



BRECCIA

Santa Clara Valley Gem and Mineral Society

Volume 71 Number 6, July 2023

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Events

July 25: General Membership Meeting will feature **Donna Kelly on Flint Knapping**. The Bragging Rights theme is **Fossils**.

July 26–August 6: SCVGMS will have a booth at the Santa Clara County Fair with displays, demonstrations, and a chance for the public to learn about our organization. The fairgrounds are located at 344 Tully Road, San Jose, CA.

July 27: Board Meeting on Zoom.

August 3–6: The 2023 AFMS/NFMS Show and Convention is coming to Billings, Montana. The activities will take place at the Billings Hotel and Convention Center, 1223 Mullowney Lane.

All registrations deadlines have been extended to July 1, 2023. (Some of the forms read June 1, but deadline is July 1.)

August 22: General Membership Meeting will feature Noel Runyan on working with fragile rocks, and an Ice Cream Social.

August 24: Board Meeting on Zoom.

Editor's Message

It is with some trepidation that I have taken on the job of editing the Breccia. When my husband, Noel, and I joined SCVGMS in 2019, I was newly retired from a job where I did a lot of technical writing, and at the time thought I might like to be the editor. After seeing all that Jo has been doing during the 4 years since, and having let other things expand to fill my time, I was far less sure when Jo was looking for a replacement. At the May 2023 general meeting, after having a cataract removed, I was feeling like a new person and so dove into the deep water.

Jo has been very helpful with training, sharing files and contacts, encouragement, and more. She has also volunteered to continue making crossword and word search puzzles, like the one [Using the Mohs Hardness Scale and Density to Identify a Mineral](#) on page 17.

I will continue to publish articles from Philip R. Kesten, Ph.D., a professor in the Department of Physics at Santa Clara University. In particular, Igneous Rocks starts on page 14 in this issue and will conclude in the August issue.

Our President, Stephen May, told us about the recent field trip to Clear Creek

Unfortunately, I do not have the deep knowledge of rocks and minerals that Jo has and so I will be depending more on others for articles. I am asking for help from our members. You could contribute anything from a short "how-to" or "my favorite thing", up to 2 to 3 pages of whatever you think others would find interesting. Rock related photos are also appreciated. The deadline for submissions is the Sunday after the General Meeting.

Do you have anything that other members might enjoy?

Deb Runyan, Breccia Editor

Win a Free Week at Camp Paradise!

The people who worked at the SCVGMS 2023 Show will be entered in a drawing at the next meeting, July 25. The winner will receive a **free week**, lodging and meals included, of Lapidary classes at Camp Paradise for them and a guest.

You do not have to be there to win; however, you must be able to go to the camp.

Please email Missy Fox if you have any questions at jfox152@comcast.net.

Membership Dues Are Due

SCVGMS membership dues are due for the year 2023. Your dues are essential to the operation of SCVGMS. They are \$5.00 for Junior, \$20.00 for an individual, and \$30.00 for the household.

Please send your check to **Treasurer, Santa Clara Gem and Mineral Society, Box 54, San Jose, CA 95103-0054** or to **Frank Mullaney, 5705 Begonia Drive, San Jose, CA 95124**

Thank you.

Field Trips

August 10-13 Thursday-Sunday: Petrified Blue Forest and American Fossil Quarry, Kemmerer, WY

A Co-op field trip sponsored by Sacramento Mineral Society

Contact: Mike Jones, Cell 916-477-0890

Email: scienceskoolbus@gmail.com

August 25, 26 Friday and Saturday: Davis Creek, California – 6 ½ hour drive, Obsidian, Rainbow, Pink, Silver, Mahogany, Electric Blue, Needles (Tentative: Trying to arrange Group Permit, with Dept. Forestry)

September 28th through October 1st: Topaz Mountain and Dugway Geode Beds, Utah

A Co-op Field Trip sponsored by the Roseville Rock Rollers Gem and Mineral Society

Topaz Crystals, Bixbite (Red Beryl), Pseudobrookite Crystals, Hematite Crystals, and Geodes.

Field Trip Leader and Contact Information: Gene Doyle, CO-OP & Roseville Rock Rollers. Text or leave message, Cell: 408-605-9457, Email: eugene.doyle@sbcglobal.net or Jim Barton, CFMS-N, Home: 916-773-0458, Cell: 916-847-7321, Email: geologist1@surewest.net.

For questions for the above listed field trips unless otherwise noted:

Contact Stephen May for details.

Email: Stephenmay0990@gmail.com

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

AFMS Field Trips in conjunction with the 2023 AFMS/NFMS Show and Convention in Billings, Montana:

August 7 Monday: Bear Canyon - black and white fortified agate

August 8 Tuesday: Fossil trip north of Hysham, MT

August 9 Wednesday: On the river for wood & agate (may change depending on weather)

August 10 Thursday: Fee dig for fossils near Glendive

August 11 Friday: Probably an additional trip for agate

There will be sign-up sheets at the show.

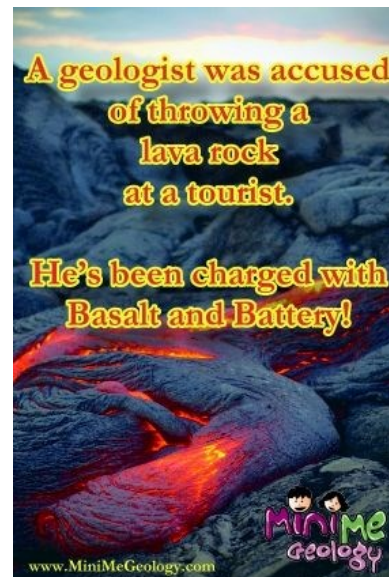
Feather River Rocks Field Trips:

July 14-16: Western Idaho (various sites)

August 11-12: Davis Creek, CA–Obsidian, several varieties

October 14-15: Royal Peacock Opal Mine–Precious Opal, Fluorescent Minerals, Petrified Wood

Read about these trips at <https://www.featherriverrocks.org/field-trips/>



President's Message

"It's not the heat, it's the humidity."

The well-known quote is true regarding comfort level. It is particularly true of the subject of this month's President's Message, Delta Utah.

The subject this month is again about Field Trips. As we continually have guests that come to our meetings for the first time, we ask the questions, "What brought you here?, What are your interests?", and invariably, the answer that most of them have in common is, "Field Trips". They don't just want to learn more about rocks (minerals, gems, fossils), they want to go find them.

Most of the sites for collecting that we choose are in California, Nevada, Oregon, Arizona and Utah. These states are within what might be considered, a 'reasonable' driving distance. Usually, most of those sites are in deserts.

Deserts tend to be hot and uncomfortable. Throughout the Northwest, most of these deserts are at elevations, 3,000, 4,000, 5,000 feet. Because of that, they usually have snow and are freezing, often day and night. The roads are muddy, slick, and sometimes impassible, so we don't go rock-hounding until late spring to summer. Then, it's hot, Hot, REALLY HOT. Temperatures in the 90's, 100's and this year, the teens, 117°, Albany Texas, yesterday. The humidity was 93%. That combination will kill you.

I bring this up, because Utah tends to be a dry state (not just alcohol, 'dry'). Delta Utah temperature yesterday, high, 82°, humidity, 32%. With humidity this low, sweat does it's job of cooling us down, quite nicely, and less stinking, sweat's less popular job. This means that while collecting rocks in Utah, while casually picking up loose rocks on the ground ('float'), or swinging a 16 lb. sledge hammer, you are staying relatively comfortable, even in temperatures up to the 90's or 100's.

So, why Delta Utah. Delta Utah is probably the most repeated field trip in the CFMS (California Federation of Mineral Societies) and the Co-Op (Field Trip Chairmen's Association CO-OP, of Northern California). There are 3 locations almost always included in the field trip. Dugway Geodes, Topaz Mountain, and U-Dig Fossils. Usually, the trip may include one or two other sites as well. U-Dig Fossils is a pay-to-play, site, with only fee digging available. Topaz Mountain is also a fee site, with differing levels and some free areas, though the fee areas are recommended and well worthwhile. Dugway Geodes is a free site. It used to be a fee site with deep pits available to mine in with great rewards. It is no longer a fee site, but still has lots of great collecting.

I will go into detail about the above 3 sites in a bit, but I wanted to talk about the best part of Delta Utah rock-hounding trips. Delta Utah. The town is beautiful. It is a significant farming community, with great small-town charm. Motel rooms are clean, comfortable and reasonably priced. Our first trip, we stayed at the Rancher Motel and Cafe. The places were dated and weathered, but clean and comfortable. The price was ridiculously cheap, but more importantly, the people were great. They were friendly and helpful and they had suggestions for everything, including places to eat besides their own restaurant. They were happy to have rock hounds staying and knew tons of places to go and collect. When we went to the hardware store, there were employees available, happy to answer questions and knowledgeable about the stock they carried. They had suggestions for alternatives to whatever you needed, and they, too, knew of places to collect rocks. Probably the best, though, were restaurants. The service was crazy friendly, attentive, and yes, they too had suggestions as to the best plac-

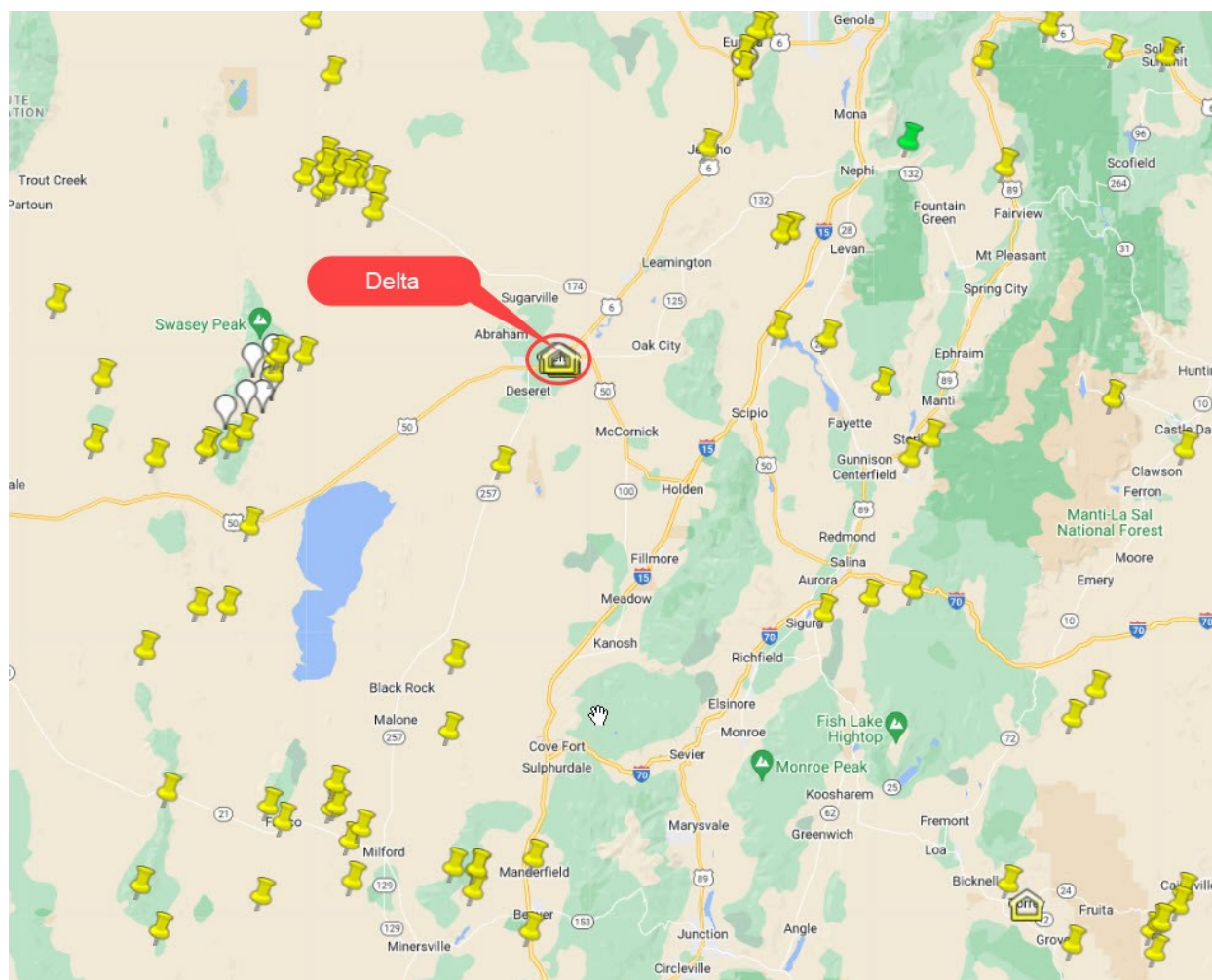
es to collect rocks. The prices were super reasonable and the food was excellent. I can't recommend The Red Rabbit Grill highly enough. We ate there 4 times in a single week.

There is also one of the best rock shops I have ever been to in Delta. The Bug House. This shop is owned by the Crapo family (pronounced, cray-po). They were the former owners of the Dugway Geode claim for 3 generations. They have an extensive collection of geodes and a fantastic collection of septarian nodules. Their available materials cover an acre, and their prices are criminally low. They are helpful and full of stories and recommendations of where to go to collect all kinds of minerals. They cut and finish a good portion of what they sell, and they can give tips on cutting techniques, polishing and other lapidary processes. They also ship. They are also affiliated with U-Dig Fossils, and have a large selection of materials collected there.

First of the 3 destinations is **Topaz Mountain**. It is located 47 miles from downtown Delta. This is a fee-dig site, though there is free collecting in the area, as it is located in a large area of BLM land. The material collected there is a sherry colored topaz in rhyolite substrate. The topaz are found in tiny to medium size vugs (small cavities in host rock). Red beryl is also found in the area and highly sought after. There are two types of fee digging at the site. Topaz Mountain Adventures mines a huge domed rhyolite hill. For a modest price, you can collect the loose topaz and break up slabs of rhyolite to find the small vugs containing the sherry topaz. Or you can get a small group and do a 'Blast Dig'. This is more expensive but produces a much greater result. This is what we did, with a group of 6. Kyle had the singular pleasure of being the person who was allowed to charge the detonator and then initiate the blast. It was loud and amazing. A ton of rock was blasted loose down the hillside. You could then pick up loose topaz, which you would find on the ground, in the dirt or cracks and flat spots on the rocks. The other way to find them is to break open the large slabs of rhyolite with rock hammers or chisels and hand sledges, to find the vugs. You might find a single topaz or sometimes a cluster. If you are lucky, you might find a cross with two intersecting crystals. You could separate out the topaz, or leave it embedded in the substrate, my favorite. We did very well on the trip. We brought home about 400 lbs. of rhyolite with topaz crystals as well as a bag of over 200 loose crystals. The sherry color in the topaz is sensitive to UV light, so the crystals are best stored in opaque brown plastic bags (provided). Left out in the sun the sherry color slowly fades over a few months to reveal a fabulously clear sparkling crystal.

The second destination is the **Dugway Geode Beds**. This is a free site, open to the public on BLM land. It had previously been owned by the Crapo family, which operated the claim using an excavator, and allowing fee-digs for over 50 years. They had several pits, up to 50' deep. The size of geodes found during their heyday, were average of 4"- 6", with the occasional large ones, over 12" in diameter. Due to registration errors upon the death of the family patriarch, the claim was closed by the BLM. The family had to backfill the pits. The remaining site spread over the multiple pits are mounds of relatively loose packed, dirt/sandy soil, in which the geodes can be found. Tools used for digging can be a rock hammer, gad bar, small picks, shovel or whatever your favorite digging implement might be. In three trips, we have never come away with less than a 5 gallon bucket full. The inside of the geodes varies from small variegated vugs to large cavities with quartz crystals ranging from tiny, milky white crystals to large, clear, black, pink, or reddish crystals. Some people break them with a hammer, on site, others take them home to cut with a lapidary saw, or tile saw. The base material of the geode is Dugways signature wavy striped brown and light blue-gray. This material is as hard as agate and takes a great polish.

The third of the regular destinations for the Delta trip is **U-Dig Fossils**. This is a fee-dig site, also owned by the Crapo family. This site is a shale quarry, located in a hillside of shale. They provide a masons hammer, a wedge shaped rock hammer which is used to split the shale along the edge. You have a seat on the ground at the edge of a bank of shale and use the hammer to separate out a flat slab of shale. You then look for a seam along the edge and 'tap' it firmly with the hammer. It splits along the seam and you look to see if there are fossils. Most splits you won't find anything, however, occasionally, you will find one. You may find a fully 3 dimensional trilobite that pops right out of the rock. More often, you will find a fossil superimposed on top of the rock, 3-dimensional. On the other half of the rock, you will find the matching impression. In two hours, our group of 4 found over a dozen, ranging in size from about $\frac{3}{4}$ " to 2 $\frac{1}{2}$ ". This is some hot work. The shale is dark gray to gray/black and it sucks up heat from the sun. You do not want to wear shorts for this, because you can burn bare skin on the heated shale. It's a lot of fun and guaranteed that you will find fossils.



There are many more places all around Delta for collecting a huge range of rocks, minerals, fossils and gemstones. A great resource is the Rockhounding Utah Map,

https://www.google.com/maps/d/viewer?mid=17-pa3pYy0AqNOD2Zh4cXklR9A7g&hl=en_US&ll=39.483150381536596%2C-111.60763899999999&z=7

This map shows at least 80 locations within 80 miles of Delta. Each pin, when clicked on, tells what materials can be collected and how to get there. Additionally, when driving the local highways South, North, East and West, just by looking to the hills on the left or right, you will see old mine sites and tailings piles all over the place. Most of these are easily accessible and can be reached with two-wheel drive, though sometimes a four-wheel vehicle is better. With all the locations every trip can be unique but still include your favorites.

Your President,
Stephen May





Smiles

If you stub your toe on a big rock, is it Kraktoa?

Did you see the rockhound towing a crate of rocks behind his car?

He had a wide lode sign.

Why did the rockhound break up with his girlfriend?

She was a little quartz-y.

Camp Paradise

Week 1: August 20 to August 26th 2023

Week 2: August 27th to September 2nd 2023

Classes – Beginning Faceting, Beginning Lapidary, Advanced Lapidary, Soft Stone Carving, Beginning Silversmithing, Intermediate and Advanced Silversmithing, Lost Wax Casting, Beading, PMC-3-clay, Fused Glass, Enamel, Cold Connection, Intarsia.

All classes are subject to change. Please Note: Class assignment preference will be given to first time students.

Camp Paradise costs \$500 per week per person.

For more information about time, location, lodging, etc., contact:

Camp Paradise Registrar Glenda Keil

[Camp-Paradise-2023-Registration-2](#)

Glenda : 1 916-448-8341, gkeil@comcast.net

Website Links

Your Window to the World of Important Websites

Click on the blue area of whatever site you want to visit!

Link to Our SCVGMS Website: <https://www.scvgms.org/>

Note: After you click on the above link, if you want to see the Breccia and other news items, scroll down and click on "Download", shown under the Newsletter option.

The American Federation of Mineralogical Societies (AFMS):

<https://www.amfed.org>

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

www.cfmsinc.org/

To access the news from the **American Lands Access Association:** www.amlands.org

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

How Geologists View
Rocks



Quartz



Slate



Turbidite



Cubic Zirconia

How I View Rocks



Rock



Rock



Wall of Rocks



Diamond

Bragging Rights

There were two winners in the June contest for a green rock:



Damale Turquoise
by John Bahr



Azurite by Stephen May

There were also two other great entries:



Aventurine by Bob Kout



Amazonite, Minas Gerais, Brazil
by Joan Schramm

Next month's Bragging Rights theme is **fossils**.

Please email a photo of your fossil treasure to **Alan Achor** by 4:00PM on Monday, August 21 to have it included in the contest. Alan's email address is kayakbb7@gmail.com.

Alan Achor-Bragging Rights Chairman

Sunshine



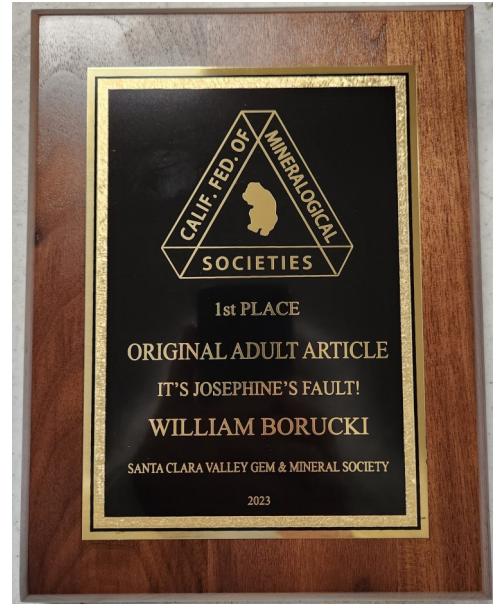
If you know of anyone needing some sunshine in their lives, please email **Margo Mosher** at margomosher@yahoo.com.

Members' Awards

Jo and Bill Borucki won 3 awards at the 2023 CFMS Show and Convention in Lodi, CA on June 24, 2023.



2023 CFMS 1st Place, Written Feature, "Hal E. Pearsall", Josephine Borucki



2023 CFMS 1st Place, Original Adult Article "It's Josephine's Fault!" William Borucki



2023 CFMS 2nd Place, Large Bulletin, Josephine Borucki, Breccia

Rockhound of the Month

Our rockhound of the month is Deb Runyan. She bravely volunteered to become the editor of the Breccia.

All help you can provide will be greatly appreciated!

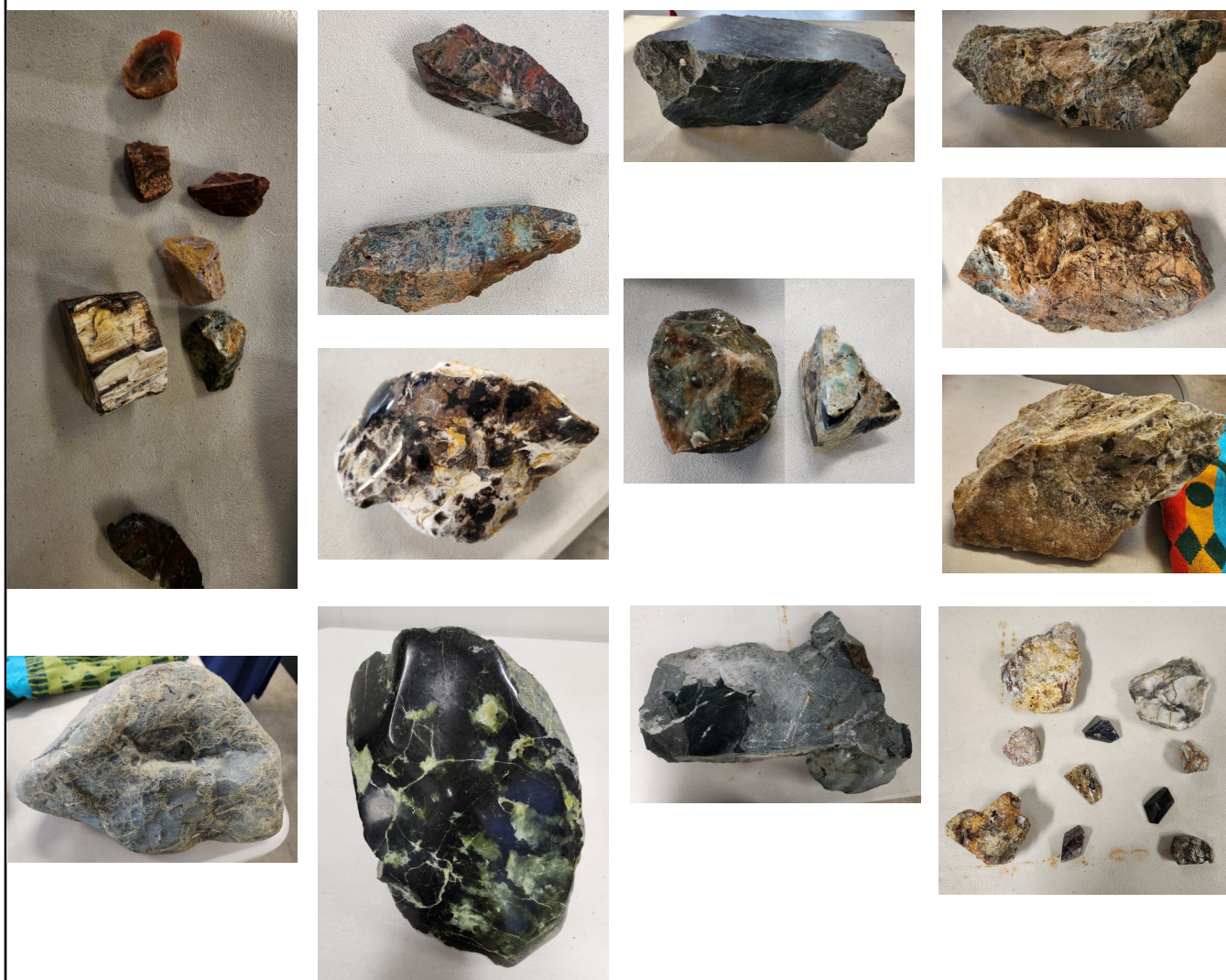
Member Displays

Please email a photo of the items that you wish to display to [Michele Smith](#) by the Sunday before the general meeting, so that the people who attend the meeting on Zoom rather than in person can view your items. **Please bring your items with you to the Cabana Club, if you are attending the meeting.**

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.

Steve May, Bruce Poehlman and Jim Fox brought Jadeite, Serpentine, Blue Schist and many Fire Agates they picked up at Clear Creek to go along with the program.

Bruce Poehlman brought in a metallic on quartz from Sunol for possible identification. (Unfortunately, no one could identify it and I did not get a picture.)



Information on Shows for 2023

July 8-9, 2023 – Culver City, CA

Culver City Gem and Mineral Society
Culver City Veteran's Memorial Auditorium
4117 Overland Ave., Culver City 90203
Hours Sat 10-6, Sun 10-5
Contact: lexyhunter@aol.com
Website: culvercityrocks.org/fiesta/

August 4, 5 & 6, 2023 – Nipomo, CA

Orcutt Mineral Society
Nipomo High School
525 N. Thompson Ave., Nipomo, CA 93444
Hours: Fri. & Sat 10-5, Sun. 10-4
Contact: nipomocowgirl55@yahoo.com
Website: <http://www.omsinc.org/>

August 5-6, 2023 – Roseville, CA

Roseville Rock Rollers Gem & Mineral Soc.
Roebbelen Event Center, @the Grounds – Roseville
700 Event Center Dr., Roseville, CA 95678
Hours: Sat. 10-5, Sun. 10-4
Contact:
gloriarosevillerockrollers@gmail.com
Website: www.rockrollers.com/index.html

August 19-20, 2023 – Tehachapi, CA

Tehachapi Valley Gem and Mineral Society
500 East "F" Street, Tehachapi, CA 93561
Hours: 9-5
Contact: (661) 972-1117,
travis462@outlook.com
Website: <https://www.tvgms.rocks>

August 26-27, 2023 – Arcadia, CA

Pasadena Lapidary Society
Arcadia Masonic Lodge
50 W. Duarte Rd., Arcadia, CA 91007
Contact: (626) 260-7239
Website: <https://pasadenalapidary.org>

September 16-17, 2023 – Monterey, CA

Monterey Fairgrounds, Monterey, CA
Hours: 10-5
Contact: (831) 801-5887
Website: www.cvgms.rocks

September 16-17, 2023 – Reno, NV

Reno Gem and Mineral Society
Reno/Sparks Convention Center
4590 S. Virginia St., Reno, NV
Hours: Sat. 10-5, Sun. 10-4
Contact: (775) 229-4420,
sailondan55@aol.com
Website: <https://renogms.org/>

October 7-8, 2023 – Grass Valley, CA

Nevada County Gen and Mineral Society
Nevada County Fairgrounds
11228 McCourtney Rd., Grass Valley, CA 95949
Hours: Sat. 10-5, Sun. 10-4
Contact: 4vanclan5@att.net

October 8, 2023 – Fallbrook, CA

Fallbrook Gem and Mineral Society
123 W. Alvarado St., Fallbrook, CA
Hours: 9-4
Contact: (760) 728-1130,
info@fgms.org
Website: <https://www.fgms.org>

**Be patient with
geologists –
they all have
their faults.**



RD

Igneous Rocks (Part 1)

Geologists classify rocks as one of three types. Igneous rocks form when hot, molten material from deep within the Earth rises to the surface, cools, and solidifies. Sedimentary rock forms as layers of organic material—dead and decaying plants, trees, and animals—get compressed beneath more and more accumulating layers. And metamorphic rocks are those that start out as one type of rock but over the course of the long time scale of Earth history, change form due to either high pressure, high temperature, or both. In this essay we will address igneous rocks.

The temperature deep inside the Earth is extremely high. Hot enough to melt rock: the “outer core” of the Earth—between about 2,000 miles and 3,000 miles below Earth’s surface—is filled with molten, liquid rock. At 3,000 miles below the surface of the Earth, the temperature is upwards of 9,000 °F! And even at “only” about 40 miles down, the temperature can reach close to 2,000 °F. Some rocks start to melt at around 1,100 °F, so there is no shortage of melted, molten rock—“magma”—40 miles down. That’s right about where the outer layer, or “crust,” of the Earth starts.

(The structure of the Earth can be divided into four major components, or layers. Deepest in, from the center of the Earth out to a distance of about 800 miles from the center, is the inner core. The inner core of the Earth is solid rock. From the top of the inner core up to about 2,200 miles from Earth’s center is the inner core—the inner core is molten (liquid) rock. From the upper region of the inner core to about 40 miles below Earth’s surface is the mantle, partially solid and partially liquid. And finally, starting from about 40 miles down is Earth’s crust.)

So, there is hot—very hot—rock down near the boundary between Earth’s mantle and Earth’s crust. Molten, liquid rock. And because of all of the rock above it, that is, all the rock closer to the surface, that molten rock is under enormous pressure. Let’s take a moment to consider pressure.

You might encounter the term “pressure” when you put air in your car tires. Air wants to push out on any surface that holds in the air, so because your tires have a fixed volume, adding more and more air to a tire makes the air push harder and harder to try to escape. In other words, adding air to a tire increases the pressure in the tire—pressure is related to how much force is exerted over a given surface area. But what about the air pressure you hear about on the weather report? Is that also related to force exerted over an area?

Yes! Think of it this way: Stretch your arms out, and spin in a circle. Your fingertips trace out a circle of a diameter of about six feet, and of an area of about thirty square feet. Now imagine a cylinder of air, with that area at either end, and rising up from the ground all the way to the top of Earth’s atmosphere. The weight of all of the air in that cylinder is pushing down on your circle.

On the surface of the Earth, all of the air up above pushes down with a considerable force. What about down inside the Earth, say, five miles down? Five miles is about the height of the atmosphere, so five miles down is about the same amount of rock above as there is air above Earth’s surface. But rock is much heavier, per volume, than air, so you would imagine that the pressure beneath all that rock is much greater than the pressure beneath the air of Earth’s atmosphere. True enough! The weight of all that rock pushing down would be about 100,000 pounds on a circle that you trace out by spreading out your arms. 100,00 pounds... fifty tons! And my gosh—go down deeper, even just to the bottom of Earth’s crust, and the pressure is enormous!

So... down below Earth’s surface, down into Earth’s crust, the temperature is so hot that rock melts.

And the pressure is so high that the molten rock is squeezed up toward lower pressure, that is, it is pushed up toward the surface. If there are any cracks or crevices above that molten rock, the liquid rock can leak out as it gets squeezed up... leak out through, say, a volcano! A volcano like, for example, Krakatoa (Figure 1), which rises up in the waters between the islands of Java and Sumatra in Indonesia.



<http://s4.thingpic.com/images/xf/fLCbNG9UPrxgLXGAtbkXS4qy.jpeg>

Figure 1. Krakatoa, a volcano and a volcanic island in Indonesia.

Notice, above, that molten lava can find its way out of the Earth through crevices and cracks in Earth's crust as well as through volcanoes. Figure 2 shows an underwater volcanic crater off the coast of Bartolomé Island, a speck of volcanic land just off the east coast of Santiago Island. Both Santiago Island and Bartolomé Island are part of the Galápagos, an archipelago of volcanic islands off the west coast of Ecuador in South America. Hot—liquid—rock cooled and solidified as it bubbled up out of a small vent in the shallow water near this island. The crater in Figure 2 is relatively small, only about 50 feet across.



Figure 2. An underwater crater, formed as molten lava seeped from a crack in Earth's crust off the coast of Bartolomé Island in the Galápagos. (Photo credit: David Tauck.)

Before we get to the real heart of this subject, that is, the igneous rock that forms from magma rising up from deep inside the Earth, let's take a detour and find some bonus information in the striking image of Krakatoa.

First, you are no doubt awed by the bright orange color of the hot lava flowing from Krakatoa. And likely you have noticed that other materials glow when they are hot—perhaps they glow a dull or bright red, perhaps orange, perhaps even white. Physicists have known since the earliest part of the twentieth century not only that a material glows when it gets hot, but also that its color is directly related to its temperature. A sketch of the correlation between color and temperature for a hot, glowing object is shown in Figure 3. (As an aside, Figure 3 gives you a clue as to the origin of the phrase “white hot.”)



Figure 3. The color of a hot, glowing object is directly related to its temperature.

Compare the color of the lava flowing from Krakatoa with the color-temperature scale in Figure 3. Bright orange... perhaps 1,500 °F. That corresponds to a depth below the surface of about 25 miles, which (yes!) is where many reservoirs of magma, like the one that feeds Krakatoa, are found.

Here's a second bit of bonus information we can glean from the image of Krakatoa. Notice the orange streaks that form parabolic arcs shooting out of the top of the volcano. Throw a baseball or a basketball, or indeed, launch any projectile into motion near the surface of the Earth, and it follows a parabolic path. Gravity only acts in the up-down direction—there are no horizontal forces (ignoring the effect of air resistance) on a projectile. So a thrown baseball does not speed up or slow down in the horizontal direction—its horizontal speed remains constant. But because gravity exerts a downward force on the ball, its speed decreases as it rises, then the ball stops rising, and finally, it falls back down. As a result of the combination of these horizontal and vertical motions, a thrown ball follows a distinctive arc, what mathematicians call a “parabola.” And those streaks in this eruption of Krakatoa? Small bits of lava are ejected from the top of the volcano, and—just as if they were thrown baseball—follow parabolic trajectories.

Part 2 will be in the August Breccia.

Prof. Philip R. Kesten, Ph.D., Department of Physics, Santa Clara University

Igneous Smiles

How does an igneous rock stay cool in the summer?

It cracks open a cold one.

What did the one volcano say to the other volcano?

“Hey, do you want to be my lava?”

That rock was magma before it was cool, know what I mean?

Volunteers Wanted for our Club's Tables at the Santa Clara County Fair

Dates: July 26th - 31st and August 3rd - 6th. 1pm to 9pm. Pick a time slot that works for you.

This is a greet, talk about our love of rocks and our club's meetings and how to become a member. Very easy and can be done sitting down.

We will have Cabbers demonstrating and Rock polishing info on hand. Its a watch and learn experience.

I believe free entry/parking to the fair are included. I will have more information on this soon.

Call or email Margo Mosher for a spot. 408 578-2841 or margomosher@yahoo.com.

Don't miss out on a chance to visit the fair!

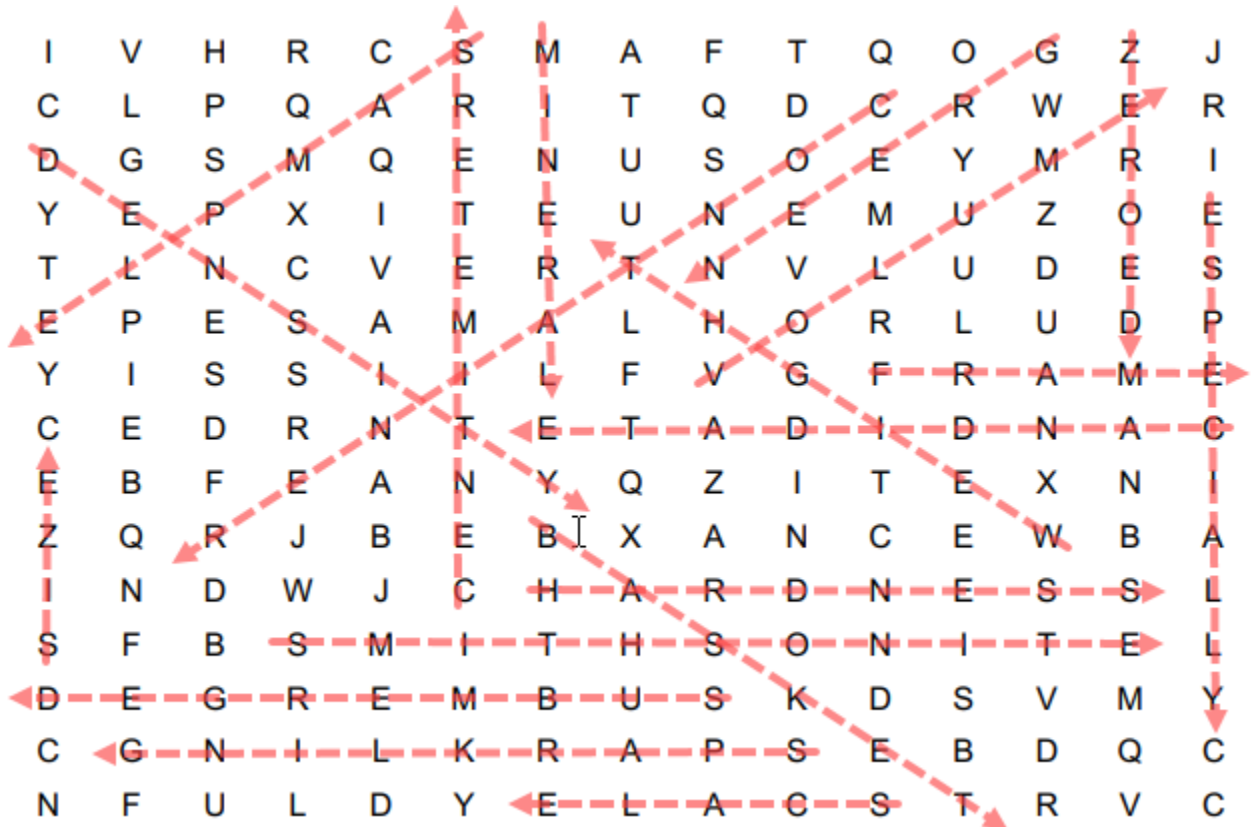
Using the Mohs Hardness Scale and Density to Identify a Mineral

A lovely sparkling green mineral caught my eye at one of our DRC sales, and I bought it not knowing what it was. Hardness and density tests are easily accomplished, especially because my husband, Bill, had purchased a Mohs Hardness kit and had constructed a density system. We used the Mohs Hardness kit and found that the mineral measured a hardness between 4 and 5. After that step was accomplished, we tested to determine the density of our mineral sample. We put my sample on the scale. It weighed 30.5 grams, but weight (mass) depends not only on the density of an object but also on its size. So, how big is it, in other words, what is its volume? To determine this, we put the frame and basket on the scale and zeroed the scale out so to cancel out its weight. Then we put the rock into the basket and gently raised the container of water under the basket so that the rock was submerged and checked the weight. The sample in water weighed 23.1 grams. And now to compute its density where $30.5 \text{ grams} - 23.1 \text{ grams} = 7.4 \text{ grams}$. The sample displaced 7.4 cubic centimeters of water. This is its volume. Density = mass \div volume. Density = $30.5 \div 7.4 = 4.12$. So, what has a hardness of between 4 and 5, a density of 4.12, and is green in color? The best candidate is Smithsonite.

By Jo Borucki

I	V	H	R	C	S	M	A	F	T	Q	O	G	Z	J
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D	G	S	M	Q	E	N	U	S	O	E	Y	M	R	I
Y	E	P	X	I	T	E	U	N	E	M	U	Z	O	E
T	L	N	C	V	E	R	T	N	V	L	U	D	E	S
E	P	E	S	A	M	A	L	H	O	R	L	U	D	P
Y	I	S	S	I	I	L	F	V	G	F	R	A	M	E
C	E	D	R	N	T	E	T	A	D	I	D	N	A	C
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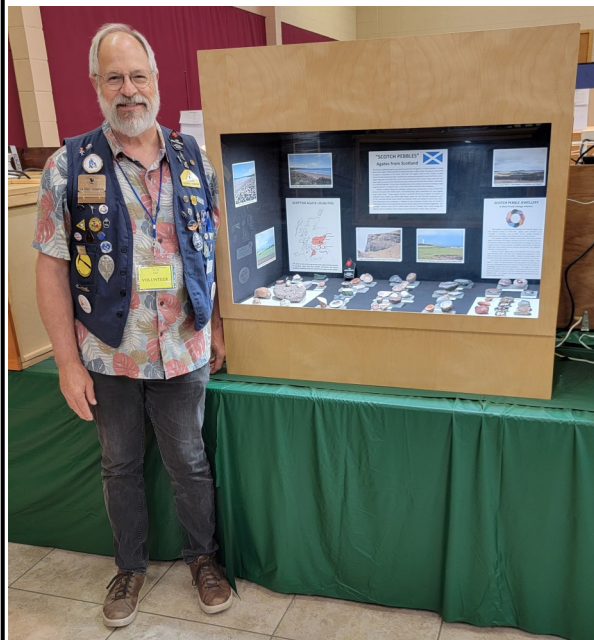
Word Search Answers



<http://beane.users.sonic.net/?comic=dont-forget-the-little-er-big-guy>

Winner of the Ruth Bailey Award of Excellence for the Best Exhibit in the Show

Jim Brace-Thompson and his case of agates from Scotland that received the Ruth Bailey Award at the 2023 CFMS Show and Convention in Lodi, CA on June 24, 2023.



Membership Meeting Minutes

June 27, 2023

Call to Order - 7:36 pm

Pledge of Allegiance

Program for the evening will be Clear Creek, 2023, a light panel discussion

New Members (Cynthia Porter):

Phil Kesten

The Vice Corner (Michele Smith): Etiquette for attending field trips.

Show up unless you communicated any changes of plan with trip leaders and travel buddies in advance.

Show up on time.

Practice Leave NO Trace. (Leave the area BETTER than you found it!)

Stay safe.

Have fun!

Member Displays: Bruce Poehlman Metallic on Quartz from Sunol brought in for possible identification.

Jobs that need to be fulfilled:

- Santa Clara County Fair Chair Person (July/August) – Michele Smith
- SCVGMS 2024 Show Chair Person (March 2024): Michele Smith
- Snacks for July, September and October meeting volunteers still needed. (Please let Stephen May know if you can help out with snack provision for any of these meetings.)

Correspondence (Frank Mullaney): No New at this time

Special Awards (Frank Mullaney):

Jo Borucki special award 1st Place Written Feature *Hal E. Pearsall*

Jo Borucki special award 2nd Place Large Bulletin *Breccia*

William Borucki special award 1st Place Original Adult Article *It's Josephine's Fault*

Field Trips (Stephen May) : Updates

May 20th (Walk-in): Clear Creek Management Area, South of Hollister. Jadeite, Plasma Agate, petrified wood, serpentine, druzy quartz, Cinnabar, Spessartine Garnet, Benitoite (questionable). 11 people attended.

Monday, June 12th, (2 slot only) Rainbow Ridge Stephen May brought home 10 tubes of Opals!

June 17, 18: Fallon Nevada – Jasper, Agate, Chalcedony, Agate and Crystal filled Nodules, Petrified Wood, Rhyolite, Banded Rhyolite.

June 23-25, 2023 - CFMS SHOW AND CONVENTION

LODI GRAPE FESTIVAL GROUNDS, 413 E. LOCKEFORD ST.,

Hours: Friday and Saturday 10 AM – 5 PM, Sunday 10 AM – 4 PM

August 7-11 Montana:

7th Bear Canyon for Black and White Fortification Agate

8th Hysham, MT Fossil trip

9th Yellowstone River Petrified Wood and Montana Agate

10th Glendive (Fee dig) for Fossils

11th Agate trip (TBD)

August 10th-13th - Pet. Blue Forest & American Fossil Quarry. Kemmerer, WY.

CO-OP & Sacramento Mineral Society Field Trip Mike Jones, cell (916) 477-0890,

scienceskoolbus@gmail.com

Pet wood, Fossils. Pet wood no fee American Fossil Quarry Fee Dig

August 25, 26, (27) Trying to arrange Group Permit, with Dept. Forestry speaker.

Davis Creek, California – 6 ½ hour drive, Obsidian, Rainbow, Pink, Silver, Mahogany, Electric Blue, Needles Spots still available.

September 28th – October 21st - Topaz Mt & Dugway Geo Beds, Delta UT.

Sponsored by Roseville Rock Rollers, CFMS, Gene Doyle, CO-OP & Roseville Rock Rollers Field Trip.

Snack Break: Costco Apple Pie, Mixed Nuts, Fresh Bing Cherries

Rockhound of the Month – Deb Runyan, for volunteering for the Editor position.

Bragging Rights for the month of June, General Meeting, 27th the theme is an item related to rock-hounding that is green in color.

Damale Turquoise from Nevada 2. Amazonite from Minas Brazil 3. Diopase 4. Large Aventurine
There was a tie vote so the winners for this month's bragging rights go to John Bahr for Damale Turquoise and Stephen May for Diopase. Congratulations!

July Bragging Rights Category will be FOSSILS

Hospitality: Introduce Guests; 25 Members and 0 Guests in attendance.

Sunshine (Margo Mosher): No news to report

Federation Report (Karen Welder): Mojave BLM Public input requested to help prevent closure of this area! Comments needed by July 5th to be considered in the decision process. Email information available through Karen Welder

Program: Clear Creek, 2023, a light panel discussion

Spring rains caused road closures into the Clear Creek area so this became a walk in only field trip. Members walked in about ¼ mile and began collecting. Snow melt had waters running high and cold but good collecting still occurred. Most found Plasma Agate, Fluorite samples and some fluorescent samples.

11 members participated in this trip! Everyone showed up on time and a great time was had by all!

Adjournment: Meeting adjourned at 9:23 PM.

Respectfully submitted, Cynthia Porter, Secretary

Board Meeting

June 29, 2023

Meeting called to order at 7:37 pm

Roll call: Noel Runyan (Board), Michelle Powers (Board), Jim Fox (Board), Missy Fox (Board), Rick Kennedy (Board), Paul Kidman (Alt Fed Dir), Stephen May (Pres), Frank Mullaney (Treasurer), Cynthia Porter (Sec), Michele Smith (Vice Pres), Dean Welder (Parliamentarian), Karen Welder (Fed Dir), *Deb Runyan* (News Editor)

Absent: Karen Welder

Reading of the Minutes from May 25th board meeting (Dean Welder/Noel Runyan) approved as amended

Correspondence: (Frank Mullaney): No new report

New Members: (Cynthia Porter): (Stephen May/ Michelle Powers) approved

Dustin Bastianelli

Treasurers Report: (see email) (Frank Mullaney): (Stephen May/Michele Smith) (approved)

Ruth Bailey award \$75.00

Request for ½ reimbursement for June snack costs

Committee Reports:

Federation – (Karen Welder)

Mojave Trails National Monument area closures discussion continues. Comments must be submitted by July 5th. Email information available through Karen Welder.

Jo Borucki special award 1st Place Written Feature *Hal E. Pearsall*

Jo Borucki special award 2nd Place Large Bulletin *Breccia*

William Borucki special award 1st Place Original Adult Article *It's Josephine's Fault*

The Sharr Choat Jewelry Award. For the best single piece of jewelry at the CFMS show. (No entries so not awarded for this year.)

Field Trips – (Stephen May) Update:

August 10th-13th - Pet. Blue Forest & American Fossil Quarry. Kemmerer, WY.

CO-OP & Sacramento Mineral Society Field Trip Mike Jones, cell (916) 477-0890, scienceskool-bus@gmail.com

Pet wood, Fossils. Pet wood no fee American Fossil Quarry Fee Dig

August 25, 26, (27) Fri. Sat. possible Sunday ½ day.

Davis Creek, California – 6 ½ hour drive

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

September 28th – October 21st - Topaz Mt & Dugway Geo Beds, Delta UT.

Sponsored by Roseville Rock Rollers, CFMS, Gene Doyle, CO-OP & Roseville Rock Rollers Field Trip.

Old Business:

Founders Day Picnic – Jim Herbold, Sign-up sheet to help. Stephen May, Alan May

New business:

Pick date for DRC Sale. Still to be determined following date selection approval by DRC. *Suggested date for approval Saturday, July 22nd

Discuss e-mail from Mandy Shi with subject 'Counterfeit jadeites purchased at Santa Clara gem show'. The e-mail is enclosed. Use Outlook to open it, but the title pretty much has the main point.

Discussion of "Counterfeit jadeites purchased at SCVGMS show". SCVGMS will send Email with customer contact information to vendor notifying the vendor that the customer is attempting to contact them. Recommendation that the vendor in question communicate directly with the customer. Request vendor confirm with our representative receipt of the email sent from SCVGMS informing them of the customer request for follow up communication and vendor's valid contact information.

Upcoming Programs:

July-Donna Kelly: Flint Knapping

August: Noel Runyan: Fragile Rocks, plus - Ice Cream Social event

September: Video TBD or Opal Program

Founders Day Picnic September 16th: Jim Herbold, volunteers. Stephen May

October: Opal Program (Michele to provide Stephen with contact)/ or Video TBD

November: Silent Auction

December: Installation Dinner

Next Board meeting is July 27th

Meeting adjourned: 8:37 pm

Respectfully submitted, Cynthia Porter, Secretary

SCVGMS ELECTED OFFICERS

President: Stephen May, 408-306-6782
Vice President: Michele Smith, 408-374-1897
Secretary: Cynthia Porter, 408-978-5848
Treasurer: Frank Mullaney, 408-691-2656
Editor: Deb Runyan, 408-628-7789
Federation Director: Karen Welder, 408-353-2675
Alternate Fed. Director: Paul Kidman, 408-356-4995

Board Members at Large

Jim Fox, 408-356-7711
Missy Fox, 408-356-7711
Michelle Powers, 408-694-8686
Noel Runyan, 408-866-7564
Rick Kennedy, 408-529-9690
Parliamentarian: Dean Welder, 408-353-2675

SCVGMS COMMITTEE HEADS

Bragging Rights Chair: Alan Achor
Donation Receiving Committee Chair: Michele Smith
Show Chairpersons 2024: TBD
Fairgrounds Booth Chair: Michele Smith
Fairgrounds Liaison: Frank Mullaney
Fairgrounds Volunteer Coordinator: Margo Mosher
Field Trip Coordinator: Stephen May
Founder's Day Picnic Chairman: Jim Herbold
Founder's Day Raffle: TBD
Founder's Day Bingo: TBD
Hospitality: TBD
Installation Dinner: Tamara Bell, and Michael Paone
Member Displays: Rick Kennedy
Refreshments: TBD
Silent Auction: TBD
Sunshine: Margo Mosher
Trophies: Frank Mullaney
Librarian: Deb Runyan

Santa Clara Valley Gem and Mineral Society

P.O. Box 54, San Jose, CA 95103-0054

Website: www.scvgms.org

Email: info@scvgms.org

Phone Number 408-265-1422

Like us on Facebook:

<https://www.facebook.com/santaclaravalleygemandmineralsociety>

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 7:15 followed by the meeting at 7:45 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. **The Next General Meeting is on July 25 at 7:45 at the Cabana Club and also available on Zoom.** The Next Board Meeting is at 7:30 on July 27 on Zoom.

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 ten times annually. The deadline for all articles is the Sunday after the general meeting. The Breccia editor is Deb Runyan who may be contacted by email at Deb4RRocks@gmail.com and by phone at 408-628-7789. The Breccia is proofread by Pat Speece and by Sonia Dyer.

Exchange bulletins may be emailed to Deb4RRocks@gmail.com. Permission to copy is freely granted to American Federation of Mineralogical Societies (AFMS) affiliated clubs when proper credit is given.