THE MONTHLY NEWSLETTER OF THE MINERALOGICAL SOCIETY OF THE DISTRICT OF COLUMBIA

The Mineral Minutes

Volume 76-08
October 2018

In this Issue:

October Program

"Jackson Crossroads Amethyst locality in Wilkes County, Georgia"

Presented by Sarah Christensen

I have good news and bad news. First the bad news. A health issue has sidelined out planned October speaker, Herwig Pelckmans. We wish him a most rapid recovery and hope we can hear his presentation at some time in the future.

Now the good news. We are most fortunate to have found another excellent speaker and presentation for our October 3rd meeting. Our speaker will be Sarah Christensen, former curator of the Tellus Museum in Cartersville, Georgia, who has recently relocated to the Washington, DC area. Her presentation will be on the Jackson Crossroads amethyst locality in Wilkes County, Georgia. When the Tucson Mineral Show picked as its theme "American Mineral Treasures," they identified 45 sites in the U.S, as the best and most iconic the country has to offer. Jackson Crossroads was one of them, well known for its world class amethyst specimens. Sarah will tell us about the geology of the deposit and share video of the recovery of a pocket at the site.

Please join us in taking Sarah to dinner on October 3rd before the club meeting. We will be meeting at 6:00 pm at Elephant & Castle Restaurant, 1201 Pennsylvania Ave, NW, Washington, DC, about 2 blocks from the Smithsonian Institution National Museum of Natural History (NMNH) where our club meeting is held. If you plan to come to dinner, please send an e-mail to me (davidhennessey@comcast.net) and let me know so I can try to get the number right for the reservation - but do not hesitate to come to dinner if you forget to e-mail. We can always make room for more around the table. If you cannot make it to dinner, we will meet in the NMNH lobby at 7:30 pm and head up to the Cathy Kerby Room for Sarah's presentation.

Prez Says...

by Dave Nanney
MSDC President

Welcome to Fall. FINALLY. Hopefully the heat and humidity will begin to break and our garden work can become enjoyable (at least a little) again. I'm normally not a fan of fall because of what follows it, but this year has worn me out. Bring on cooler, drier weather please

Your MSDC Board will meet before our next meeting so expect a report on any issues addressed..

I am very excited about this month's speaker, Herwig Pelckmans, from Antwerp Belgium, speaking on fluorite. I can not guess how Dave Hennessey pulled this off, but we have a superstar as a speaker this month.

It appear Parking is now paid street parking, Metro, Uber, or the like. I am told 1 October the parking goes away for good. This is cause a challenge, but the street parking is close and available in time for our meeting. Sorry about the inconvenience, but even the volunteers at the SI are now on their own. I personally think our speakers are worth the effort and we hope to see you on 3 October.

June Business Meeting Synopsis

By Andy Thompson, Secretary

President Dave Nanney welcomed the relatively large gathering of attendees, including three MSDC past presidents and several first-time visitors. The latter ranged from veteran Dave Line who has been the long-time Chairman and coordinator of field trips for the Southern Maryland Rock and Mineral Club as well as novice collectors interested in lapidary and gem stones (including Alyson Smith), and Gary Christmas, visiting from Texas. A special warm welcome was extended to visiting Dr. Cindy Kearns, an instructor at James Madison University who recently received her Ph.D. in geology from is and spouse of the evening's presenter Dr. Lance Kearns.

V.P. Dave Hennessey stepped in for absent President Dave Nanney and welcomed all attendees, especially guests Amelia and Andy who have recently relocated to the DC area. Dave also thanked MSDC past presidents attending the meeting.

He asked for and received unanimous approval of the June Business Meeting Minutes as published in the September Mineral Minutes newsletter. Given the club Treasurer was traveling, no report on the finances was available.

New Business: Due to increased construction on the national mall, starting in October, MSDC members will no longer be able to use the NMNH parking lot. One alternative mentioned was Constitution Ave on-street parking in front of the museum which requires paying via a kiosk. In case socializing runs late, parking is free after 10 pm.

Program Report: Dave noted with enthusiasm that the October MSDC program will be presented by Herwig Pelckmans who will speak on "The Many Faces of Fluorite." Herwig is the president of the Mineralogical Society of Antwerp, Belgium and has collected throughout Europe, Asia, Africa and the United States.

Geology in the News: Craig Moore gave everyone a heads-up that the Lorton stony meteorite which fell into a dentist's office in VA in 2010 is now newly on display in the NMNH on the 2nd floor. Dan Teich encouraged everyone to follow up on the recommendation Dr. Jeff Post made at the 75th celebration that we visit the Objects of Wonder exhibit also on the 2nd floor. Dan said to be sure to visit the huge amethyst which has the appearance of floating unsupported in space. Lastly it was noted that Brazilian museum workers discovered that their nation's largest meteorite survived the recent devastating fire despite the loss of most of the other treasured artifacts.

Upcoming Events: Dave called on the Bob Cooke, president of the Northern Virginia Club who shared that their September 24 meeting will be an auction and their 27th annual Gem, Mineral and Fossil Show at George Mason University will take place November 17 and 18. More information is available at www.novamineralclub.org . Ken Reynolds, President of GLMS Montgomery County welcomed everyone to the Montgomery County monthly meetings which, he said, take place on the second Mondays at the Rockville Senior Center at the Senior Center, 1150 Carnation Drive, Rockville, MD. More information is available at http://www.glmsmc.com.

Dave thanked members (Pam, Joyce, Betty and Andy) who provided goodies for socializing after the presentation. He also mentioned he expected the MSDC board of directors would soon be holding a meeting. With no further business to conduct, he called for and received a motion to close the meeting which was seconded and approved. Dave then introduced the evening's presenter, Ms. Amanda Parker.

To be perfectly clear:

The usual parking is no lon-geravailable for an extensive number of months. Please plan accordingly.

CLUB INFO

MINERALOGICAL SOCIETY OF THE DISTRICT OF COLUMBIA

Meetings are the First Wednesday of the Month (Jan-Jun and Sep-Dec). We meet in the lobby of the Smithsonian National Museum of Natural History at 7:45pm.
WEBSITE http://mineralogicalsocietyofdc.org/
FACEBOOK www.facebook.com/MineralogicalSociety-OfTheDistrictOfColumbia

2018 Officers & Directors

President	Dave Nanney, dnanney@cox.net
Vice President	David Hennessey, davidhennessey@comcast.net
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June Program: "The Sculptural Evolution and Predicted Future of Bermuda's Geologic Landscape"

Presented by Amanda Parker

Amanda's personal interest in Bermuda lies within the cave system and fascinating calcite which accumulates within Bermuda's ancient buildings, creating speleothems. The discussion began with answers to the most important questions everyone was wondering. How is it possible to return from the Bermuda Triangle safely and what's up with Bermudas? Where did they come from and why are they called Bermudas?

The Bermuda Triangle, otherwise known as the Devil's Triangle because of nearly 1000 associated deaths, is located below Bermuda. It consists of the ocean and air space between Florida, Puerto Rico and Bermuda's southern shore. During the 1940s two planes disappeared on the same day in the triangle and newspapers elaborated on it throughout history until the 1970s when it became more popularized by these publications.

The idea of it being "mysterious" or "unexplainable" why these planes crashed in addition to 14 ships and 12 other aeronautical accidents is not plausible. Everything relating to these incidents can be explained by weather conditions and faulty equipment that led to almost 1000 deaths.

Bermuda has had about 500 shipwrecks throughout history due to its location between the United States and Africa. By 1609 settlements were established on the island, but for over 100 years prior survivors of the shipwrecks lived off the island's fresh vegetation and surrounding

schools of fish. Eventually they carved living quarters into the limestone and used it to create bricks and cement for structures.

During the tectonic plate shift Bermuda was welded onto the American plate and shifted west. That happened roughly 100-150 MYA. Today it's located off the Eastern seaboard, longitudinally parallel to South Carolina.

Locals explained 3 volcanoes erupted to create the island, but recent cave explorers have found what appear to be peaks from 4 volcanoes that started the formation of Bermuda. About 30 MYA the tectonic plate shifted and placed Bermuda right on top of a hot spot. That hot spot created the last known eruption for the island's volcanoes.

Today see some evidence of the volcanoes remains as two calderas have been created on the East and West sides of the island. Calderas occur when a volcanic top becomes heavy and collapses in on itself.

A theory from 2009 by NOAA suggests worldwide reorganization of the tectonic plates along with the closing of Tethys Ocean caused Bermuda's final eruption during the Cenozoic Era. The collision between Arabia and Eurasia caused worldwide volcanic activity which could have led to the final eruption that created Bermuda as we see it today.

Sea Level Impact

Even though Bermuda was not covered by glaciers at any point, the sea levels continually altered the elevation of the island and its biological composition. As water levels rose and fell a cycle occurred on the island as well.

Dunes formed, plant life grew, soil was created and then water levels rose. More plant life grew, and the water levels receded and left behind bioclastic material. This revolving pattern occurred 7-12 times during the ice age and created many rich sediment layers within the Earth. The most positive thing about this process is that it created several rich Paleosols (clay-like layers created by atmospheric dust and trees).

Pink sand is produced when the fish nibble on coral and excrete it. However, these rich paleosols are red clay material produced by high concentrations of aluminosilicate (minerals composed of silicon, oxygen, aluminum and countercations). They are the product of dust deposition and interbedded in the lower (underground) carbonate formations of the Bermuda oceanic island system.

In 1996 fine-grained sands were collected and analyzed by energy-dispersive X-ray Fluorescence to determine trace elements. USGS compared ratios from Bermuda with those from Mississippi, the Sahara and Great Plains. They found several sediments were sized similarly to the Saharan dust which means the trade winds during glacial maxima were much stronger than they are now and reached high altitudes, regardless of lower sea surface temperatures.

Originally the dunes were thought to have been formed during the low sea levels when Bermuda was more exposed to air and elements in a natural weathering process. However, aeolianites have been found far below sea level. This indicates that they formed quickly during sea level intervals about 40,000 to 400,000 years ago. That was discovered through uranium series dating of stalactites, stalagmites and corals from Bermuda beaches in the 1980s.

Visiting the caves of Bermuda explains a bit more about how the sea levels have changed historically. It's possible now to view stalagmites submerged in water 80 feet below the surface.

This information is becoming more and more valuable because of growing climate change concerns. Scientists can reconstruct past conditions more accurately because of USGS, NOAA and University research being done in Bermuda.

Today the volcanic area is about 35m deep in the smaller caldera and 110m deep in the larger caldera. About 90 percent of the surface layers consist of biogenic beach sediments above the dormant volcanoes.

How Limestone is created

The cap of the underwater volcano that forms the ground of the Bermuda Islands is made of limestone. This limestone was created by the living organisms from the sea. When fish eat the algae and coral reefs, they also ingest the calcium carbonate from them. This calcium carbonate is then released by fish as sand and pushed onto the volcano surface by the water to create the previously mentioned dunes.

This Limestone is used for the rooftops where rain is collected and sent to the reserve under the home. Since Limestone acts as a natural filter it's perfect for drinking, cooking, and cleaning.

In addition to creating limestone, the sea life also creates the pink sand. Shells break up and are relocated on the shores making it appear pink while fish excrete pink biogenic material and it gets washed up on shores.

Bermuda Today

Sedimentation production is taking place as the surrounding bioclastic material is accumulating. This basically means one side of the island is growing while the other is shrinking. The top of the island's landscape is becoming lower and lower due to rainfall eating away at the limestone. Cruise ships can no longer dock in St. George because of the sedimentation building in the area they once docked in.

The other side of the island is constantly breaking up, but the process is so slow that it will take a millennium to destruct the entire seaboard. The porous limestone is changing constantly due to bioerosion. The simple sponge alone can eat up to 16 pounds of sediment in 100 days which is much more destruction than waves cause as the island is surrounded by a shallow shelf.

After the discussion Amanda shared videos of her spelunking adventures and stories about the minerals located in the Crystal Caves gift shop. She also found calcite crystals along the shoreline and shared photos which depict the sea level rise within Crystal Caves.

"Istria Limestone: A Look Back and Forward in Time"

By Andy Thompson

This could happen to any one of us average mineral club members. It was a rainy weekend and I was quietly re-reading researcher Jeff Goodell's The Water Will Come, published in 2017. Its subtitle summarizes the book's story of today's rising sea levels, sinking cities and the remaking of the civilized world. In one sentence describing the now regularly flooding Italian city of Venice, the author innocently mentioned how its original Roman builders used Istrian limestone blocks. They were set upon wooden poles sunk deep into the hard clay at the bottom of the lagoon on the edge of the Adriatic Sea.

That was all it took. What is Istrian limestone and why had it never appeared on my mineral radar screen? Where did it come from and why was it used as the foundation for a city of heavy stone buildings that have "floated" on water for more than a thousand years? I had to put Goodell's book aside and go on a Google-enabled electronic field trip to dig for some answers. I was surprised with the results.

Like everyone else, I knew Venice was founded by refugees escaping the barbarian invasions which helped bring about the fall of the Roman empire back around the 5th century A.D. But beyond that headline, there had to be more to it. Who were those early Venetian founders and why did they continue to build a new city atop a shallow lagoon while sitting just a relatively short distance off the eastern shore of the Italian mainland? Where did these people come from and how did they have the engineering skills to bring about this new and somewhat unique urban creation?

We will get to these puzzles but let's start with the first question which provoked me to put the book aside: what is Istrian limestone? It turns out that Istria is a peninsula located in present-day Croatia, at the north-eastern side of the Adriatic Sea roughly eighty miles across the water from present-day Venice. Along the western side of the Istria peninsula, for two millennia, there have been actively mined quarries whose limestone was known for its unusual high density and a minimum of pores, two qualities which give it an impermeability and endurance approaching that of marble. Its pure white color and ease of maintenance explains why the best preserved, surviving first century Roman amphitheater is today found at Pula, at the southern end of the Istrian peninsula.

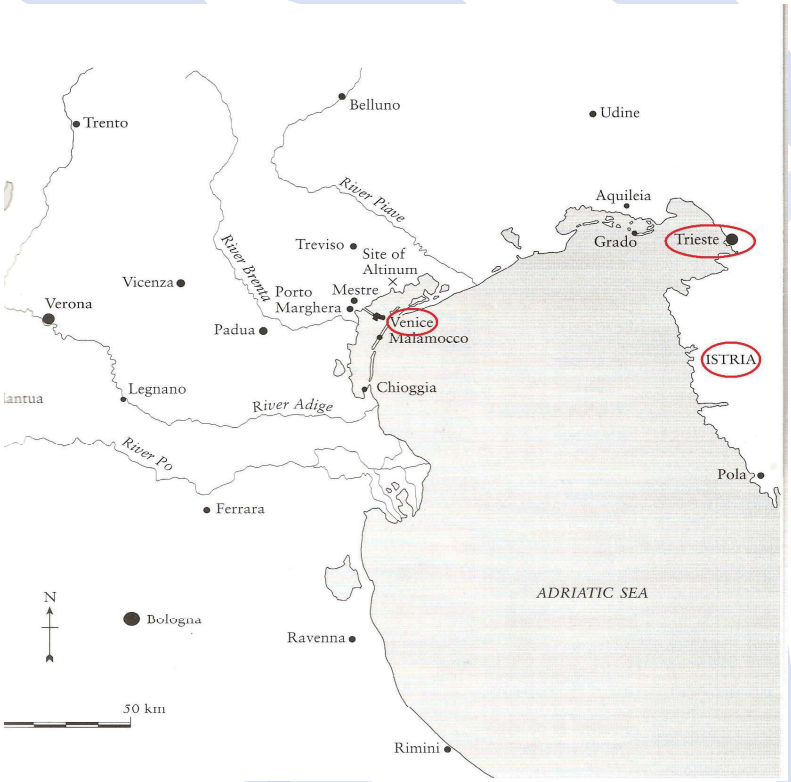
Given that the Roman Emperor Vespasian himself (69-79 A.D.) ordered the construction of the Pula amphitheater, the importance of the Istria peninsula must have been well known. Also, the Istria limestone blocks used for the amphitheater and other buildings throughout the Pula area in the southern-most part of the peninsula were quarried from the region's oldest and widely known quarry, Cave Romanae, here pictured. This same somewhat unique Istria limestone was prevalent and mined throughout the peninsula and used for buildings and monuments in towns close to both of the Adriatic coastlines, of present-day Croatia and Italy.

Pula amphitheater in southern Istria

The walls of the Cave Romanae quarry

So how did the original founders of Venice even know about this unique limestone given they were on the other side of the Adriatic? The answer is found in who those founders were, namely well-traveled Roman soldiers largely stationed at the once-famous city of Aquileia. Some historians say that town was the 9th largest city of the Roman world. It was established as a large fortified Roman army garrison and eventually had a population of well over 100,000 people, including families. The Romans strategically placed the walled fortress at the northern-

most point of the Adriatic in order to stop the advance of any northern barbarian incursions which had been occurring periodically in the prior decades throughout the entire western Roman empire. Also, the military city was on the road between the Istria region and the Italian mainland whose eastern coastline led to the lagoon which eventually became Venice.



The fortress-city's intended purpose was realized when the Visigoths unsuccessfully attacked the garrison in 408. Later, in the spring of 452, Attila the Hun laid siege for three months and finally breached its lightly defended walls. During the siege, night after night, the vast majority of clever Aquileians gradually and stealthily slipped outside the city walls and escaped down the east shore of mainland Italy to what are now the lagoons of Venice.

Stories tell of the original founders borrowing the boats of local fishermen from the Italian mainland and rowing out to the farthest of the 118 islands which make up today's Venice. For those early decades, the founders were hidden out of sight and safe from Attila's foot-soldiers and other northern invaders who had no boats or navy.

Some people cite the founding of Venice as March 25th of 431, before Attila's invasion. Perhaps it is more helpful to think of the founding of Venice as a gradual process including successive influxes of immigrants steadily swelling the population. Over the centuries, these people formed the labor force which drove millions of 60-foot-long poles of oak and pine tree trunks into the hard mud and topped them with Istrian limestone which formed a solid foundation for the city's buildings. The totally submerged tree trunks gradually ingested river silt and, unexposed to decay-causing oxygen, the wooden poles petrified.

Limestone topped poles at water's edge, 2nd drawing of 2 workers

During my exploration, I found it helpful to keep in mind that the original founders of Venice included Roman soldiers, skilled in engineering and building. They were famous for their feats of construction, including roads, walls and fortresses that have endured into modern times. Although they did not know the chemistry of the Istrian limestone, ($CaCO_3$), with its high molecular density that left no room for salty sea water incursions, they knew of its durability. Average limestone, when encountering water and carbon dioxide, gradually decomposes into calcium ions and carbonic oxide ions. That

however was not the fate of the Istrian variation. Today, a visit to the Pula amphitheater, located in the south of the Istria peninsula, shows the best preserved of any first century Roman arena. It is a convincing testament to Istria limestone's structural integrity.

Today, architectural researchers note that about 90 percent of Venice's buildings, from the gleaming white stone of the Doge's palace to St. Mark's Basilica (built in 1063) and most other buildings, employ this limestone from the Istria peninsula.

Also, over the centuries, the citizens gradually dredged some of the shallow lagoons making deeper shipping channels. The deeper water soon attracted Slavic pirate raids which the individual island inhabitants fought off. But those early struggles galvanized the islands' populations into a unified government. They gained a reputation for their lion-like fierce independence from allegiance to any kingdoms or nations other than themselves. The omnipresence of the winged-lion imagery on the buildings of Venice and on Istrian peninsula buildings on the other side of the Adriatic Sea, illustrates the migrations of the Italian populations throughout the region as well as a solidarity and unity the neighboring people enjoyed with the powerful Venetians.

The Venetian winged lion atop St. Mark's Basilica

The geographic location of Venice midway between the Eastern and Western Roman empires, combined with the Venetians' trading and shipping expertise, all fostered their rise to economic superiority and domination of the entire Mediterranean region. Centuries after their founding, not even Emperor Charlemagne's army nor the diplomatic skills of his son Pepin (773-810) could convince this growing city-state to pledge allegiance to an outside authority. It took more than a thousand years, until Napoleon in the late 18th century, for anyone to subdue the kingdom of Venice and bring it under the governance of a foreign nation.

Today, the city of Venice is once again fighting for its integrity and identity against the overwhelming waves of tourists, rising waters, more frequent flooding and an escalating cost of living. To meet the challenges of flooding, they have designed a revolutionary engineering plan called "Mose," reminiscent of biblical Moses who tamed the Red (or Reed) Sea waters and protected his people. It consists of gates which hold back storm waters and excessive high tides. Once the danger passes, the gates then submerge beneath the waters. This creative modern response to threatening rising waters, according to author Jeff Goodell, has captured the attention of many coastal cities internationally.

Having concluded my web-based field trip exploring the significance of Istrian limestone, the collateral damage was I accidently learned something about the historical context for the founding of Venice and the central role of its unique limestone. Perhaps it also provided a broader context for understanding the plight of refugee populations, whether the displacement of people has been caused by yesterday's barbarians, today's political tribalism or rising waters. The electronic digging gave a better appreciation of the engineering know-how of the Roman military. Their skills, combined with the citizens' fierce resistance against being subjugated or polarized by barbarians and emperors, is a hope-filled model for maintaining political unity as well as grist for thought about our collective future.

The winged lion atop Zadar City's main gate, in southern Croatia

Mineralogical Society of America Editors' Picks

With the permission of Keith Putirka, the following are the Editor's picks of Highlights and Breakthroughs & Invited Centennial Articles from the September 2018 issue of the American Mineralogist: Journal of Earth and Planetary Materials.

http://www.minsocam.org

Nb-Ta-Fractionation Controlled by Disequilibrium Crystal Growth

On page 1353 of this issue, Aleksandr Stepanov reviews the results of new experiments by Van Lichtervelde (p. 1401, this issue), who are able to reproduce the textures of columbite-group minerals (CGMs) using fluid-rich and highly super-saturated conditions. As noted by Stepanov, nominally "fluxing elements" such as F and P, have little impact on the occurrence of zoning in CGMs. The experiments show that while saturation with respect to CGMs is controlled by Ta contents in associate fluid/liquid phases, the precipitating CGMs still yield compositions that are far displaced from equilibrium and that Nb-Ta fractionation could depend heavily on crystallization kinetics.

Super heavy Neoproterozoic Pyrite (Sulfur) From Non-Biologic Processes

On page 1362 of this issue, Cui et al. examine elevated □34S in pyrite in Neoproterozoic sedimentary deposits in southern China. So-called "super heavy" pyrite, enriched in 34S, appears to be associated with de-glaciation events and has been linked to changes in the isotopic composition of syn-glacial sea-water sulfates, which are then transferred to pyrite by microbial sulfate reduction processes that yield heavy pyrite. The new observations indicate significant grain-scale heterogeneity in S isotopes and textural patterns that indicate a late-stage diagenetic (non-biogenic) origin for super heavy pyrite. The authors suggest that super heavy pyrite forms by thermochemical, rather than microbial sulfate reduction and that SEM-SIMS studies are needed to differentiate the two.

Fe oxidation state of silicate glasses using electron probe microanalysis

On pages 1445 and 1473 of this issue, Zhang et al. and Hughes et al. present new techniques for the determination of Fe oxidation state in silicate glasses using the electron microprobe. Zhang et al. show that by using a garnet calibration curve the EPMA-derived Fe oxidation state of silicate glasses matches well those obtained using wet chemistry, while Hughes et al. use silicate glasses for calibration. Both groups analyzed some glasses with consistent results. Both studies find that beam damage is a significant issue, which is controlled by beam conditions, water, and SiO2 and FeO concentrations. Zhang et al. mitigate this by moving the sample continuously at a constant speed during analysis, whereas Hughes et al. use a time-dependent intensity correction to allow the analysis of small areas of glass, such as melt inclusions.

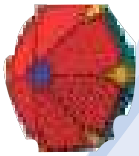
Removing As from water

On page 1497 of this issue, Yang et al. report on a new mineral, Segerstromite, which is the first naturally occurring phase to contains the hydrated arsenite, As3+(OH)3, and compared to the arsenate analog of apatite, johnbaumite, this new phase may be an even more useful means to remove As from contaminated water, at least in Ca-bearing systems.

Shocking news on the origin of tissinite in meteorites

On page 1516 of this issue, Rucks et al. discuss the genesis of tissinite, a meteoritic vacancy-rich clinopyroxene; to date, its origin has been unclear, and often assumed to be due to shock transformation of crystalline plagioclase. Using spike heating in a multi-anvil press to simulate a shock event, the authors show that tissinite does not form directly from crystalline plagioclase. Instead, it forms at temperatures over 900 Celsius during decompression from a Ca-rich amorphous plagioclase phase ("maskelynite") that itself likely formed during a shock event.

Useful Mineral Links:

AFMS	American Federation of Mineralogical Societies (AFMS)	www.amfed.org
Eastern Federation of Mineralogical & Lapidary Societies, Inc.	Eastern Federation of Mineralogical and Lapidary Societies (EFMLS)	www.amfed.org/efmls
mindat.org	MINDAT	www.mindat.org
Mineralogical Society of America 1916 2016 American Mineralogist Centennial	Mineralogical Society of America (MSA)	www.minoscam.org
Friends of Mineralogy	Friends of Mineralogy	www.friendsofmineralogy.org/
	WebMineral	webmineral.com
THE GEOLOGICAL SOCIETY OF AMERICA	The Geological Society of America (GSA)	www.geosociety.org/
Scovil PHOTOGRAPHY	Jeff Scovil Mineral Photography (not advertising - just great photos)	scovil photography.com/
USGS science for a changing world	United States Geological Survey (USGS)	www.usgs.gov
The Geological Society of Washington	The Geological Society of Washington (GSW)	http://www.gswweb.org/

Upcoming Local (or mostly local) Geology and Mineral Events of Interest:

October

19-21: 62nd Annual Desautels Micromount Symposium, The Friends School of Baltimore, 5114 North Charles St; Baltimore, MD 21210. Info: www.baltimoremineralsociety.org/desautels-symposium.html

Registration: BMS, PO Box 302; Glyndon, MD 21071.

AFMS Code of Ethics

- I will respect both private and public property and will do no collecting on privately owned land without the owner's permission.
- I will keep informed on all laws, regulations of rules governing collecting on public lands and will observe them.
- I will to the best of my ability, ascertain the boundary lines of property on which I plan to collect.
- I will use no firearms or blasting material in collecting areas.
- I will cause no willful damage to property of any kind - fences, signs, and buildings.
- I will leave all gates as found.
- I will build fires in designated or safe places only and will be certain they are completely extinguished before leaving the area.
- I will discard no burning material - matches, cigarettes, etc.
- I will fill all excavation holes which may be dangerous to livestock. [Editor's Note/ Observation: I would also include wildlife as well as livestock.]
- I will not contaminate wells, creeks or other water supply.
- I will cause no willful damage to collecting material and will take home only what I can reasonably use.
- I will practice conservation and undertake to utilize fully and well the materials I have collected and will recycle my surplus for the pleasure and benefit of others.
- I will support the rockhound project H.E.L.P. (Help Eliminate Litter Please) and will leave all collecting areas devoid of litter, regardless of how found.
- I will cooperate with field trip leaders and the se in designated authority in all collecting areas.
- I will report to my club or Federation officers, Bureau of Land management or other authorities, any deposit of petrified wood or other materials on public lands which should be protected for the enjoyment of future generations for public educational and scientific purposes.
- I will appreciate and protect our heritage of natural resources.
- I will observe the "Golden Rule", will use "Good Outdoor Manners" and will at all times conduct myself in a manner which will add to the stature and Public "image" of rockhounds everywhere.

MEMBERSHIP APPLICATION OR RENEWAL
THE MINERALOGICAL SOCIETY OF THE DISTRICT OF COLUMBIA (MSDC)

(___) Family ~ $25.00 per year. One address.

(___) Individual ~ $20.00 per year.

(___) New * (___) Renewal Dues are for Year _____*

For new members who join in the last months of the year, membership will extend through the following year with no additional dues.

ANNUAL DUES – PLEASE PAY YOUR DUES PROMPTLY.

Pay at next meeting or mail to:

Mineralogical Society of DC
c/o John Weidner
7099 Game Lord Drive
Springfield, VA 22153-1312

Name(s) (First and Last) _____

Address_____

City _____ State _____ Zip:_____

Phone(s): Home/Work/Mobile_____

Email(s): _____

OK TO INCLUDE YOU ON CLUB MEMBERSHIP LIST?

( ) Yes – Include name, address, phone, email.

If you want any information omitted from the membership list, please note:

Omit my: ( ) Email; ( ) Home phone; ( ) Work phone; ( ) Mobile phone; ( ) Address; ( ) Name

SPECIAL CLUB-RELATED INTERESTS? _____

Meeting Dates, Time, and Location: The first Wednesday of each month. (No meeting in July and August.) The National Museum of Natural History, Smithsonian Institution, 10th Street and Constitution Ave, Washington D.C. We will gather at the Constitution Avenue entrance at 7:45 PM to meet our guard who will escort us to the Cathy Kirby Room. Street parking: Parking is available in the Smithsonian Staff Parking – Just tell the guard at the gate that you are attending the Mineral Club Meeting.

THE MINERAL MINUTES

NEWSLETTER OF THE MINERALOGICAL SOCIETY OF THE DISTRICT OF COLUMBIA

Mineralogical Society of DC

Time Sensitive Dated Material
First-Class Mail