

# The Mineral Minutes

## Announcement

There will be no regular club meetings in June 2020 due to coronavirus. Since the club typically has no meetings in July and August, the next in-person meeting is currently scheduled for September 2, 2020.

We continue to monitor the COVID-19 situation and government rules and recommendations in the District of Columbia, Maryland, and Virginia, and may need to adjust the plan for our September meeting as the situation becomes clearer toward the end of the Summer. Please follow us on Facebook and check our website for the latest announcements.

## Archival Treasures

An involuntary cancellation of April and May meetings deprived us of exciting new presentations and follow-up articles about them in this newsletter. However, it allowed us to turn back to great stories from the past. In the May newsletter, we reprinted articles on Yellowstone by Tom Tucker and on the Blanchard Mine by Susan Fisher. We continue to rely on our library of excellent mineralogical articles for this newsletter as well.

The blast from the past this month includes a set of five “Mineral of the Month” articles by Susan Fisher in the “5 Years Ago” section and Sheryl Sims’ description of Dr. Eloise Gaillou’s presentation about diamonds in the “10 Years Ago” section.

## Museums - Virtual Tours

(reprint from May 2020 edition)

Smithsonian [Natural History Museum](#) virtual tour, including the Hall of Geology, Gems, and Minerals. The resolution is amazing as you zoom in. On the Smithsonian Natural History Museum map, on the upper right, choose the second floor. Then choose one of the 25 well-placed viewpoint dots on the brown side (on the right). Each dot gives a 360-degree view with zoom-in options. For (dozens? hundreds?) more perfect close-ups, visit the museum's [GeoGallery](#).

[David Friend Hall](#) virtual tour, at the Yale Peabody Museum of Natural History: Enjoy a 6-minute up-close video of some of the Hall's spectacular specimens.

[Geology Museum](#) virtual tour at the South Dakota School of Mines & Technology, O’Harra Building. Explore the exhibits in the museum. Watch a cool fast-motion 1 minute 20 second video about [putting together a Mosasur skeleton](#) and tour the rest of the [campus](#).

James Madison University’s Mineral Museum has posted [wonderful images](#) of important samples in its collection.

Please send us your favorite links to be included in the next newsletter.



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## Prez Says...

by Dave Hennessey, MSDC President

I am now officially medically certified as profoundly tech-challenged. The official verification came with the attempt to have a doctor’s appointment via Zoom. I downloaded the Zoom app onto our iPad and was very pleased with myself that I had managed that successfully. When the time came, I clicked on a link for the appointment that the doctor had sent via email and successfully reached a virtual waiting room. I surmise the existence of the virtual waiting

(Cont. on p. 2)

(Prez Says... continued)

room is so you do not miss the experience of waiting well past your appointment time for the doctor to finally see you, just like you would if you were in the doctor’s actual waiting room. Fifteen minutes later, the doctor’s face was on the screen and the doctor’s voice was saying “I can see you, but I can’t hear you”. My camera was working but my microphone was not. We fiddled with trying to get the microphone working and had to give up. I couldn’t check with my local tech support person next door. He is 5 years old and was taking a nap. So, the doctor called on the house phone (hurray for land lines) and with the receiver in one hand and the iPad in the other, we had our meeting. The doctor says our next meeting can wait until a face-to-face appointment is possible. I heartily agree and look forward to the day that I can again wait overlong in the doctor’s actual waiting room waiting to hear those magic words “the doctor will see you now.”

Zoom also seems to be the app of choice for other kinds of virtual meetings and many in the mineral collecting community are utilizing it at this time. As you will recall, the MSDC January meeting featured Thomas Hale with the topic “Virginia Mineral Project”. Thomas is now conducting Zoom-based meetings on topics of interest primarily to Virginia collectors. John Weidner forwarded an e-mail to the club membership on May 18<sup>th</sup> that announced one of the Virginia Mineral Project virtual meetings and provided the link to log into the meeting (Thank you John). I did not try – profoundly tech-challenged, you will recall. I hope some of you were able to give it a try. Also, one of the dealers who is always at our local shows (Alan Benson), has been having virtual mineral shows using the Zoom platform. I’m not sure how the virtual mineral show works, but presume it provides an opportunity to chat with Alan and with fellow collectors.

I have been reading what news is available regarding the re-opening of the Smithsonian, hoping to get some sense of what we can expect for September, after our summer hiatus. Initial reports are that the museum will open “slowly”. The analogy being used is that it will not open like a light switch being turned on, but rather like a dimmer switch slowly turning up the lighting. I don’t know what that will mean for us by September but whatever the word is, we will get it out in our Newsletter and Webpage as soon as we know. Remember, we have no meetings in July and August, so everyone please have a safe and enjoyable summer. My fingers are crossed hoping the circumstances will have changed enough that we can have in-person meetings again beginning in September.

## Blast From the Past: 5 Years Ago “Mineral of the Month” Series

### February 2015: Sphalerite - The Great Pretender (by Susan Fisher)



SPHALERITE  
with Calcite  
  
Trepca, Mitrovica,  
Kosovo

SPHALERITE  
  
Grace B. Mine,  
Picher, Oklahoma



Formula:	Zinc Sulfide – ZnS
Crystal System:	Isometric
Color:	Yellow, light to dark brown, black, red-brown, red, colorless, and very rarely, green
Luster:	Adamantine, Resinous
Hardness:	3½ - 4

Since men have been mining metal ores, some ores have confused and frustrated them. Just when they thought they had found a great vein of a sought-after metal ore, something went wrong. The ore didn't act like it should in the smelting process. Although the ore appeared to be normal, it didn't melt easily and the desired metal wasn't produced. Sphalerite is notable for a long history of confusing early miners and metallurgists. The very name sphalerite indicates the miners’ frustrations. It is derived from the Greek word sphaleros meaning “treacherous.” The confusion is very understandable as sphalerite crystals are isometric and tend toward forming tetrahedrons and octahedrons. To complicate matters, twinned crystals are very common and sphalerite can occur in a range of colors. The darker samples of this common mineral can resemble other metal ores, most notably galena.

The very things that were the bane of early miners help make sphalerite attractive to modern mineral collectors. Sphalerite is a common, widespread ore mineral so good samples are usually available to most collectors at reasonable prices. Although it is found in numerous geologic environments, sphalerite is usually found in hydrothermal veins and associated with other sulfide minerals. The variety of colors and crystal forms allows the collector to have a number of very differently appearing examples of the same mineral. Sphalerite is normally stable under household conditions so it does not deteriorate in the collector's cabinet.

The variety of colors of sphalerite have always fascinated the collector. When it is very pure with little or no iron substituting into the crystal, it is pale yellow or orange or red. The clear red or yellow crystals have been cut into lovely gem stones. As the iron content increases, sphalerite becomes darker and more opaque. The rare green crystals contain a very small amount of cobalt. The intense red sphalerite crystals from Spain, China, and the Tri-state region (the area of Oklahoma, Kansas, and Missouri around Joplin, MO) are much sought-after classics.

## March 2015: Cassiterite (by Susan Fisher)

Formula:  $\text{SnO}_2$   
 System: Tetragonal  
 Color: Black, yellow, brown  
 Luster: Adamantine, greasy, sub-metallic  
 Hardness: 6 – 7  
 Density: 6.98 – 7.01 g/cm<sup>3</sup>



1 Cm Cassiterite crystal on Quartz and Fluorite  
 Preisseberg District, Krupka, Czech Republic  
 (Susan Fisher specimen and photo)

Cassiterite, a lovely ore of tin, has been mined for well over 5,000 years and was one of the more valuable commodities of the ancient world. The mineral name seems to have referred to what were non-existent islands “off the coast of Europe.” The ancient traders may have even then been trying to protect their monopoly by hiding the source. Ancient metal workers discovered that by putting a small amount of tin (5 – 20%) into molten copper an alloy called bronze was produced and that it was easier to work and harder than copper. This made it very valuable for tools and weapons. The oldest production of tin-bronze is believed to have taken place in Turkey about 3500 BC and there is evidence of exploitation of the tin resources in Britain before 2000 BC. There are accounts of a thriving tin trade developing with the civilizations of the Mediterranean and Britain before the Roman conquests.

Because of cassiterite's high density (around 7 g/cm<sup>3</sup>) and its relative hardness (6 - 7), most commercially recoverable sources today are found in alluvial deposits containing the resistant weathered grains. These deposits, while commercially valuable, are of little interest to most mineral specimen collectors. The best sources of primary cassiterite crystals are found in the tin mines of Bolivia Cornwall, England, and the Czech Republic. In recent years, China has emerged as a producer of very nice specimens. Most of the crystals that are of interest to collectors occur in hydrothermal veins and pegmatites associated with granitic intrusions. While most English and Czech cassiterite specimens come from the resale of older collections, Bolivia and China are currently producing lovely, and relatively inexpensive, samples. Many of these crystals show extensive twinning and brilliant luster so they are attractive additions to many mineral collections. Old time classic pieces from England and the Czech Republic are prized, but tend to be rather expensive if in good condition.

## May 2015: Shattuckite - Rare and Wonderfully Blue (by Susan Fisher)

Formula:  $\text{Cu}_5(\text{Si}_2\text{O}_6)_2(\text{OH})_2$   
 Crystal System: Orthorhombic  
 Color: Light to dark blue.  
 Hardness: 3½  
 Density: 4.11 g/cm<sup>3</sup>



SHATTUCKITE after Azurite  
 Laputo Mine, Lubumbashi, Katanga, Republic of Congo  
 (Susan Fisher specimen and photo)

Shattuckite is a rare secondary copper silicate usually found in the oxidation zones of copper deposits. The first recorded find of this mineral was in 1915 in the Shattuck Mine (also known as the Shattuck-Denn Mine; Shattuck-Arizona Mine; or the Denn Mine), Bisbee, Warren District, Mule Mountains Cochise County, Arizona. It derives its name from this mine.

Shattuckite is rarely found in single elongated crystal, but usually forms radiating, botryoidal, globular, reniform, and stalactitic crystal groups. It may also form beautiful blue lining the sides of vugs. Shattuckite frequently forms pseudomorphs after other minerals. In its massive form, it is sometimes cut for unique gem stones.

Shattuckite, although rare, is found in some well known locations. In the USA it is found in Arizona at the Shattuck mine, Bisbee, Cochise County; the New Cornelia mine, Ajo, Pima County; and the San Manuel and Mammoth-St. Anthony mines, Tiger, Pinal County as well as a few others. The famous Red Cloud district, in Lincoln County., New Mexico. has produced some great specimens. Africa has given us beautiful specimens from Tsumeb and the Kunene Region of Namibia as well as the Katanga Province, Republic of Congo. Lesser known specimens are found at Mili, Evvia Island, and Apikia, Andros Island, Cyclades Islands, Greece.

## June 2015: Azurite and Malachite - Fraternal Twins (by Susan Fisher)



**Azurite**  
Ibiajara, Bahia,  
Brazil  
(3.5x2.5x4 cm)



**Malachite**  
Milpillas Mine,  
Cuitaca, Mun. de  
Santa Cruz,  
Sonora, Mexico  
(12.5x9.x7.3 cm)

**Azurite:**

Formula:  $\text{Cu}_3(\text{CO}_3)_2(\text{OH})_2$

System: Monoclinic

Color: Azure blue, light blue

Luster: Vitreous

Hardness:  $3\frac{1}{2}$  - 4

Name: From the ancient Persian lazward, meaning "blue". The name was changed to azurite in 1824 by Francois Sulpice Beudant.

**Malachite:**

Formula:  $\text{Cu}_2(\text{CO}_3)(\text{OH})_2$

System: Monoclinic

Color: Bright green

Hardness:  $3\frac{1}{2}$  - 4

Name: Named in antiquity molochitus because it resembled the green color of the leaves. The spelling was changed to malachite sometime before 1661.

Malachite and azurite are closely related minerals. Both are secondary copper minerals frequently found in the oxidized zones of copper bearing ore deposits. Both are copper hydroxyl carbonate with just minor differences in the amounts of copper and the carbonate radical. Both are widely distributed and often occur together in numerous locations. Both have been known from antiquity and have been used for ores of copper, paint pigments and decorative stones. There are numerous striking mineral specimens containing vivid blue azurite and bright green malachite. Azurite is often pseudomorphed to malachite with much sought after specimens showing large azurite crystals partially modified to malachite.

Azurite is typically found as tabular to prismatic crystals of a deep "azure blue" color with lustrous faces. Many of these crystals are very complex so that it is difficult to identify and decipher the Miller indices of the faces. Beautiful specimens are found in many locations, but those from Bisbee, Arizona; Tsumeb, Namibia; and Chessy, France are famous.

Malachite has widely variable habits. Typically it is found as crystalline aggregates or crusts, often banded in appearance. It is also often found as botryoidal clusters of radiating crystals. Single crystals and clusters of distinguishable crystals are uncommon. Many of the thick crusts are so compact that they can be cut and polished into ornamental stones or jewelry.

## September 2015: Wulfenite - A Fragile Lead Mineral (by Susan Fisher)

Formula:	Pb(MoO <sub>4</sub> ), lead molybdate
System:	Tetragonal
Color:	Orange-yellow, yellow, red, brown
Luster:	Adamantine, Sub-Adamantine, Resinous
Hardness:	2½ - 3
Density:	6 ½- 7½ g/cm <sup>3</sup>



**WULFENITE**  
Villa Ahumada, Sierra de Los Lamentos, Chihuahua, Mexico  
Piece: 9 x 5.5 x 4 cm  
Fisher specimen and photo

Wulfenite is one of the more colorful minerals containing lead. It may be vivid yellow, orange, bright red, greenish gray, or even black. It usually occurs in oxidized hydrothermal lead deposits and has been known to cover the walls of very large pockets. (The Arizona- Sonora Desert Museum in Tucson has a reconstructed pocket of bright orange wulfenite covering an impressively large surface area.) The crystals are usually tabular squares with flat or rounded faces but may also be pyramidal or rarely pseudooctahedral. When the crystals are very thin, they tend to be fragile because of the high density of the mineral. The weight of the crystal is almost more than its physical structure can support. It is usually associated with other minerals common to oxidized hydrothermal lead deposits such as smithsonite, hemimorphite, cerussite, anglesite, mimetite, vanadinite, and pyromorphite. It has been used as a minor ore mineral, but it is prized by many mineral collectors for its crystal perfection and its vivid colors.

When described in 1772 by Ignaz von Born, wulfenite from Annaberg, Austria was called “plumbum spatiosum flavo-rubrum” (try getting that on your labels!!!). Other equally difficult names were proposed over the next few years but none were universally accepted. Finally the mineral was renamed wulfenite in 1845 by Wilhelm Karl von Haidinger in honor of Franz Xavier von Wulfen who had written a monograph on the lead ores of Bad Bleiberg Austria.

There are numerous wulfenite locations around the world. The American Southwest is famous for the number of mines producing fine examples. The Red Cloud mine in the Silver District, La Paz County, Arizona is a noted locality for bright orange-red, well formed wulfenite. The Glove mine in Santa Cruz County, Arizona produces lovely butterscotch-yellow crystals. The Los Lamentos locality in Chihuahua, Mexico produces very thick tabular orange crystals. In recent years several locations in China and Morocco have produced notable examples. Old European pieces are also sought by many collectors.

## Blast From the Past: 10 Years Ago May 2010: “An Eye for Diamonds by Dr. Eloise Gaillou” (by Sheryl E. Sims)

Many of us remember the colorful song of our youth pertaining to rainbows: Red and yellow, and pink and green, orange and purple, and blue—well, the same color reference may be made for diamonds. They come in all colors! The color, along with clarity, cut, and number of carats, determines their value. This was further explained by visiting scientist to the Smithsonian Institution, Eloïse Gaillou, Ph D. Dr. Gaillou is a French scientist from the Université de Nantes.

At the April 7, 2010 club meeting of the Mineralogical Society of the District of Columbia, Dr. Gaillou gave a brief lecture on, “The Beauty of Defects: Color in Diamond.” Because diamonds are indeed a girl’s (or a guy’s) best friend, I attended that meeting and learned more than I ever hoped to know about diamonds. As in my case, one need not have a background in geology or mineralogy to appreciate the beauty and value of diamonds. One only needs eyes to see their beauty, and the desire and money, to possess them. Webster’s II New College Dictionary defines a diamond as: “a very hard, highly refractive colorless or white crystalline allotrope of carbon, used when pure as a gemstone and otherwise chiefly in abrasives.” While they are defined as being colorless, diamonds actually range from one end of the spectrum to another in terms of color and rarity. They are made up of carbon, but usually contain some impurities of nitrogen, hydrogen and very rarely boron. Diamonds are formed at least at 150 km deep in the earth and need a thick crust on top of them called a “craton.” The most common color for diamonds is brown or subtle yellow. The brown colored diamonds, according to Dr. Gaillou, are referred on the market as champagne, cognac, or chocolate. Brown diamonds display a so-called “graining,” she stated, and this is due to plastic deformation.

Diamonds can be found in almost every color of the rainbow: steel gray, white, blue, yellow, orange, red, green, pink to purple, brown, and black.<sup>1</sup>

What causes coloration in natural, non treated diamonds? Colored diamonds contain impurities and structural defects. These defects cause the coloration. However, pure diamonds should theoretically be transparent and colorless. They are classified into two main types and several subtypes. This is done based on how the impurities in them affect light absorption and on the type of impurities found.

*Type I diamonds have nitrogen atoms as the main impurity, commonly at a concentration of 0.1%. If the nitrogen atoms are in pairs they do not affect the diamond's color; these are Type IaA. If the nitrogen atoms are in large even-numbered aggregates they impart a yellow to brown tint (Type IaB). About 98% of gem diamonds are type Ia, and most of these are a mixture of IaA and IaB material: these diamonds belong to the Cape series, named after the diamond-rich region formerly known as Cape Province in South Africa, whose deposits are largely Type Ia. If the nitrogen atoms are dispersed throughout the crystal in isolated sites (not paired or grouped), they give the stone an intense yellow or occasionally brown tint (Type Ib); the rare canary diamonds belong to this type, which represents only 0.1% of known natural diamonds. Synthetic diamonds containing nitrogen is Type Ib. Type I diamonds absorb in both the infrared and ultraviolet region, from 320 nm. They also have a characteristic fluorescence and visible absorption spectrum.*<sup>2</sup>

*Type II diamonds have no measurable nitrogen impurities. Type II diamonds absorb in a different range of the infrared. They also have different fluorescence characteristics (but no discernible visible absorption spectrum). Type IIa diamond can be colored pink, red, or brown due to plastic deformation during crystal growth— these diamonds are rare. Type IIb diamonds, are usually light blue due to scattered boron within the crystal matrix. A blue-grey color may also occur in Type Ia diamonds and be unrelated to boron. Green diamonds get their color from exposure to varying amounts of radiation.*<sup>3</sup>



(photo by Sheryl Sims)



Jewellers diamonds. (medium brown color.)  
National Museum of Natural History

Natural Black or grey diamonds. What are they and why are they black? According to Dr. Gaillou, the origin of color in natural black diamonds is mostly caused by a total absorption of light that can be due to:

- a large quantity of black or grey inclusions (usually sulfides or graphite inclusions)
- a large amount of fractures that will absorb light,
- or a very, very dark color, the stone will therefore appear black, but under a strong fiber optic light, a color (usually brown) can be observed

Colorless diamonds are clear and have no absorption of light in the visible range. Dr. Gaillou stated the following about colorless diamonds:

*They can still contain a lot of impurities, such as aggregated nitrogen(A-aggregates for example) that do not absorb in the visible range, but only in the infrared (they can be type I or type IIa diamonds).*

According to experts:

*A chemically pure and structurally perfect diamond would be perfectly transparent with no hue, or color. However, in reality almost no gem-sized natural diamonds are absolutely perfect.*

*The color of a diamond may be affected by chemical impurities and/or structural defects in the crystal lattice.* <sup>4</sup>

White diamonds have a milky appearance due to tiny inclusions that have the right size to diffract light. Another reason for the opalescence, according to Dr. Galliou, “is the presence of a very strong fluorescence, even under visible light, which is the example of the Portuguese diamond, in exhibit at the Smithsonian Institution.”

Vivid Yellow diamonds are very valuable and are called “cape diamonds.” Their color mostly comes from their N3 color center, that involves 3 nitrogen atoms surrounding a vacancy.

Green diamonds are very rare and very popular. Their color comes from natural irradiation that creates vacancies in the structure (carbon atoms are removed from the diamond) Dr. Galliou continued by stating that:

*A color center named GRI center (neutral vacancy) is created and will absorb red and orange. But to have the green color, the N3 center absorbing the violet/blue needs to be present as well, so that the only color that can be emitted by the stone would be green Facetted green diamonds are really rare, as the irradiation of the stone is usually on the surface of the rough diamond, and when the diamond is cut and polished, the surface layer that is colored in green is removed, and only remains a yellowish diamond.*

Blue diamonds are the purest as they contain the less impurities of all diamonds. They are also the most desired and expensive. Per Dr. Gaillou:

*Blue diamonds are type Ib and contain a small amount of boron (< 1ppm) which gives them their blue color. Most natural blue diamond emit a blue phosphorescence. Interestingly, the famous Hope Diamond phosphoresces red for over a minute, a feature that is rare among blue diamonds. The only other blue diamond that presents such an intense red phosphorescence is the Wittelsbach-Graff diamond.*

Note the Hope Diamond. It has 45.52 carats (9.104 g) and is a fancy dark grayish-blue. Fancy-colored diamonds such as the deep blue Hope Diamond are among the most valuable and sought-after diamonds in the world. (It is reported that in 2009 a 7-carat blue diamond sold for the highest price per carat ever paid for a diamond. It sold at auction for 10.5 million Swiss francs or \$9.5 million. Each carat sold for more than \$1.3 million per carat. <sup>5</sup>



(Museum of Natural History, The Smithsonian Institution)

Pink diamonds can have color modifiers like brown and purple. (Red diamonds are really just dark pink diamonds.) The cause of their color is not really known, however, the color is concentrated in the pink graining, which is known to be due to plastic deformation. The Darya-I-Nur Diamond (translated: River of Light) is one of the world's largest diamonds. It is one of the rarest diamonds because of its pale pink color, and it weighs about 182 carats (36.4 g). Its exact weight is not known because it has been mounted in its brooch setting for over 130 years. <sup>6</sup>

1. Wikipedia. ([http://en.wikipedia.org/wiki/Diamond\\_color](http://en.wikipedia.org/wiki/Diamond_color))
2. J. Walker (1979). “Optical absorption and luminescence in diamond.” Rep. Prog. Phys 4: 1605-1659
3. Sources for Type I and Type II diamonds: [http://en.wikipedia.org/wiki/Diamond\\_color](http://en.wikipedia.org/wiki/Diamond_color)
4. Ibid
5. Ibid
6. Ibid

## MSDC Club Information

Meetings are the First Wednesday of the Month (Jan-Jun and Sep-Dec). We meet in the Constitution Avenue lobby of the Smithsonian National Museum of Natural History at 7:30 pm.

Website <http://mineralogicalsocietyofdc.org/>

Facebook [www.facebook.com/Mineralogical-SocietyOfTheDistrictOfColumbia](http://www.facebook.com/Mineralogical-SocietyOfTheDistrictOfColumbia)

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THE MINERAL MINUTES

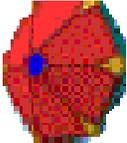


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NEWSLETTER OF THE MINERALOGICAL SOCIETY OF THE DISTRICT OF COLUMBIA

Mineralogical Society of DC  
Time Sensitive Dated Material  
First-Class Mail

Useful Mineral Links

	<p>American Federation of Mineralogical Societies (AFMS)</p>	<p><a href="http://www.amfed.org">www.amfed.org</a></p>
	<p>Eastern Federation of Mineralogical and Lapidary Societies (EFMLS)</p>	<p><a href="http://www.efmls.org">www.efmls.org</a></p>
 <p><a href="http://mindat.org">mindat.org</a></p>	<p>MINDAT</p>	<p><a href="http://www.mindat.org">www.mindat.org</a></p>
	<p>Mineralogical Society of America (MSA)</p>	<p><a href="http://www.minoscam.org">www.minoscam.org</a></p>
	<p>Friends of Mineralogy</p>	<p><a href="http://www.friendsofmineralogy.org">www.friendsofmineralogy.org</a></p>
	<p>WebMineral</p>	<p><a href="http://webmineral.com">webmineral.com</a></p>
 <p>THE GEOLOGICAL SOCIETY OF AMERICA</p>	<p>The Geological Society of America (GSA)</p>	<p><a href="http://www.geosociety.org">www.geosociety.org</a></p>
	<p>Jeff Scovil Mineral Photography (not advertising - just great photos)</p>	<p><a href="http://scovilphotography.com">scovilphotography.com</a></p>
	<p>United States Geological Survey (USGS)</p>	<p><a href="http://www.usgs.gov">www.usgs.gov</a></p>
	<p>The Geological Society of Washington (GSW)</p>	<p><a href="http://www.gswweb.org">www.gswweb.org</a></p>



## 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 7:30 PM to meet our guard who will escort us to the Cathy Kerby Room.