MAY-JUNE, 2025

NEWSLETTER OF THE

SOUTH CENTRAL FEDERATION

Of Mineral Societies

Member of: The American Federation of Mineral Societies

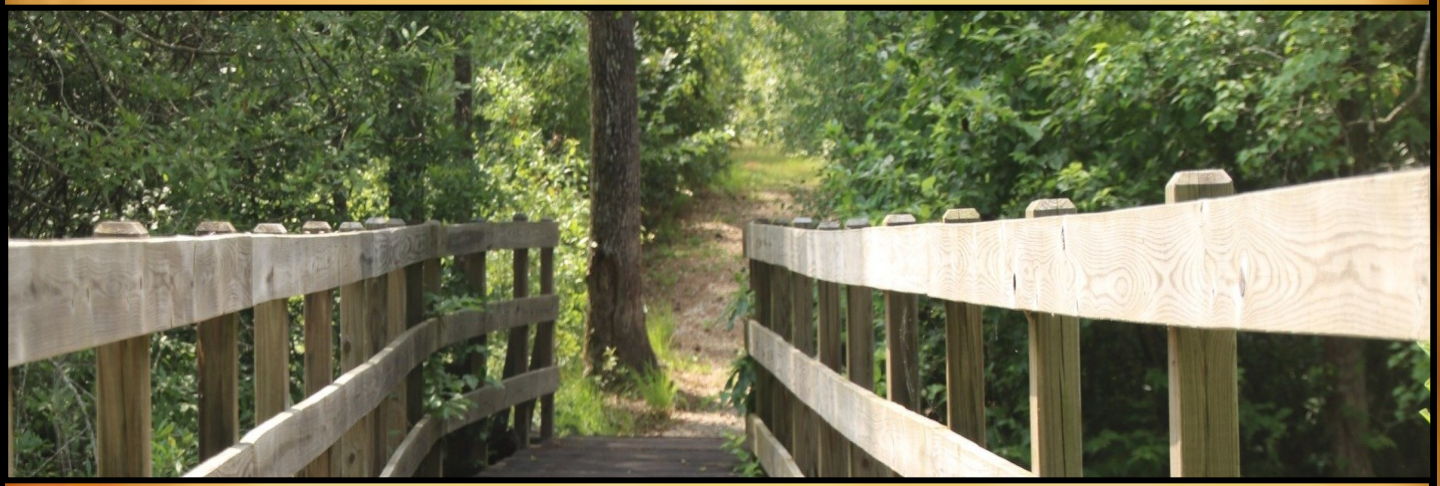
ON THE COVER

Wolf Rock Cave

Wolf Rock Cave is best described as two small rock overhangs overlooking Bundick's Creek. It is the only known rock shelter in Louisiana used by its early people. There is also some evidence from the archaeological record that this area was used as a small habitation, that is some Archaic people lived here for short periods of time.

This site is near Pickering, LA. For more information visit:

Kisatchie National Forest | Wolf Rock Cave | Forest Service



INSIDE THIS ISSUE

SOUTH CENTRAL FEDERATION OF MINERAL SOCIETIES, INC.

2025 SCFMS OFFICERS

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Executive V-P: Sigrid Stewart

Secretary: Vacant

Treasurer: Henry Rojas

Web Master: Don Shurtz

Exec. Secretary: Susan Burch

AFMS Endowment Fund Raffle for SCFMS: Walt Beneze

SCFMS Endowment Fund Treasurer: Walt Beneze

Nominating Committee – Ron Carman

Past President: Roger Burford

For more information or to send information to the SCFMS or an officer, please email:

scfmsinformation@gmail.com

PURPOSE

*To promote popular interest and education in the various earth sciences, in particular those hobbies dealing with the art of lapidaries and the science of minerals, fossils, as well as their associated fields.
*To cooperate with educational and scientific institutions or other groups engaged in increasing knowledge in the earth sciences.
*To cooperate with or become members of similar Federations in the United States and elsewhere.
*To assist in the formation of earth sciences societies in localities where public interest justifies their formation.

E-MAIL ADDRESS CORRECTION AND CHANGES

It is each members responsibility to send your email address corrections to the SCFMS Editor:

Susan Burch,
scfmseditor@yahoo.com

NEWSLETTER PUBLISHED BIMONTHLY

DUPLICATION

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A NOTE FROM —THE EDITOR—

THE FINAL DEADLINE, ETC.

For each newsletter the deadline is the 25th of the month prior to scheduled publication. February-April-June-August-October-December all provide the deadline for the following bi-monthly issue. Although, the Editor may chose to adjust the deadline due to circumstances.

As a reminder! Shop hints and tips that are used in this newsletter have not been evaluated for safety or reliability by myself. Please use caution and safety when trying out any new idea. Please, if you have something urgent, send me a text, but send newsletter content via email.

ANNUAL SHOW 2025

Hosted by the AGMS
OCTOBER 17-19, 2025
AUSTIN, TX

ANNUAL MEETING

OCTOBER 18, 2025

SCFMS WEB-SITE:
WWW.SCFMS.NET

The SCFMS is a member of the American Federation of Mineral Societies. amfed.org

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Susan Burch
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The President's Corner

By Don Shurtz, SCFMS President

THIS AND THAT

Don Shurtz, SCFMS Website Contest Chair / Executive Vice-President

I like to write about rocks and minerals – their chemical properties, where they are found, and oddities associated with them. For the SCFMS Newsletter, I need to write about other things like the status of the SCFMS, the SCFMS Convention, and similar topics. However, I will write about something totally different for most of this column.

As a youth, I spent a lot of time in the sun. There was little league, swimming, tennis, swimming, roller-skating, swimming, biking, swimming, rock polishing, swimming – you see the pattern. My father built the first private swimming pool in our small community. The concept was so novel that neither the town nor the county had anything in its building codes about private swimming pools. They rapidly made copies of the code from the large city about 40 miles away. They changed the city and county names as appropriate, and there it was – a building code for swimming pools. A month later, we had a swimming pool. The family and all the neighborhood kids had a great time for years. So, what comes along with a lot of time outside, particularly when swimming? The sun with all its UV rays! I think the only form of sunblock that we had was a T-shirt, and we all knew that only wimps wore T-shirts when swimming. Even that long ago, the lifeguards at the town pool used zinc oxide on their noses to block out the sun. Some had a large umbrella over their chair and no other protection. The swimmers didn't even have the zinc oxide on their noses.

For the last 10 to 15 years, I have been paying for all that time in the sun. It started with a sore that looked like a pimple but would not heal. It was a basal cell carcinoma – a mild skin cancer. The basal cell was removed; I have seen a dermatologist regularly since then. Every visit, the dermatologist uses liquid nitrogen to freeze off pre-cancer areas and occasionally removes a basal cell carcinoma by surgery. I had one surgically removed from my nose in April of this year. The golf-ball-size surgical dressing was in place for two days, then a surgical dressing for the next three weeks. This particular surgery has been the hardest one to recover from. It is not something I want to wish on anyone.

So, how does all this tie in with being a rockhound? We wait all winter for the weather to be nice enough to get out on field trips. Unfortunately, many field trips stretch into the hot summer months. The sun in the spring and summer is out to get you. You need to use a good sunblock cream. I personally use SPF 100. It would also help to wear long-sleeved T-shirts, which are easy to wear in the early spring, but the short-sleeved shirt generally prevails when the temperature heats up. Unfortunately, the UV rays we currently experience are not doing all the damage. The effects of UV light are cumulative. The damage from the UV rays as a youth stays with you and worsens. That is why so many older people end up with skin cancers. If you have a darker complexion, consider yourself lucky; the fair-skinned people are most prone to the issue. If you want to go on a rock-collecting trip in the summer months, my first recommendation is to wait until later in the year. However, most of us (including myself) ignore that recommendation – strike when the opportunity arises. So, when you go, take plenty of sunblock and use it several times daily. If possible, long-sleeved shirts are better. A canopy over the top of your collecting area would be nice if practical. And don't forget about all the other necessities – water to keep hydrated, the right tools, a first aid kit, food, etc. Also, remember that all field trips do not need to be rock collecting – a trip to a museum, a rock shop, or a gem and mineral show will work and may save you a lot of grief later in life.

Now, putting on a different hat – it is time to write a little about the SCFMS. We need only one District VP – a representative for the Southeast Texas district to fill out the elected officer compliment of the SCFMS. In the last newsletter, I mentioned that Becky Copenhagen had volunteered to be our new Secretary. With a bit of pressure from Becky, her husband, Kris Copenhagen, has volunteered to be the District V (West Texas) Vice President. Thank You, Kris, and Thank You, Becky.

This summer, I will reach eighty years old. It is time for me to start shedding some of my SCFMS positions. Is there anyone out there who will be willing to be the

Continued on Page 5

Continued from Page 4

SCFMS Webmaster? Several club web admins do great work with their club website. The effort to maintain and update the SCFMS website would be easy if you knew a little bit about web design. How about someone to take on the Website Contest Chair position? It would take about twenty to thirty hours each year. The effort would be centered around the end of September to get entries for the contest and then a few hours to get the winners entered into the AFMS contest. The AMFS Website contest chair has automated and simplified many of the tasks. The SCFMS Scholarship Chair is another easy task. You receive all club donations to the AFMS Scholarship Fund and forward them to the Fund Treasurer. You need to track the donations and write a "Thank You" letter for each donation, which is basically busy work. You would also be expected to attend the annual AFMS Scholarship Fund meeting at the AFMS Convention – but that could be accomplished by Zoom. If you are interested, I would be happy to talk to you further about explaining these positions.

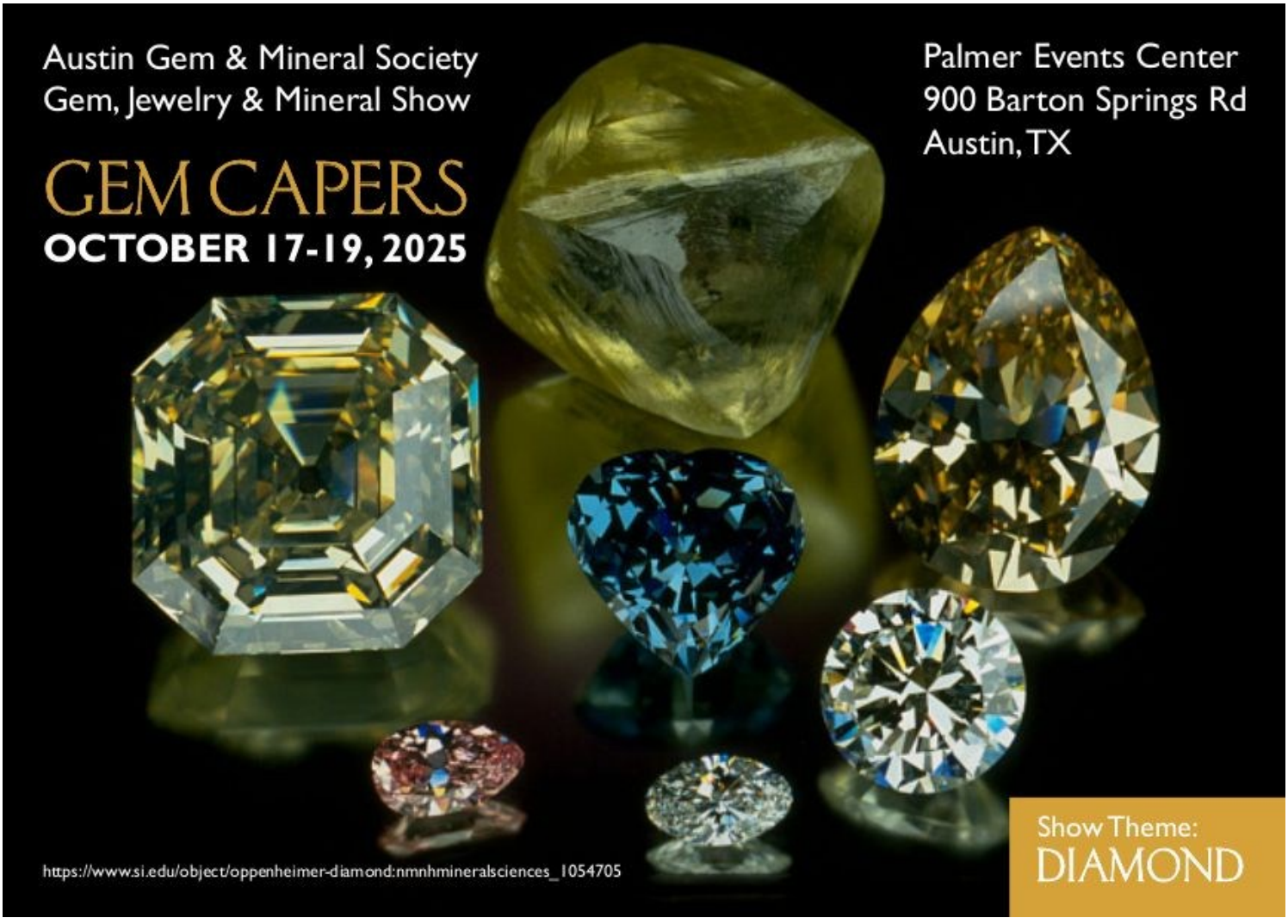
CONTRIBUTIONS WELCOME!

SCFMS exists for the benefit of our member clubs and we are all volunteers. Please consider enriching our club by making a photo, drawing, or written contribution to the newsletter about a geology or earth science related topic.

Pick a topic that interests you and give it a go. Please send it me at scfmseditor@yahoo.com by the 20th of the month prior to the expected publication date and I would be glad to work with you to finalize your item for this newsletter.

Please, be sure to send me your show flyer at least several months in advance so, I can share it in our newsletter.

Susan Burch, Editor



TRI-CITY GEM AND MINERAL SOCIETY NEWS

In loving memory

ANOTHER DEATH IN THE FAMILY

Tri-City Gem and Mineral Society, 58, folded its books and faded away at its final meeting on April 19, 2025.

Cause of death: Lack of interest, new members, old members not at meetings, no officers, waning Show participation and attendance by the public and no or little support from our community.

The Society leaves behind a few members who tried to save her life, but despite valiant efforts, lost the struggle. Now another old stablished club is gone. I can only hope other groups will get their annual health check-ups or we will read of their demise also.

Best Wishes,

Ruth Rolston

Former President, VP, Vendor Chairman, Publicity Chairman, Field Trip Organizer, Writer for the Prattle, Monitor for the Post Office Box, Refreshment Provider, Speaker, Educator for outside groups, Provider of prizes at Shows for the children's activities, raffle, door prizes for silent auction, making props for decorations, setting up the show, running the children's activities, being Show Chairman, preparing "goodie bags" for vendors, calling those who were not at the meetings, cooking for potlucks.

I could go on just to make a point, but someone had to do these things, and I enjoyed them.

PRESIDENT'S MESSAGE
David Farhie, Last President of TCGMS

As Carol Burnett used to sing…"I'm so glad we had this time together, just to have a laugh or sing a song. Seems we just get started, and before you know it, comes the time we have to say, so long."

My Tenure with TCGMS has been filled with fun, lots of ups and downs, and many things to do and a fair measure of stress. I have no complaints, and only wish the best for all the people who came together to meet and share, and learn. Perhaps we will bump into one another at another show, sale, or just out and about.

As you continue in this wonderful hobby, remember how we shared our love of rocks, minerals, fossils, and lapidary, and seek to enjoy it further as we go our separate ways. I made strong lasting friendships and learned a lot about people along the way. I hope you did as well.

Sir Arthur Conan Doyle reminds us "a change is as good as a rest". Perhaps.

Good luck in your further enjoyment of our great avocation.

The last meeting of the TCGMS was held Saturday, May 17, 2025.

INTREPID

By David Farhie

I joined the club
To have some fun
And learn some stuff
But now it's done.

There will be a loss
Of meet and share
But in spite of all
You are still there.

I shant forget the
help you gave
Smoothing the way
Making me brave.

There's more to do
And more to see
Let's do it all
Me and thee.

Via The Rock Prattle, 5/2025

FOSSIL WORD SEARCH

T	T	F	D	S	S	B	B	M	D	I	I	R	A	L	U	N	O	C	K	U	F	K
C	Y	L	I	S	S	O	F	O	R	C	I	M	Z	A	T	E	L	I	D	T	L	Q
B	R	R	C	I	C	E	R	J	Q	M	W	T	T	I	E	E	E	W	L	S	A	H
O	T	U	A	D	I	A	T	O	M	I	O	R	I	C	T	W	F	W	A	R	C	K
R	Q	C	S	N	B	M	I	R	Z	A	A	I	V	H	I	G	C	D	R	V	I	B
N	X	J	C	L	N	D	L	Q	H	C	Q	L	I	T	N	A	I	I	O	U	G	P
I	D	O	U	T	O	O	L	U	X	I	E	O	M	H	O	H	S	O	C	O	O	H
T	Y	K	T	A	L	M	S	O	W	D	N	B	Z	Y	M	A	S	N	N	J	L	Y
H	X	U	E	B	Q	Z	O	A	R	K	A	I	C	O	M	D	A	I	R	W	O	T
O	U	P	S	R	O	W	X	F	U	P	F	T	A	S	A	R	I	R	O	M	T	O
P	M	D	O	P	O	I	H	C	A	R	B	E	D	A	X	O	R	C	H	E	N	S
O	Y	D	I	N	O	S	A	U	R	S	I	K	A	U	A	S	T	T	B	A	O	A
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U	W	D	X	C	A	V	X	C	U	T	Q	K	S	M	B	U	K	I	J	E	L	R
A	E	K	V	J	M	E	S	O	Z	O	I	C	L	P	Z	R	A	F	D	O	A	U
P	T	E	R	O	S	A	U	R	I	E	L	A	H	S	M	H	J	S	H	W	P	T

Find the following words in the puzzle.
Words are hidden ↑, ↓, →, ←, and ↘.

Solution on Page 11

Puzzle Word List:

PALEONTOLOGICAL	TRIASSIC	AMMONITE
BRACHIOPOD	CONULARIID	CRINOID
DIATOM	DINOSAUR	HORN CORAL
ICHTHYOSAUR	MESOZOIC	MICROFOSSIL
ORNITHOPOD	PHYTOSAUR	SHALE
TRILOBITE	TYRANNOSAURIDS	PTEROSAUR
SCUTES	MIACID	HADROSAUR

AFMS JUNIORS COMMITTEE REPORT & A NEW BADGE

Lora Hall, AFMS Junior Programs Chair

Lora Hall, AFMS Junior Programs Chair

It has been a busy year for Juniors in the AFMS! The Juniors Committee continues to meet via Google Meets once a month to work on a number of projects. There is no shortage of great ideas that committee members continue to come up with and thank God, no shortage of volunteers willing to tackle them. One of the first projects we completed this year was a rewrite of the Showmanship Badge with the goal of encouraging more juniors to enter competitive displays. We highlighted the idea that a junior does not have to be present to enter a display at a regional or AFMS competition and that they can appoint someone to set up their display for them. This will open up opportunities for juniors and their families that cannot get off work or school to travel out of the state to conventions.

Badge #21 Sand and Sediment was unveiled at the EFMLS/AFMS Convention in Hickory, NC at the Junior's Cracker Barrel on Saturday.

We are also unveiling a new badge, Sand and Sediment written by Lori Carter and members of the International Sand Collectors Society. This is an amazing opportunity to share their knowledge. As the introduction to the badge says, "Big rocks become little rocks and little rocks become even smaller. Biological things can go from big to small too. This happens in various ways to produce sand, silt, and clay. Some things are just naturally tiny." Well, the reverse can happen too, when a small idea grows into a big one and just like that, we have a new badge to share with Future Rockhounds of America. Thank you to Lori and all her friends in the sand world for this awesome gift!

The website, www.juniors.amfed.org, continues to spread the word about the AFMS Future Rockhounds of America programs. Our goal is to reach clubs that already have a junior's program but are not signed up with FRA and to encourage clubs without a junior's program to start one. We currently have 96 clubs actively participating in one or more FRA programs including the Badge Program, Rock Pals Rock Exchange, Junior Volunteer Award, and Crack the News Junior's Newsletter. A special thank you to our webmaster Joan Stoker from the Indian Mounds Rock and Mineral Club in Michigan. We have published five (5) issues of Crack the News and awarded each talented author or artist a George the Geode Patch. This year, articles from Crack the News will be competing in the AFMS Bulletin Contest. A huge shout out to our Editor, Dennis Gertenbach from the Flatiron Gem Mineral Club in Colorado. This is the first year in a very long time that we have an active Junior Programs Chair in each of the seven (7) Regional Federations.

Please welcome our newest chairs:

- Michelle Cauley, Natural Resources Instructor at Dakota College in North Dakota (the new RMFMS Juniors Chair). Michelle is also our Facebook moderator!
- Jennifer Fitch with the Hellgate Mineral Society in Montana (the new NFMS Juniors Chair)
- Reinee Hildebrandt from the Lincoln Orbit Earth Science Society in Illinois (the new MWF Juniors Chair)
- Erin Erwin with the Lubbock Gem and Mineral Society in Texas (the new SCFMS Chair)
- Darrell Powell, owner of Diamond Dan Publications (the new EFMLS Juniors Chair) Many of these individuals have already been instrumental in promoting Junior Programs in their respective regions, serving on the Juniors Committee, and driving our national AFMS goals.

Via Rocky Mountain Federation News, April 2025

The next issue of Crack the News is out!
Crack the News - 2025-03.pdf

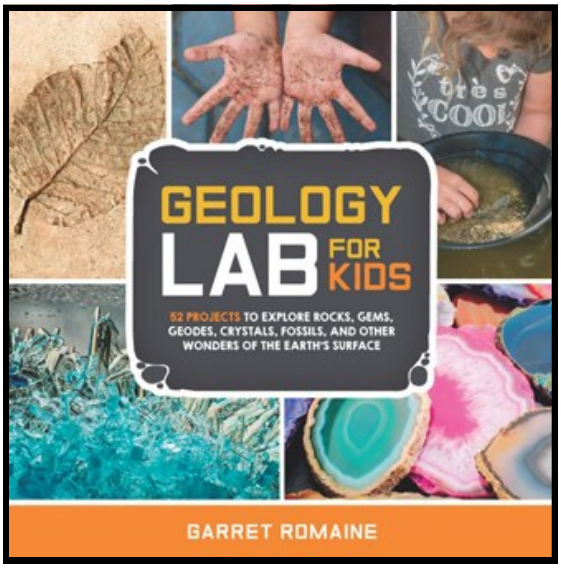
GOLD PANNING
Emily Stevenson, age 12

The Marshall Gold Discovery State Historic Park is located in Coloma, California, and is famous for being the site where James W. Marshall discovered gold in 1848. This event marked the beginning of the California Gold Rush, one of the most significant migrations in U.S. history. Marshall found gold while building a sawmill for John Sutter, and the news of his discovery spread quickly, attracting thousands of people seeking fortune.

Gold was discovered in California in 1848 by James W. Marshall while he was building a sawmill for John Sutter along the South Fork of the American River in Coloma. Marshall noticed shiny flecks of gold in the tailrace (the area where water flows away from the mill) and initially kept it a secret. However, when he and Sutter had the gold tested, it was confirmed to be real.

Gold panning at Marshall Gold Discovery State Historic Park was such an gold, the whole adventure was worth it. We set up our panning spot on one side of the river, being careful to stay within the designated area. The other side is privately owned by the park, so it's important to respect those boundaries. As we scooped up the river gravel and carefully sifted through it, I felt like a true prospector, just like those who rushed to California during the Gold Rush. Even without finding any shiny flecks, we enjoyed the beautiful scenery, the sound of the rushing water, and the thrill of searching for treasure. It was a great opportunity to connect with nature and learn about the history of gold mining in the area.

CTN Editor's Note: This article first appeared in the January February Flatirons Facets. From Crack the News, March 2025.



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https://www.amazon.com/Garret-Romaine/e/B0037I87T8

LAB 29

FROZEN FORCES

Ice is another powerful force that can turn cliffs into talus slopes. One of the interesting things about water is that it doesn't behave the way you would expect when it freezes—it doesn't shrink, it expands. Think about when a wet storm dumps a lot of water on a cliff or rock. We know that water goes everywhere—into the tiniest cracks, making puddles in larger holes. If the temperature were to rapidly drop, that water would freeze and begin to expand. If there is somewhere to go, the ice will flow like toothpaste. But if there is no place to go, the ice turns into a very strong force.

Continued on Page 10

Continued from Page 9

MATERIALS

- Small balloons used for water balloon fights
- Water
- 1 empty 1-pint (475 ml) milk carton
- 1 cup (200 g) of plaster of Paris

Safety Tips

- Don't use a glass jar—it could break.
- Use care cutting the milk carton.
- Wash hands after using plaster of Paris.

PROTOCOL

STEP 1: Fill a water balloon with enough water to make it about the size of a golf ball—about 2 inches (5 cm) across. Tie it off very tightly and set it aside.

STEP 2: Cut the milk carton in half and save the bottom half.

STEP 3: Mix up the plaster of Paris and fill the prepared milk carton to about 1⁄2 inch (1 cm) from the top.

STEP 4: Push the water balloon down into the carton and hold it long enough for the plaster of Paris to harden a little and keep the balloon where you put it. You want at least 1 inch (2.5 cm) of plaster of Paris above the water balloon, and you don't want it to touch the sides, either.

STEP 5: Let the plaster of Paris harden for at least an hour. Once it's hardened, remove the paper milk carton material.

STEP 6: Place the mold in the freezer and leave it overnight. In the morning, you should see cracks in the surface of the container. If your balloon was large enough, it may have actually cracked the block of plaster of Paris in half!

Creative Enrichment

1. What would happen if you left a lot of air in the balloon?
2. What would happen to a block of plaster of Paris that freezes without a water balloon inside?

THE SCIENCE BEHIND THE FUN

This experiment simulates what happens to a rock cliff that gets water trapped inside the cracks. The freezing water expands, and since it is trapped, it cannot ooze its way back out. It can only push and push. If there is enough strength in the rock, it will resist the force as best it can. But even metal pipes can break thanks to ice. Any good plumber can tell you about water freezing in pipes and bursting the metal seams. These are called *atomic forces*—the physics behind water molecules lining up into ice crystals is happening at an atomic level. Most times, the ice finds a weak spot and the rocks survive. But over several storms per year, and millions of years, you can see how this mechanical weathering can be very effective.

HOW DO YOUR JUNIORS DISPLAY THEIR BADGES?

Hello FRA Leaders, One of the first questions new junior leaders ask is, "How do other kids display their badges?" So, I am asking for help! Send me a photo of how your club juniors display their patches, pins, and awards. Does your club use a vest, jacket, backpack, sash, or something else? We would like to put these pictures on the junior's website. As always, be sure you have parental permission for us to use the photograph. I have included 2 ideas I already received, one is a collecting bag, and the other is a wall hanging. If your juniors club isn't using the badge program but your junior members collect other kinds of rock related patches or pins, we would love pictures of those to.

Send your photos to youth@amfed.org.

Lora Hall
AFMS Junior Programs Chair
youth@amfed.org
406-370-1863
www.juniors.amfed.org

SOLUTION

FOSSIL WORD SEARCH

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T . . . . . D I I R A L U N O C . . . .
. Y L I S S O F O R C I M . . . . . L .
. . R . . . . . M . T . I E . . . L . A .
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R . . S N . . . . . A . I . H I . C D R . I .
N . . C . N . . . . C . L . T N . I I O . G P
I . . U . . O . . . I . O . H O H S O C . O H
T . . T . . . S . . D . B . Y M A S N N . L Y
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. . . . . M E S O Z O I C . . . R . . . . A .
P T E R O S A U R . E L A H S . . . . . P .
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Word directions and start points are formatted: (Direction, X, Y)

PALEONTOLOGICAL (E,1,14)
TYRANNOSAURIDS (W,15,1)
ICHTHYOSAUR (N,16,15)
MICROFOSSIL (W,20,9)
BRACHIOPOD (S,23,4)
CONULARIID (S,6,4)
ORNITHOPOD (W,20,3)
HORN CORAL (E,8,16)
PHYTOSAUR (E,2,15)
TRILOBITE (W,21,2)
PTEROSAUR (S,22,7)
HADROSAUR (W,15,8)
TRIASSIC (E,10,4)
AMMONITE (W,14,10)
DINOSAUR (S,3,4)
MESOZOIC (S,5,5)
CRINOID (W,9,2)
DIATOM (N,4,11)
SCUTES (S,1,6)
MIACID (E,1,3)
SHALE (N,20,14)

TIEMANNITE AND LUANHEITE: TWO RARE MERCURY MINERALS

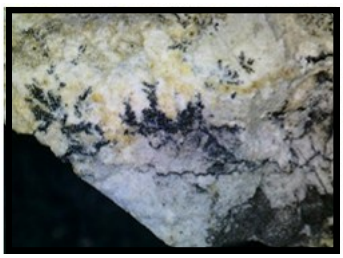
Mike Nelson, csrockguy@yahoo.com, Colorado Springs Mineralogical Society

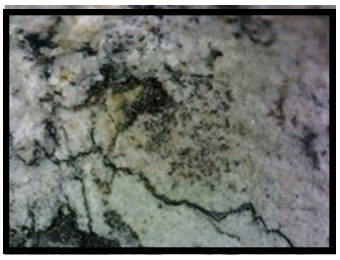
Selenium, Number 34 on the Periodic Chart of Elements, has properties that are intermediate between the elements above (sulfur) and below (tellurium) in the periodic table. It is often described as a metalloid with properties intermediate between a metals and nonmetals. For comparison, other metalloids include silicon, boron, antimony, arsenic, tellurium, and several others. Selenium is a rare element and its abundance in the earth's crust ranks the element 67th (0.05 ppm) while #1 oxygen has 461,000 ppm. Native selenium is rare as a mineral but does appear in some uranium-vanadium sandstone deposits. If selenium is available in hydrothermal or magmatic solutions it often substitutes for some sulfur in the formation's sulfide minerals.

I do not have a specimen of native selenium but have acquired and described, in the April Newsletter, thumbnails of clausthalite [PbSe], klockmannite [CuSe] and berzelianite [Cu2Se]; all are fairly rare minerals and in the selenide group. Selenium can exist in the oxidation states of 2-, 2+, 4+, and 6+ and form selenates, selenides, and selenites (not the gypsum variety). In selenide compounds the selenium has an oxidation charge of 2- and this group includes all ~125 naturally occurring selenium minerals (I think).

My most recent collection addition to the selenides is a specimen of tiemannite acquired at the 2022 Tucson Show. Tiemannite is a rare mercury selenide [HgSe] where the selenium anion has an oxidation state of 2-. Mercury, in nature, has three possible valence states. Elemental mercury has no valence state (Hg0), mercurous mercury has a 1+ state (Hg+), and mercuric mercury comes in at 2+ (Hg++). So, tiemannite has a nice balance of a 2+ cation and a 2- anion. It is related to coloradoite, a mercury telluride (HgTe).

Tiemannite has a steel gray to black color, a metallic dull luster, and a black streak. Like most metals it is opaque and soft (~2.5 Mohs); however, it does exhibit a brittleness. Although some collecting localities produce small tetrahedral crystals most specimens of tiemannite are massive to granular and compact. It commonly occurs with other tough-to-identify selenides in hydrothermal veins.





Above left: *Tiemannite crystals (sub-millimeter in size) forming dendrites and other features. A large cluster of micro-crystals may be observed in the lower right quadrant. Width FOV ~7.0 mm.*

Above right: *Tiemannite crystals (sub-millimeter in size). Notice the scattered individual crystals in center of photograph. Width FOV ~4.0 mm. Best my camera could produce of these microscopic crystals.*

My specimen came from the Lucky Boy Mine, Mount Baldy Mining District on the east flank of the Tushar Mountains of Piute County near Marysvale, Utah. The district is a large gold-silver producer having significant zinc-lead deposits and covers part of the Marysvale volcanic field in the transition zone from the Basin and Range Province to the west and the Colorado Plateau to the east. Upper Paleozoic and Mesozoic sedimentary strata occur along the eastern base of the range and are unconformably overlain by rocks of the Marysvale volcanic field (Chenoweth, 2007). The Lucky Boy mine was not a gold-silver mine but was producing mercury (213 flasks) by retort during 1886 to 1887 and, as far as is known, is the only U. S. deposit of the selenides of mercury to be operated commercially (Callaghan, 1972).

The second mineral that joined my collection in 2022 (Tucson) is also a mercury mineral that, at first, confused me to no end! With the tiemannite described above I was able to observe mercury as a "normal" cation with an oxidation charge of 2+ and balance with the selenium anion of 2-. My new specimen was luanheite with a formula of Ag3Hg and I nabbed it due to mercury appearing as an anion—and so it came home with me. Last week while sorting and looking at minerals (a constant joy) I pulled out the two perky boxes and suddenly my mind hit a brick wall. Something was wrong, or so I thought. As noted above, mercury has oxidation states of

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0, 1+, and 2+ so how could it be an anion? How could it match with the positive oxidation states of silver, 1+, 2+, 3+? Confused was I!

As noted, before in my little writings, I am trying to remain a lifelong learner and therefore relearning "basic chemistry as I advance in age. My three semesters of chemistry as an undergraduate in Hays, Kansas, were completed over 60 years ago and much of the "learning" in these classes did not stick in my brain for the following decades. That is one reason I commonly mention oxidation states in discussions—pushing, pushing my mind to try and understand. So now perhaps I have an answer.

Luanheite, according to MinDat, belongs to the silver amalgam group (yes, the same as your tooth fillings) and therefore is an amalgam mineral. So far, so good. An amalgam is an alloy and a combination of mercury with another metal, in this case silver. Most minerals, other than the native elements, are chemical compounds and held together by chemical bonding (several types of bonding) and may be transformed by chemical reactions. Amalgams, and most metals, are held together by metallic bonding where electrostatic forces are in play. This bonding is quite strong and therefore "holds together" the silver and the mercury.

With some continued interaction examining chemistry books, I found the answer. All elements in an amalgam are in an elemental state and have oxidation charges of zero. So, in the mineral luanheite, an amalgam, both mercury and silver are in oxidation states of zero. I suppose any student enrolled in CHEM 100 would know that; however, if I learned such, it "slipped my mind."

Robert Cook wrote a great article in Rocks and Minerals (2002) describing the discovery and naming of luanheite. The crux of the story was your work is not finished till the paperwork is done. Cook posed the question, "if one discovered a pocket of this material [luanheite in Chile], a mineral unknown until the 1980s, its peculiarity and obvious rarity would suggest that timely formalization as a new species was not an urgent matter. Why then rush to publication?" As you might guess, a group of Chinese scientists had identified and published a description of the new mineral luanheite located in a gold-bearing alluvial gravel, a completely different environment from the Chilean volcanic tuff-hosted silver and mercury mine. Although the Chilean luanheite locality produces the finest specimens in the world, the Type Locality is an obscure river in China and the Type Specimen is a rounded small pebble; no photograph is included on the MinDat description.

Dark metallic gray-black sheets of luanheite on a matrix of volcanic tuff. The specimen was collected in 1985, the year that information about the rare find was published. Width FOV ~9.0 mm

As Cook described, luanheite closely resembles native silver, ranging in color from gray, white to black, has a metallic luster, a hardness of ~2.5 (Mohs), and is soft and malleable. It usually is massive, granular, or sheetlike; however, at the Chilean Elisa de Bordos mine it may occur in arborescent growths. The chemistry remains constant across mineral grains indicating it is a mineral and not just a jumbled mixture of silver and mercury. This has been a tough assignment but perhaps someone sort of perked me up---Richard Faynmann: Study hard what interests you the most in the most undisciplined, irreverent, and original manner possible. I can, at times, be quite irreverent and undisciplined!! References Cited: Callaghan, E. (1973) Mineral Resource Potential of Piute County, Utah, And Adjoining Area: Utah Geological & Mineralogical Survey Bulletin 102. Chenoweth, W.L., 2007, History of uranium production, Marysvale district, Piute County, Utah, in Willis, G.C., Hylland, M.D., Clark, D.L., and Chidsey, T.C., Jr., editors, Central Utah—Diverse geology of a dynamic landscape: Utah Geological Association Publication 36. Cook, R.B., 2002, Connoisseur's Choice: Launheite: Elisa de Bordos Mine, Northern Chile, Rocks & Minerals, vol. 77 no. 2.

STROMATOLITES

Judy Beck, McPherson Gem & Mineral Club

Photo by C Eeckhout, CC BY 3.0. https://commons.wikimedia.org/wiki/File:StromatolitheAustralie2007_06.jpeg

Dinosaur or plant fossils are perhaps some of the first answers to come to mind when considering the oldest biological material on Earth. However, single cell formations known as the stromatolite are the king of ancient biomass. Stromatolites are the oldest fossils, dating back 3.9 billion years. Stromatolites are a sedimentary rock that is formed by fossils left behind by cyanobacteria sometimes called blue-green algae.

The blue-green algae which formed stromatolite fossils were microscopic bacteria. The cells were not plants or true algae but simple prokaryotic cells which grew in dense mats. The word stromatolite comes from stroma meaning layer and lithos meaning rock or layered rock. Fossilized plants are difficult to find from this era in the fossil record because most plant cells require a carbon precipitate not found in the ancient environment to fossilize. The cyanobacteria forming the stromatolite colonized and created slimy mats in salt and freshwater, using the carbon dioxide in the surrounding water to release oxygen through photosynthesis. The photosynthetic process used by the algae created calcium carbonate, forming the required precipitate needed to fossilize. The calcium carbonate coated the slimy surface of the colonies along with sand and sediment forming layers. Layers continued to form and the process was repeated, creating the sedimentary rock layers the stromatolite fossils are found in.

Without large terrestrial plant life stromatolites were key to producing the oxygen rich environment needed for evolving life billions of years ago. Stromatolites can look different depending on where they are found in the world.

Stromatolite producing cyanobacteria is not as common today due to increased predation by other organisms in the modern world.

However, stromatolites can still be found worldwide. The bacteria is most common in the salty seas of the Bahamas and Shark Bay, Australia, and in the freshwaters of Pavilion Lake, Canada and Cuatro Ci'enegas Basine, Mexico.

While not as flashy as other mega fauna from the ancient world, there are still those who appreciate these single cell fossils. There are even dealers at American Federation shows who exclusively deal in this ancient material. Indeed, the under appreciated stromatolite offers a fascinating window into the history of the world and the origins of plant and animal life on Earth.

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AFMS Adult Articles, 1st Place 2025 The Post Rock, 11/2024, via Rocky Mountain Federation News,

SAFETY REMINDER

By Erin Irwin
SCFMS Junior Chair
Lubbock GMS Juniors Coordinator & Secretary

We've all seen the safety rules posted around the club shops. Most of us tend to overlook them— until someone speaks up. That's usually when we roll up our sleeves, tie back our hair, and maybe dig around for a pair of safety glasses. At home, though, I know many of us let our guard down even more. I'm definitely guilty of that. A few weeks ago, we were using a bench grinder and a Dremel at home. No one was wearing safety glasses, and no one had their hair pulled back. One thing people rarely talk about is the importance of posture and body positioning when working with machinery. It can make all the difference. My 15-year-old son, who's been taught proper safety protocols and has used many machines without issue, had a scary experience that day. In a split second, his hair got caught in the spinning mechanism. He shouted, and while I rushed to unplug the machine, he managed to shut it off himself. Thankfully, the only thing he lost was a lot of hair—not his scalp. Still, for a teenage boy, losing that much hair was a big deal. He was angry and swore he'd never touch the machines again. I hope with time he'll reconsider and get back to making cabs—something he's genuinely talented at. But one thing is for sure: we won't be taking safety for granted again.

BENCH TIPS BY BRAD SMITH

TAPERED REAMERS A tool you don't see often these days is a tapered reamer. It's not a tool you'll use everyday, but they're particularly useful for making an irregular hole round or for enlarging a hole to an exact diameter. For example, the small set in the yellow pouch is for holes in the range of 0.3mm to 2.5mm. They are great for sizing a tube to fit a hinge pin. Other times when I'm drilling a hole for riveting and can't find the exact size drill, I simply drill the holes with a slightly smaller bit and enlarge them with a reamer until the wire just fits.

For larger hole sizes in sheet metal up to 14 ga, I really like the reamer with the black handle. It makes quick work of sizing holes from about 3mm to 12mm. You can find them in well-equipped hardware stores.

You may never use the large diameter reamers, but when sawing out some rings from 4mm thick sheet, I found they worked well for rounding and sizing the hole.

TORCH GASSES INSIDE THE HOME—It's important to understand the risks in using a torch to make jewelry inside the home. For fuel gasses, my preference is to use only the small disposable Propane tanks. That avoids any possible problems with the fire marshal, with your landlord, or with your insurance company. Note that you can get an adapter to refill these tanks outside from your BBQ propane tank.

For oxygen, I used to use the high pressure tanks, but I don't like the risk of transporting them for refills. My gas supplier wouldn't even load them into the car for me because they didn't want the liability.

A better choice is to get an oxygen concentrator. Search the want-ads for a good bargain. Got mine for $300. The units put out about 5psi and will run a Smith Little Torch very nicely. No regulator is needed. Look for units with under 5-7000 hours of operation.

DRILLING A STONE -One of the things my students often ask to do is drill a hole through a piece of gemstone. The usual thought is to get a diamond drill, but I've been disappointed with them. I think the reason is that the tip of the drill is just pivoting in the hole and fails to cut well. When it looks like the drill isn't cutting, the tendency is to push with more force. The drill gets hot, and the diamond grit falls off.

A much better approach is to use a core drill. This is a small hollow tube with a coating of diamond grit at the business end. The diamonds easily carve out a circular arc without undue pressure or heat buildup.

Core drills are readily available from lapidary and jewelry supply companies. They come in sizes as small as 1mm and are very reasonable in price. For instance, a 2mm diameter drill is about $6.

Chuck the core drill in a drill press, Dremel or Foredom and be sure to keep the drilling zone wet to cool the tool and to flush out debris. Also, if you're drilling a through hole, ease up on the pressure as the drill is about to cut through. Otherwise, you may chip off some of the stone surface around the hole.

Making jewelry involves a multitude of skills, intricate hand work, and a lot of problem solving. In this book series find help to:

- Broaden your metalworking skills
- Improve productivity at the bench
- Save money on tools and supplies

See Other Tips in my Smart Solutions for Jewelry Making Problems
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Happy hammering,
Brad Smith

Please, check out more Smart Solutions for Your Jewelry Making Problems
Amazon.com/author/bradfordsmith

UPCOMING SHOWS 2025

JUN 14-15 ARLINGTON GEM AND MINERAL SOCIETY

AUG 9-10 BATON ROUGE GEM AND MINERAL SOCIETY

AUG 16-17 ARK-LA-TEX GEM AND MINERAL SOCIETY

SEP 27-28 LUBBOCK GEM AND MINERAL SOCIETY

From Kieth Harmon

To those who helped make this issue possible...

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