



The Conglomerate

Newsletter of the Baltimore Mineral Society

www.baltimoremineralsociety.org

Volume 12, No. 2

February, 2017

Program Notes: Into Mexican Mines

Mexico is a prolific locality for minerals. Many of us probably have specimens of these often beautiful minerals in our personal collections and more continue to be available to us at various mineral shows.



Wulfenite

San Francisco Mine, Sonora, Mexico

Photo: R. Lavinsky, i-rocks.com

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For our February program, Jim Hooper has selected a video talk entitled "Adventures in Mexico's Great Specimen Mines" that was given

at the 2014 Dallas Mineral Symposium by Peter Megaw.

A geologist by profession, Peter spends much of his time working and collecting in Mexico. He's also chairperson of the exhibits cases for the Tucson Gem & Mineral show and is the guy responsible for obtaining all those special museum and private collection displays that are one of the hallmarks of every TGMS show.

An engaging speaker, Peter will talk about the geological, historical, cultural and mineralogical importance of a few localities that have been the source of several major specimen recovery projects.

The meeting will be hosted by Al Pribula and will be held on Wednesday, February 22 at the Natural History Society of Maryland.

Color in Minerals – Part X: Colorful Chromium

by Al Pribula

The element chromium (Cr) was first isolated in 1798 by the French chemist Nicholas Louis Vauquelin. He began his studies because he was interested in a red-orange mineral discovered in Russia and referred to as "Siberian red lead" at the time. Today, we know this mineral as crocoite, which chemically is lead chromate ($PbCrO_4$). (Lead is one of those weird elements whose symbol (Pb) doesn't seem to be related to its name. The symbol derives from the Latin name plumbum, from which we also derive our English words "plumbing" and "plumber" because lead was used to make water pipes in ancient Rome.) He also was the first to show that the green color of emeralds was caused by chromium.

In working with samples containing this element, he observed a very wide variety of colors (yellow, blue, green, orange, and violet) as he ran his chemical tests. Because of this, he based the name he gave the new element on the Greek word chroma, meaning "color." The first commercially-viable deposits of chromium ore (primarily chromite, $FeCr_2O_4$) were found by Isaac Tyson in Maryland and Pennsylvania in the early 1800's, and were the main source of the world's chromium until the discovery of large chromite deposits in Turkey in 1848. Since its discovery, many more compounds of this element have been synthesized, and only a tiny number of them are colorless. (In playing with my chemistry set as a kid and working in chemistry laboratories for about 50 years, the small number of colorless chromium compounds I encountered contained chromium in a very unusual bonding situation, resulting in the unusual "color.") What's behind the colorful nature of this element?

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Baltimore Mineral Society

The BMS was established in order to allow its members the opportunity to promote the study of mineralogy and to act as a source of information and inspiration for the mineral collector. We are members of the Eastern Federation of Mineralogical Societies and affiliated with the American Federation of Mineralogical Societies.

Meetings are held the 4th Wednesday of each month (except November, December, June & August) at the Natural History Society of Maryland beginning at 7:30 p.m. Visit the club website <www.baltimoremineralsociety.com> for directions.

Yearly dues are \$10 for individual members and \$15 for family memberships. Send payment along with your name, list of family members, if applicable, address, phone and e-mail to: BMS, PO Box 302; Glyndon, MD 21071-0302.

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Write for "The Conglomerate"!

Send news, announcements, comments, observations, or articles to <mseeds at fandm.edu>. No e-mail? Hand in your submission at a meeting.

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President's Postings

by Jim Hooper, BMS President



Herewith a slightly earlier than usual edition of the Conglomerate as our esteemed editor, Mike Seeds makes preparations to head out to Tucson. Hope you had a great trip, Mike, and all other club members who attended the big show. We look forward to your reports and pictures later this year.

As I write this we have thus far had a pretty mild winter and perhaps that will continue. We know what Punxsutawny Phil's opinion was on that.

We continue to look for a presentation coordinator to organize our monthly programs on a regular basis. If you'd like to help with that, please get in touch with me; I can tell you more about it.

One activity that makes getting through February a little easier are the longer hours of daylight and both the Delaware and Gaithersburg shows coming up in March. Seems like there are always great specimens to check out and some bargains too. Both are fun shows, have great display cases, and food and drink on the premises. Hope you can make it either as a regular attendant or a first timer. Wear your club badges to brag about being a BMS member. They are both good shows!

The birthstone for February is Amethyst. I think it's a first mineral for many collectors as it seems in plentiful supply and typically reasonably priced. The beautiful shades of purple and distinctive crystal habit can draw your attention even after seeing it in many shows over many years.

Watch the weather and be careful getting around out there and I look forward to seeing you at the next meeting where our presentation will be on the Minerals of Mexico.

Jim H

Winter Weather Policy

If Baltimore County schools cancel their evening activities our meeting will be cancelled. You can obtain this information by tuning to WBAL radio (1090 AM) or most TV stations. You usually can also find it on the web at <wbaltv.com>. We'll also try to put out a notice via e-mail.

In addition, if the parking lot at NHSM isn't cleared of ice or snow, and is unusable, we'll send out an alert to members via e-mail as early as possible.



Minutes From our Last Meeting

by Jake Slagle, Secretary

President Jim Hooper called the September 28 meeting of the Baltimore Mineral Society to order at 7:40 PM. Minutes to the previous meeting at the home of Al Pribula and Linda Watts were approved by consensus.



Treasurer Carolyn Weinberger announced that the Society was solvent. She also noted that dues should be paid by now.

Unfinished Business

President Jim noted that the American Federation of Mineral Societies had encouraged clubs to submit names for a "Rockhound of the Year" and encouraged members to nominate those who they believed were deserving of that recognition.

New Business

• Discussion ensued regarding how programs would be arranged for future meetings. Jake Slagle noted that many of the DVD's accompanying Mineralogical Record, which range from "What's Hot in Tucson" to the numerous presentations recorded on DVD from the Dallas Mineral Collecting Symposium could be well received. Carolyn noted that a live presenter would be preferable. Members were encouraged to contact President Jim with proposals for programs and President Jim was encouraged to contact members for help finding programs. Another source could be those who have provided presentations at other clubs.

Mineral of the Month Program presenter Al Pribula had a table full of garnet specimens to compliment his presentation.

After a short break the program ensued that was informative, well received and well-illustrated with a variety of garnet group species from the considerable garnet suite in Al's personal collection.

Respectfully Submitted,
Jake Slagle: Secretary

January 2017 Program: Garnets

text and photos by Mike Seeds

The program for January was a detailed discussion of garnets presented by Al Pribula. Al discussed the different kinds of garnets, the different crystal shapes that garnets can assume, and the locations where they are found. Al distributed a detailed handout that summarized the structure and natural history of garnets including crystal diagrams.



The front table was covered with garnets of different kinds and from different locations all carefully labeled. A few had been selected from the Natural History Society of Maryland collection, but nearly all of the specimens on the table were from Al's collection. He admitted that they were only some of his garnets.



Last Call for 2017 Dues

by Carolyn Weinberger, Treasurer



Our February meeting (February 22) is the last opportunity for you to remain a member of BMS. If you've not yet renewed your membership, please take a moment to fill out the form on page 11 and either give it to me at the upcoming meeting or send it to me by mail so that I receive it before the end of the month.

We'll generate a new membership roster on March 1 and distribute it to all our 2017 members and we'd certainly like to be able to include you!

Location, Location, Location

In Lancaster, Pennsylvania, one of the nicest neighborhoods contains a house with a strange back yard. It's a deep pit, and it is filled with ferns and looks almost Victorian. The house is on Quarry Avenue, and, yes, that pit is an old limestone quarry probably dug long ago by farmer who wanted to build a barn. Being located next to a quarry might not be good for the value of a home, but there can be advantages.

Nashville International Airport has a runway located next to an old quarry. Some time ago they thought of filling the quarry in, but that would have been expensive. Then they realized the quarry is an asset. It is flooded by water that maintains a constant temperature of 50°F. The airport now pipes warm water at 79°F from its cooling plant to stainless steel heat exchangers 50 feet down in the quarry. The cooled water returns to the airport buildings where it provides air conditioning. The only expense is electricity to run pumps. That saves the airport \$430,000 per year.

Arsenic in Water

Dr. Oz made headlines when he revealed that there is arsenic in most commercial apple juice. Maybe that's not surprising. Arsenic occurs naturally in soil especially in some areas -- central India, for example. Now scientists have proposed a way to remove at least some forms of arsenic using two minerals. Tooeleite is $\text{Fe}(\text{AsO})\text{SO}(\text{OH}) \cdot 4\text{H}_2\text{O}$ and Wurtzite ZnS . The key is to control the pH of the solutions, but if it is successful, people in large areas of Earth can avoid drinking arsenic with their water or their apple juice.

Mineral of the Month

by Steve Weinberger

Since our program for February deals with the minerals of Mexico, for our Mineral of the Month we ask you to bring 10 or so of your more spectacular or interesting minerals from Mexico for display.

Since many are fragile, we ask that you view them only, but don't pick them or their boxes up.

Hydrogen

Do you have hydrogen on your want list? Scientists have studied the possibility of producing not only solid hydrogen, but solid metallic hydrogen. In October 2016, scientists at Harvard reported a controversial result. They found evidence that a sample of hydrogen compressed between diamond anvils had reached a solid metallic form. The reported reflectance of 90% suggests that it is highly metallic. Other experimenters question this result and are attempting to reproduce it.

The interior of Jupiter has high enough pressure to form liquid hydrogen. No one is sure what impurities might do, but there is reason to believe that solid hydrogen might form deep in the planet. To complicate matters further, under high enough pressure, solid hydrogen may revert to a liquid form. Certainly, hydrogen is a complex material.

Solid hydrogen can be formed at very low temperatures and high pressures. It takes on four different phases depending mostly on pressure, and the evidence suggests a hexagonal form. Perhaps a complete collection of minerals should contain a crystal of hydrogen.

Zircons from Where?

Mauritius is an island nation located in the Indian Ocean east of Madagascar, and scientists based there and exploring under sea volcanism have found something tiny that leads to some big ideas. Lava brought up from deep-ocean eruptions contains zircons with measured ages between 2.5 and 3 billion years. Such zircons could not have been formed in the lava or in the lava chambers that feed the volcanos. Where do they come from?

The scientists suggest that the zircons are survivors of the continent of Mauritia that broke away from Africa about 60 million years ago and formed Madagascar and India. Parts of that ancient continent have been subducted back into the mantle, but studies have shown that such subducted crust can survive for long periods deep in the mantle. Indeed, the presence of subducted crust can trigger volcanism, and evidently some of the lava flowing out on the ocean floor is the melted remains of the Mauritian Continent. The zircons, with a melting point of 2100-2300 C (3800-4200 F) are the toughest bits, and they have survived.

It turns out that chromium is capable of producing colors by a number of the mechanisms that have been discussed so far. This means that it can be responsible for such a wide variety of hues. The metal itself has the silver-gray color typical of most metals, as discussed in Part IX. In its compounds, it most commonly produces colors because of d-d electron transitions, but can also give color by metal-metal charge transfer (as previously discussed in Part IX), by oxygen-to-metal charge transfer, and by molecular-orbital transitions.

Simple chemical compounds containing Cr^{3+} ions generally have a green or blue-green color due to d-d electronic transitions which absorb red/orange and blue/violet light, transmitting green. Relatively few common minerals have Cr^{3+} as an essential component, but those that do such as uvarovite (discussed previously in Part VII), the rare garnet knorringite ($\text{Mg}_3\text{Cr}_2(\text{SiO}_4)_3$), and the tourmaline-group mineral chromium-dravite ($\text{NaMg}_3\text{Cr}_6(\text{Si}_6\text{O}_{18})(\text{BO}_3)_3(\text{OH})_4$) typically show this characteristic color. In the mineral eskolaite (Cr_2O_3), the light absorption is so complete that bulk samples look black. However, when the mineral is finely powdered (or synthetic Cr_2O_3 is prepared with a very fine particle size), the green color is seen, and this is used as the pigment called chrome green.

Because aluminum and chromium both typically form ions with +3 charges and which are approximately the same size, it is very common for chromium(III) ions (Cr^{3+}) to substitute for aluminum ions (Al^{3+}) in minerals where aluminum is an essential component. This substitution is responsible for the green color in grossular and other garnets (including some tsavorite; discussed previously in Part VII), actinolite, antigorite (var. williamsite when translucent), berlinite (synthetic), clinozoisite, diopside (but the “chrome” diopside from the Jeffrey mine is actually colored by iron), elbaite (var. verdelite), epidote, euclase, hydrogrossular (“Transvaal jade”), muscovite (var. fuchsite), phengite (var. mariposite), synthetic spinel, spodumene (var. hiddenite; color also from Mn^{4+}), titanite, tremolite, variscite (also colored by V^{3+}), vesuvianite, zoisite (var. “chrome tanzanite” or anyolite), and dark green jade (including kosmochlor, also referred to as “maw-sit-sit”). Kyanite is normally blue due to $\text{Fe}^{2+} \rightarrow \text{Ti}^{4+}$ CT transitions, but can take on an additional greenish tinge if Cr^{3+} is also present. In titanite (sphene), 2 Cr^{3+} ions can substitute for $\text{Ca}^{2+} + \text{Ti}^{4+}$, giving this same color. When Cr substitutes for part of the Si in chalcedony, green “chrome chalcedony” (called mtorolite or mtorodite

in the gem trade) is the result. (“Chrome fluorite” has a green color very similar to the color typically shown by Cr-containing minerals, but is actually colored by ions of the element samarium (Sm).)

This substitution of Cr^{3+} for Al^{3+} is often found in beryl ($\text{Be}_3\text{Al}_2\text{Si}_6\text{O}_{18}$), corundum (Al_2O_3), and spinel (MgAl_2O_4), where it produces the green of emerald and the red of ruby and ruby spinel (“balas ruby”), respectively. Why does the same metal ion produce such different colors in these cases? In beryl, the ions in the aluminum site are surrounded by six oxygens from the cyclosilicate ($\text{Si}_6\text{O}_{18}^{12-}$) ions, while in corundum and spinel, they are surrounded by six oxide (O^{2-}) ions. The green color seen in emeralds is essentially the “normal” color produced by Cr^{3+} . However, since oxide ions are smaller and have a larger concentration of negative charge, they can interact at a shorter distance and thus more strongly with the metal ions than the much larger cyclosilicate ions. This difference in surroundings affects the metal ion’s electrons differently (remember that electrons have a negative electrical charge, so will be repelled by the negative charge on the surrounding anions, changing their energy). This in turn affects the energy absorbed and therefore the color observed. In ruby and ruby spinel, less red light is absorbed when compared with emerald, and less green light is transmitted, so these have a red color rather than the more normal green due the presence of Cr^{3+} . (This is somewhat analogous to the explanation of the color difference between azurite and malachite discussed in Part V of this series.) If both Cr^{3+} and Fe^{2+} are present in spinel, a purple color is produced from the red due to Cr^{3+} and the blue due to Fe^{2+} . Other examples where Cr^{3+} produces a non-green color are stichtite ($\text{Mg}_6\text{Cr}_2(\text{OH})_{16}\text{CO}_3 \cdot 4\text{H}_2\text{O}$; pink-purple), chromian clinoclare (var. kammererite; red-violet), yedlinite and chromian amesite (purple), when Cr^{3+} substitutes for Al^{3+} in topaz (pink/red/violet), pyrope (pink), purple sapphire (where the red from the Cr^{3+} combines with the blue from charge transfer from Fe^{2+} to Ti^{4+}) and purple to purple-red in the rare gemstone taaffeite. As mentioned in Part VIII, the yellow color of so-called “chrome” cerussite is actually due to organic inclusions or stains.

When Cr^{3+} ions substitute for Al^{3+} ions in chrysoberyl (BeAl_2O_4), things get even more complicated. This un-

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usual material, referred to as alexandrite, has a green color when viewed in sunlight, but is violet-red or brownish-red when viewed in artificial light (especially candlelight, which is how it would have been viewed indoors when it was first discovered in 1834). Here, the strength of the negative electric field around the Cr is between that in corundum or spinel and that in beryl. That shifts the absorption of light to transmit more red light than would be seen in beryl (emerald), but less than in corundum (ruby) or spinel (ruby spinel). Human eyes are much less sensitive to red light than they are to green, so the increase in red light transmission isn't that noticeable when the gem is viewed in sunlight, making its color somewhat similar to that of emerald. However, artificial light contains relatively less blue and more red than does sunlight (remember that "white" light is a mixture of all the colors, but not necessarily always in the same proportions), so the increased red transmission becomes more noticeable under those lighting conditions and the violet-red color is what is observed. (Candlelight is especially deficient in blue light, so much so that a gem transmitting only blue (such as a blue sapphire) will look almost black when seen in candlelight.) If the concentration of Cr³⁺ is very high, a larger fraction of the blue/violet light is absorbed and red predominates in the transmitted light, making the effect less dramatic. A similar color change in diaspore is caused by the same substitution, and kyanite is known which shows a somewhat similar color change, produced by essentially the same mechanism (perhaps in that case also "helped" by Fe³⁺). Some garnets in the pyrope-spessartine series show a similar color change due to the presence of Cr³⁺ and/or V³⁺. If chrysoberyl contains Fe³⁺, it is a yellow color due to d-d transitions, but if a very small concentration of Cr³⁺ and/or V³⁺ is present as well (not enough to cause a noticeable alexandrite effect), the green color produced by these ions adds to the yellow to produce a pale green or yellow-green sample.

In the pinkish-orange gemstone called Padparadscha sapphire, the situation is similar, but with an important difference. In this case, there is a replacement of two Al³⁺ ions by a Mg²⁺ or Ni²⁺ ion and a Cr⁴⁺ ion. Note that the charge on the Cr ion here is +4, rather than the much more common +3. This difference in charge means that the electronic structure of the ion changes, allowing it to absorb light of a very different energy than usual, producing this unusual (for Cr) color. (There is also some evidence that iron may be involved in producing this color,

probably by a Fe³⁺ → Cr⁴⁺ charge-transfer transition.) In the synthetic version of this stone, it is believed that a combination of Cr³⁺ and Ni³⁺ is the cause of the color.

When the chromium is highly oxidized (i.e., when bonded to many oxygen or similar atoms), a different color-producing mechanism is operative. For example, the "Siberian red lead" (crocoite) studied by Vauquelin does indeed contain lead, but the lead isn't the source of its color. In this mineral, the chromium is present as the chromate ion (CrO₄²⁻). This ion and the related dichromate ion (Cr₂O₇²⁻), both containing Cr(VI), give the color to a number of chemical compounds, including a few minerals. In these ions, oxygen-to-metal charge transfer is activated by light in the green/blue/violet end of the spectrum, meaning that the transmitted light will be in the red/orange/yellow end of the spectrum. Interestingly, when synthesized in a laboratory, lead chromate has a yellow color because it crystallizes with a different crystal structure than naturally-occurring crocoite. When this synthetic material is used as a pigment, it is named chrome yellow (and is commonly used for yellow traffic markings on streets). Other than crocoite, minerals containing these ions are fairly rare, such as tarapacáite (K₂CrO₄) and chromatite (CaCrO₄) which are yellow, lopezite (K₂Cr₂O₇) and embreyite (Pb₅(CrO₄)₂(PO₄)₂•H₂O) which are orange, red-orange phoenicocroite (Pb₂O(CrO₄)), and yellow-orange georgerobinsonite (Pb₄(CrO₄)₂(OH)₂FCI). The mineral vauquelinite (Pb₂Cu(CrO₄)(PO₄)(OH)) named in honor of chromium's discoverer has an olive-green color because it contains copper as a chromophore in addition to the chromate ion.

Chromium is also apparently responsible for the yellow/orange/red/ color of wulfenite. Chemically, this mineral is lead molybdate (PbMoO₄). Wait a minute... there's no Cr in that formula, so how can chromium be the cause of its color? Well, chromium and molybdenum (Mo) are in the same family in the periodic table, so they have chemical similarities. They are also similar enough in size that chromium can substitute for molybdenum in its compounds. When two ions have the same charge and are close in size, one can easily replace the other in a crystal lattice. So, some of the MoO₄²⁻ ions in wulfenite can be replaced by CrO₄²⁻. Depending on the extent of this substitution, the color

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Shoobox Adventures 68: Nontronite

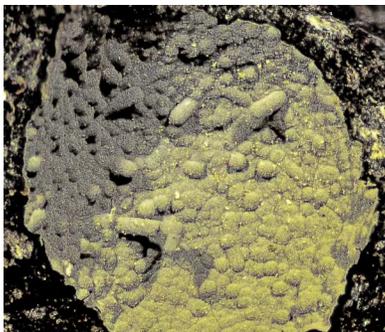
text and photos by Mike Seeds

Everyone loves crystals. They are shiny and pretty and sparkly. They are the popular kids at school who go to the prom. But what about minerals like Nontronite. It's a clay mineral, the iron (III) rich member of the smectite group. That name alone means it doesn't get invited to the prom. Nontronite is more like a member of the high school science club; it's interesting, and fun, and it does neat things.

Nontronite is a recognized mineral with the composition $\text{Na}_{0.3}\text{Fe}^{3+}_2(\text{Si,Al})_4\text{O}_{10}(\text{OH})_2 \cdot n\text{H}_2\text{O}$

The formula shows that the chemical composition can vary with different substitutions and variable amounts of water. Nontronite does form crystals, and you can find some photos if you visit MinDat, but you will usually find nontronite as nearly submicroscopic crystals forming weakly bonded layers to produce a clay like material

One place to look for nontronite is in the rock from Sugar Grove, Pendleton County, West Virginia. The site is a road cut and the rock is Eocene amygdaloidal basalt. (MinDat says the rock is the youngest volcanic rocks east of the Rocky Mountains.) The basalt contains lots of small vugs a few millimeters in diameter, and many



Nontronite lining a vug
Field of View 4 mm

of those vugs contain fine crystals of analcime, barite, chabazite plus lovely pyrite wires. But some vugs are lined with nontronite that covers all of the crystals. Figure 1 shows such a vug with a lumpy lining of nontronite. Look closely and you can see "cigars" of nontronite protruding up from the surface.

How could nontronite form cigars sticking up from the surface? It's a clay mineral and the crystal structure is very small. A clue lies in the second photo, a close up zooming in on the cigar in the lower left of the photo above.



Close up of the bent "cigar" in Figure 1.
Field of View 1 mm

The cigar is difficult to see in Figure 1 because the photograph is made of 30 exposures stacked to put everything in the vug in focus. Figure 2 is made to control depth of field, so the background is out of focus. That makes the cigar stand out, and, in fact, our talented human brains tend to interpret such photos as three dimensional.

The interesting thing about this cigar is that it is bent. Why would a cigar of nontronite bend? A second clue is that the bend is a right angle. If you've looked into a few vugs in Sugar Grove material, you know that pyrite wire is common, and you know that some of those wires make right angle turns.

Figure 3 confirms your suspicion that the nontronite cigars are made of tiny nontronite crystals growing on pyrite wire. One of the cigars in Figure 3 contains pyrite wire with a right angle turn, and the extension is bare pyrite. Perhaps the nontronite coating has broken off of the extension. Nontronite is as soft as talc and it does break off to expose the wires



Nontronite covering pyrite wire with a right turn in the wire uncoated. Note the broken cigar with the pyrite wire exposed. FOV: 0.8 mm.

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Color in Minerals

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produced can be anywhere between yellow and red. Pure wulfenite (i.e., not containing Cr as an impurity) is relatively rare, but, when found, is colorless.

So, chromium lives up to its name. It is probably the element responsible for the widest variety of colors in minerals. Next time you see a sample of ruby, ruby spinel, emerald, crocoite, green tourmaline, green garnet, williamsite, kammererite, green jade, or wulfenite, you have chromium to thank for the beautiful colors present. In the next article, I'll discuss the final mechanism for the production of color—the presence of so-called color centers. After that, I'll discuss the colors of some familiar minerals used as gemstones which I haven't treated in detail up to this point.

in some vugs. Or perhaps there was something about the atomic formation of the exposed pyrite wire that prevented nontronite from coating it. Such incompatibilities can occur when one mineral coats another.

Look again at Figure 3 and notice the broken cigar below center. The break exposes a cross section showing the gleam of the central pyrite wire and the thick coating of nontronite around the wire. Such broken coatings are common in Sugar Grove vugs, and you can find interesting formations in which the nontronite refuses to grow on some sections of the pyrite wires. That can produce strange formations such as pom poms, spitted hot dogs, and more.

Nontronite is dark brown, and you can see that in the broken cigar, but it has a light gray coating. Most collectors who know Sugar Grove refer to the entire coating as nontronite, but Pat Hayens reports that XRD analysis of the gray coating reveals that it is dickite. Mindat does not list dickite as a mineral from Sugar Grove, but Pat is confident in the XRD identification. So even simple nontronite isn't so simple after all.

Nontronite doesn't get invited to the prom and it probably won't make the cover of the mineral magazines, but it's interesting stuff and it does interesting things. As you explore, keep an eye out for good old nontronite.

Safety Matters: Seeing the Light?

by Ellery Borow, AFMS Safety Chair from the AFMS Newsletter – Feb.2017

If you are seeing the light, the ultra violet (UV) light that is, there may be a problem. Many of the shows I visit offer a display / exhibit / darkened booth highlighting the amazing effects of ultra violet reactive minerals for show patrons to see. Such displays are really great to see at shows because they offer a view of minerals and rocks most folks never have the opportunity to see. While many of the UV exhibits I have seen offer sufficient safe guards for the public, some could be better at protecting the club members working the display and the general public.

In your exhibit are folks provided with sufficient eye protection and bare skin protection? Is sufficient attention being paid to reflective surfaces? Are the lights angled sufficiently well to illuminate the minerals and rocks and keep the UV rays out of patron's eyes?

Even short term exposures to UV can have harmful effects. One of the examples I like to cite is about UV reflections. Take the story of a group of people out on a boat and enjoying some sport (catch and release) fishing. Imagine that all the folks are wearing baseball caps with visors to protect their heads and faces from harmful UV ray sunburn effects. At the end of the day there will be folks showing no signs of sunburn because they wore the proper amount of sun screen. There are also most likely going to be folks at the end of the day who are quite sunburned, right to the very underside edge of the baseball cap where its head band touches the forehead.

How might the sun's harmful UV rays have reached under the visor right to the persons forehead to create a sunburn in an area the should have been protected by the visor? In a word, the answer is -- reflections. The surface of the ocean is not flat, it is covered by waves. Those waves act as curved reflectors to reflect the sun's harmful UV waves upward and right underneath a persons visor-covered forehead. The same can happen on a smaller scale in a show's UV mineral booth. UV can be reflected by some mineral surfaces up onto the bare skin and unprotected eyes of show patrons and club members tending to the booth.

Under most circumstances the amount of exposure is relatively minimal, except for those who remain in the booth for extended periods of time - such as the folks tending to the booth and those curious show patrons who just can't get enough of the beauty and curiosity of UV illuminated minerals. Some suggested solutions to UV overexposure include:

- Wear eye protection for extended viewing or working in the vicinity of UV light
- Wear sunscreen protection on exposed skin
- Minimize reflections of UV light toward viewers - reflections may come from the display material and / or the minerals themselves
- Angle the UV lights so no one, especially small children, can kneel down and look up into the UV lamp housing or bulbs
- Offer protective eye-wear temporarily to patrons

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“Spring” Into Action or “Fall” Behind

by Steve Weinberger, Wildacres Workshop Chair



There is still time to register for the first EFMLS Workshop at Wildacres (May 22-28, 2017) although space is filling fast. We're delighted to have the renowned Bob Jones, Sr. Editor of *Rock & Gem Magazine*, as our speaker-in-residence once again. Bob's a world traveler and outstanding speaker and will surely share with us some of his adventures in both United States and other world collecting localities during his talks.

Our fall session will feature a new to us speaker - Dr. Tim Morgan. Tim's specialty is gemstones and he'll share his collecting adventures and knowledge about many of them with us during his non-technical talks. There is still space available for this fall session (September 4 - 10, 2017).

Classes being offered during the spring and fall sessions can be found on the EFMLS Wildacres webpage (efmls-wildacres.org). Don't delay sending in your reservations so you won't be disappointed. *BMS members should note that Mike Wise from the Smithsonian will be teaching a Mineral ID class during the spring session.*

So what is Wildacres? The property originally belonged to Thomas Dixon (author of the *Clansman* which was used as the source for the film "Birth of a Nation"). During the depression, Dixon lost the property and in 1936, it was sold at bankruptcy auction to I.D. Blumenthal for \$6,500.

After several years, non-profit groups such as our Eastern Federation were invited to use the facility for programs which in some way better human interactions. New buildings were constructed to replace Dixon's original hotels, and the number of groups using the facility was expanded as the season grew. Some 90 different groups are now invited each year!

The property sits on a private tract of land - Pompey's Knob - just off the Blue Ridge Parkway in Little Switzerland, NC about an hour north of Asheville.

Wildacres is quiet - no TV, radios or frantic car traffic or beeping horns interrupt the pleasant mountain silence. On clear days you can see Mt. Mitchell from the patio or porches! Sounds that do interrupt the silence are birds, musical instruments if there is a music group in attendance, and lots of great conversation and laughter.

Why attend an EFMLS Wildacres session?

- it's lots of fun
- you'll get to meet fellow rockhounds from all over the east coast (and perhaps other areas as well)
- you'll learn new skills or perhaps polish already learned ones
- you'll have a great chance to relax in a beautiful and quiet setting
- you'll have a chance to do this for a reasonable cost (\$410 per person including room and board)
- and much, much more

We encourage you to attend one or both of our upcoming sessions. We doubt if you'll be disappointed - and at only \$410 per person (plus fees for the materials you use in the classes you take), you'll quickly learn why so many people come back year after year. Give it a try!



Safety Matters

continued from page 8

who wish to use it, even if for short exposure times

- Take periodic breaks from being under strong UV illumination

We encourage shows to offer exhibits of UV minerals and rocks because such displays always seem to be a great attraction. We also encourage sufficient protections and safeguards be utilized with such exhibits. As always, we hope you safely see the light because your safety matters.



Gem, Mineral & Fossil Show

*** **At New Location** ***

March 4-5, 2017

Saturday 10:00 am - 5:00 pm
Sunday 11:00 am - 5:00 pm

**** NEW SHOW LOCATION ****

U of Delaware - Wilmington Campus

Arsht Hall

2800 Pennsylvania Ave. (Rt-52)
Wilmington, DE 19806

TAX FREE SHOPPING

Show Theme: *Quartz of course*
An Educational Experience for All

Outstanding Minerals & Fossil Dealers
Gem, Jewelry & Lapidary Supplies
Demonstrations, Exhibits & Door Prizes
Jr. Booth for Kids

Adults: \$6.00 (\$1.00 off with this coupon)

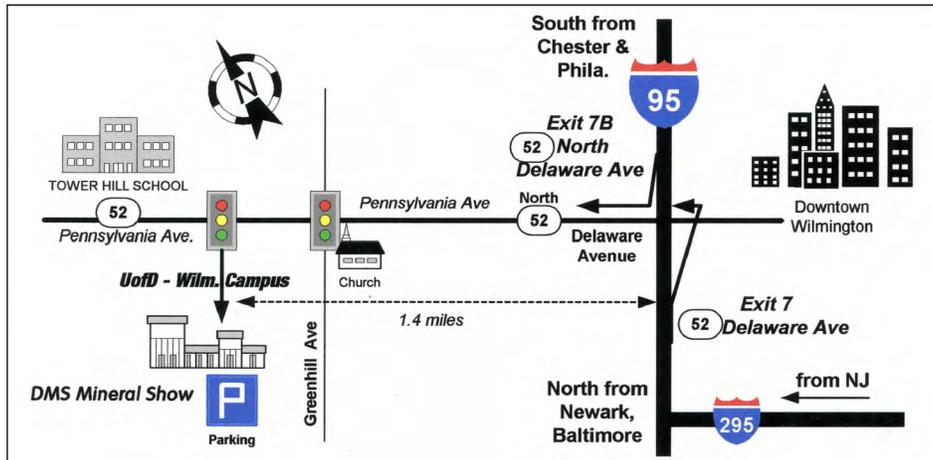
Seniors: \$5.00

Juniors (age 12-16): \$4.00

FREE to Children and all Scouts in Uniform

Additional Information @ www.delminsociety.net

Coupon can be Duplicated WEB



Adult Admission \$6 each
Group with this Ad. All \$5 each
11 and under Free!

March 18-19, 2017
Sat. 10 am-6 pm
Sun. 11 am-5 pm

The Gem, Lapidary, and Mineral Society of Montgomery County, MD.

Featuring:
Door prizes
Demonstrations
Fluorescent minerals

Free specimens for the kids!
DIY cabachon making
Free kid's mini mine

Over 40 exhibits
Raffle

More than 20 dealers from around the country featuring:
Fossils
Minerals
New age items

Jewelry
Fluorescents
Gems & gem rough

Beads
Meteorites
And more

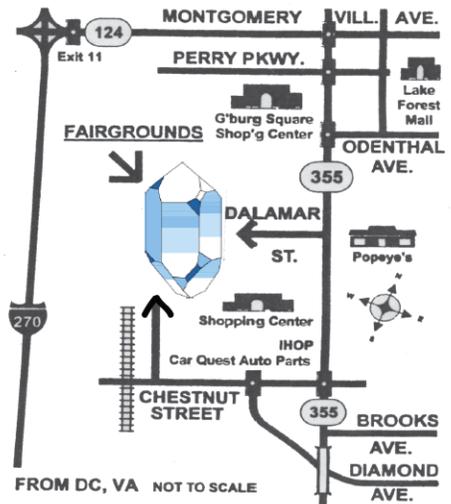
www.glmsmc.com

© 2017



Montgomery County
Fairgrounds

GPS: 39°8'44"N
77°12'22"W
Building 6
16 Chestnut Street
Gaithersburg
Maryland



Baltimore Mineral Society – 2017 Membership Renewal

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Telephone: _____

E-mail: _____

Names of family members included in membership:

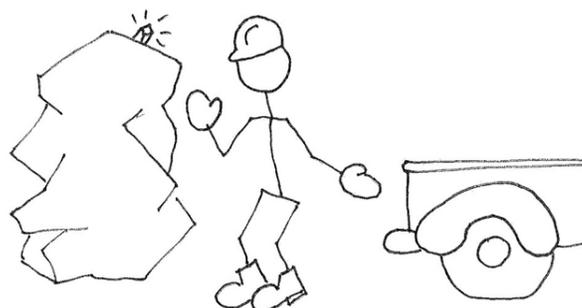
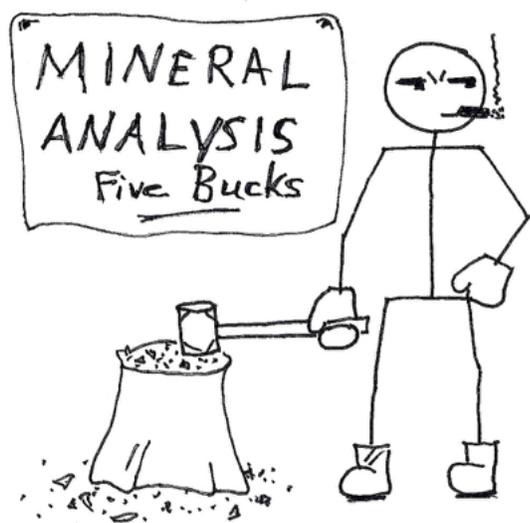
Annual dues for individual memberships are \$10.00

Annual dues for family memberships shall be \$15.00 for husband and wife and all children residing in the home under the age of 18.

Renewal deadline is the March meeting.

Mail or give to: Carolyn Weinberger
PO Box 302
Glyndon, MD 21071-0302

Checks should be made payable to "Baltimore Mineral Society".



"Whadayamean, I gotta trim it before I load it?"

The Conglomerate

Mike Seeds, Editor
516 Bald Eagle Ct;
Lancaster, PA 17601



Upcoming Events

February:

22: BMS meeting at Natural History Society of Maryland – 7:30 pm.

March:

4-5: Delaware Mineralogical Society show. NEW LOCATION. See page 10 for directions and discount flier.

7: Gem Cutters Guild meeting at Meadow Mill – 7:30 pm. See website (gemcuttersguild.com) for program announcement.

10: Chesapeake Gem & Mineral Society auction meeting at Westchester Community Center – 7:30 pm. See website (chesapeakegemandmineral.org) for directions.

11: 41st Annual Micromount Symposium (9 am - 3 pm). Northminster Presbyterian Church, 140 Trenton Rd; Fairless Hills, PA. Contact <Don.mcalarnen@hpe.com> for registration

18-19: Montgomery County show at Gaithersburg. See page 10 for directions and discount flier.

22: BMS meeting at NHSM – 7:30 pm. Program to be announced.

31 - April 1: Atlantic Micromounters Conference. Springhill Suites, Alexandria, VA. See website (dcmicrominerals.org) for details, registration and motel info.

April:

20-23: 44th Rochester Mineralogical Symposium, Rochester, NY. Info at <www.rasny.org/minsymp/>. Always an interesting and fun weekend. Good talks and dealers too!

28: BMS meeting at NHSM. Tentative talk is the annual Tucson gem and mineral show review.