

Lake George Gem & Mineral Club

Club News

November, 2020



CANCELLATIONS!

The coronavirus pandemic has resulted in statewide emergency regulations and public health advisories against group gatherings. Cancellations include all **LGGM Club meetings**, and **programs**, as well as **classes** such as Rockhounding 101, Mineral Identification, and Basic Wire Wrapping. We will let you know when these events can be rescheduled.

COMING EVENTS OUTSIDE THE LGGM CLUB:

Many events that are held in college facilities or local community facilities are still cancelled until further notice. However, other organizations have resumed in-person meetings or have begun having meetings or special events online.

Some of the programs listed below are through the Colorado Scientific Society. Whether these meetings will be virtual or in-person is dependent on our nation's progress containing the COVID-19 epidemic. See <https://coloscisoc.org/> for details and updates.

Nov. 19, Colorado Scientific Society November Meeting. "The Rock that cried Silver Tears – The Early Jurassic Springdale Sandstone and its unusual precious metal mineralization at Silver Reef, UT, revisited". Uwe Kackstaetter, Metro State University. Location to be determined.

The Denver Mining Club has resumed its regular Monday noontime meetings at the Golden Corral Buffet, Sheridan (S. Santa Fe Dr.). See their website for the upcoming monthly schedule once it is posted, <https://www.denverminingclub.org/>.

OTHER EVENTS OUTSIDE THE LGGM CLUB: (Nearby gem, mineral, fossil and geology events that you may enjoy.)

- **Cañon City Geology Club**, cancelled until further notice. <https://www.canoncitygeologyclub.com/>
- **Columbine Gem & Mineral Society**, meetings TBD. <https://rockaholics.org/about/>
- **Colorado Springs Mineralogical Society** meetings cancelled until further notice
- **Pueblo Rockhounds**, meetings cancelled until further notice.

* * * * *

Online Events

US National Committee for Geological Sciences Webinar Series. Tuesdays 9:00 a.m. MT. For a complete list of webinar dates, topics, and speakers in the series, and to register, please visit <https://www.nationalacademies.org/our-work/americas-geoheritage-ii-a-workshop>.

America's Geoh heritage Workshop II Distinguished Speakers Webinar Program, Fall 2020
Register via the hyperlinks below:

Nov 10 **Geoheritage, Economic Development, Geotourism**

Nov 17 **Geoheritage and Geoscience Education (K-12, undergraduate, informal)**

Dec 1 **Geoheritage and Research Initiatives**

CU Geological Science Colloquium (Online via Zoom - Wednesdays, 4 p.m.)

see <http://www.colorado.edu/geologicalsciences/colloquium>

CSU Dept. of Geoscience Seminars (online via Zoom - Fridays, 4 p.m.),

see <https://warnercnr.colostate.edu/geosciences/geosciences-seminar-series/>

Denver Museum of Nature and Science, Earth Science Colloquium series, VIP Room unless noted, meeting dates and day of the week vary. Museum admission is not required;

see <http://www.dmns.org/science/research/earth-sciences/>

Golden Beer Talks, 2nd Tuesday, 6-8 p.m.), **At Home Editions** of Golden Beer Talks! These At Home Editions will include short videos providing an informational talk along with some details about local beers. "Golden's grassroots version of TED talks, Expand your mind with a beer in your hand".

See <http://goldenbeertalks.org/> for more information.

Rocky Mountain Map Society RMMS; Denver Public Library, Gates Room, 3rd Tuesday, 5:30 p.m.), Online via Zoom until further notice. For further information see: <http://rmmaps.org/>

Western Interior Paleontological Society (WIPS); WIPS has virtual meetings (rather than their usual meetings in person on the 1st Monday of the month, 7 p.m., in Petroleum Hall, Green Center, 924 16th St., Colorado School of Mines campus, Golden) See <http://westernpaleo.org/> for more info.

The following are cancelled until further notice: check the following links for information on lecture series when they resume:

Colorado Café Scientifique in Denver, monthly lectures on science topics see <https://coloradocafesci.org/>

Denver Region Exploration Geologists Society (DREGS); (Cancelled until further notice - usually 1st Monday, 7 p.m., Room 241 Bethoud Hall, CSM campus, Golden) <http://www.dregs.org/index.html>

Florissant Scientific Society (FSS); (Cancelled until further notice - meets monthly in various Front Range locations for a lecture or field trip; meeting locations vary, normally on Sundays at noon; all interested persons are welcome to attend the meetings and trips); see <http://www.fss-co.org/> for details and schedules.

Friends of Mineralogy, Colorado Chapter, (Cancelled until further notice -usually meets on the 2nd Thursday of odd-numbered months, 7:30 p.m., Berthoud Hall Room 108, CSM campus, Golden; see <https://friendsofmineralogycolorado.org/>.

Nerd Night Denver is a theater-style evening featuring usually 3 short (20-minute) TED-style talks on science or related topics; held more-or-less monthly at the Oriental Theater, 4335 W. 44th Ave., Denver; drinks are available; for ages 18+. Admission is \$6 online in advance, \$10 at the door. See <https://www.nerdnitedenver.com/>.

LGGM Club News:

Dave Alexander submitted the following report on the joint LGGM Club/Mile High RAMS field trip to the Book Cliffs.

The trip was a lot of fun. Four of our club members were on the trip with about the same number from the Mile High Rock and Mineral Society (RAMS). We visited the "west side" (Fig. 1) and "east side" (Fig. 2) locations where concentrated concretions exist over the two days of the trip. Digging was in areas of exposed concretions that were weathered on the Mancos shale hills; some of the digging was just pulling out chunks of the concretion that were weathered enough they were loose. However much of the digging required tools such as pry bars and screwdrivers. Barite is often found close to the center of a concretion, so you have to work through the outer rind. Approaching a concretion from the side of the hill worked better than digging down from above because it allows you to get deeper into the core of the concretion while still being comfortable. Wildfire smoke was heavy, but made for beautiful sunsets.



Figure 1 Book Cliffs western collecting area (in the distance). Beautiful Colorado landscapes. Photo by Dave Alexander



Figure 2. Book Cliffs eastern collecting area. Notice in the foreground the piles of rocks; these are the concretions. Photo by Dave Alexander



Figure 3 Ken and Marshal Eyster began to have some luck picking apart a large concretion. Photo by Chris Rayburn



Figure 4. These long and slender crystals found by Marshall and Ken. Photo by Dave Alexander



Figure 5 . Dave excavating a large concretion. Photo by Chris Rayburn



Figure 6. Calcite was common between the layers of the concretion. Photo by Chris Rayburn



Figure 7. Nice barite cluster found at the eastern collecting area. Photo by Chris Rayburn



Figure 8. Barite starting to form a crystal shape. Photo by Dave Alexander



Figure 9. A combination of water clear barite crystal on calcite. Photo by Dave Alexander



Figure 10 A small barite showing crystal shape. Photo by Dave Alexander



Figure 11. Small calcite crystals forming in a tiny space in the cracks of the concretion.



Figure 12. You will see sparkles on some of the rock in the interface between calcite and host rock. We found the barite in this area of the concretion. This is one of the signs to look for, host rock that is sparkly showing signs of crystallization. Photo by Dave Alexander



Figure 13. Do wear gloves and be careful. Some critters like to escape the heat of the day and retire to cracks within the concretions. There were 4 small scorpions living in this one. There are also rattlesnakes, so dig safely and make some noise when first prospecting the area.

Member Reports on Private Rockhounding Activities. Even though the club has resumed rockhounding field trips, any information you may have about other rockhounding you may have done on public lands that allow rock collecting, or on private lands or mines which allow fee digs or rockhounding with permission. Please tell us where you went, what you found, and provide contact information for obtaining permission (if required). Your information and photos may be included in future newsletters.

Links to Interesting Gem & Mineral Articles Online:

Jerrolynn Kawamoto provides a link to an International Gem Society article that may interest many rockhounds in this area.

A Visitor's Guide to Colorado Gemstones
<https://www.gemsociety.org/article/colorado-gemstones-guide/>

* * * * *

Wayne Orlowski sent the following links:

A YouTube video provides a good review of “How the Ocean Floor Got Filled with Riches”
https://www.youtube.com/watch?v=J6uULoBsTJo&feature=push-u-sub&attr_tag=O6WhbKRDilvLzwc8%3A6

An article suggesting that the earth may create fine gems in minutes rather than millennia.
<https://www.sciencedaily.com/releases/2020/10/201006132126.htm>

An article on the possible creation of a huge crater in Siberia by extreme cold events rather than by meteorite impact or volcanic eruption.
https://www.nationalgeographic.com/science/2020/09/colossal-crater-found-Siberia-what-made-it/?cmpid=org=ngp::mc=crm-email::src=ngp::cmp=editorial::add=Science_20200930&rid=D8407F1582FA941CBFBB877BD7CDE4EA

Notes from the Editors

Bob Carnein
Co-Editor
ccarnein@gmail.com
719-687-2739

Jerrolynn Kawamoto
Co-Editor
jerrolynn@wildblue.net
719-748-8152



Note from Co-Editor Bob Carnein: The LGGM Club and Mile High RAMS had planned a rockhounding trip to some private claims in the Thomas Range, in Juab County, Utah last spring, but the claim owners closed the claim to public access due to the Covid-19 outbreak. Some months later, when they were able to allow a smaller group to rockhound at the claim, the Mile High RAMS Field Trip Coordinator, Chris Rayburn, assembled a small group of several RAMS members, a few LGGM Club leaders and a couple of out-of-state geologist/rockhounds for an exploratory trip to the claims on October 12-14. Our goal was to explore possibilities for our club members to collect some minerals—both familiar and very rare -- from claims operated by Gem Tours, Inc. in an area about 60 miles northwest of Delta, Utah. The trips were led by veteran Utah collectors John Holfert and Jeremy Fuller and visited four of their private sites: the Starvation Canyon or Searle Canyon Red Beryl Mine; the Durangite Pit; the Maynard Mine; and the Solar Wind Mine, all in the Topaz Mountain area of Juab County. **I appreciate the great photos provided by Dave Alexander (DA) and Richard Kawamoto (RK); other photos are by yours truly (BC).**

* * * * *

Mineral Prospecting in the Thomas Range of Utah

By Bob Carnein

General Geology:



Figure 1. Basin and Range physiographic province. (en.Wikipedia.org)

The Sevier valley and Thomas range are part of the Basin and Range geomorphic province. Extending from central Utah westward across Nevada, the Basin and Range is a vast region of crustal extension (“stretching”) bordered on the east by the Colorado Plateaus and on the west by the Sierra Nevada mountains. Stretching of the crust in an east-west direction resulted in hundreds of high angle normal faults trending generally north-south. Where two normal faults dip towards each other, the intervening crustal block drops, forming a **graben** (the basins of the Basin and Range). Where two adjacent faults dip away from each other, the intervening block moves upward, forming a **horst** (the ranges of the Basin and Range) (see Figure 2).

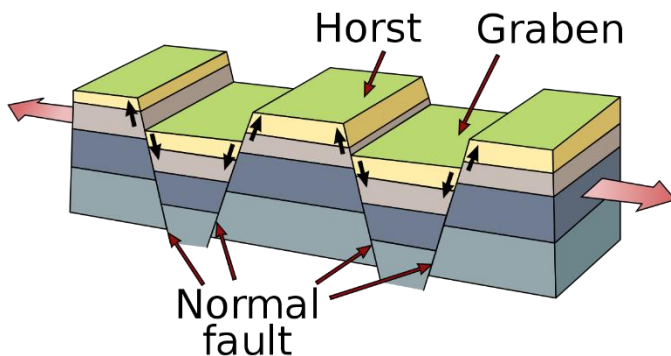


Figure 2. Horsts and graben produced by stretching of the crust. (en.Wikipedia.org)

Areas of stretching and crustal thinning occupied by the normal faults result in pressure melting lower in the crust. Typically, this allows buoyant magma to move upward, resulting in extensive areas of volcanic activity. The Thomas range consists mostly of Tertiary volcanics: technically, latite and rhyolite welded tuffs.

These rocks formed from volcanic ash produced by explosive volcanic activity between 12 and 34 million years ago (Hintze, 1997). Although faulting and volcanism continued in the Late Tertiary and Quaternary epochs, erosion partially buried the Thomas and other ranges, filling the adjacent basins with thousands of feet of sediment, including Quaternary lake deposits of Lake Bonneville, the precursor of Great Salt Lake. These sediments make great aquifers that support irrigated agriculture near Delta and other western Utah communities. They also underlie the flat terrain adjacent to the Thomas range.



Figure 3. Southern end of the Thomas range and Solar Wind mine, from our meeting place. (DA photo)

Rhyolite is the volcanic equivalent of granite, and, like granite, its magma source typically contains abundant volatile compounds (e.g. water, fluorine, and other materials that become gaseous when the pressure drops). Unlike some volcanics, rhyolite magma is so viscous that it can't flow, in the normal sense. When it reaches the surface, the gases expand explosively, blowing the viscous molten rhyolite into myriad tiny fragments of crystals and glass that may flow as a semicoherent cloud of incandescent gas and molten rock fragments that obliterates everything in its path.

Local concentrations of volatiles produce lithophysae ("stone bubbles") in the resulting welded tuff layers (Figure 4). In those lithophysae, the residual magmatic fluids may deposit odd minerals from elements that were originally widely dispersed in the magma but were concentrated in the fluids as the lava solidified. What turns up in the cavities depends on where the fluids came from and how they interacted with the host rocks as they made their way upward and outward. That's the source of the minerals that bring countless collectors to Juab County every year. This is volcanically similar to the processes that form "pockets" of rare minerals in our Colorado pegmatites.



Figure 4. Rhyolitic welded tuff with lithophysae. (DA photo)

Minerals: Now that you know something about the geology, let's look at the minerals we found in the Thomas range. All four localities visited are hosted by rhyolitic and latite welded tuff. But the minerals found are sometimes subtly and sometimes obviously different.



Figure 5. Starvation/Searle Canyon site. (DA photo)



Figure 6. View to southeast from Starvation/Searle Canyon mine site. (DA photo)

The first site, the Starvation Canyon or Searle Canyon Red Beryl mine (Figures 5 and 6), is best known as a source of tiny red beryl crystals (sometimes called “bixbite”; Figure 7), sherry colored topaz crystals, and “sandy” topaz crystals, which include tiny quartz crystals. Red beryl is very rare—it’s known from 8 localities in Utah and New Mexico (Mindat.org, accessed October, 2020). It owes its raspberry red color to the presence of manganese. Collecting consists of probing soft “pockets” and seams in the rhyolite with a screwdriver and sifting the contents. The claim owners were very helpful, providing screens and digging up weathered material for collectors to sift. Future visitors should be aware that, of the four localities, this one is relatively steep and treacherous terrain—it would be a tough climb, both up and down, in the heat of the summer.

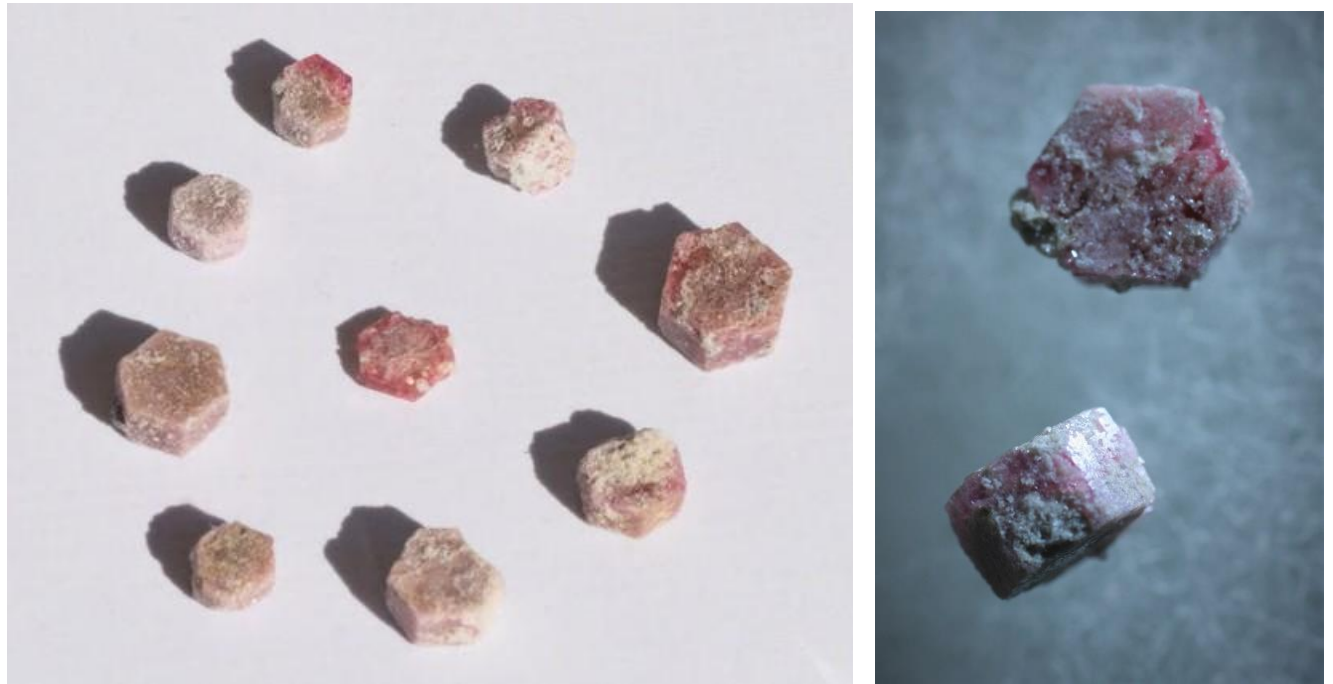


Figure 7. Red beryl from Starvation/Searle Canyon mine (left, DA photo and collection; right BC photo and collection)



Figure 8. Topaz crystals from Starvation/Searle Canyon. (RK photos and collection)

On the second day of the trip, we visited two collecting sites. The first, known as the Durangite pit, features three small slot-like pits dug into rhyolitic host rock and following a linear trend. Collectors dug through material excavated from the pits and were able to find hematite crystals of several habits (Figures 9 and 10) and needle-like white or colorless topaz crystals nested in specular hematite (Figure 13). The rare arsenate mineral durangite and the tin oxide cassiterite were found associated with hematite or with the SiO_2 polymorph cristobalite (Figures 12 and 13). Also found near the Durangite Pit is black, hematite-included topaz and at least two thus-far unidentified minerals (Figures 14 and 15).

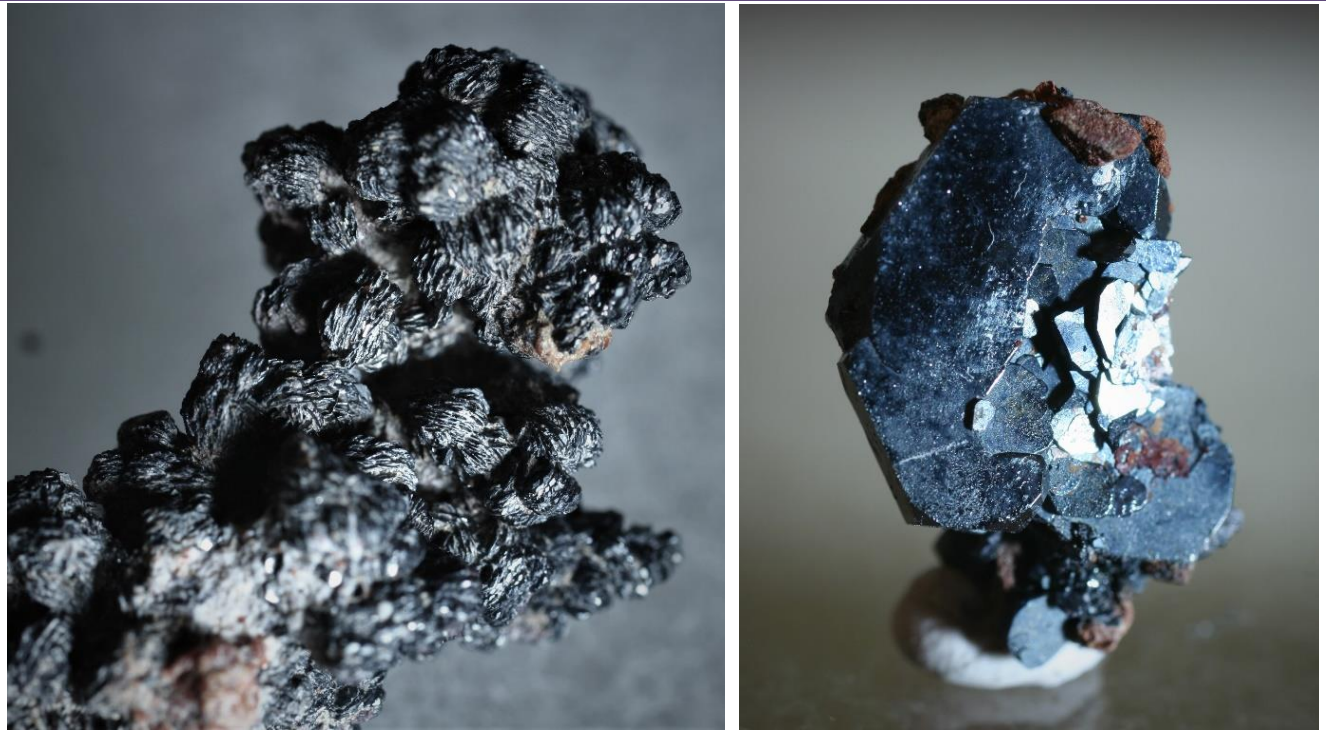


Figure 9. (Left) Hematite, rosette-like aggregates; (right) large hematite crystal with durangite. (Durangite Pit; BC photos and collection)

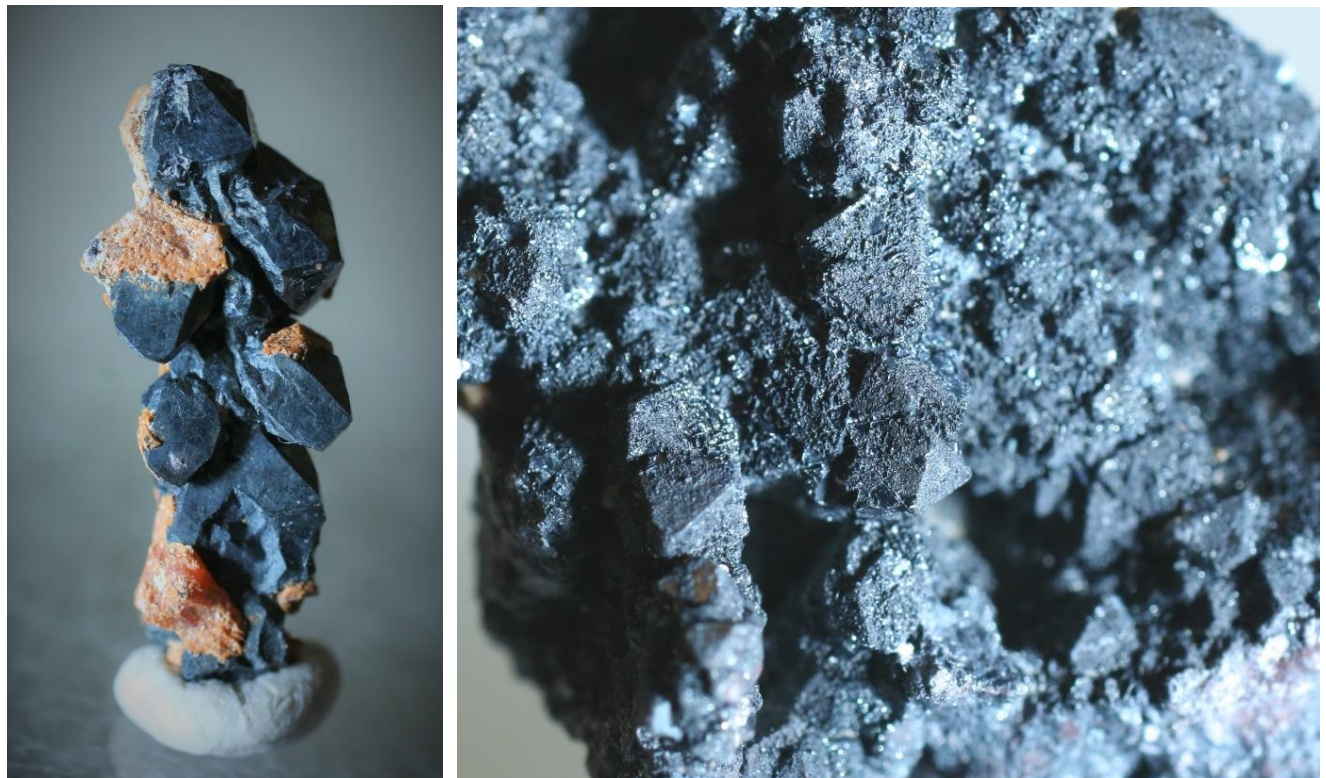


Figure 10. (Left) Hematite with durangite crystals. (Right) Hematite pseudomorphs after magnetite (note octahedral crystals). (Durangite Pit; BC photos and collection)

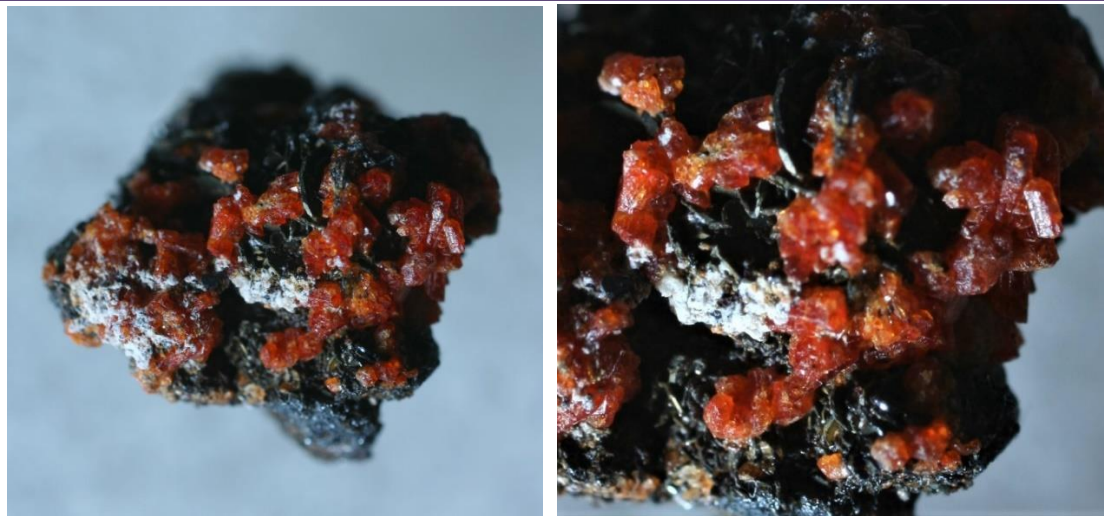


Figure 11. Durangite crystals on hematite. (Durangite Pit; BC photos and collection)

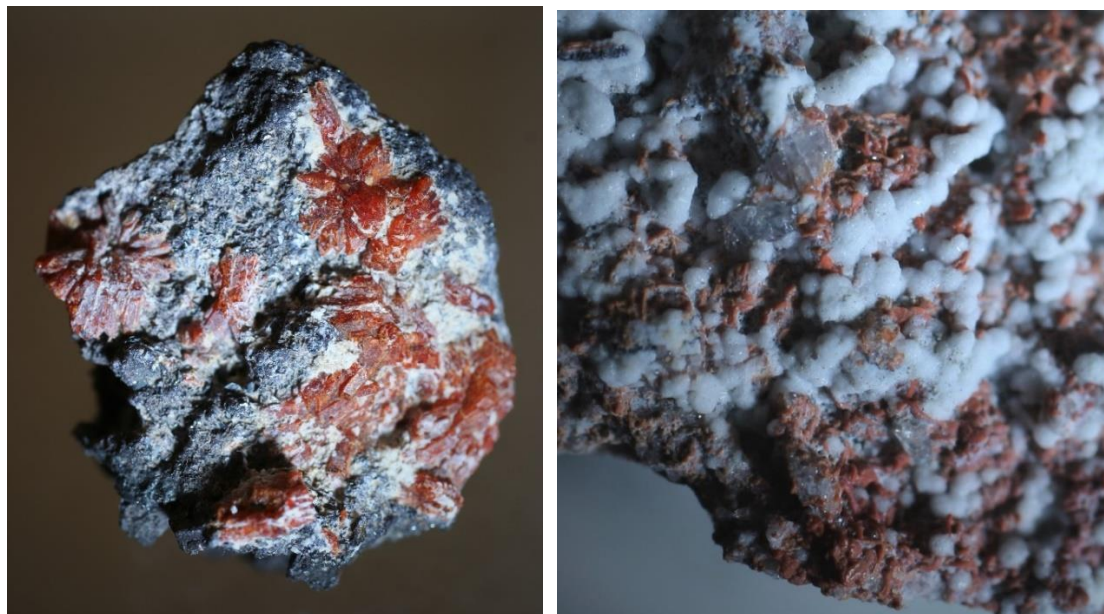


Figure 12. (Left) Durangite crystals on hematite. (Right) cristobalite with cassiterite (?). (Durangite Pit; BC photos and collection)



Figure 13. (Left and center) Cassiterite on hematite; (Right) Acicular topaz crystals on specular hematite. (Durangite Pit; BC photos and collection)



Figure 14. (Left) Black, hematite included topaz (Durangite Pit; DA photo and collection); (Right) Whitish radiating unidentified mineral. (Durangite Pit; BC photo and collection)



Figure 15. Unknown mineral occurring as orange rosettes. (Durangite Pit; BC photo and specimen)



Figure 16. (Left) Bixbyite, cubic crystal in rhyolite (BC photo and collection); (Right) Topaz crystal included by quartz (RK photo and collection); both from Maynard's Mine.

The second site, Maynard's Mine, was named for famous early Utah mineral collector Maynard Bixby, who discovered the rare manganese oxide mineral bixbyite in the late 1800s, as well as Utah's famous red beryl (sometimes known by the informal name "bixbite"). Maynard's Mine is the type locality for bixbyite, and, thanks to help from Jeremy Fuller and a portable jackhammer, we were able to find abundant small, cubic bixbyite crystals (Figure 16), sherry colored topaz crystals, and occasional striated prisms of the rare mineral pseudobrookite. Some collectors also visited a nearby site with relatively abundant crystals of red beryl.

On the third and final day of the trip, collectors were eager to visit the Solar Wind Mine, famous for large, complex bixbyite crystals associated with topaz and the rare iron-titanium oxide mineral pseudobrookite. Dave Alexander found a superb bixbyite-topaz combination (Figure 17), as well as topaz with fluorite (Figure 18). Richard Kawamoto came up with some nice topaz and bixbyite and probably the best pseudobrookite specimen of the trip (Figure 18).



Figure 17. Topaz crystals and bixbyite-topaz combination. (Solar Wind Mine; DA photos and collection)



Figure 18. (Left) Pseudobrookite with topaz (Solar Wind Mine; RK photo and collection); (right) fluorite with topaz. (Solar Wind Mine; DA photo and collection)

Conclusion: In closing, there are several things that potential visitors might like to know:

- The sites visited are all privately owned and open only by arrangement with GemTours. The fee for next year has not yet been determined.
- Nearby collecting of similar minerals is available, free of charge, on BLM land set aside for that purpose. A good description can be found in Holfert, *et al.*, 1996.
- The famous Dugway geode locality is also nearby, as are public areas for freely collecting wonderstone, or agates, and an excellent fee dig area for trilobites.
- Dry camping is available nearby, and motels, restaurants, and gas can be found in Delta, about 60 miles from Topaz Mountain (by excellent paved highway).
- The Starvation/Searle Canyon site features fairly rough terrain (at least for this 77-year-old who has lost his sense of balance). The other sites are relatively easy.
- Visitors should bring a sturdy 1/8-inch mesh screen, as well as a screwdriver (for prodding), fold-up shovel, hammer, and other tools. Plastic pill bottles are perfect for small crystals.
- Dave Alexander tells me that he and Chris Rayburn are thinking about organizing another RAMS-LGGMC trip for Spring, 2021. If it happens, don't miss it! This trip is a blast!

References:

Hintze, L.F., 1997, *Geologic Highway Map of Utah*: Provo, Brigham Young University.

Holfert, J., W. Mroch, and J. Fuller, 1996, *A Field Guide to Topaz and Associated Minerals of the Thomas Range, Utah (Topaz Mountain), Volume I*: Boston, HM Publishing Corp.

Williams, F., L. Chronic, and H. Chronic, 2014, *Roadside Geology of Utah, Second Edition*: Missoula, Mountain Press Publishing Co.

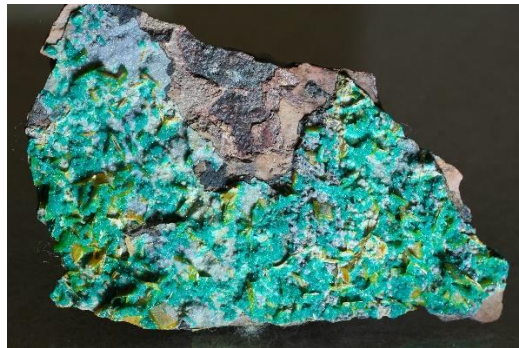
Monthly Mineral Quiz

Last Month's Mineral: Apatite $\text{Ca}_5(\text{PO}_4)_3(\text{Cl}/\text{F}/\text{OH})$.



Apatite is a group of minerals that are named according to whether the anion chlorine, fluorine, or hydroxyl is present. It's common in pegmatite and, if manganese substitutes for some of the calcium, often makes an attractive mineral for a fluorescent display, glowing bright yellow-orange. (The piece to the left, from near Guffey, is very fluorescent.) Sedimentary apatite (mainly hydroxylapatite) is an important source of phosphate for fertilizers. Apatite represents the hardness of 5 on the Mohs scale. The name means "deceiving stone" because of the varied colors and crystal habits that make this a difficult mineral for beginners.

This Month's Mineral. Here's a mineral that's a favorite among collectors because of its emerald green color. Unfortunately, it is not listed for Colorado (Mindat.org, accessed October, 2020; Eckel, 1997). It occurs sparingly in many copper deposits as a secondary mineral found in the oxidized zone (above the water table). Despite its attractive, slightly bluish emerald green color, this mineral has 3 cleavage directions and has about the same hardness as apatite, so it doesn't make a good gemstone. The specimen on the left (below) came from the Republic of Congo, while the specimen on the center and right (with wulfenite) came from Arizona. What is it?



This month's mineral (Carnein photos and collection)

Eckel, E.B., 1997, *Minerals of Colorado, Updated and Revised by R.R. Cobban, et al.*: Golden, Colorado, Fulcrum Publishing.



The Lake George Gem and Mineral Club is a group of people interested in rocks and minerals, fossils, geography and history of the Pikes Peak/South Park area, Indian artifacts, and the great outdoors. The Club's informational programs and field trips provide opportunities to learn about Earth science, rocks and minerals, lapidary work and jewelry making, and to share information and experiences with other members. Guests are welcome to attend, to see what we are about!

The Club is geared primarily to amateur collectors and artisans, with programs of interest both to beginners and serious amateurs. The Club meets on the second Saturday of each month at the Lake George Community Center, located on the north side of US Highway 24 on the east edge of town, sharing a building with the county highway shops. **In the winter, we meet at 10:00AM. From April through September, we meet at 9:00AM, to allow more time for our field trips.**

Our organization is incorporated under Colorado law as a nonprofit educational organization, and is a member of the Colorado, Rocky Mountain, and American Federations of Mineralogical Societies. We also sponsor an annual Gem and Mineral Show at Lake George, where collectors and others may purchase or sell rocks, minerals, fossils, gems, or jewelry. Annual membership dues (Jan. 1 through Dec. 31) are \$15.00 for an individual (18 and over), and \$25.00 for a family (parents plus dependents under age 18). New memberships and renewals are only accepted Jan 1 through March 31 each year.

Our Officers for 2020 are:

Richard Kawamoto, President
7584 Cedar Mountain Rd.
Divide, CO 80814
719-748-8152
kawahome@wildblue.net

John Rakowski, Vice President
PO Box 608
Florissant, CO 80816
719-748-3861
rakgeologist@yahoo.com

Lorrie Hutchinson, Secretary
10915 Grassland Rd.
Colorado Springs, CO 80925
719-330-2795
4lohutch@gmail.com

Cathy McLaughlin, Treasurer
11595 Owls Nest Rd.
Guffey, CO 80820
702-232-3352
cathy_mclaughlin@hotmail.com

C.R. (Bob) Carnein
Newsletter Co-Editor
507 Donzi Trail
Florissant, CO 80816
719-687-2739
ccarnein@gmail.com

Jerrolynn Kawamoto
Newsletter Co-Editor
7584 Cedar Mountain Rd.
Divide, CO 80814
719-748-8152
jerrolynn@wildblue.net