BRECCIA

Santa Clara Valley Gem and Mineral Society

Volume 72 Number 5, May 2025

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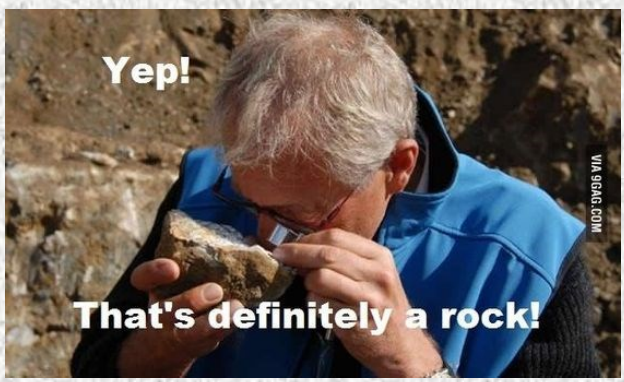


Events

May 27, 7:30 PM: The General Membership Meeting will feature **a Silent Auction**, so there will be no Bragging Rights.

June 3, 7:30 PM: Board Meeting on Zoom. All Members are welcome to attend. If you do want to attend, please contact Jim Herbold.

Annual SCVGMS Picnic

Sunday, June 8th, 12–3: at the Belwood Cabana Club

June 24: The General Membership Meeting will feature TBD. The Bragging Rights theme is **"Yellow"**.

Editor's Message

Welcome to May! ¡Viva El Cinco de Mayo! Happy Mother's Day!

Stephen May talked about field trips to Clear Creek and to Davis Creek, at the April Membership Meeting. He brought several large specimens from both places.

Be sure to fill in the Camp Paradise Application if you are eligible. You might win tickets for two for a week at camp!

The May General Meeting will feature a Silent Auction, so come ready to spend. 

Phil Kesten's article on "Yellow Stones" may help you in choosing something for Bragging Rights in June.

Do you have anything that other members might enjoy?

Deb Runyan, Breccia Editor

editor@scvgms.org, 408-628-7789

Rockhound of the Month

Our rockhound of the month is **Lon Mullaney**, for all he's done for our Shows through the years.

Sunshine

We are saddened to hear of the passing of **Michele Smith's** brother. Our thoughts and prayers are with Michele and her family at this difficult time.

We are also sad to hear that **Jim Fox's** Mother recently passed. She lead a long, full, exciting life, and passed peacefully. She will be missed by her family and all who knew her. Our thoughts and prayers are with Jim and Missy, and families.

If you know of anyone needing some sunshine in their lives, please email **Margo Mosher at margomosher@yahoo.com.**

Field Trips

Note: Driving times are from Campbell and are approximate.

June 14–15, Saturday and Sunday: Davis Creek, CA, 6.5-hours

Obsidian: Rainbow, Pink, Silver, Mahogany, Electric Blue, Needles

SCVGMS

2025 Co-Op Field Trips

May 23–26, Friday to Monday: Gabbs Middle Gate Earthquake Fault, East of Fallon, NV, 5-hours

Agate, Jaspers, Petrified Wood

CO-OP

Contact: Gina Malcolm, 707-685-4006 (Cell) Text RSVP be sure to let me know who you are and what days you will be attending!

June 17–29, Tuesday to Sunday: Prineville, OR, 9-hours

Madras Pow Wow's additional field trips, 12 days

Moss Agate, Obsidian, Limb Casts, Jasper, Biggs Jasper, Sunstones, Thundereggs

Mother Lode Mineral Society and Calaveras G & M

Contacts: Janet Steigerwald (proffvolunter@aol.com, 209-604-3721) and Kevin Kirschman (kkirschman@prodigy.net, 209-769-1502) with email being best.

For questions about the above listed field trips

Contact: Stephen May, Stephenmay0990@gmail.com

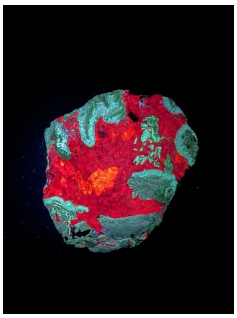
Phone: 669-248-3993 or 408-306-6782

President's Message

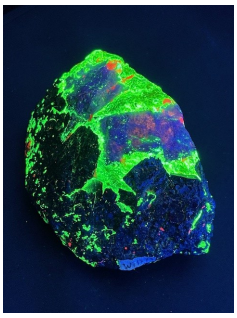
Hello, everyone! As I sit at my computer to write this article for Breccia, I'm realizing that I do not have too much information to share at the moment, so I will focus on sharing a few pictures with you. On the personal front, I won a lottery slot to climb Half Dome later this year, so I will tune my eyes to be ready to spot interesting feldspar crystals in the majestic granite of Yosemite.

A mimetolith is a rock that resembles a living form. This mimetolith bears a face that has a mouth that has crooked teeth formed by quartz crystals. My 6-year-old niece saw this, put it in her pocket, and told me she's never giving it back…

In the world of club news, we have settled on Sunday, June 8 for our annual Founder's Day picnic. Please mark your calendars. Our May general meeting at the Cabana Club will feature our spring Silent Auction. And we will also hold a Silent Auction at the picnic, so you can double-dip on your bidding in the near future. Also, the club's field trip season has kicked off, so check for details in Breccia for opportunities to get out in the field.



Calcite (shortwave UV orange), dolomite (SW UV red), and willemite (SW UV blue green) from Aroona Zinc Mine, Beltana Station, Northern Flinders Ranges, South Australia, Australia. Illuminated under SW UV light. A pickup from Mineralman, the dealer who was selling fluorescent minerals in our glow room at this year's Annual Show.



Hardystonite crystals (SW UV blue) in willemite (SW UV green) with minor clinohedrite (SW UV orange) and calcite (SW UV red) and well-formed franklinite crystals (black). It's not common to find hardystonite crystals, so this specimen is notable. Illuminated under shortwave UV. From A Rock in a Hard Place, a dealer on the main show floor at our Annual Show who had many flats of fluorescent rocks for sale.

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Here's a piece of scheelite (SW UV blue/yellow) and calcite (SW UV red) from California. I'm guessing this specimen came from one of the old Darwin-area mines near Death Valley. From Google's AI: The difference in fluorescence color (blue/yellow) in scheelite is primarily due to the presence of molybdenum. Scheelite, a calcium tungstate mineral, typically exhibits a bright blue fluorescence under short-wave ultraviolet (UV) light. However, when molybdenum is present, it can shift the fluorescence to white or yellow. The amount of molybdenum determines the shade of fluorescence, with higher molybdenum content resulting in a yellow color. Also from A Rock in a Hard Place.

Enjoy, and I'll see you soon!

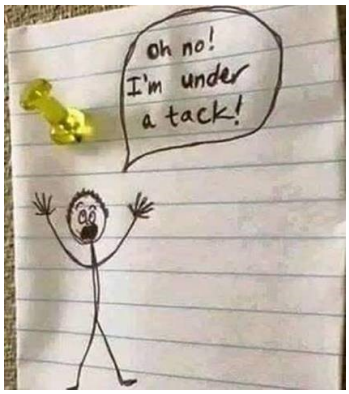
Jim Herbold

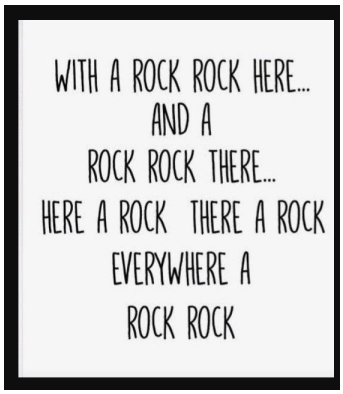
SCVGMS President

Member Displays

Stephen May brought Garnets, Quartz Points, and small pieces of Tourmaline from the Ocean View Mine.

Don't know what to display? Any type of rock, mineral, or fossil (identified or not), your latest project, information on a field trip, ideas for a display case, or anything to do with rocks is appreciated. Sharing items helps to educate all who are attending. Show off what you love, so that we can enjoy it with you.





Why are rubies red and emeralds green? Their colors come from the same metal in their atomic structure

Rubies get their bright color from some fascinating chemistry.

Daniel Freedman

University of Wisconsin-Stout

I am an inorganic chemist. Researchers in my field work to understand the chemistry of all the elements that make up the periodic table. Many inorganic chemists focus on the transition metals – the elements in the middle of the periodic table. The transition metals include most of the metals you are familiar with, like iron (Fe) and gold (Au).

The colors of rubies and emeralds are so striking that they define shades of red and green – ruby red and emerald green. But have you ever wondered how they get those colors?

One feature of compounds made with transition metals is their intense color. There are many examples in nature, including gemstones and paint pigments. Even the color of blood comes from the protein hemoglobin, which contains iron.

Investigating the colors of compounds containing transition metals leads you into some really amazing science – that's part of what drew me to study this field.

Rubies and emeralds are great examples of how a small amount of a transition metal – in this case, chromium – can create a beautiful color in what would otherwise be a fairly boring-looking mineral.

Minerals and crystals

Rubies appear red because they absorb blue and green light.

Both rubies and emeralds are minerals, which is a type of rock with a consistent chemical composition and a highly ordered structure at the atomic level.

When this highly ordered structure extends in all three dimensions, the mineral becomes a crystal.

With a theory developed by physicists in the 1920s called crystal field theory, scientists can explain why rubies and emeralds have the colors they do. Crystal field theory makes

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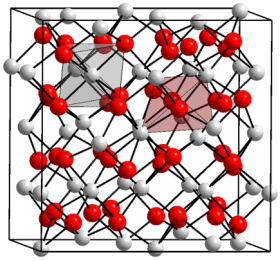
predictions about how a transition metal ion's structure is affected by the other atoms surrounding it.

Rubies are mainly made up of the mineral corundum, which is composed of the elements aluminum and oxygen in a regular, repeating array. Each aluminum ion is surrounded by six oxygen ions.



A crystal of corundum looks like this at the atomic level, with the aluminum ions shown as red balls, and the oxygen ions shown as white balls. Each aluminum ion is surrounded by six oxygen ions, and each oxygen by four aluminums.

Eigenes Werk/Wikimedia Commons, CC BY-SA

Emeralds are mainly made up of the mineral beryl, which is made from the elements beryllium, aluminum, silicon and oxygen. Beryl's crystal structure is more complicated than corundum's because of the additional elements in the formula, but each aluminum ion is again surrounded by six oxygen ions.

Emeralds appear green because they absorb red and blue light.

Pure corundum and beryl are colorless. The brilliant colors of rubies and emeralds come from the presence of very small amounts of chromium. The chromium replaces about 1% of the aluminum in the corundum or beryl crystal when a ruby or emerald forms underground at a high temperature and pressure.

But how can one element – chromium – create the red color of a ruby and green color of an emerald?

Color science

Rubies and emeralds have the colors they do because, like many substances, they absorb some colors of light. Most visible light, like sunlight, is composed of all the colors of the rainbow: red, orange, yellow, green, blue, indigo and violet. These colors make up the visible light spectrum, which is easy to remember as ROY G BIV.

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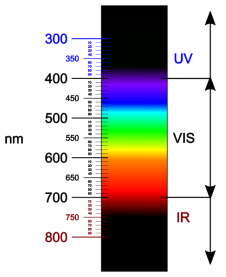


Objects absorb some visible light wavelengths and reflect others, which is why we see them as having a color.

Fulvio314/Wikimedia Commons, CC BY-SA

One of the main reasons why objects have a color is because they absorb one or more of these visible colors of light. If a substance absorbs, for instance, red light, it means that the red light gets trapped in the substance and the other colors reflect back to your eyes. The color you see is the sum of the remaining light, which will be in the green-to-blue range. If a substance absorbs blue, it will look red or orange to you.

Unlike the colorless aluminum ion, the chromium ion absorbs blue and green light when surrounded by the oxygen ions. The red light is reflected back, so that's what you see in rubies.

In an emerald, even though the chromium is surrounded by six oxygen ions, there is a weaker interaction between the chromium and the surrounding oxygen ions. That's due to the presence of silicon and beryllium in the beryl crystal. They cause the emerald to absorb blue and red light, leaving the green for you to see.

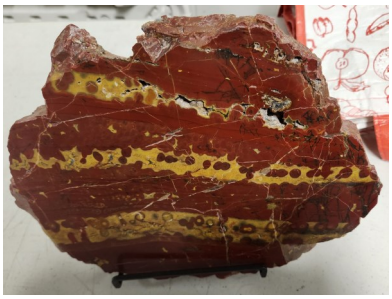
The ability to tune the properties of transition metals like chromium through changing what is surrounding it is a core strategy in my field of inorganic chemistry. Doing so can help scientists understand the basic science of metal-containing compounds and the design of chemical compounds for specific purposes.

You can take delight in the amazing colors of the gemstones, but through chemistry, you can also see how nature creates those colors using an endless variety of complex structures made with the elements in the periodic table.

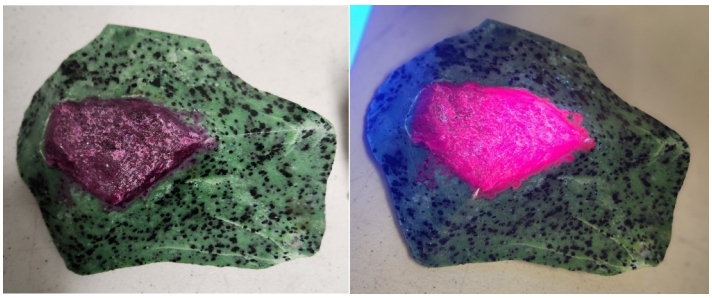
Daniel Freedman, Dean of the College of Science, Technology, Engineering, Mathematics & Management, University of Wisconsin-Stout

Bragging Rights

April's Bragging Rights Theme was **"Red"**.



Orbicular Jasper from Loma Prieta, **Lynn Toschi**



Ruby in Zoisite from Tanzania, **Bob Kout**

Realgar crystal from Honan Province, China, **Joan Schramm**

Honeycomb Ruby, **Jim Fox**

The winner is **Lynn Toschi's** Orbicular Jasper

The program for the May General Meeting will be a Silent Auction so there will be no Bragging Rights. June's Bragging Rights theme is **"Yellow"**.

Website Links

Your Window to the World of Important Websites

SCVGMS Website: https://www.scvgms.org/

SCVGMS Facebook Page: https://www.facebook.com/santaclaravalleygemandmineralsociety

American Federation of Mineralogical Societies (AFMS): https://www.amfed.org

American Lands Access Association (ALAA): www.amlands.org

BLM Rockhounding: https://www.blm.gov/programs/recreation/rockhounding

California Federation of Mineralogical Societies (CFMS): https://www.cfmsinc.org/

Mindat.org (world's largest open database of minerals, rocks, meteorites): https://www.mindat.org/

GemKids: https://gemkids.gia.edu/

Smithsonian Science How Webcast Archives: https://naturalhistory.si.edu/education/school-programs/grades-3-5/smithsonian-science-how/smithsonian-science-how-webcast-archives

Smithsonian National Museum of Natural History: https://www.youtube.com/@nationalmuseumofnaturalhistory

Emeralds—the May Birthstone

The History of Emerald

Emerald gemstones were mined in Egypt as early as 330 BC, but some estimate that the oldest emeralds are 2.97 billion years old.

Cleopatra is perhaps the most famous historical figure to cherish emerald gemstones. She even claimed ownership of all emerald mines in Egypt during her reign.

The Egyptians used emeralds both in jewelry and in their elaborate burials, often burying emerald stones with monarchs as symbols of protection.

On the other side of the world, the Muzo Indians of Colombia had well-hidden and prized emerald mines. These mines were so hidden, it took the Spanish conquistadors nearly twenty years to find them.

Today, emerald is a symbol of loyalty, new beginnings, peace, and security, making it not only a beautiful gem to wear, but also a meaningful jewelry gift to be treasured by the receiver. It is still widely prized by the rich and famous, with Elizabeth Taylor's famous emerald pendant selling for $6.5 million in 2011.

https://www.americangemsociety.org/birthstones/may-birthstone/history-of-emerald/

2025 Camp Paradise

Once again, SCVGMS Continuing Education will provide two tickets to attend Camp Paradise in August. The winner will be chosen from those who fill out the application form on the next page, and get it to **Missy Fox**, before the May 27th General Meeting. Missy needs to have the applications either in her hands, or emailed to her, before the meeting starts, so she has time to copy the names onto the bidding slips.

The eligibility criteria and requirements are explained in the application form.

Many of our members have enjoyed attending Camp Paradise in past years. To learn more about Camp Paradise, go to https://cfmsinc.org/camp-paradise/.

CFMS – 2025 Camp Paradise Registration (Fillable) (https://cfmsinc.org/wp-content/uploads/2025/02/CFMS-2025-Camp-Paradise-Registration-Fillable.pdf)

2025 Camp Paradise

By Jill Atkins, Co-Chair

From the May 2025 CFMS Newsletter

Great news! We have a hard stone carving instructor for 2025 Camp Paradise! Peter Adam is an award winning stone carver who, along with everyone else, will be donating time and expertise to Camp Paradise to enrich the learning experience of our students. Thank you Peter for agreeing to carry on the work of Bob Rush. Please visit CFMSinc.org for his bio, class description and prerequisites.

Application and payment are electronic this year and seem to be working flawlessly. (You may still download, write a check and mail if you prefer.) The Applications are rolling in so you may want to stop procrastinating and get on it! Excitement is high this year. We have people from all over the country signing up.

In 2023 Moi was gifted an ugly rock! (I, too, was shocked.). I brought it to camp in 2024 to confront the miscreant. Alas she was not there, so some wags took the rock and "decorated" it. It went on the auction table and raised money for Camp Paradise. Good news! It's back! Pepe has generously re-donated it back to CP and it will be on the auction table the second week of camp. (I think Michelle "encouraged" him.). We want everyone to have an opportunity to have this "art piece" in their own house for one year. Then it comes back to Camp Paradise to be put on the auction table once again. I hope to see you this summer.

SCVGMS Continuing Education Application 2025

Filling out this application and returning it to Missy Fox enters you into the Continuing Education drawing. The winner receives tickets for two people to attend one of two week-long stays at Camp Paradise at the end of August. The drawing will be held at the May 27th general meeting. The SCVGMS Board welcomes you all to fill out the application if you have met the eligibility criteria below:

- Attended three or more SCVGMS general meetings in the last year.
- Volunteered eight or more hours at the annual show or in preparation for the show.
- Have not been a winner and attended this camp in the last three years.

Name: _____

What is the best way to contact you? Phone: _____

Email: _____

Please tell us what interests you about this opportunity. We like to hear what inspires people in this hobby. If you are a winner, we would like to share your words with the club members via Breccia Newsletter. Don't worry, we'll edit for spelling and punctuation.

Why would you like to attend Camp Paradise this coming season? _____

_____

_____

What is your favorite part of our hobby? _____

_____

_____

Things you need to know:

- The drawing will be held at the May general meeting. You do not have to be present to win.
- Up to five names will be drawn. If, for any reason, the winner is unable to attend the camp, the second person will be contacted, and so forth.
- The winner is responsible for his/her transportation to/from the camp and any additional material fees for special classes. The tickets cover accommodations and meals.
- To assure your accommodations and attendance in one of the camps, you must contact Jill Atkins, CFMS head of Earth Science camps to make arrangements by July 1. Contact information for Jill Atkins can be obtained from Missy Fox, Continuing Education Chair.

The winner will share his/her camp experience with the club by taking photos, doing a show and tell at a meeting, and writing a short article for the Breccia.

The deadline for submitting the application for the drawing for Camp Paradise is before the May 27th meeting.

Mail or turn forms into Missy Fox, 16344 Shady View Lane, Los Gatos, CA 95032

Open to member and nonmembers alike.

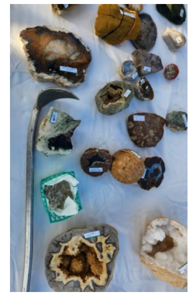
Week 1: August 17 to 23, 2024

Week 2: August 24 to 30, 2024

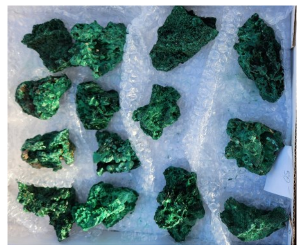
Questions ??? Contact Missy Fox (408) 356-7711 or jfox152@comcast.net

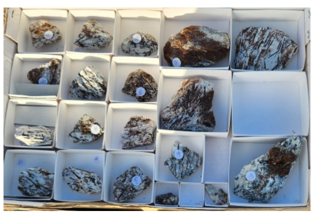
Photos from the Member Sale





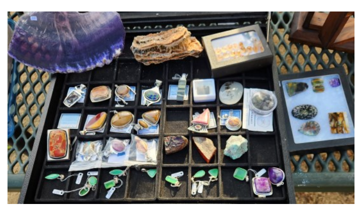
















Information on Shows

May 2–4, 2025 - Santa Ana, CA
West Coast Gem & Mineral Show
Holiday Inn-Orange County Airport
2726 South Grand Avenue
Hours: Fri & Sat 10–6, Sun 10–5
Contact: mineralshowslld@gmail.com
Website: https://www.mineralshowslld.com/

May 10–11, 2025 - Lancaster, CA
CFMS Convention
Antelope Valley Gem and Mineral Club
Antelope Valley Fairgrounds
2551 W. Ave H
Hours: Sat 9–5, Sun 9–4
Website: https://avgem.weebly.com

May 15–17, 2025 – Vista, CA
Vista Gem and Mineral Society
Antique Gas and Steam Engine Museum
2040 N. Santa Fe Ave.
Hours: Fri & Sat 10–5, Sun 10–4
Contact: info@vistarocks.org
Website: https://vistarocks.org/shows/

May 17, 2025 - Grass Valley, CA
Nevada County Gem & Mineral Society
2nd Annual Tailgate Swap
Banner Grange parking lot
12629 McCourtney Road
Hours: Sat 8–5
Contact: oominerals@gmail.com

May 30–June 1, 2025 – Reno, NV
Reno Gem and Mineral Society
Reno Town Mall
4001 S. Virginia St.
Hours: Fri 10–6, Sat 10–5, Sun 10–3
Contact: theresalanghans@yahool.com
Website: https://renogms.org

May 31, 2025–Laguna Hills, CA
So Orange County GMS, Searchers GMS, Laguna Woods Lapidary
Florence Sylvester Senior Center,
23721 Moulton Pkwy
Hours: Saturday–Presentation 10-11
Sales 11-5
Contact: (408) 718-0504, edupuy@me.com
Website: https://www.socgems.com/

June 7–8, 2025 – Escondido, CA
Palomar Gem and Mineral Club
The California Center for the Arts, The Museum
340 N. Escondido Blvd.
Hours: Sat 10–5, Sun 10–4
Contact: 425-281-6218, tonifloyd41615@gmail.com
Website: https://palomargem.org

June 28–29, 2025 – Culver City, CA
Culver City Rock & Mineral Club
Veteran's Memorial Auditorium
4117 Overland Ave.
Hours: Sat 10–6, Sun 10–5
Contact: culvercityrocks35@gmail.com
Website: https://culvercityrocks.org/fiesta/

August 1–3, 2025 – Nipomo, CA

Orcutt Mineral Society

Nipomo High School

525 N. Thompson Ave.

Hours: Fri & Sat 10–5, Sun 10–4

Contact: (805) 929-2783,

nipomocowgirl55@yahoo.com

September 13–14, 2025 – Reno, NV

Reno Gem and Mineral Society

Silver State Pavilion at the Grand Sierra Resort

2500 E. Second St.

Hours: Sat 10–5, Sun 10–4

Contact (925) 785-4551,
sabl@comcast.net

Website: http://renogms.org

September 20–21, 2025 – Arcadia, CA

Pasadena Lapidary Society

Arcadia Masonic Center

50 W Duarte Rd.

Hours: Sat 10–5, Sun 10–4

Contact: (626) 260-7239

Website: https://pasadenalapidary.org/pls-2025-show/

September 20-21, 2025 – Monterey, CA

Carmel Valley Gem and Mineral Society

Monterey Fairgrounds, 2004 Monterey Road

Hours: Sat and Sun 10-5

Contact:
johnandjamiesmama@yahoo.com,

(831) 679-2896

Website: http://cvgms.rocks

Yellow Stones

By Prof. Philip R. Kesten, Ph.D.

Got a rock in your pocket? You might, and if you do, it might be yellow. There are certainly a number of stones and crystals that are either primarily yellow, or for which a yellow variety can be found… stones such as fluorite and calcite. Crystals of topaz, apatite, and even orthoclase feldspar can also be yellow, or, at least, yellowish. (See Fig. 1a. to Fig. 1e. for images of specimens of fluorite, calcite, topaz, apatite, and orthoclase feldspar that are yellow.) I have addressed these minerals in other essays; in this essay, I will briefly discuss some other, less common, stones that are yellow: heliodor, orpiment, carnotite, legrandite, and zircon. Representative samples of these rocks are presented in Fig. 2a., Fig. 2b., Fig. 2c., Fig. 2d., and Fig. 2e.

Fig. 1a.

Fig. 1b.

Fig. 1c.

Fig. 1d.

Fig. 1e.

Fig. 1a. Yellow (cubic) fluorite.
https://i.etsystatic.com/37605841/r/il/11ff38/5275869061/il_1588xN.5275869061_pi6x.jpg

Fig. 1b. Yellow calcite.
https://hiddenjewelse.com/cdn/shop/products/2021-08-15-16-59-58.jpg

Fig. 1c. Yellow topaz.
https://prettyrock.com/cdn/shop/products/imperial-topaz-10212009-2-1.jpg

Fig. 1d. Yellow apatite.
https://i.ebayimg.com/images/g/dNwAAOSw1~NivfII/s-l1600.jpg

Fig. 1e. Yellow orthoclase feldspar.
https://i.ebayimg.com/images/g/8ZoAAOSwjVhkC0B4/s-l1600.jpg

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Heliodor. Heliodor is the yellow (or greenish yellow or golden yellow) variety of beryl, a rock that I have discussed in another essay. Because heliodor can be golden yellow in color, some who study rocks and minerals refer to heliodor as "golden beryl".

The molecules in a pure crystal of beryl are "beryllium aluminum silicates"—molecules formed by the chemical bonding of beryllium (Be) and aluminum (Al) atoms with a silicate, that is, with a grouping of silicon (Si) and oxygen (O) atoms. A beryllium aluminum silicate molecule is, in particular, $Be_3Al_2Si_6O_{18}$. Pure beryllium aluminum silicate is colorless. But impurities mixed in with the beryllium aluminum silicate molecules cause the crystals to become green, blue, brown, pink, or red… and, yes, yellow. The yellow color of heliodor, by the by, is embedded in its name. "Heliodor" comes to us from the Greek helios, meaning "sun", and doron, meaning "gift". Heliodor: it is yellow like the Sun… it is a gift from the Sun!

Heliodor makes a fine choice for a stone that will be cut and faceted and set into a piece of jewelry. Heliodor, as is true for all varieties of beryl, has a Mohs hardness of between seven and a half and eight. That makes it relatively hard, a property for which any stone used in jewelry is prized. Heliodor is harder, for example, than a US coin, harder than a piece of glass, and harder than a steel nail. So a piece of heliodor is hard enough to resist surface abrasions, even if it is, say, bumping up against other objects in your pocket. (A brief discussion of the Mohs hardness scale is included at the end of this essay.)

In addition to its hardness, the internal structure of heliodor makes it easy to cut into any shape; hard and easily cut into faceted shapes: these are properties you want in a gemstone. Fig. 2a, Fig. 2b. and Fig. 2c. show (translucent) specimens of heliodor with a round cut, an emerald cut, and a pear brilliant cut, respectively.

Fig. 2a. A round cut heliodor stone.

Fig. 2b. An emerald cut heliodor stone.

Fig. 2c. A pear brilliant cut heliodor stone.

Fig. 2a. https://vision360.azureedge.net/stones/16H0BVM/16H0BVM.jpg

Fig. 2b. https://i.etsystatic.com/9522462/r/il/5e28f3/3845452900/il_1588xN.3845452900_kb1z.jpg

Fig. 2c. https://lauriedonovan.com/wp-content/uploads/2013/12/Heliodor-Pear-1W-290258.jpg

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Orpiment. This stone is often found as an amorphous rock, although orpiment crystals – as single crystals or as clusters of crystals – have been found. Orpiment is often lemon yellow (see Fig. 3.), although brownish-yellow and orange-yellow specimens of orpiment are not uncommon. Like heliodor, the color of orpiment can be found buried in its name; "orpiment" is derived from the Latin aurum, meaning "gold" and pigmentum, meaning "pigment" or "coloring". A gold-colored pigment… orpiment was once the primary source of the deep-yellow pigment used by artists.

Fig. 3. A specimen of orpiment.

https://i0.wp.com/geologyscience.com/wp-content/uploads/2023/09/image-32-jpeg.webp

Ah, but while orpiment was once the primary source of yellow paint pigment, that is no longer true. For good reason, too: the molecules that comprise orpiment are poisonous. These molecules consist of two arsenic (As) atoms bonded to three sulfur (S) atoms, or As_2S_3. Sulfur is toxic, but only mildly so. Although you probably would not enjoy ingesting sulfur, doing so would pose little or no risk to your health. But arsenic… yikes! Arsenic is highly toxic. Exposure to arsenic by, for example, drinking water contaminated with it, can cause a host of health problems. Nausea and abdominal pain are probably the least unpleasant of these. But exposure to arsenic can also result in much worse symptoms – doing so can cause, for example, skin lesions and cancer. For this reason, we no longer use yellow pigment made from orpiment.

As an aside: Although not all historians agree, some speculate that the French emperor and military commander Napoleon Bonaparte died from long-term exposure to arsenic. The pigments used to color the wallpaper that lined the walls of his quarters contained orpiment, as was revealed by studies of that wallpaper made in the 1980s.

On a personal note: As an undergraduate, I participated in a research project in which we measured the level of arsenic along hairs that had been removed from Napoleon's head after he died. (Oh my, yes: we were able to obtain actual hairs removed from Napoleon's actual head. My faculty mentor Lee Grodzins, now professor emeritus of physics at M.I.T., had a significant amount of clout in the science world!) And no surprise: we found that there was more and more arsenic in Napoleon's hair the closer and closer we made measurements to the ends of the hairs, that is, closer and closer to where those hairs had come out of his head. And of course, the ends of those hairs that were closest to his head

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were growing at the time of his death. In other words, the amount of arsenic in Napoleon's body rose up higher and higher until the time of his death. Yes, Napoleon died of arsenic poisoning.

Just to say, by the by: Anyone's hair reflects the body chemistry of that person at the time the hair is forming, that is, at the time the hair is growing out of their scalp. But in addition, and in a real sense, hair presents a record of the body chemistry of a person (or of any animal) as a function of time. Yes, the end of the hair closest to the scalp (or skin) reflects what was happening in the body when the hair was growing out. But move out along the hair, from the scalp end to the other end, and you have a record of what was happening in that body, as a function of time. Oh, my (!)… to study someone's hair can uncover what that person ate, and what the status of their health was, over the course of the time that hair was growing. And human hair grows at a rate of about one millimeter every three days, so the end of a hair that is, say, about one hundred and fifty millimeters long (that is, about six inches long), started growing out of someone's scalp about fifty days earlier. A six-inch-long hair, then, gives a record of the body chemistry in a person over a period of about fifty days.

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(Will be continued in the June Breccia)

Smiles for May

May your troubles be less, may your blessings be more, and may nothing but happiness come through your door.

The trouble with resisting temptation is that it may never come your way again.

I may not have lost all my marbles yet, but there's a small hole in the bag somewhere.

May the quartz be with you!

I may be obsessed with rocks, but that's my pre-rock-ative.

Beauty may be only skin deep, but ugliness goes right to the core.

WinErr: 01C Uncertainty error - Uncertainty may be inadequate.

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An Invitation

This society is pleased to invite guests to attend general meetings, study groups, and field trips. **General meetings are held the fourth Tuesday of every month with meet and greet time beginning at 7:00 followed by the meeting at 7:30 PM at 100 Belwood Gateway (the Cabana Club), Los Gatos, CA 95032.** Belwood Gateway is just south of Blossom Hill Road between Leigh Avenue and Harwood Road.

Our Society's Purpose: The inculcation of a love of rocks and minerals by the furtherance of members' interests in the earth sciences and by education in all facets of related educational activities with the promotion of good fellowship, proper ethics, and conduct.

Our Membership Requirements: Attendance at two general meetings within twelve months.

This society is a member of the California Federation of Mineralogical Societies (CFMS) and is affiliated with the American Federation of Mineralogical Societies (AFMS).

Our Newsletter, the Breccia, is published 11 times annually. The deadline for all articles is the Sunday after each general meeting. The Breccia editor is **Deb Runyan** who may be contacted by email at editor@scvgms.org and by phone at 408-628-7789. The Breccia is proofread by **Pat Speece** and **Sonia Dyer**.

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