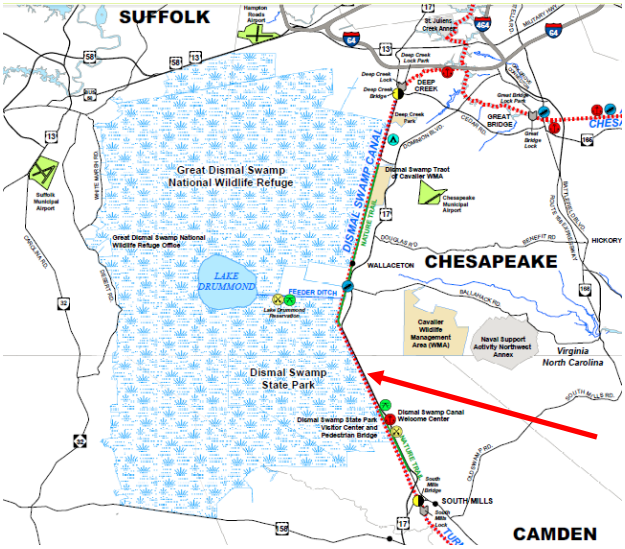


Figure 3—*Lake Drummond and the Great Dismal Swamp naturally drain to the east into the Dismal Swamp Canal (arrow). To protect the swamp and its native species, the U.S. Army Corps of Engineers controls the level of outflows from Lake Drummond into the canal. Source: U.S. Army Corps of Engineers.*

Virginia was much colder and drier than today. The Laurentide ice sheet advanced to its maximum extent about 18,000 years ago, reaching into what is now east-central Pennsylvania and central New Jersey. As the ice advanced, the cooling climate in Virginia's Coastal Lowlands created open wind-swept landscapes dominated by grasses and punctuated by conifers and patches of coniferous forest, much like parts of Canada today.

When the ice sheets finally retreated, the climate in southeastern Virginia grew warmer and wetter. Closed forests of northern hardwoods (dominated by sugar maple, birches, and American beech) gradually replaced the open boreal landscapes in what is now southeastern Virginia. By about 11,000 years ago, the oak–hickory forest familiar in our area today was replacing the northern hardwoods.

And as the climate got wetter, swamp began to form along streams in southeastern Virginia about 11,000 to 12,000 years ago. Ample rains on top of the area's underlying geology saturated the soils, and the oak–hickory forest gave way to more water-tolerant forest types. Today, the swamp is covered by a bottomland forest dominated by water-loving oaks (such as willow oak and swamp chestnut oak); water-tolerant trees such as sweetgum, sweetbay, red maple, and Atlantic white cedar; and American baldcypress on the wettest sites, including the margins of Lake Drummond.

American baldcypress in Lake Drummond. Although a conifer, baldcypress is deciduous, losing its flat needles in the fall. You can see it in the marsh from the boardwalk on Theodore Roosevelt Island—well worth a trip. Source: Wikipedia.

As the swamp spread westward along streams, peat began to accumulate. By about 3,500 years ago, a layer of peat up to 15 feet thick had blanketed the area of the Great Dismal Swamp; today, peat overlies a layer of mineral soil that in turn covers the Sandbridge Formation, the top layer of the ancient marine sediments.

Peat and rotting vegetation have tinged the water in Lake Drummond brown with tannin, making it unusually acidic, with a pH of 4 to 5. The low pH limits the fish in the lake to acid-tolerant species such as crappie and bullhead (you anglers will know what I mean). The acidic waters also lower nutrient levels, limiting the number and size of the fish.

Hydrostatic Pressure

When the weather is dry, so is the swamp. At times, the Great Dismal Swamp can even burn in great forest fires. (More on that in another issue.)

During wet times of the year, however, the swamp's aquifer saturates the soils, forcing ground water to the surface. Even though Lake Drummond is a high point in the swamp, it amounts to a giant hole that naturally fills with water.

And if the ground water pressure is great enough, Lake Drummond overflows. Would-be developers of the swamp, beginning with George Washington, dug ditches to "reclaim" the wet soils, with mixed success. To protect the swamp and its native species, the U.S. Army Corps of Engineers now controls the level of outflows into the Dismal Swamp Canal (fig. 3).

So we know how the swamp got there, and we know why Lake Drummond is full of water. It would be strange if it weren't: Hydrostatic pressure forces any hole in a swamp to fill with water.

Do the experiment yourself. Cut a hole in a sponge and soak the sponge with water. Water will seep from the saturated sponge into the hole. As long you keep the sponge saturated, a lake will form in the middle.

But how did a hole get into the middle of the Great Dismal Swamp? That mystery remains unsolved.

Next: How did Lake Drummond form?

Acknowledgment

The author thanks NVMC member Sue Marcus for reviewing and improving the article. Any errors are the author's alone.

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April 2017—Upcoming Events in Our Area/Region (see details below)

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1 **NOVA field trip** Show: Midland Park, NJ
2 Show: Midland Park, NJ	3	4	5 MSDC mtg, Washington, DC	6	7	8 **ANS field trip**
9	10 GLMSMC mtg, Rockville, MD	11	12	13	14	15
16 **Easter**	17 **Flag Ponds field trip, Calvert Cliffs, MD**	18	19	20	21	22 Show: Severn Park, MD
23 **NOVA field trip**	24 **NVMC mtg, Arlington, VA**	25	26 MNCA mtg, Arlington, VA	27	28	29 Show: Franklin, NJ
30 Show: Franklin, NJ						

Event Details

1: Paleozoic Geology of VA/WV—NOVA field trip; 7 am–9 pm; info, reg: GOL 135 Website.

1–2: Midland Park, NJ—28th Annual North Jersey Gem, Mineral & Fossil Show; North Jersey Mineralogical Society; Midland Park High School, 250 Prospect St; Sat 10–6, Sun 10–4; info: Jeff Wilson.

5: Washington, DC—Monthly meeting; Mineralogical Society of the District of Columbia; 1st Wednesday of the month, 7:45–10; Smithsonian Natural History Museum, Constitution Avenue lobby.

8: Geology of Seneca Creek, MD—Audubon Naturalist Society field trip; 10 am–2 pm; info, reg: ANS Website.

10: Rockville, MD—Monthly meeting; Gem, Lapidary, and Mineral Society of Montgomery County; 2nd Monday of the month, 7:30–10; Rockville Senior Center, 1150 Carnation Drive.

17: Flag Ponds Nature Park, MD—Fossil collecting field trip; 8:30 am–3:30 pm; Route 4, just south of Prince Frederick, MD, details p. 8 above; info: Pat Flavin 703-915-1883.

22: Severna Park, MD—Annual Jewelry Gem and Mineral Show; Patuxent Lapidary Guild, Inc.; 10–5; Earleigh Heights VFC on Rte 2; $6 over 10, under 10 free; info: www.patuxentlapidary.org.

23: Cretaceous Geology of MD—NOVA field trip; starts 10 am; info, reg: GOL 135 Website.

24: Arlington, VA—Monthly meeting; Northern Virginia Mineral Club; 4th Monday of the month, 7:45–10; Long Branch Nature Center, 625 S Carlin Springs Rd.

26: Arlington, VA—Monthly meeting; Micromineralogists of the National Capital Area; 4th Wednesday of the month, 7:45–10; Long Branch Nature Center, 625 S Carlin Springs Rd.

29–30: Franklin, NJ—45th Annual NJ Earth Science Association Gem & Mineral Show; Sat 9–5:30, outdoor swap 8, Sun 10–5, outdoor swap 9; Franklin School/50 Washington Ave; info: http://www.njesa.org/spring-mineral-show.html.

THE NORTHERN VIRGINIA MINERAL CLUB INC

Crystals are the flowers of the Mineral Kingdom

Mineral of the Month: Titanite

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Visitors are always welcome at our club meetings!

RENEW YOUR MEMBERSHIP!

SEND YOUR DUES TO:
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OR

Bring your dues to the next meeting.

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).

You may reprint NVMC materials in this newsletter.

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.*