



The Conglomerate

Newsletter of the Baltimore Mineral Society

www.baltimoremineralsociety.org

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May, 2017

May Meeting: Maryland Minerals: Unusual, Extreme, Spectacular

The May meeting of the Baltimore Mineral Society will take place on May 24th at the Natural History Society of Maryland, 6908 Belair Road, Baltimore, Maryland 21206. The Society is located 1 mile south of I695 beltway exit 32 on the right (west) side of Belair Road. (For further directions, visit the BMS website at <baltimoremineralsociety.org/directions.html>).

The program, Maryland Minerals: A Bit of the Unusual, Extreme, and Spectacular, will be presented by Jake Slagle.

Summer Picnic Set

Mark your calendar now for the annual, and always fun, BMS Summer Picnic. This year we'll be at the home of Linda Watts and Al Pribula on Sunday June 25th beginning at 5 pm.



As usual, the club will supply the burgers, dogs, paper goods and soft drinks. Each of us attending is asked to bring a side dish to share with the crowd.

We'll send out an "e-vite" in June asking you to RSVP and to let us know what side dish you plan on bringing.

Rochester Mineralogical Symposium

by Carolyn Weinberger

The 44th Rochester Mineralogical Symposium held April 20 - 23, was one of the most memorable in recent years. Talks were outstanding and covered such topics as minerals from the Bay of Fundy, Mining Crocoite in Tasmania, the Red Cloud Mine in Arizona, the Silver King and Magma Mines of Pinal Co. AZ and an overview of how Mindat.org is driving new scientific theories.

The displays as always were excellent and the specimens displayed and sold by the dealers varied and interesting. Steve and I picked up a few Bay of Fundy specimens to add to our collection and of course enjoyed the company of friends - both old and new - in attendance.



Calcite
Dalnegorsk, Russia
Terry Huizing specimen
Specimen is approx, 5" tall.

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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Vice President Al Pribula
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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



May seems to have finally arrived and the weather continues with its ups and downs to where you wonder if the seasons have turned away from well-known traditional patterns and opted for more spontaneous expressions. Whatever the case our temperature ups and downs are pretty mild compared to what other areas of the nation are experiencing with big T-storms, huge hail, and deadly tornados. Let's be grateful our weather can be accommodated by adding or subtracting an extra layer of clothing.

And now that things are greening in it seems to follow that Emerald is fairly logical as a choice for birthstone for the month. So many different greens now surround and greens we'll only see this time of year. Soon the shades of green will change, become a little darker and begin to block or obstruct pathways and trails in the woods. New life is branching out everywhere and with it come old acquaintances like ticks, mosquitos, gnats, and a few serpentine reptiles.

You won't run into many of these in a quarry though and we've had two club trips to quarries already. The first to Mt. Pleasant, PA, and next to Bluegrass Medford quarry near Westminster. No problems have been reported to me thus far and all clubbers in attendance seemed happy to have the opportunity of the hunt. I'd like to thank Bob Eberle and Richard Hoff for helping to arrange the outings. Hopefully we may have some pictures to add to the newsletter.

I'd also like to thank Mike Seeds and Al Pribula for the presentation of highlights from the Tucson extravaganza we enjoyed at the last meeting. And big thanks too, to Carolyn who was a last minute big help by having a projector available that allowed the presentation to proceed. The Natural History Society projector was in use for a botany presentation in the room next door. And also thanks to Herb Close for providing snacks for the meeting. Be sure and check your schedule at home or in the newsletter for seeing who's up next for refreshments. Thank you Jake for documenting the minutes of the meeting in typical excellent manner.

See you at the next meeting and don't forget about the mineral of the month! I have it on good authority that it's going to be mimetite.

Jim

Scrambleite

from Mike Seeds

Rearrange the letters in the following to spell the names of some common minerals. Answers are given later in this newsletter.

Urea zit	Squire out	Rye pit
Flap reds	Lace is it	

Minutes From our Last Meeting

by Jake Slagle, Secretary

President Jim Hooper called the April 26th meeting to order at 7:40 p.m. Minutes to the previous month's meeting were unanimously approved.



Treasurer Carolyn Weinberger announced that the Society was financially solvent and that its tax forms had been submitted and received.

Unfinished business: None

New business: None

Announcements: Lynn Lugar reminded everyone of the Chesapeake Gem and Mineral Society's Annual Show to be held on Saturday, May 13 at Ruhl Armory in Towson.

Mineral of the Month: Native copper with numerous specimens to be seen. Steve Weinberger, Al Pribula, Jim Hooper, Steve Dyer and Phil Greenberg all had interesting and varied specimens to show.

After a brief break, Mike Seeds and then Al Pribula gave presentations relating to the Tucson Gem and Mineral Show (s) and their experiences this past February.

The meeting adjourned at approximately 9 p.m.

Respectfully submitted,
Jake Slagle, Secretary

Mineral of the Month: Mimetite $Pb_5Cl(AsO_4)_3$

by Steve Weinberger

Mimetite is a member of the pyromorphite group. Its name comes from the Greek mimetes which means "an imitator" because it looks like pyromorphite.



Mimetite

Delaware Mineral Museum

Photo: Derek Ramsey

Wikimedia: Creative Commons Attribution Share Alike 4.0 License

Mimetite forms in the hexagonal system and takes many forms: prismatic, barrel-shapes, acicular, globular, botryoidal, or earthy. It is the oxidation product of galena. Colors include yellow, yellow-brown, orange, greenish-yellow, white, and even colorless. Crystals can be transparent to translucent. Streak is white; hardness ranges from 3.5-4; specific gravity is 7.1-7.3. Sometimes fluorescence can be noted under ultra-violet light.

Beautiful flowery specimens of mimetite are found in wulfenite from mines in Arizona, but mimetite also comes from many locales worldwide. These include Chihuahua, Mexico, the Czech Republic, Cumbria England, Iran, Thailand, China, and Namibia among others.

Why not look through your collections and dig out examples of mimetite, but be careful to wash your hands if you touch them, because they do contain lead and arsenic.

Silicate
Feldspar
Pyrite
Turquoise
Azurite

Scramblette Answers

Medford Collecting Trip

text and photos by Lynne Emery

It was pretty foggy as we drove up I- 795 on Friday April 21. Fortunately that cleared up before we got to Westminister. It was sprinkling when we arrived at Medford, but stopped by the time we went down into the quarry. We were in the original quarry. As the morning progressed so did the temperature, it got quite hot and sunny.



*Jim making little rocks
from big rocks.*

Those in attendance from BMS were Lynne and Bernie, Richard Hoff, Jim Hooper, Herb Close Jr., Jerri Cuffley, Erin Baker, and Alyson Auton Russo.

Since it had poured the night before, everything was REALLY muddy, but nobody cared. In fact Bernie and Richard were handing me basketball size very thick mud balls, for me to sort through to find crystals. I never played in the mud as a kid, but this was fun. The mud was so thick that you really couldn't see what you had found until you cleaned it up later at home.



*Bernie digging a productive hole for
everyone to share*

We were all finding calcite, pretty much like the last time. Nothing huge or extraordinary, but everyone seemed happy with what they were uncovering. One of the Chesapeake members, Jat Thompson, also found some small Geothite. He has a good eye, and it was neat to find something different.

Alysson, a new BMS member, went through mud globs for water etched calcite rhombs. This Medford trip was her first quarry dig. She brought along some nice, large Petoskey stones from Michigan that she had collected just days prior.



*Herb Close moving a
serious rock!*

And from the photo of Herb with the hand truck, it looks like he is giving Bernie a run for his money in "Bernie" size minerals. Of course the entire rock is not Calcite, but a few areas of nice crystals.

And as always - no matter what the weather or what the find it was a good day at Medford!

*Richard Hoff contributed to this
article.*



Allyson and Lynne comparing finds

Color in Minerals – Part XIII: Beryl and Tourmaline

by Al Pribula

In the previous installment of this series, the colors observed in topaz, spodumene, and zoisite were discussed. To continue with gem silicates, this installment will deal with two additional but more complicated cases—beryl and tourmaline. Both of these minerals occur most commonly in pegmatites, but they can occur in other geological environments as well. They both often occur in well-formed crystals, sometimes of rather large size.

From a chemical and mineralogical standpoint, beryl is the simpler of the two. A good source of information about this mineral is *Beryl and its Color Varieties* (the English version of extraLapis #23) published by Lapis International. There are five minerals in the beryl group, but only beryl itself (beryllium aluminum silicate; $\text{Be}_3\text{Al}_2\text{Si}_6\text{O}_{18}$) is commonly found. It forms crystals which generally are elongated along one axis and with a hexagonal cross-section, but more flattened, tabular crystals are found as well (particularly for the morganite variety). Pure beryl is colorless; the name goshenite is often used for this (relatively uncommon) variety. Much more commonly, beryl samples are colored, and can be pale or dark green, pale or dark blue, yellow, pink, red, or (very rarely) violet due to the presence of metal ions such as Cr^{3+} , V^{3+} , Mn^{3+} , and Fe^{3+} substituting for the Al^{3+} , and/or substitution of Ti for the Si, as well as color centers. Lots of explanations for lots of colors!

Emerald, the dark green or bluish-green variety of beryl, was discussed in Part X of the series. The green color is due to d-d transitions in Cr^{3+} (and/or possibly V^{3+}) ions substituting for some of the Al^{3+} ions. If only a very small fraction of the Al^{3+} ions are substituted, the color is a pale green and it is merely “green beryl.” A pale green color can also be caused by the presence of iron (probably as Fe^{2+} substituting for part of the Be^{2+}). High-quality emeralds are among the most expensive of gemstones. Good synthetic stones have been produced by the Chatham and Gilson processes. A rare variety called “Riesling beryl” with a pale green color and a yellow flash may also owe its color to Cr^{3+} , but I was unable to find any information as to the cause of the unusual yellow flash.

Yellow beryl (often with an orange tinge) is referred to as heliodor or golden beryl. The color is due to d-d transitions in Fe^{3+} ions substituting for the Al^{3+} or Si, and to O → Fe^{3+} charge-transfer (CT) transitions. The color can be more on the orange side due to inclusions of hematite. Irradiation of natural iron-containing emeralds gives them a yellow-green color due to the production of a yellow color center related to the oxidation of Fe^{2+} to Fe^{3+} . Irradia-

tion of synthetic (and presumably iron-free) emeralds gives them a greenish-black or violet color due to the production of a color center similar to that in smoky quartz (to be discussed in a future article). Typical of colors due to color centers, these color changes can be reversed by heating.

Medium blue (or slightly greenish-blue) beryl is referred to as aquamarine. The color in this variety is a result of $\text{Fe}^{2+} \rightarrow \text{Fe}^{3+}$ CT transitions. Irradiation of aquamarine (or even an essentially colorless but iron-containing “goshenite”) with gamma rays is said to cause the Fe^{2+} to be oxidized to Fe^{3+} , removing the blue color and producing heliodor, but this has been called into question by some authors. Some very pale blue beryls are colored due to d-d transitions in Fe^{2+} . If the sample contains a small number of Cr^{3+} ions along with the Fe^{2+} , the sample will have a color very similar to the medium blue of aquamarine (so-called “chromium aquamarine”). If both Fe^{2+} (which causes the blue color) and Fe^{3+} (which causes a yellow color) are present, then the sample will have a green color. Heat-treating this green material in the appropriate atmosphere causes the Fe^{3+} to be reduced to Fe^{2+} , removing the yellow component of the color, thereby “improving” it (at least from the standpoint of the gem trade). A darker blue color is produced when O → Fe^{3+} CT occurs in addition to the $\text{Fe}^{2+} \rightarrow \text{Fe}^{3+}$ CT. A much darker indigo-blue color is found in Maxixe beryl (named for the mine in Brazil in which it was first found). This color, which fades rapidly when the material is exposed to light, is caused by a color center associated with a NO_3^- molecule produced when an electron is dislodged from nitrate ion (NO_3^-) impurities by natural irradiation. A virtually identical color can also be produced by artificial irradiation of some natural pale beryls, which produces Maxixe-type beryl which is colored due to a color center associated with CO_3^{2-} . (Note that this is not the same as the much more common carbonate ion, CO_3^{2-} .) A synthetic beryl has been prepared which is colored blue by Cu^{2+} .

Pink or peach-colored beryl is referred to as morganite (also pink beryl, rose beryl, and (incorrectly) pink emerald). The color in this case most frequently is due to d-d transitions in Mn^{2+} ions, but Co^{2+} can also be the cause of a similar color. However, the pink color of some specimens can be removed by heating and re-established by exposure to X-rays. In these cases, a lattice O vacancy (electron-trap color center; formed to balance the change in charge caused by the substitution of a Li^+ ion for a Be^{2+}) is the cause of the color. If the sample has a brownish or orangish tinge (presumably from Fe^{3+}), heat-treatment can remove

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this shade, producing a more desirable (again, from the standpoint of the gem trade) pink stone. Red beryl is often referred to by that name, but is also called bixbite (not bixbyite, which is a totally different mineral which was discussed in Part IX of the series), "raspberry," or, quite incorrectly, "red emerald." (The cover of the May, 2017 issue of Rock & Gem asks "Is it really red emerald?" The article -- which contains numerous errors regarding the causes of the various colors of beryl -- discusses that question and talks about one man's quest to have that name get wider use.) Its darker color was originally thought to be due to Mn³⁺ ions, but more recent work has shown that it is really due to Mn²⁺, just at a higher concentration than is usually found as an allochromatic impurity. Its color is unchanged by heating. Another pink mineral in the beryl group is pezzotite ($Cs(Be_2Li)Al_2Si_6O_{18}$). Its color probably is due to radiation-induced color centers involving Mn³⁺ when it substitutes for part of the Al³⁺. Rare violet beryls owe their color to a color center of unknown structure.

As with "garnet," "tourmaline" is not a single mineral species, but rather a group of borate-silicate minerals containing almost 30 separate species with related structures. All of these tend to form crystals elongated on one axis (sometimes greatly so), having a cross-section with six or twelve sides, and often with striations parallel to the long axis of the crystal. The crystals sometimes show hemimorphism; that is, they show a different set of faces on the two ends of the crystal. Among the group members, dravite ($NaMg_3Al_6(Si_6O_{18})(BO_3)(OH)_3OH$), elbaite ($Na(Al_{1.5}Li_{1.5})Al_6(Si_6O_{18})(BO_3)(OH)_3OH$), fluor-liddicoatite ($Ca(Li_3Al)Al_6(Si_6O_{18})(BO_3)(OH)_3F$; formerly named simply liddicoatite), schorl ($NaFe_3Al_6(Si_6O_{18})(BO_3)(OH)_3OH$), and uvite ($CaMg_3(Al_5Mg)(Si_6O_{18})(BO_3)(OH)_3OH$), are the most common. (Some of the members of the group are hypothetical end-members which have not yet been found in nature.) Substitution series exist between dravite and schorl, elbaite and schorl, dravite and elbaite, uvite and dravite, and between elbaite and fluor-liddicoatite (and probably lots of other pairs as well). There is also substitution of fluorine (F) for OH and vice versa in the final position(s) in the formulas. The complex and variable chemistry led the English writer John Ruskin to remark in 1890 (that is, before the various members of the group had been scientifically sorted out) that tourmaline is made of "a little of everything...the chemistry is more like a medieval doctor's prescription than the making of a respectable mineral." In addition to these "official" mineral names, in the gem trade, there are a number of names for the colored varieties, such as rubellite (pink/red), verdelite (green), and indicolite (dark blue). The fact

that tourmalines can be found in such a wide variety of colors (including color-zoned specimens) is reflected in the fact that the name derives from the Sinhalese name tura-mali, which is thought to mean "stone with mixed colors." (It's also possible that it derives from the Sinhalese toramalli, which means "something little out of the earth.")

There are a number of informative references about this complex mineral group. The Tourmaline Group by R. V. Dietrich is a good (but somewhat dated (1985)) book containing an entire chapter on the causes of color. An entire issue of Mineralogical Record (Vol. 16, #5; Sept.-Oct. 1985) was devoted to this material, with a discussion on chemistry and color written by Dietrich. The title of Tourmaline: A Gemstone Spectrum (extraLapis English #3) hints at the variety of colors this mineral can exhibit. Collector's Guide to the Tourmaline Group by R J. Lauf has some technical information, but is more of a descriptive discussion (illustrated with many interesting specimens) of the members of the group. As always, the pages of the Mindat and Gemdat websites on these species have reliable information. And, for an "everything you ever wanted to know..." experience, visit the "Tourmaline Today" website of Prof. Darrell Henry of Louisiana State University at www.geol.lsu.edu/henry/Research/tourmaline/TourmalineToday.htm.

Of the five "official" species listed above, four contain only ions which normally don't produce any color—only schorl would be expected to be colored (by the Fe²⁺). However, colorless tourmaline occurs relatively rarely. It is called achroite (from the Greek words meaning "no color"), and is most commonly elbaite, but can be other species as well. Most tourmalines are allochromatically colored due to d-d and/or CT transitions involving transition-metal ion impurities, and multiple color causes can be found in a single sample to give "mixed" colors (e.g., purple can be caused by the simultaneous presence of red and blue chromophores). In addition, since it is used as a gemstone, there are many treatments and color "enhancements" which have been used, causing complications and contradictions in the literature. And—to complicate things still further, tourmaline is dichroic (often strongly so), with one color observed when viewing parallel to the "c" crystallographic axis (typically the long axis of the crystal), and another perpendicular to that direction. It normally is not fluorescent, but occasionally does exhibit this property. All things considered, from the standpoint of colors, this is the most complicated case I'll be discussing in this series (and the reason why this installment is the longest one of all—my apology in advance).

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One of the most common colors for this mineral is green, which is most often caused by the presence of Cr³⁺ ions substituting for part of the Al³⁺. This so-called “chrome tourmaline” is usually elbaite or uvite. (However, some “chrome” tourmaline contains more vanadium than chromium.) In the schorl-elbaite series, green can be produced from a combination of d-d transitions in Fe²⁺ and Fe²⁺→Ti⁴⁺ CT transitions. Some chromium-containing dravite-uvites can show a green/red color change similar to alexandrite (discussed in Part X). Green can also be produced by various combinations of Cu²⁺, Fe²⁺, and/or V³⁺ substituting for one or more of the “normal” cations in the structure, and by O→Fe³⁺ CT transitions. Another common color is pink or red. This is most often the result of the presence of manganese, with the paler shades produced by Mn²⁺ and darker colors due to Mn³⁺, with Mn²⁺→Mn³⁺ CT involved in some cases. If a Fe³⁺ is near the Mn³⁺ in the lattice, the intensity of the light absorbance by the Mn³⁺ is increased greatly, making the sample look essentially black. In a rare case, dravite has been shown to be red due to the excitation of an electron in each of two Fe³⁺ ions simultaneously. In some pink elbaites, the color can be removed by heating and regenerated by gamma irradiation. The irradiation (either natural or artificial) is believed to cause the oxidation of the very pale pink Mn²⁺ to the more intensely-colored Mn³⁺. A dark brownish-red color in high-iron dravite-schorl samples has been attributed to a combination of d-d transitions in Fe²⁺, O→Fe³⁺ CT, and Fe²⁺→Fe³⁺ CT. A rare chromium- and vanadium-containing dravite found in the Umba Valley, Usambara Mountains, Tanzania exhibits a remarkable color property. When this material is viewed in transmitted light, a green color is seen in the thinner parts of the sample but thicker parts show a red color. This “distant cousin” of the Alexandrite effect has been called the Usambara effect.

Cu²⁺ by itself gives the medium blue of the cuprian elbaite found in Paraiba, Brazil (“Paraiba tourmaline”). In some samples, this color is modified by the presence of Mn³⁺. The darker blue of “indicolite” is apparently due to d-d transitions in Fe²⁺, Fe²⁺→Fe³⁺ CT, and Fe²⁺→Ti⁴⁺ CT transitions. The commonly-seen brown color of dravite is due to Fe²⁺→Ti⁴⁺ CT transitions, and the black color of the dravite-uvite series tourmalines from the Powers Farm locality in New York is due to this same cause (or, at the very least, to some cause involving iron ions). Even though “pure” schorl contains only Fe²⁺ (and would likely be pale green), I’m guessing that its typical black color is due to Fe²⁺→Fe³⁺ CT transitions due to the presence of some of the iron as Fe³⁺ (similar to the case for hematite discussed in Part IX). The presence of both Mn³⁺

(producing pink/red) and iron (producing blue) gives some samples a purple color. A purple or pink-purple color seen in tourmalines from Nigeria is due to Mn³⁺ (giving the pink/red) and Cu²⁺ (adding the blue color). Yellow tourmalines (particularly elbaites) owe their color to Mn²⁺→Ti⁴⁺ CT transitions. Manganese-rich elbaite from Zambia has an unusual color behavior. The colors of the as-dug stones range from yellow through yellow-green to orange or brown, with the red-to-orange color due to Mn³⁺. Upon heating to about 550°C, the Mn³⁺ is reduced to Mn²⁺, leaving only the yellow color from the Mn²⁺→Ti⁴⁺ CT transitions. Heating to 700°C causes re-oxidation to Mn³⁺, regenerating the red-brown color. Lastly, the rare orange color is likely due to irradiation of stones which were originally pink (adding yellow) or yellow (adding pink).

As with many other minerals, if the composition of the fluid from which the crystal is forming changes during crystal growth, color-zoned tourmaline crystals can be formed. The color zoning is sometimes seen along the length of the crystal (i.e., the boundaries of the color zones are perpendicular to the “c” axis of the crystal), producing the familiar “blue-cap” crystals and many other possibilities. In other cases, the boundaries of the color zones are parallel to this axis (i.e., parallel to the prism faces), producing radially-zoned crystals such as the familiar “watermelon” tourmalines. It is also possible for the boundaries of the color zones to be parallel to the pyramid faces, so that different colors are seen in wedges forming from the center of the crystal and widening towards the outer faces when the crystal is cut perpendicular to the “c” axis. This sometimes gives crystals which show a “Y” (or Mercedes-Benz symbol) when cut in cross-section. For some reason, this is especially common in crystals of fluor-liddicoatite, and a virtual “trip” through a liddicoatite crystal can be taken at minerals.gps.caltech.edu/mineralogy/animation.htm.

(Whew! Like I said above, explaining the colors of this “stone with mixed colors” gets pretty complicated.)

In the next installment, I’ll switch from silicates to oxides when I discuss the variety of colors which can be exhibited by the minerals spinel and corundum.

Shoebox Adventures 69: Dumortierite

photos and text by Mike Seeds

A Navajo artist once told me, "Don't buy a piece of turquoise unless it speaks to you." The same can be said for mineral specimens. The Atlantic Micromount Conference took place in March in Alexandria, Virginia, and Al Pribula had a big table full of talkative specimens. One in particular took a liking to me and demanded to go home in my shoebox. It was Dumortierite.

Dumortierite is a nesosilicate containing aluminum, boron, and independent silicate tetrahedra. It tends to be blue to blue-violet, although it can shade to green and to red. It can form radial clusters of long thin crystals, but it is often found in masses.



It doesn't sound like a very interesting mineral, but the specimen on Al's table was begging for attention. The dumortierite in the specimen is in the form of radial needles encased in quartz. The formation is both attractive and suggestive of an interesting history.

The original quartz crystal has been sliced like a hot-dog destined to join baked beans in a pot. The sectioned

pieces were polished so that the dumortierite needles are clearly visible inside. The quartz is clear and the needles are the typical blue-violet of dumortierite.

This specimen comes from the Vaca Morta Quarry in Bahia, Brazil. Dumortierite from this quarry is often found encased in quartz, and a quick check with Mindat.

org reveals 18 photos of dumortierite encased in quartz, but none have the attractive formation evident in this sample.

Inside the section of quartz, the dumortierite needles form radial masses, and the bases of the needles define a hexagon. Evidently, the dumortierite needles formed on the surface of a smaller quartz crystal. It must have been a lovely sight with blue-violet needles covering its surface. But the quartz kept growing and eventually engulfed the needles

encasing the dumortierite needles in a permanent coffin of transparent quartz. Later, the quartz crystal was sliced and polished to produce the specimen that spoke to me.

Photographing this specimen is quite difficult because of reflections from the surfaces of the quartz and shadowing of some of the needles by other masses of needles. Photographing against a white background was hopeless and using a black background did not work well because of the texture of the black substrate. The best solution was to create a black cavity by lining a microbox with a black liner and placing a piece of black liner over the top of the box. Then the specimen was suspended over a small opening cut in the covering of the box. Any light passing through the crystal bounces around inside the box and is absorbed. (Physics majors will recognize this as a black body cavity.) Also, any texture in the liner in the bottom of the box is far out of focus. Such a black box, properly illuminated, creates a deeply black background as shown in the second photograph.



Photographed above a black cavity, the dumortierite crystals are clearly visible. What appear to be dust specks are inclusions inside the quartz. (52 stacked images)



Section of a quartz crystal containing radiating needles of dumortierite

This photo shows that the original quartz crystal seems to have been slightly asymmetrical, and that the dumortierite appears to have preferred to deposit on four of the six sides of the crystal. There are a few needles attached to the other two sides, but those sides of the quartz were evidently inhospitable to the dumortierite.

The photo reveals numerous specks that appear to be dust on the quartz, but they are actually inclusions inside the crystal. In fact, the specks in the bottom third of this image outline a curved three-dimensional surface that can only be appreciated when you tip and turn the crystal under the 'scope. The surface appears to be saddle shaped, and it isn't clear at all how it could have been produced by deposits on the surface of a growing quartz crystal.

Safety Matters – World Domination Made Easy

by Ellery Borow, AFMS Safety Chair. from EFMLS News, June 2017

Did you see that? World Domination Made Easy – Just the title draws attention. Now, if only I might



draw your attention with the actual title of this article - which is: "How to promote and Promulgate Safety Matters articles to those in our hobby who might most benefit by their content". The actual title just does not have the same potential to draw attention.

Truly, safety messages are not the prettiest marbles in the bag. But, they sure can win the game.

How does a club safety chair, or field trip coordinator draw the attention of members when important safety measures are discussed? The use of attention drawing titles, humor, pounding a gavel first, or making messages personal (as in how the matter effects each member personally), all good ways.

Member's attention often drifts away from safety messages - think of the safety talk given by the head flight attendant just prior to a jet's take off. Messages must often be repeated - think of the person who has never been on a jet plane before. When one is delivering a safety message and most of the members are glancing down into their lap, one might well imagine

they are, instead of listening, texting. Lap looking -- it's a sign you've lost them.

Gaining and keeping members attention for safety messages is important - we all know that. Now, how do we manage that trick of legerdemain? Here are some ideas - try using an authoritative tone of voice, engage the members, keep the topic relevant, tell stories to illustrate your message, during the talk ask if the members have questions, mix repeat messages with new material, ask members if they can think of how they might apply the topic to what they do in the hobby, try keeping discussions relatively short (try not to overload the members), try approaching a repeat topic in a new manner, ask (if they are texting) if they are texting about safety (that's humor there and, yes, I know it's lame humor but that's what I do).

How does one know if members are engaged? Ask. If asked, and a member can repeat what has just been discussed, and how it can be applied not just to the topic being discussed but how it might also be applied to other situations - you've got one engaged member there!

If so, pat yourself on the back and offer yourself a high five on a talk well presented!

Safety does not have to be boring, but it does take a certain engagement to keep it from being so. Telling stories about the more repetitive messages helps make them more memorable.

Certainly one would not refer to world domination in a safety message title. But you get the idea, I'm sure you can think of some more suitable catch phrase to draw attention. Gaining and holding member's attention when delivering safety messages are good things.

My hard hat is off to you dedicated safety and field trip chairpersons. Thanks for doing such a great job in getting those safety messages out to your members. Oh, and lastly, while speaking of world domination, it sure would be nice if safety messages were more often featured in our club newsletters and bulletins - just sayin'.

Shoebox Adventures 69: Dumortierite

continued from page 8

This specimen is both beautiful and fascinating. The dumortierite needles are a lovely blue-violet and their radial formation is striking. In addition, the specimen is the product of a complex process that we can only partially understand. The specimen could tell an interesting story, if only it could speak.

AFMS History - Competitive Exhibits “We've Come a Long Way Baby”

by Jennifer Haley, Historian from AFMS News June 2017

I think you are going to love this bit of history. Did you know that California was the state that gave birth to competitive exhibiting of our earth science hobby? During the 1930's and 1940's there were few exhibits, but following World War II the interest blossomed. Prior to 1948 minerals were the only category usually displayed, and at that time display cases were not used. Instead exhibitors displayed their specimens on top of tables, and actually stayed with their exhibit so they could talk to people about them. The use of risers on top of the tables came later and in time display cases were used, but without lighting as we know it today. The earlier exhibitors were determined and imaginative, using aluminum foil and mirrors which helped to reflect light on their exhibits.

History has a fun habit of recalling the first time for everything that's a home run. During the 1950's a store decorator named Mr. Craig, used a light blue flannel cloth and added a riser to show off his copper exhibit. From then on showmanship became an important aspect in competitive displays as it is today.

The AFMS Uniform Rules manual was developed following 1947, when regional conventions began being held, and competitive exhibiting became a popular, fun and valuable part of the shows. Soon it was realized there was a need for a standard set of uniform rules for showmanship, which every federation would follow when it came to competitive exhibiting.

Over the years, additions and changes have been made to the manual, to address the expanding areas of interest in our hobby. Beading was added to manual a few years ago, and this year, Meteorites. An example of how the manual has come a long way; is that spheres used to compete with cabochons for the same trophy, and micromounts no longer competes with cabinet minerals.

The manual is dedicated to the work of museum curators, many judges, competitive exhibitors, mineralogists and others. Only time will tell what changes and additions to the manual will be made. The purpose of Uniform Rules is two-fold; it sets the standards for our members to be able to create successful competitive exhibits, and is a judge's guide in the judging process. AFMS Uniform Rules was created to be supportive of our members, because the points a competitive exhibitor receives only belong to the individual, instead of exhibitors competing against each other.

As I write this report, society members across the nation are working on their competitive exhibits for the CFMS-AFMS Show & Convention, Ventura Rocks the Nation. Other members are getting their exhibits ready for their society and neighboring society shows. Some of you are helping pebble pups with their first exhibit. Your exhibits are a beautiful and educational introduction to the public about the hobby, and an inspiration to each other. You are the rock stars of the Earth Sciences and the Practice of the Lapidary Arts & Crafts, and will always be. You are the windows that open to our special world for all others to see. Keep up the good work!

History can be a beautiful thread that can weave longevity and meaning into the things we do today.

Go out and play, celebrate the joys of the Earth Sciences and the Practice of Lapidary Arts & Crafts. It is our gift to give, always has been and will always be. Never forget to create fun and beautiful memories for others, for in time, they will become a special part of history

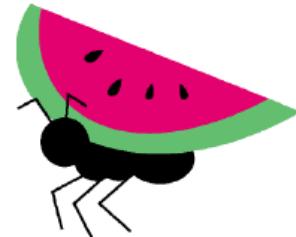


The Southern Maryland Rock & Mineral Club is proud to sponsor the 2017
Eastern Federation of Mineralogy and Lapidary Societies (EFMLS)

Region IV Potluck Picnic and Rock Swap/Sale



Gilbert Run Recreational Park
Charlotte Hall, MD



Saturday, June 17, 2017
9 am - 5 pm

Admission to the Park is \$5 per carload
(No charge for swapping or selling)

"This is an old-fashioned rock swap where people who collect rocks, minerals and fossils will be selling and trading specimens"

Details

This is a **FREE** event for all EFMLS rock club members and their families and friends. In addition to minerals, fossils and lapidary for swap/sale each attendee/family is asked to **bring a potluck dish to share, and one labeled specimen donation** for an auction that will take place after lunch.

The auction will help defray the cost of the event. There is ample parking for tailgate swapping/selling. **Please bring your own tables and chairs.** There are onsite restrooms and handicap access. **Donations** of excess rocks and related tools to the "Treasure Box" are welcomed and are free for anyone to take. The Southern Maryland Rock and Mineral Club will provide plates, cups, plasticware, sodas, and bottled water. **Go to SMRMC.org for more details.**

Schedule of Events

9:00 - 12:00 Swap and sell
12:00 - 1:30 Potluck Lunch and Auction
1:30 - 5:00 Swap and sell

Contact Person: Dave Lines (240)-427-7062

Dave.Lines@earthlink.net

Physical Address:
Gilbert Run
Recreational Park
13140 Charles Street
Charlotte Hall, MD,
20622

Directions:

From the D.C. Beltway:

Take Rt. 5 South (Exit 7A) towards Waldorf
Go 12.3 miles and turn left onto Mattawoman Beantown Rd. (Rt.5)
Go 3.2 miles and turn left onto Leonardtown Rd. (Rt.5).
Go 4.9 miles and turn right on Olivers Shop Rd.
Go 5.9 miles and turn left onto Charles St. (Rt 6)
Go 1 mile and turn left into Gilbert Run Recreational Park

OR

Take Rt. 301 to La Plata, turn left onto Charles St (Rt 6 East) and go 8.6 miles to Gilbert Run Recreational Park
Turn left into Gilbert Run Park and follow the signs to the Hilltop Pavilion Parking lot.

From La Plata, Md

From Rt. 301, take Rt. 6 East (Charles St) 8.6 miles
Turn left into Gilbert Run Park and follow the signs to the Hilltop Pavilion Parking lot.

The Conglomerate

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



Upcoming Events

May:

24: BMS meeting at Natural History Society of Maryland. Jake Slagle will give a talk on Maryland Minerals.. Jake will also be bringing refreshments - 7:30 pm.

29: Memorial Day

June:

6: Gem Cutters Guild mtg. at Meadow Mill - 7:30 pm.

9: Chesapeake Gem & Mineral Society auction. Westchester Community Center,, Oella, MD. - 7:30 pm.

17: Region IV picnic. See page 11 for details.

25: BMS summer picnic at the home of Linda Watts and Al Pribula. Details and directions next month.

July:

26: BMS meeting at Natural History Society - 7:30 pm.

