



The Conglomerate

Newsletter of the Baltimore Mineral Society

www.baltimoremineralsociety.org

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July 2016

More on Chambersite

by Pete Richards (Micromounters HOF member)

A note about chambersite in response to Mike Seeds' Shoebox Adventures from The Conglomerate January 2016 11⁽¹⁾. Chambersite is in a group with boracite and ericaite. All have orthorhombic symmetry with $a=b \neq c$ (though not all sources give the same cell parameters, and particularly some do not have $a=b$). Boracite is known to have a higher temperature polymorph which is isometric and consistent with the typical boracite morphologies. Crystals at room temperature are complex mosaics of orthorhombic crystals that are twinned to each other, and are transformation pseudomorphs after the high-temperature form (*Dana's System*, 7th edition).

Chambersite often has a complex surface texture (see image) that suggests a similar origin - a pseudomorph after a higher-temperature isometric polymorph, and in fact the *Handbook of Mineralogy* (www.handbookofmineralogy.org/pdfs/chambersite.pdf) states that this is the case.

I could not find anything in the common literature about a high-temperature polymorph of ericaite, however there is a comment in the initial new-mineral description of ericaite that refers to its isometric-orthorhombic transition (http://www.minsocam.org/ammin/AM41/AM41_370.pdf).



Chambersite, Venice, LA

So apparently all three of these minerals owe their paradoxical discrepancy between appearance and crystal symmetry to the same kind of temperature-related change of crystal symmetry with no gross change in crystal form.

This is analogous to the mosaic twinning that accompanies the transition of high quartz to low quartz.

As for Al Pribula's perceptive comments about the unit

July Meeting – Show and Tell

by Jake Slagle, Program Chair

Our July 27th meeting will be a show and tell entitled "Unusual Mineral Specimens". All members are invited to bring one or two specimens from their collection and then spend no more than 5 minutes talking about what they brought. Minerals falling into the "Unusual" category include:

- Rare minerals
- Common minerals in unusual formations
- Unusually attractive minerals
- Minerals from unusual locations

As usual, the meeting will be held at the Natural History Society of Maryland and will begin at 7:30 pm. The meeting will be hosted by Mike Seeds.

cell dimensions being about $1 : 1 : \sqrt{2}$, first it should be said that having two axes equal (and at right angles) normally indicates tetragonal symmetry, but this need not be the case. Presumably some other properties, perhaps optics, indicate the lower symmetry. Orthorhombic crystals are biaxial, whereas tetragonal crystals are uniaxial. Without going into details, suffice it to say that optical properties can be very sensitive indicators of true symmetry.

The more interesting piece is the striking third unit cell dimension which is apparently equal to or very close to the square root of two. How could this come about? When a crystal undergoes a polymorphic transformation, the structure is generally not totally re-organized, but only changes by slight shifting of the positions of atoms in the structure. The original isometric structure had cell ratios, of course, of $1 : 1 : 1$. Suppose that the structural change on transformation was such that the new unit cell had two edges very nearly equal to the face diagonals of the original cell. This would give new cell ratios close to $\sqrt{2} : \sqrt{2} : 1$, or $1.414 : 1.414 : 1$, which however is not what we see.

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@fandm.edu>. No e-mail? Hand in your submission at a meeting.

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President's Postings

by Jim Hooper, BMS President



I've been enjoying one of the lushest, greenest springs I can remember due to all the rain back in March and April. Not making rock hounding any easier, but the green is easy to look at. Then along comes a storm and suddenly you have six times the foliage with trunks and branches down on the ground which really doesn't help much at all. I hope everyone came through the storm(s) well and have had any lost power restored well before now.

Fortunately the storms held off while approximately 20 or so members of the BMS and other clubs made a very early morning trip to the Vulcan Manassas quarry site in northern Virginia back on the 18th. Reports tell me all went well and everybody found at least 'something'. Varieties of Zeolites were found as well as Prehnite and other associated minerals. I encourage clubbers to bring favorite finds to the July meeting so those us who couldn't make the trip can ogle and admire specimens. And on that topic a few people have asked why we don't have pictures of trips that could go in the Conglomerate. The answer is; I don't know. I'm not terribly handy with the digital world of photography yet, but we would love to add some pictures to the newsletter if anyone could take a camera (or cellphone) along and immortalize some of the adventure for the rest of us. If you think you'd like to; let editor Mike Seeds know for next time.

A fine time was also had recently at the Pribula residence as BMS'rs met there for the annual picnic. We want to thank Al and Linda again for generously hosting the event which was well received by all. A hot, humid day for the picnic, but with enough breeze to allow mostly outdoor entertainment on the great wrap-around porch. I don't think anyone went away hungry.

In August we take a break from the monthly meeting and look to meet again in September. I extend the usual cautions about mineral hunting in the great outdoors, such as getting permissions as appropriate, don't grab ticks or snakes if you encounter any, and don't leave a mess anywhere. Till next meeting, stay safe and try to keep one eye on the ground and one on the skies. See you soon!

Hooper

Field Trip Ideas

Spring, summer and fall is when our thoughts turn to rock collecting. If you are interested in collecting trips, contact the Field Trip Coordinator Bob Eberle with ideas and suggestions for collecting sites. Do you know someone at a quarry or a property owner of a good location? Give your suggestions to Bob (410-661-8436). Let him know that you are anxious to dig, and he will keep you on his list.

Minutes From our Last Meeting

by Jake Slagle, Secretary

President Jim Hooper called the May 25, 2016 meeting of the Baltimore Mineral Society to order at 7:30 PM. Minutes to the previous meeting of April 27, 2016 were accepted without corrections.



Officers Reports:

- Treasurer Carolyn Weinberger noted that the Society was financially solvent. She mentioned that we just enrolled a new member, William

Krach and welcomed back Barry Berlin.

Unfinished Business

- It was confirmed that the June picnic was to happen on June 11 at the home of Al Pribula and Linda Watts.

New Business - None

Mineral of the Month

- The mineral of the month was rhodochrosite. Mike Seeds, Al Pribula, and Steve Weinberger showed specimens.

Announcements:

- President Jim noted that there would be no newsletter for June.

- President Jim noted two field trips during the past month: one to the Medford Quarry, which was "successful," another to a quarry near Hagerstown, which he implied was less fruitful

- Carolyn Winberger noted two upcoming trips to Manassas: one on June 4, another on June 18.

After refreshments, Mike Seeds, Carolyn Weinberger, and Jake Slagle showed brief PowerPoint presentations from the 2016 Tucson Show.

The meeting adjourned at approximately 9 p.m.

Respectfully submitted,
Jake Slagle: Secretary

Gus Cleans a Clock

by Mike Seeds

Two Saturdays ago, Pudge and Gus decided to row across to Muddy Point and dig for geodes. They were just putting buckets in the boat when Stinky's van pulled up. "Oh crud," said Gus. "That guys a liar, a cheat, a thief, and a blowhard. If he messes with me, I'll clean his clock. I'll do it, Pudge."

Stinky begged a ride to Muddy Point, and although Gus turned his back, Pudge, always the nicest guy in the room, agreed. The old boat was heavily loaded and Pudge rowed across carefully. They collected for a couple hours, and Stinky yammered on and on about the Smithsonian asking him to help with some identifications, and he explained how he was unofficially welcome to collect weekends and after dark at lots of quarries. Pudge kept a careful eye on Stinky, and twice Gus had to remind Stinky that he was looking into a bucket that wasn't his. Finally Pudge rowed Gus and Stinky back and prepared to go back for the buckets when Gus spoke up. "I'll go get the buckets. I aint stayin' near him." Gus clambered into the boat and began rowing, which included a lot of splashing, banging, and cursing.

While Gus went for the buckets, Stinky told a long story about how he helped the county museum reorganize its mineral exhibits, and Pudge refrained from asking about the rumor that Stinky was now barred from the museum over some missing specimens. At last Gus cursed his way back to shore with their three buckets of geodes.

"That's nice havin' your own boat right here," said Stinky. "How much would you take for it?"

Gus didn't look up. "Hunner dollars," he said.

Stinky shook his head, "That's a lot. It's really old and it leaks."

"Fifty dollars," said Gus.

Stinky looked up river. "That's still a lot. I can just go up to Bob's Sushi Bar and Bait Shop and rent a boat for twenty bucks."

Gus spun to face Stinky nose to nose and pointed at his bucket. "I'll take twenty bucks and your bucket of geodes."

Pudge looked into Stinky's bucket and saw it was half full of muddy geodes, but before he could pick any up to see what was deeper in the bucket, Stinky pulled out a twenty and Gus swung the bucket into the back of his truck. As Gus and Pudge drove away, Gus was smiling.

Why was Gus smiling? Solution on page 11.

Mineral of the Month

by Steve Weinberger

Since the July meeting will feature minerals brought in by members, I thought it might be a good idea to look at other minerals, ones which most of us do not have either in large specimens or even at all. These minerals were all chosen because they were named for friends and acquaintances of ours—people we have known for many years and who have made substantial contributions to our hobby. Here they are in alphabetical order:

1. Alfredopetrovite $\text{Al}_2(\text{SeO}_3)_3 \cdot 6\text{H}_2\text{O}$

Alfredo Petrov is a world-traveling geologist and mineral dealer. He will again be the main speaker at this fall's Wildacres session. If you've been to the West Springfield Show you probably have seen him there as well as at Tucson. He lives in California.



Alfredopetrovite is hexagonal; the hardness is 2.5, and it is usually found as druzy, scaly coatings with individual crystals measuring 0.1 mm. It is the first aluminum selenite mineral found. It is vitreous and has a density of 2.504.

2. Bobjonesite $(\text{VO})(\text{SO}_4) \cdot 3\text{H}_2\text{O}$

Bob Jones is very well-known, being the senior managing editor of Rock & Gem Magazine and a dynamic speaker, Bob was not too happy to learn that the mineral named for him changes upon being exposed to air and no longer is bobjonesite. Bob is a perennial speaker at West Springfield and numerous times at Wildacres. He and his wife Carol live in Arizona.



The mineral is monoclinic, pale blue to blue-green in color and hydrates rapidly in air thus changing it. The luster is vitreous, hardness is 1, and the density is 2.28

3. Dickthomssenite $\text{Mg}(\text{V}_2\text{O}_6) \cdot 7\text{H}_2\text{O}$

Dick Thomssen has done much in the field of micromounting throughout the country. He is a member of the Micromounters' Hall of Fame and attends many shows and symposia. He is a consulting geologist and lives in Arizona.



Dickthomssenite is monoclinic, its color is light golden brown. The hardness is 2.5, luster is vitreous, streak is white, density is 1.96-2.09. It is brittle.

4. Haynesite $(\text{UO}_2)_3(\text{OH})_2(\text{SeO}_3)_2 \cdot 5\text{H}_2\text{O}$

Named for Patrick Haynes, a geologist now living in New Mexico. Those of you who attended our micromount conferences know Patrick as an attendee and mineral dealer. He has discovered several new mineral species.



Haynesite is orthorhombic and has a hardness of 1.5-2.0.

5. Markascherite $\text{Cu}_3(\text{MoO}_4)(\text{OH})_4$

Mark Ascher is a mineral collector, engineer, and chairman of the Tucson Micromounters' Conference. He lives in Arizona.



Markascherite is monoclinic and green in color. It's hardness is 3.5-4.0, is brittle, and its density is 4.216. It is a dimorph of Szenicite and forms secondarily from the breakdown of molybdenite, bornite, chalcocite and chalcopyrite. Crystal sizes are up to 0.5 mm x 10 mm x 0.05 mm.

The next two causes of color on our list (transition-metal compounds and transition-metal impurities) are two of the most common causes of color in minerals, and are two manifestations of the same color-causing mechanism. This probably raises at least two questions in your mind: (1) What's a transition metal? and (2) why and how do they produce color? The first one is easier to answer: a transition metal atom is one in which its highest-energy electrons are in d orbitals. "Yeah, easy for you to say!" I hear you complaining. "What the heck is a d orbital?" To review: Remember that an orbital is a region of space within an atom in which an electron is most likely to be found. In every atom, there are a number of types of orbitals having different shapes and energies, which are designated by different letters. (Why the letter d was chosen for this particular type is of historical importance only.) For our purposes here, the most important thing to know is that the difference in energy between d orbitals in a given atom or ion in a chemical compound (like a mineral) often is in the same range as the energy of light waves in the visible region of the electromagnetic spectrum. (These energy differences can also "slop over" into the ultraviolet and infrared regions as well.) "Ah—I get it now" you say. "If the energy gaps are in the visible region, then the electrons in these atoms or ions can absorb visible light. If they only absorb specific energies of light, then the sample will transmit or reflect the complementary color. That's the answer to question #2!" Yup—you're catching on. Since the electrons are moving from one d orbital to another, they are said to be undergoing d-d transitions.

So—a couple more questions arise. First, what specific metals are we talking about here? There are about 30 relatively common metallic elements that fit this definition. (Some might count about another 30 as well, but they're pretty rare and we don't need to consider them here.) Of these, the ones that most commonly are the chromophore in minerals are titanium (chemical symbol Ti), vanadium (V), chromium (Cr), manganese (Mn), iron (Fe), cobalt (Co), nickel (Ni), and copper (Cu), but many others (including gold (Au), tungsten (W), uranium (U), and the rare-earth elements (cerium (Ce), lanthanum (La), etc.)) are capable of causing color as well. These metal ions might be essential components of the mineral (such as manganese in rhodochrosite, copper in azurite, nickel in annabergite, etc.), so they can be the cause of an idiochromatic color (pink, blue, and green, respectively). They can also be the cause of an allochromatic color if they are present as a substitutional impurity in a normally colorless mineral, such as cobalt in cobaltoan calcite (pink), iron in sphalerite (yellow/orange/

brown), chromium in corundum or spinel (red), or chromium in beryl (green).

Hmmm...next question: How come one metal can produce different colors in different minerals? Azurite, malachite, and cuprite all contain copper, but azurite is blue, malachite is green, and cuprite is red. Why aren't all three the same color? And how come chromium in corundum or spinel causes the red color of ruby and ruby spinel, but it causes a green color in beryl (emerald)? There are actually two possible reasons for this, depending on the exact case in question. First a little bit more about electrons in orbitals. The maximum number of electrons that can occupy any given orbital is two. (Again, the reason behind this isn't important for our purposes here.) When two electrons occupy an orbital, they are said to be paired. A single electron in an orbital is said to be unpaired. If all the electrons in a given atom or ion are paired, it is much less likely (but not impossible) that this will cause a color than if one or more electrons are unpaired. (When they're paired, they tend to stay that way.) When present in a compound, metals are present as cations (cat-eye-ons)—that is, positively-charged particles formed when neutral atoms lose one or more electrons. (A negatively-charged particle (due to an excess of electrons over protons) is called an anion (an-eye-on).)

Part of the answer is that some metal atoms can form more than one cation; that is, sometimes they lose one number of electrons and sometimes they lose another. (When something loses electrons, it is said to be oxidized, and when it gains electrons, it is said to be reduced. The charge on the resulting particle is sometimes called its oxidation state or oxidation number.) Two common examples of this are iron and copper. Depending on the conditions, iron atoms typically lose either two or three electrons when they form chemical compounds, forming ions with either a +2 or +3 charge, respectively. These are symbolized Fe^{2+} and Fe^{3+} and are named iron(II) and iron(III) (pronounced "iron two" and "iron three") respectively. (Note: These have been the "official" names of these ions for well over 50 years, but old-timers may still refer to these as "ferrous" and "ferric" ions.) Copper commonly loses either one or two electrons, forming either Cu^+ (copper(I); old name "cuprous") and Cu^{2+} (copper(II); old name "cupric") ions. Since ions with different charges will have different numbers of unpaired electrons, they normally will exhibit different colors. The copper ions in most copper minerals are copper(II), which

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produces a blue or green color. In cuprite, the copper ions are copper(I), leading to a different color (which is not due to d-d transitions, but rather to another mechanism which will be discussed in a later article). Similarly, iron(II) usually produces a green color, while iron(III) most commonly produces yellow/orange/brown.

The second reason that a metal can produce more than one color is due to the chemical environment around the metal ion. Even the exact same metal ion (i.e., with the same charge) can be responsible for different colors if the chemical surroundings of the metal ion are different. One of the most familiar examples of this is the difference in color between azurite and malachite. These minerals are made from the same components (copper(II) ions, carbonate ions, and hydroxide ions), just in different proportions. Malachite is $\text{Cu}_2(\text{CO}_3)(\text{OH})_2$, while azurite is $\text{Cu}_3(\text{CO}_3)_2(\text{OH})_2$. Why do these two materials of very similar composition have different colors? The answer lies in the arrangement of the ions in the crystal lattice. In both of these minerals, the Cu^{2+} ions are surrounded by six oxygen atoms from the carbonate and hydroxide ions, but in azurite, these atoms are closer to the cation, increasing the negative electric field felt by the d-electrons in the cation. Malachite absorbs light at both ends of the visible spectrum (blue/violet and red/orange), so the transmitted/reflected light is from the center of the spectrum—green. The larger electric field around the cation in azurite causes the electrons on the Cu^{2+} in azurite to absorb less blue/violet light and more red/orange light, resulting in the observed blue color. Similarly, when a cobalt(II) ion (Co^{2+}) substitutes for a magnesium ion (Mg^{2+}) in spinel, it is surrounded by four oxide ions and produces a blue color. (A similar substitution gives the blue color in “cobalt” glass.) However, when it substitutes for a zinc (Zn^{2+}) ion in sphalerite and the Co^{2+} is surrounded by four sulfide (S^{2-}) ions, it produces a green color. (I’ll discuss the cases of ruby and emerald in a later article where I focus on colors due to the element chromium.)

In addition to the identity of the anions surrounding the metal ions, their number and arrangement can affect the color as well. The surrounding atoms or ions are usually arranged in some symmetrical arrangement (four at the corners of a tetrahedron, six at the corners of an octahedron, eight at the corners of a cube, etc.), and the same metal ion can produce different colors in different surroundings. As mentioned above, a Co^{2+} ion substituting for a magnesium ion in spinel is surrounded by four oxide ions at the corners of a tetrahedron (this is sometimes described as being in a “tetrahedral hole,” or that the cation is “four-coordinate”) and produces a blue

color. However, when a cobalt(II) ion substitutes for a calcium (Ca^{2+}) ion in calcite, the cation is surrounded by six oxygens (from six carbonate (CO_3^{2-}) ions) at the corners of an octahedron (i.e., it is in an “octahedral hole,” or is “six-coordinate”), and the resulting cobaltian calcite is pink. (You may have seen inexpensive humidity indicators which change from blue to pink/red as the humidity increases. These contain cobalt(II) chloride (CoCl_2). When the humidity is low, the Co^{2+} ions are surrounded by four chloride ions (Cl^-), and this produces the blue color. As the humidity goes up, water is absorbed and incorporated into the structure. When a Co^{2+} ion is surrounded by six water molecules, it gives a pink/red color.) Distortions in the geometry of the surrounding atoms or ions from the “perfect” geometry can further influence the color.

The above is a simplification (perhaps even an oversimplification) of a theory first proposed in the late 1920’s to explain the colors in mineral crystals, which was named Crystal Field Theory (CFT) for that reason. An updated and expanded version of that theory is called Ligand Field Theory (LFT) (the groups surrounding and bonded to the metal ion are called ligands (from the Greek word meaning “to tie” or “to bind”). If you’re interested in finding out more about this subject, most introductory college Chemistry textbooks will present a good basic description of CFT to explain the color of transition-metal compounds, but will likely have few (if any) mineral examples. The article titled “Shedding Light on the Color of Gems and Minerals” by Bruce Loeffler and Roger Burns (*American Scientist* 64 (6), 636-647 (1976)) has a good discussion at a somewhat higher level, and gives a number of good examples (including some involving color-producing mechanisms which I will discuss in later articles). For more advanced reading, with lots of good mineral examples, the book titled *Mineralogical Applications of Crystal Field Theory* by Burns is a good reference, but be advised that it’s not written at an “introductory” level and is likely to be a pretty heavy read for those who aren’t up on their Chemistry (and maybe even for those who are!).

In the next article in the series, I’ll give a lot more examples of colors (both idiochromatic and allochromatic) which are caused by transition-metal d-d transitions. In the succeeding article, I’ll discuss the variety of colors caused by d-d transitions that can be exhibited by the garnet group of minerals, and later on, I’ll focus on the element chromium and the wide variety of colors it can give to minerals.

Shoebox Adventures: Gifts

text and photos by Mike Seeds

My friend saw me approaching and reached for a little paper bag. "Hey," he said. "I brought you something." There were a few micromounts in the bag, gifts from a pal. He is a talented artist and businessman, but he likes minerals and has a microscope, so he keeps an eye out for good micromounts, and we have developed the custom of giving each other little gifts now and then.

One of the advantages of collecting the little bits is that they make good gifts. They are not usually expensive and it is easy to accumulate a few good ones for friends. I know someone who collects micro coppers, and another collector who likes anatase. I have a friend who collects the Francon Quarry and another pal who likes micro minerals from the locations for which they were named. It's easy to put a micromount aside and think, "My friend will really like that one."

Micromounters are famous for their generosity, but it is built into the hobby. If you clean and trim a small rock you will get a bunch of lovely specimens. You will mount and keep a few for your own collection, but you will have leftovers much too nice to throw in the trash. You can put them on the giveaway table at the next micromounter's symposium, and you can save the best to give to friends. Giving micro gifts just happens.

The paper bag contained a few really nice minerals carefully prepared by my friend. One was vanadinite on barite from Mibladen. The barite is creamy blades bunched in parallel formation with brilliant transparent hexagons of vanadinite scattered on top like sprinkles on ice cream. At a glance it is dramatic and under the scope it is fascinating because each little tab of vanadinite is so perfect. Some are thicker and some are thinner, but they all look like bright red sugar crystals poised and spoon-ready.



*Vanadinite on Barite
Mibladen Mining Area, Morocco FOV: 1 mm*

Another micromount in the bag was labeled "Malachite

Rosasite Goethite" but it isn't the chemical composition that is impressive. It's the formation. The goethite is the matrix, of course, and somehow the malachite and rosasite have formed mushrooms. Seven tiny green mushrooms are scattered across the specimen standing up in a micro forest that hints that miniature fairies have just left and will return late tonight when the dew falls and the moon rises. Exactly what is malachite and what is rosasite isn't clear nor how the mushrooms formed, but they make an enchanting scene.

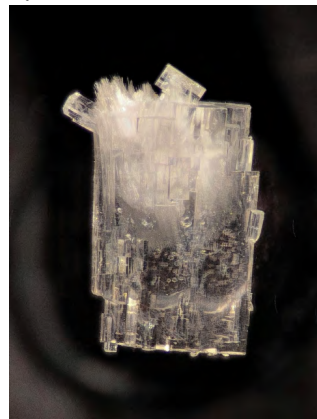


Malachite/Rosasite mushrooms stand only a millimeter high on this specimen from Mina Ojuela, Durango, Mexico

What beautiful gifts my friend had for me. I must put aside some nice things for him next time I visit. It's what micromounters do.

You can also give yourself a gift now and then. When you see that mineral that speaks to you and you have to have it, you can give yourself the treat. Micromounts are usually not expensive.

The xonotlite on thaumasite specimen shown here turned up in a dealer's box and it was too beautiful to leave behind. The



*Xonotlite in Thaumasite, Wessels Mine, Kalahari Manganese Field, South Africa.
The specimen is 4 mm high.*

xonotlite ($\text{Ca}_6\text{Si}_6\text{O}_{17}(\text{OH})_2$) is the snow white whiskers imbedded in the clear thaumasite and extending out of the crystal. Thaumasite is $\text{Ca}_3(\text{SO}_4)[\text{Si}(\text{OH})_6](\text{CO}_3) \cdot 12\text{H}_2\text{O}$ and usually forms clear, colorless hexagonal crystals. In this case, the larger hexagonal thaumasite crystal has on its surface smaller hexagonal crystals. When I saw it in a dealer box, I had to give myself that gift. Luckily it cost only three dollars.

Giving micro gifts to micromounter friends is a fun part of the hobby, and that's what makes micromounting a social as well as scientific hobby.

How Rock Collecting Helps Kids: Our Responsibility

by Dr. Gary Lohman, EFMLS Juniors Chair, from EFMLS News. May 2016

Nearly every rockhound I meet is eager to explain how their interest in rocks, minerals, or fossils started when they were young. In fact, prior to the development of an increasingly media-driven society, hobbies like rock collecting were an important part of both personal and social development. With all the time spent watching television, playing video games, and tethered to social media, the sad reality is that many of today's children have never experienced the rewards of a hobby. To be clear, a hobby is not the same as organized, adult-directed, after-school activities such as Little League. Hobbies are an important means of self-discovery and expressions of personal accomplishment that help build self esteem and resilience. Working on hobbies teaches children how to learn about things, how to set goals, make decisions, and develop a variety of problem-solving skills. Hobbies often mature into lifelong interests and sometimes even careers.

Consider how thirty-plus years ago almost every kid in your neighborhood had some sort of hobby, whether it was trading baseball cards, mounting butterflies, or collecting things like stamps, or rocks. A young colleague recently expressed the financial motivation behind his degree in electrical engineering and his current interest in pursuing a master's degree in business to make him more promotable. This was in stark contrast to an older colleague, also with a degree in electrical engineering, who expressed his start in "building radios" as a child and now dissatisfied with a career that increasingly pulls him away from his technical "roots." Similar to the way trees need solid roots to grow tall and stand strong, kids need hobbies to help them develop life-long "roots" as well.

As rockhounds, we already recognize the value of our hobby, so how do we help children today develop and sustain hobbies?

Having participated in events with a variety of displays and demonstrations at a number of venues with children over past years, I am repeatedly reassured that kids still have innate curiosities for which hobbies form a way of tapping into. The child-like curiosity that is still awakened in us as adults through the pursuit of our hobbies is a necessary ingredient. Fortunately, geology remains fashionable among kids. Collecting rocks is interesting and learning how those rocks are geological windows into our own past is even better. Kids love to recognize patterns in nature.

Cultivating a hobby takes "spare time," which is arguably the first casualty of media-driven distractions and

tightly packed schedules of organized activities in today's world. Consider that by age 15, the average child has spent more time watching television than sitting in a classroom. Add to that the addictive-like effects of video games and the tether-like effect of social media and texting, and one quickly recognizes that potential "spare time" is rapidly consumed by a craving for stimulation - even to a point of over-stimulation. Childhood is followed by the adult pressures of making a living with increasingly demanding schedules. If one never learned how to appreciate and make use of "spare time" with hobbies as a child, it's not likely to be an integral part of adult life either. Hence, the first challenge is making room for "spare time."

Un-tethering the child, even for a little while, from his or her media-fed environment does not have to involve draconian parental controls accompanied by screaming and door slamming. The key is to (1) set an example by making time ourselves as adults and (2) taking advantage of that time to tap into a shared child-like curiosity. This is where family-oriented events like rock shows, county fairs, STEM expos, etc. can be very important venues to help explore interests together. This is also where it is important for our clubs and their memberships to continue hosting and participating in such events. In today's financially-obsessed world, it is easy to forget that the real "value" of these events is not measured by their profitability in a purely monetary sense. The last STEM expo in which I participated with a 10x10 blackout tent filled with UV lights and fluorescent minerals captivated the interest of children and their parent's innate curiosity alike! Asking questions together, many became interested in the glowing rocks and how they could get involved also. By setting the example as role models and being prepared to provide encouragement and guidance, there is still room for hobbies in today's world. The good news is that activities like this psychologically free kids from being merely glued to computers and cell phones all day! When given the chance, children embrace the opportunity to get back to those interests we used to call "hobbies!"

For want of spare time, a hobby may never develop. It takes a village as helping to make that "spare time" reality involves the time and effort of our clubs and its members supporting each other, parents, and children. The reward is that by helping a child to find a hobby, a talent may be born and a life enriched. In future articles, I intend to further explore how to inspire and guide children of different ages within the hobby.



The Rockhound Soap Box

by John Martin, Conservation & Legislative Chair from the AFMS Newsletter, June 2016

“California and the New National Monuments” It seems that the hot topic going around right now is what is happening in the Southern California Deserts in regards to collecting of rocks, minerals and fossils on public lands. So, just a brief history of what has happened. In 1994 Senator Diane Feinstein introduced Senate Bill S.21: California Desert Protection Act of 1994. After much debate it was passed and signed into law by the President. The bill created 71 Wilderness Areas in the California Desert Conservation Area and withdrew 105,197,277 acres (100,273.26 Sq. Miles) of public lands from most forms of public access. In most of the 71 wilderness areas Rock and Mineral collecting was allowed, only if you could reach the collecting sites by foot or horseback and use only non-powered Hand Tools.

Over the next 22 years Senator Feinstein and others introduced additional bills to congress to withdraw more of California lands from public access. Most of the bills met resistance in congress and died in committee. They never made it to the house of senate floor for debate. Note: Bills introduced during a session of congress if not passed during that session die in committee at the end of that session. Some were re-introduced at the start of the next session and the cycle started over. Basically wilderness legislation stopped but the environmental and conservation lobby pick up where legislation failed and more collecting areas were closed due to legislation and litigation of wildlife and wildlife habitat protection through the Endangered Species Act.

Over the past 20 years the Recreational Rockhound has lost over 75% of the pre 1994 collecting areas of Southern California through legislation, conservation and wildlife habitat regulations and restrictions. Out of the remaining 25% of the open public lands in the deserts of California the creation of the 4 new National Monuments in Southern California, San Gabriel National Monument, Mojave Trails National Monument, Sand to Snow National Monument and the Castle Mountain National Monument another 1.8 Million acres are now restricted to what human activities are acceptable. Prior to the creation of the national monuments in California there were several bills going through congress that were trending to be favorable to the recreationist and environmentalist alike and would have probably past congress and became law. At which time Recreational Rockhounding would have been allowed by legislation and the American Recreational Rockhound would have had a

chair in each of the monument’s management teams. That did not happen and the monuments were created by Presidential Proclamation which has, at this time, made it unlawful to remove any rocks, minerals or fossils from within the boundaries of the established national monuments. (Read the Proclamations not the hype on the internet)

In each of the proclamations it states that within 3 years from the date of the signing of the proclamation the Monument Management Agency (BLM, USFS, NPS) will submit to the Secretary of the Interior and to congress a National Monument Management Plan. This plan is where the Recreational Rockhound will have the authority to collect rocks and minerals for non-commercial, personal and educational use. The management plan has started within the BLM. Three BLM district Managers have been tasked with creating the plan and at the appropriate time in the process the plan will be released for public input and comment.

This is the time period in which we, the Recreational Rockhound, must make our inputs and comments known to the Land Managers that are making the decisions to allow collecting of rocks and minerals. If Recreational Rockhounding is not listed in the management plan collecting will not be allowed. This work has already started with the gathering of collecting site information, attending BLM Public meetings, joining advisory groups, contacting BLM offices and discussing the issues, contacting elected official’s offices and voicing our personal concerns.

Through personal experience, when I have attended public meetings, the recreational Rockhound is usually out numbered at least 4 to 1 by the groups which do not want recreational rockhounding recognized as a recreational activity. I am only one voice and to make Recreational Rockhound a recognized activity it will take a lot more voices, yes more voices than the 8,747 members of the CFMS, it will take all of the voices of the 502 clubs and societies of the AFMS supporting this recreational activity.

In closing I just want to state that I know that people are still going to collecting areas like Lavic Siding, Afton Canyon the Cady Mountains and others that now lie inside the national monuments. Please keep in mind that it is unlawful to remove rocks and minerals from the monument. I also have talked to the BLM office and managers responsible for the monuments

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Rockhound Soapbox

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ceive new instructions. They have also stated verbally they do not have the resources to patrol the monuments looking for violations. They have also stated verbally they probably and most likely will not go looking at the known collecting sites and issue citations or confiscate your equipment or vehicles. Just keep in mind if you do venture to the new national monuments in southern California with the intention of collecting the Jaspers, Agates and minerals found throughout the monuments, you are breaking federal law as it stands today. That is the reason that Recreational Rockhounding

must be included in the monument management plans. Hopefully more information will be available by the time of the AFMS Convention in Albany, OR. this coming July.

As always, if you have any questions or concerns, do not hesitate to contact me and I will strive to answer and resolve them.

Happy Rockhounding and Enjoy Your Public Lands.

Heavy Mineral Sands

by William Beiriger, adapted from Livermore Lithogram, November 2009

Seventy percent of the world's sands contain mostly quartz, with little or nothing else. But in some areas, 10 percent or more of the sand is made up of heavy minerals. Heavy minerals mixed in with quartz sands can be found on many beaches, rivers, and dunes around the world.

After storms, the wave action on a beach can remove the lighter grains of sand and pull them back out to sea, leaving the heavier grains behind. The same thing goes for rocks. That is why you go to the beach in the winter to collect agates.

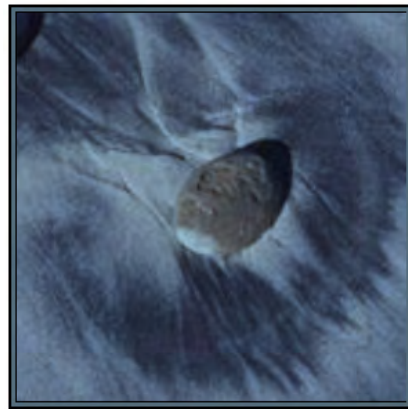
In the case of sand dunes, the prevailing winds blow the less dense quartz sands over the top of a dune, leaving the heavier material behind. It's the same principle as panning for gold: As you swirl the water in your pan, the dense gold is left behind as the less dense material washes over the edge.

Take a trip to the beach and look for areas that show color changes around rocks on the beach. On many California beaches, you can find high concentrations of pink or rose garnet and black iron minerals separated from the quartz sand. Use a magnet and see if you can pick up the black sand; if you can, it is magnetite.

In many parts of the world, there are industries that mine heavy sands for minerals like rutile, ilmenite, zircon, monazite, and garnet. Other heavy minerals like amphiboles, pyroxenes, olivine, tourmaline, co-rundum, and topaz can also be found on many beaches. Beaches along

the coast of Namibia are heavy with diamond-containing sands that can be profitable to mine. The main problem with sand mining is that it can damage the environment.

Australia, South Africa, Canada, and China do the most heavy-mineral sand mining. About ten other countries (including the United States) are not far behind.



Black magnetite is mixed in with white quartz in the sand.



The rose color in the sands come from garnet mixed in with the quartz

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Gus Cleans a Clock

solution from page 3



Pudge could hardly wait to ask, "What's in Stinky's bucket? You are grinning like a fool. It must be something special. You just sold your boat cheap to get a bucket of muddy geodes. What's in there?"

Gus gripped the steering wheel tighter and said, "That wasn't my boat."

The Conglomerate

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



Upcoming Events

July:

27: BMS meeting at Natural History Society of MD.
- 7:30 pm. Show & Tell - unusual minerals. Host: Mike Seeds.

August:

12-14: East Coast Gem & Mineral Show in West Springfield, MA. Discount coupon on page 11.

19-21: Gem Miner's Jubilee - Lebanon Expo & Fairgrounds, 80 Rocherty Rd; Lebanon, PA. Discount coupon, page 11.

No BMS meeting held in August!

September:

21: BMS meeting at NHSM - 7:30 pm

24-25: Atlantic Coast show. BMS will have an info table - please plan on helping for an hour or two.

Last Laugh

by Mike Seeds

