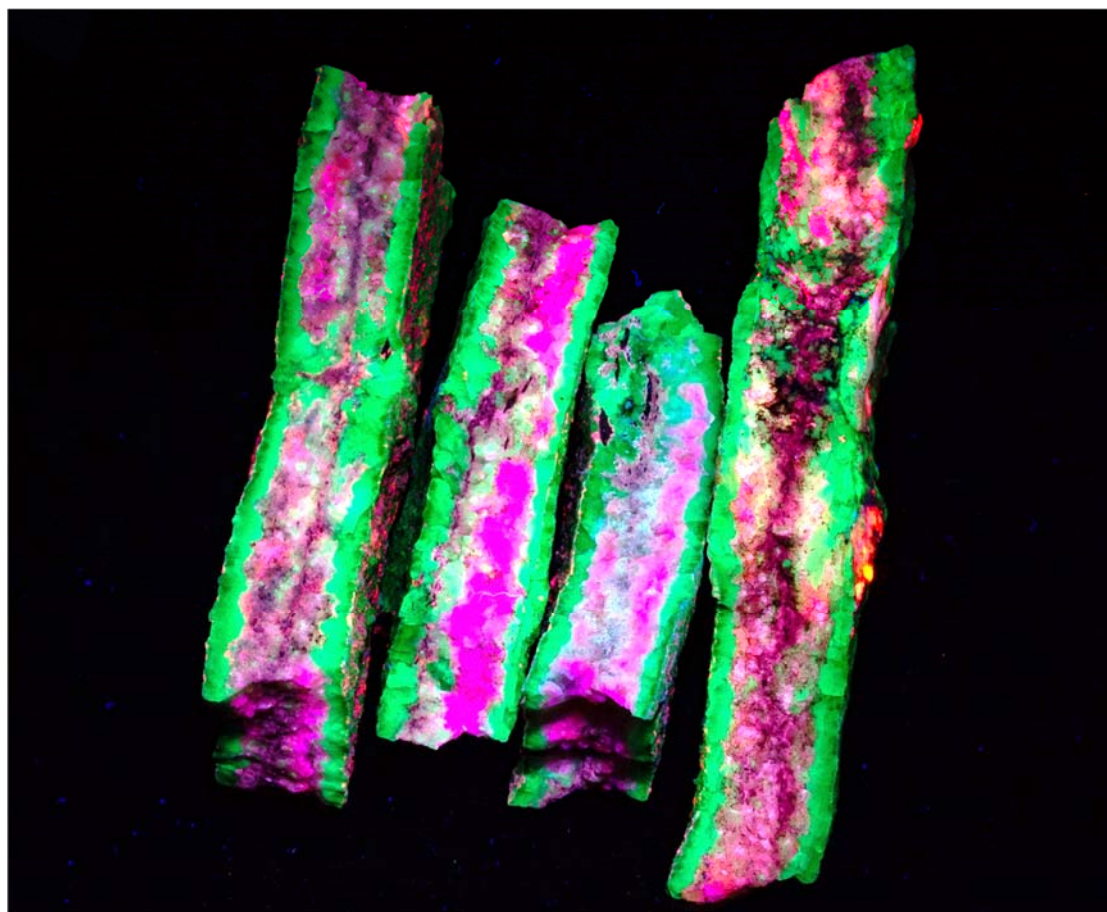




# Flatirons Facets

Flatirons Mineral Club of Boulder County, Colorado  
Volume 66, Number 6

November-December 2023



Watermelon  
Chalcedony  
under UV light  
from Crawford,  
Nebraska

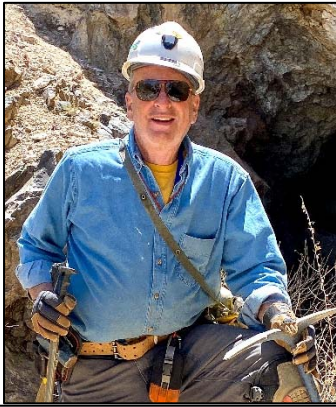
The field trip to  
Crawford was  
one of several  
club field trips  
during the past  
two months.

Field trip  
reports begin  
on page 20.

Photo credit:  
Brian Walko

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**The Flatirons Mineral Club** is a non-profit organization, which is dedicated to developing and maintaining interests in Earth science and associated hobbies. The purpose of this Club includes, but is not limited to, studying geology and Earth science, teaching others about our hobby, including young people, collecting gem, mineral and fossil specimens, and learning lapidary skills.

The Flatirons Mineral Club is affiliated with the Rocky Mountain Federation of Mineralogical Societies, the American Federation of Mineralogical Societies, and the Greater Denver Area Council of Gem and Mineral Societies.



## *President's Message*

### **Private Land & Collecting**

The best rock, mineral, and fossil collecting is on private land. The problem is, how does one get access to it? Some private landowners charge a fee. Some will deny access. Here are some tips on how I get private land access. First, identify where you want to collect. Then research who owns the land. This can be done electronically via the local county clerk and recorders or assessor's office. The Boulder County Assessor has a good [property search site](#). You can also purchase a landowner app for your smart phone. I use [onXmaps](#). Once you identify the owner, you need to contact the party. This could be as simple as driving by and seeing if the owner is home, asking neighbors, or mailing a letter introducing yourself and your wish to collect on their property.

When contact is made, bring a map of the area in which you want to collect. The landowners generally tell you what areas are off limits. After collecting, always show the landowner what you found and give your first pick as a thank you. Never post your private property adventures on social media unless you can hide the location. Some people are very good at identifying locations by looking at the background landscape.

Serendipity sometimes helps. Recently I was coming out of one of my gold claim access roads at the same time and another person was entering the adjacent private property. He stopped to check me out and I went over to introduce myself. After talking and explaining what I do, he had a need for my services. We exchanged contact information. Within two weeks I was conducting a workshop for the Environmental Education Center's staff on uranium geology with a field trip to an old uranium exploration pit where we found autunite. You never know when your lucky prospecting break will come.

## **Come to the Towel Show – Tuesday, November 14**

If you're new to the club, you're probably asking, "What is a Towel Show?" Each year, members bring specimens they have collected this past year, as well as lapidary and jewelry they have made in the last year, to show to other club members. The specimens are displayed on a towel, hence the "Towel Show".

Prizes are awarded to both adults and juniors in the following categories: personal field trip, club field trip, lapidary/jewelry, best mineral, best fossil, best ugly rock, and even best towel. Participants vote for their favorites, and gift cards are presented to the first and second place winners in each category. So, pick out some of your best specimens in as many categories as you like, make labels for them, and bring them to display on your towel.

The Towel Show starts at 7:00 pm in the Mountain View United Methodist Church (355 Ponca Place in Boulder). **If you are bringing items to show, plan to arrive 10 minutes early to set up your display on your towel.** Also, please bring snacks to share with everyone.

Come and join in the fun of displaying your special finds and creations and enjoying those of other members.

## 2024 Dues are Due

Annual dues are still only \$18 per household for 2024. You can pay in two ways:

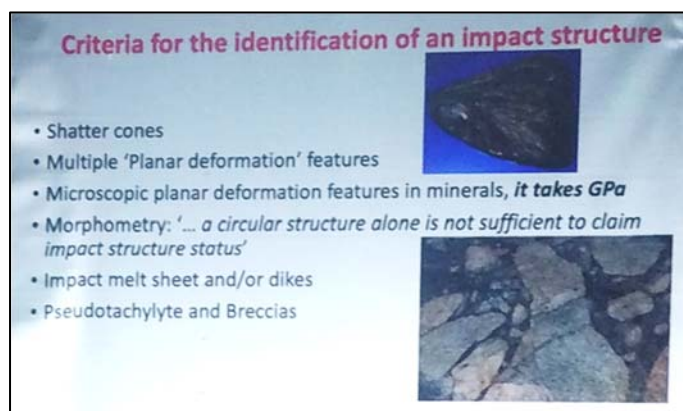
- Pay Gerry Naugle, Treasurer and Membership Chair, at any FMC monthly meeting.
- Send a check made to "Flatirons Mineral Club" to P.O. Box 3331, Boulder, CO, 80307. Please do not send cash in the mail.



Be sure to pay next year's dues, so you continue to receive newsletters and email blasts, plus have access to the members-only area on the club's website to sign up for field trips.

## Recap of Our October 10 Club Meeting

Club member **Andrew MacGregor** gave a great talk about the **Serendipitous Discovery of Large Impact Craters** at our October meeting. He told the story of how serendipitous events led to the discovery of an impact crater larger than the Washington Beltway. It was an interesting talk about how geologists use a number of techniques to make important discoveries about our Earth.



## Rocks & Rails, December 8-10



Last year's Rocks & Rails Show. Credit: Brian Walko

Rocks & Rails, the club's annual Gem and Mineral Show, is on December 8 to 10 at the Boulder County Fairgrounds in Longmont, 10 am to 5 pm each day. Adult admission is \$8 and children 12 and under are free with a paid adult. Our show is run in conjunction with the Boulder Model Railroad Club, so you can enjoy lots of rocks, minerals, and fossils, plus model trains in the other half of the building. The show features gem and mineral dealers, exhibits, fluorescent minerals, and children's activities including games, grab bags, and the Rock R Magic Show.

Club members can participate in many ways. The show is planned and run by club volunteers; see the next page to find out how you can help. There will be eight display cases to showcase your special specimens or lapidary work. Details on

how to sign up for a display case are on page 5. Club members can also sell their own creations or rock collections at



the Artisan Tables – see page 5. Also, specimens are needed for the Kids Corner; we have a home for those specimens you collected years ago but no longer want. More information on donating specimens can be found on page 6.

### Volunteer for Our Annual Club Mineral Show

Every year, our club puts on the best gem and mineral show in Colorado. But to do this, we need volunteers. We need people who unselfishly donate their valuable time to help with the show. There are several areas of the show where we need those volunteers. I'm here to ask if you could volunteer some of your time for the show in one of the following areas.

The first area is **Set-up**. Set-up takes place on Wednesday, December 6<sup>th</sup>, starting at 9:30 am and continuing until finished. Jobs include putting tables in their predesignated places and helping where needed. But we no longer cover and skirt the dealer tables. Lunch is provided.

During the show, volunteers are needed in 2 areas. The first area is **Security**. Each volunteer dons an orange vest and patrols the show floor, keeping an eye out for shoplifters. We also have 2 plain-clothed security guards that also patrol the show floor. It would be appreciated if security volunteers spend at least 1½ hours on patrol.



Brady, one of our Jr. Geologists, runs the shark teeth hunt at last year's kids' area. Credit: Brian Walko

The other area volunteers are needed is the **Kids' Area**. That's my area. In the kids' area, we have games for the kids to play for a quarter, and everyone wins. There are also colorful grab bags filled with specimens for \$1.00. Volunteers interact with the kids and their parents at each game. All proceeds from the games and grab bags go to a scholarship fund - the club keeps no profit. I ask that volunteers spend at least 1½ hours in the kid's area, but I appreciate any time a volunteer can donate. The kids' area is open Friday, Saturday, and Sunday from show opening at 9am to the 5pm closing. I will do my best to work with you to find a time and day that works best with your schedule.

**Take-down** starts at the close of the show on December 10<sup>th</sup> at 5pm. Volunteers do a reversal of set-up; take tables down and clean up. This can last several hours. Dinner is provided.

We could also use some help in the morning before the show opens for an hour or two on Friday, Saturday, and Sunday, helping direct people to parking places.

And your perk for volunteering at the show is free admission! This also presents a great opportunity to do some Christmas shopping!

If any of these areas is of interest to you, and you would like to volunteer, please contact me, Char Bourg, at [showvol46@gmail.com](mailto:showvol46@gmail.com).

### Show Club Artisan Sale Table

This year we are continuing the opportunity for club members who are not dealers to sell their own creations or rock collections at our December show in Longmont. This can include bulk rocks, slabs, jewelry, and other items that fit the following description from our dealer contract: Dealers will be permitted to display or sell only materials or equipment directly related to the Earth Sciences, Rocks, Minerals, Fossils, Lapidary, Gems, Jewelry, Indian Artifacts, or printed materials, film or video materials associated with any of these fields.

We will provide a set of tables at the show designated for this purpose, and we are calling it the “Flatirons Mineral Club Artisan Table”. You are not required to get either a Colorado Multiple Events License and/or a Tax Resale number if you do not anticipate selling over \$1,000 worth of merchandise.



Kevin Notheis with items for sale at last year's Artisans Table. Credit: Brian Walko

See the email from the Flatirons Mineral Club to all members dated Oct. 6<sup>th</sup> for guidelines. A few ground rules for participation are:

1. This is offered on a first-come, first-served basis and space is over 70% full, so please don't wait to register if you are interested.
2. We limit each individual's space to 2, 3, 4, 5 or 6-foot increments. Please let us know the number of linear feet you are requesting, so we can make sure we have the room available. Individuals may combine for more space or to help with staffing.
3. **You must sign up and pay for your space by November 18th.** The price for table space is \$6 per foot.
4. You may set up your space either on Thursday, December 7th, between 7:30 am and 9 pm, or on Friday morning between 7:30 am and 10:00 am.
5. All items must be clearly marked as to price, either individually or in groups, (which you can then negotiate as you wish).
6. Your Artisan Table area must be staffed at all times to properly register sales and for security purposes. To this end, it is the obligation of all participants in this offering to register for one or more time slots to oversee this area. Once I have a list of the people who will be participating, I will then coordinate the staffing.

If you would like to join this endeavor, please contact Andrew MacGregor at [andrew.d.macgregor@gmail.com](mailto:andrew.d.macgregor@gmail.com) to register. Once you register, he will send you confirmation.



### Display Your Best

Once again, we will have display cases for our members to showcase their rocks, minerals, fossils, and lapidary work. The display cases are from the Denver Show and feature a glass front, overhead lighting, and are secured. The display cases will be set up for you. All you need to do is bring your specimens, labels, and liners on Thursday, December 7, and fill your case. Plan to take down your case on Sunday at 5 pm.

Coral with her display from last year. Credit: Dennis Gertenbach

The display cases are always a great hit with the public and help to interest people in joining our club. To reserve a display case, please contact Dennis Gertenbach at [gertenbach1@gmail.com](mailto:gertenbach1@gmail.com). Preference for cases will be given to the juniors.

### **Specimens needed for the Rocks & Rails Show**

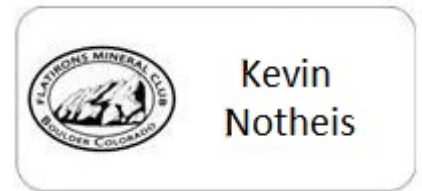
It is time for you to go through your rock collections and donate to the KIDS' AREA for our rock and mineral show. We need donations for the WHEEL OF ROCKS, ELECTRIC MATCHING, and a new game, PIC-A-DINO. These all need SMALLER SPECIMENS, about the size of a quarter, for prizes. Some examples are small pieces of calcite, Apache tears, quartz crystals, fossils, wood, etc. We like to be able to fill a container with the same type of specimen for the kids to choose from.

Of course, if you have rocks and minerals that you aren't sure of, bring them anyway. Some we can cut down and use while others may end up in a pothole. To DONATE your specimens, contact Char at [rckhnd4252@gmail.com](mailto:rckhnd4252@gmail.com).

## **Member Name Tags**

Would you like a Flatirons Mineral Club name tag to wear at club events and field trips? The club places orders for name tags several times a year for members.

If you would like a name tag, please log onto our website and choose the "Request a Name Tag" link in the Members Area. Add your name to the list as you want it to appear on your name tag, and it will be ordered for you. Your first name tag is free!



Example of a club name tag



## **Holiday Party and Gift Exchange – December 19**

To finish the year, come and join the fun at the annual Holiday Party on Tuesday, December 19. It is a time to exchange gifts and share snacks and stories with one another. So, bring a gift and some snacks to share with others.

One of the highlights of the evening is the annual gift exchange. Bring a wrapped \$5 to \$10 rock-related gift. The gift exchange is great fun, with gifts exchanging hands throughout the evening. Members young and old will have a great time, and you never know what gift will go home with you.

The party starts at 7:00 pm at Mountain View United Methodist Church (355 Ponca Place in Boulder). We hope you can join us!

This metal dinosaur garden ornament was the most sought-after gift at last years Holiday Party.  
Credit: Brian Walko



## Member Profile: Brian Walko

Anita Colin

If you have seen our current FMC president, Brian Walko, at club meetings, introducing the guest speakers, or at rock shows, tending the fluorescent mineral displays, you have NOT seen him in his element. This man LOVES the outdoors. Whether he is scouting the surface for fluorescent minerals, scaling mountains looking for gems, panning rivers for gold, skiing down snow slopes, or learning mining techniques underground, the outdoors is his “happy place”.

Brian was born in, believe it or not, New York City. Luckily for this outdoor-loving boy, his parents soon moved to rural Holmdel, New Jersey. Brian spent as much time as possible in nature, looking for rocks in the summer and teaching himself to ski in the winter. He screened sand in a local creek for sharks’ teeth and discovered fossil shells embedded in nearby cliffs. His parents supported his hobby, taking him to rock shows whenever possible. When they went to a show in Franklin, New Jersey, which is the fluorescent mineral capital of the world, Brian became hooked on these glowing rocks.

When it was time for college, Brian chose Colorado. Why Colorado? Skiing! (The rocks aren’t too bad either.) He earned his bachelor’s degree in Earth Sciences - Geology, as well as a teaching certificate from the University of Northern Colorado. After college he took a job teaching 8th grade Earth Sciences in Chadron, Nebraska. (What about skiing? Well, he discovered cross-country skiing.) He enjoyed agate and fossil hunting with the other teachers and took a lapidary class as well. And at the end of the school year, he took his students on a field trip to Toadstool Park near Crawford.

His next step was to marry his college sweetheart and get an Earth Sciences teaching job in Colorado. A big career change was in store for him when his school bought a couple of Apple II computers. Brian was fascinated with their potential, and he learned how to program in Basic. He then took some programming classes at CU and became the computer science teacher at his school. IBM was offering summer programs for teachers to learn more about computing, and Brian jumped at the opportunity. After his second summer learning software engineering, he took a programming job at SEI information systems. He worked for several companies after that, earning a master’s degree in software engineering from the University of Denver along the way. His most interesting job was being in charge of the “Y2K” transition for MatchLogic-Excite.com, Inc. The project involved working on computer systems around the world and earned him an “Employee of the Year” award. He retired from IT in 2019.

Wherever he goes, Brian is ready for rockhounding and gold-panning. Although his first and greatest love is fluorescent minerals, he is thrilled



Brian looking for aquamarine on Mt. Antero.

with all of Colorado's rock-hounding opportunities, from the slopes of Mt. Antero to the old mine pits in Jamestown. He even hunts down uranium deposits! (Apparently, some uranium ore is fluorescent.) Ten years ago, he started his own company, Earth Extractions, LLC, dedicated to prospecting and small-scale mining in the Jamestown-Ward area. He mentioned that he has been with the Lefthand Fire Department for over 20 years as a director and that it has really helped him connect with the area and the landowners.

In addition to being the current president of Flatirons Mineral Club, Brian is a member of the Fluorescent Mineral Society (head of the Rocky Mountain Chapter), Colorado Mineral Society, and DREGS (Denver Region Exploration Geologists' Society). He has hosted club trips to a couple of his claims in recent years, as well as trips up to Toadstool Park near Crawford, Nebraska. If you are a good friend and not afraid of the dark, he might even take you hunting for fluorescent minerals at night!

You can check out his activities and fabulous photos on his [Earth Extractions](#) Facebook page and website at [earthextractions.com](#). Learn about the Fluorescent Mineral Society at [uvminerals.org](#) and the Denver Region Exploration Geologists' Society at [dregs.org](#).

## Collecting Rocks for Grab Bags

Anita Colin

Every year, Flatirons Mineral Club assembles up to a thousand "grab bags", cloth bags with ten labeled rock, mineral, and fossil specimens in them, to sell at the Denver Gem & Mineral Show and at our Rocks & Rails Show. The grab bags put specimens into the hands of interested kids (and adults) and the proceeds help fund scholarships for students in the earth sciences.

A thousand bags multiplied by ten specimens each equals TEN THOUSAND ROCKS a year! Happily, these do not need to be precious gemstones, especially since the bags still sell for just \$1. Mostly, they just need to be good examples of some type of rock, mineral, or fossil. Often, grab bag specimens come from our club field trips, such as barite and magnetite from this past summer's trip down to Hartsel, Colorado. If you are still hanging on to your stash, pick out a few favorites to keep, and bring the rest to a club event to donate.

Many grab bag specimens come from club members' personal trips. These donations can really broaden the selection of rocks that go into our bags, as individuals often get much further from home than your typical club trip. Consider collecting for the club if you take a trip out of state this winter. Roadcuts provide an easy source of fresh specimens if you are on the lookout for interesting material. Some of my favorite spots are Highway 4 west of Los Alamos, New Mexico for pumice, Highway 50 in eastern Nevada for shale, and Old Highway 40 in Reno for chalk.

Yet another source of specimens for grab bags is landscape supply yards. While a lot of the material might be unidentifiable, some companies will have beautiful pink quartzite or tri-colored granite. My best find was a company in southern California that sold "Oro Verde", a gorgeous green quartzite from Utah. I told them why I wanted to buy just a bucketful, and they said, "Take all you need. No charge." Woo!!!

The author collecting chalk in Reno, Nevada







So, keep the rocks coming in and the club will keep making grab bags to inspire budding rockhounds. To make a rock donation, bring them to any club event or contact me at [anitacolin@hotmail.com](mailto:anitacolin@hotmail.com) to arrange a drop-off/pick-up.

Green quartzite from a landscape yard near San Bernardino

## Jr. Geologists Activities

Last month, the Jr. Geologists held a mini-Towel Show to get ready for the club's show on November 14. The juniors enjoyed talking about their favorite rocks, minerals, fossils, and lapidary projects, and seeing what others brought. To complete the requirements for the Collecting Badge, the juniors need to write a short article about their collection. Several articles begin on page 10. For homework, the juniors took home three different rocks and determined if each is an igneous, sedimentary, or metamorphic rock.

Here are pictures from our mini-Towel Show.



Photo Credits: Hana Elek and Dennis Gertenbach

This month, we will learn more about igneous, sedimentary, and metamorphic rocks, plus get ready for next month's Rocks & Rails Show by learning how to put together a display case and showcasing special minerals at the Rocks & Rails Magic Show.

If your family would like to join the Jr. Geologists and you are not on our email list, please contact Dennis Gertenbach at [gertenbach1@gmail.com](mailto:gertenbach1@gmail.com) to have your name added.

## **My Collection**

Mihai Nicolaev, age 8

I just started collecting rocks and minerals, so my collection is still small.

One of my favorites specimens is lapis lazuli - a semi-precious stone that I received as a gift during my trip to Moldova. I like to collect quartz.

During the club field trip to collect magnetite, I was hammering on the top of the rock to get out a big piece of magnetite. On one of the hits, the magnetite just flew out of the rock without breaking. By the way, this was my first field trip.

One day my dad asked me to come to the garage, and he gave me a heavy case with a lot of rocks. Those rocks were collected in the late 1950's in the Black Hills and Badlands of South Dakota, US. It was a big surprise to me.

## **My Collection**

Emilyn Bubb, age 10

I love to collect rocks, but it's hard to choose a few. I like to find rocks that are valuable and turquoise colored, and minerals. If you're talking about a certain rock, it depends on my mood. Why? It's because finding valuable things is special. I also like the color turquoise because it's pretty in my opinion. Last, minerals are just cool!

I have a story to tell about a specimen that's in my collection. One day I was taking some people on a trip to the Big Thompson Canyon. We went up the trail to a chimney rock and started to look on the ground. And there it was, right there in front of me, a big blue beryl crystal.

Our oldest could be the stromatolite. They can be up to 3 billion years old. Our youngest is an amber that my dad found last year. It might be only a few years old! If so, it isn't old enough to be a fossil. Our large fossils from Peace River are from the last Ice Age and are about 11,000 years old.

My most interesting fossil is a tooth from a dire wolf or a cave bear. Why? I think that is because I like wolves, and it might be from one.

One of my lapidary projects was an amazonite that I got to polish. You start off with a large grit and shape the sides. Then with each smaller grit, you start polishing from the sides to the top. This grit is on a grinding wheel. Also, you need the wheels to spin fast so the polishing works. After the polishing, it was a cabochon.

## What We Like to Collect

William Elek, age 13

We like collecting different varieties of rocks and minerals, including fossils, petrified wood, and gems. On our recent personal family trip in Kremmling, Colorado we found shells, ammonites, and even a Native American artifact! In the spring of 2023, we went to Arizona and New Mexico. In Arizona, we visited Meteor Crater, Petrified Forest National Park, and Homolovi State Park, where you can find many pieces of pottery, shards, artifacts, and ruins of “Hopi people” who resided in the area from 1200s to 1300s.

In New Mexico we visited Chaco Canyon, El Malpais National Monument, and the Bisti Badlands Wilderness Area, which is one of the most magical places to visit. You can find unusual erosion of rocks, petrified wood, and fossils. The scenery of the area is spectacular and absolutely breathtaking.

We love to collect rocks because it takes us on new adventures, and we get to see and explore new places.

### Fossils

Over the years we found many different types of fossils. One fossil I found was a sea biscuit, which I found in Boulder Canyon, Colorado. The sea biscuit is estimated to be 70-80 million years old. Other favorite fossils we found are dinosaur bones dating back to the Jurassic era, 145 million years ago near Green River in Utah. Some of the bones were over five feet tall! We found so many fossils just in the state of Colorado, such as shells near north Boulder, or petrified wood near the town of Marshall. Another amazing place we visited with our mineral club was Florissant fossil beds in Colorado, where you can find fossils of insects, leaves and giant fossil tree stumps from 34-35 million years ago.



Herkimer diamond (quartz) from  
Herkimer, New York

### Gems and Minerals

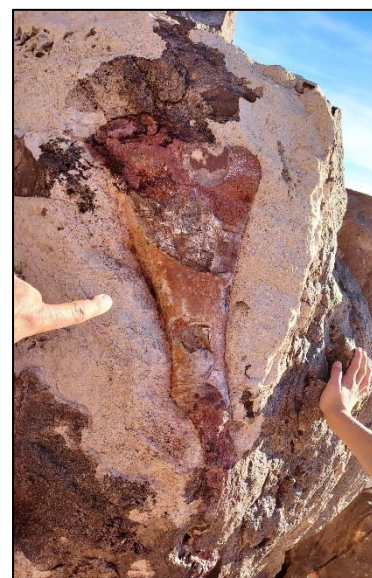
In 2022 we went to New York to look for Herkimer diamonds. Herkimer Diamonds are only found in Herkimer County, upstate New York. We found some beautiful specimens. In Hartsel, Colorado on our field trip, we found some beautiful blue barite, green and purple fluorite, actinolite, epidote, magnetite, and calcite.

### Ugly Rocks!

Every time we go on a trip, we will always find some funny looking or ugly looking rocks. I found some rocks just near my house, and there's one that I found, and I absolutely think it's cool, “the cookie rock.” We also found a strange looking concretion we call the “Brain Rock.”

### Special Rocks!

We have collected a variety of special rocks. Some we found, some we bought, and some were given to us as gifts. A few examples of special rocks we have include moldavite, opal, and a few rocks I found on my trip to Slovakia. We also have rocks from Turkey from a very special and ancient place.



Dinosaur bone from Fossil  
Point, Utah



Brain Rock



Collecting rocks and minerals is a great and fun way to learn about geology.

### Other Fun Places We Have Visited



Balanced Rock, North Salem, New York



"Stone waterfall" near the castle of Somoska, Slovakia



Ammonite, Kremmling, Colorado

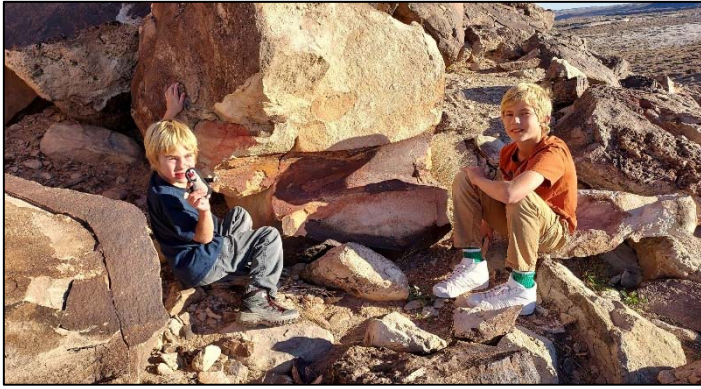


Wieliczka Salt Mine, Poland



Artifact, Kremmling, Colorado





Fossil Point, Utah



Bisti Badlands, New Mexico



Bisti Badlands, New Mexico



Near Fossil Point, Utah



Near Bisti Badlands, New Mexico



# How to Make Your own Pottery Clay at Home (FROM DIRT)!

Eian Link, Age: 11

Are you eager to embark on a pottery journey from the comfort of your home? Perhaps a trip to a hobby store for pre-made clay is out of the question, or you're just beginning to explore the world of pottery. The good news is that you can create your very own clay right at home!

## Step 1: Unearthing the Perfect Soil

The first step in crafting your clay is selecting the right soil. Not all dirt is equal, and some might lack the necessary clay content. Here are a few key indicators to consider:

- **Tracks:** Keep an eye out for impressions left by vehicles, animals, or objects when the soil was wet; these often indicate clay presence.
- **Texture:** Clay-rich dirt typically has a muddy or dense consistency.



- **Dust:** Surprisingly, even dusty dirt can contain clay. I tried this and the results were surprisingly good!



Don't be too selective; these are just helpful pointers.

## Step 2: Processing Your Clay

There are two methods for processing your clay, depending on its composition.

### Method 1

This method is ideal for soil samples with minimal organic matter, mainly composed of sand, gravel, and rocks.

1. Start by placing your soil in a bucket of water and agitate it until there are no lumps.
2. Gently pour off all the dissolved clay into a fabric bag or cloth, taking care not to include any sand.
3. If there's any residual clay, you can add more water to dissolve it. Hang the bag for 12 hours, and upon your return, you'll find pure clay with no water left!



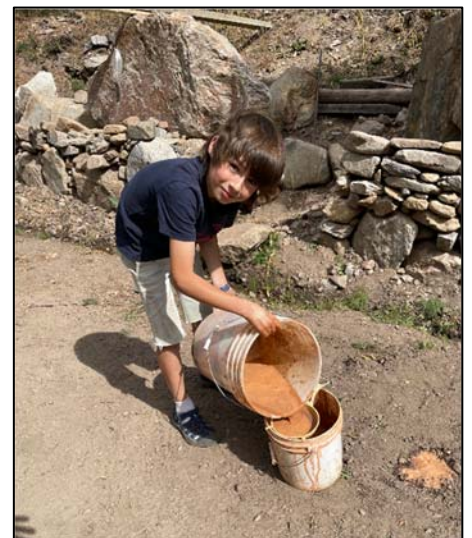




### Method 2

This approach works well for clay that contains a bit more organic matter.

1. Begin by placing your clay in a bucket of water and agitate it until no lumps remain.
2. Pour the dissolved clay through a fine sieve into another bucket to eliminate debris.
3. Repeat this process between the two buckets about three times to refine the clay.
4. Finally, transfer the clay into your fabric bag and wait for 12-24 hours, depending on the weather and climate.



### Step 3: Perfecting Your Clay

Now that you've extracted your natural clay, there's one final step before it's pottery-ready. Clay tends to shrink as it dries because

of its high water content. To prevent cracks in your pottery, add some fine, clean sand to your clay; it should make up about 20% of the clay's volume.

And there you have it – your homemade clay is now primed for your pottery endeavors! Enjoy crafting your masterpieces with your very own DIY clay. Happy pottery making!

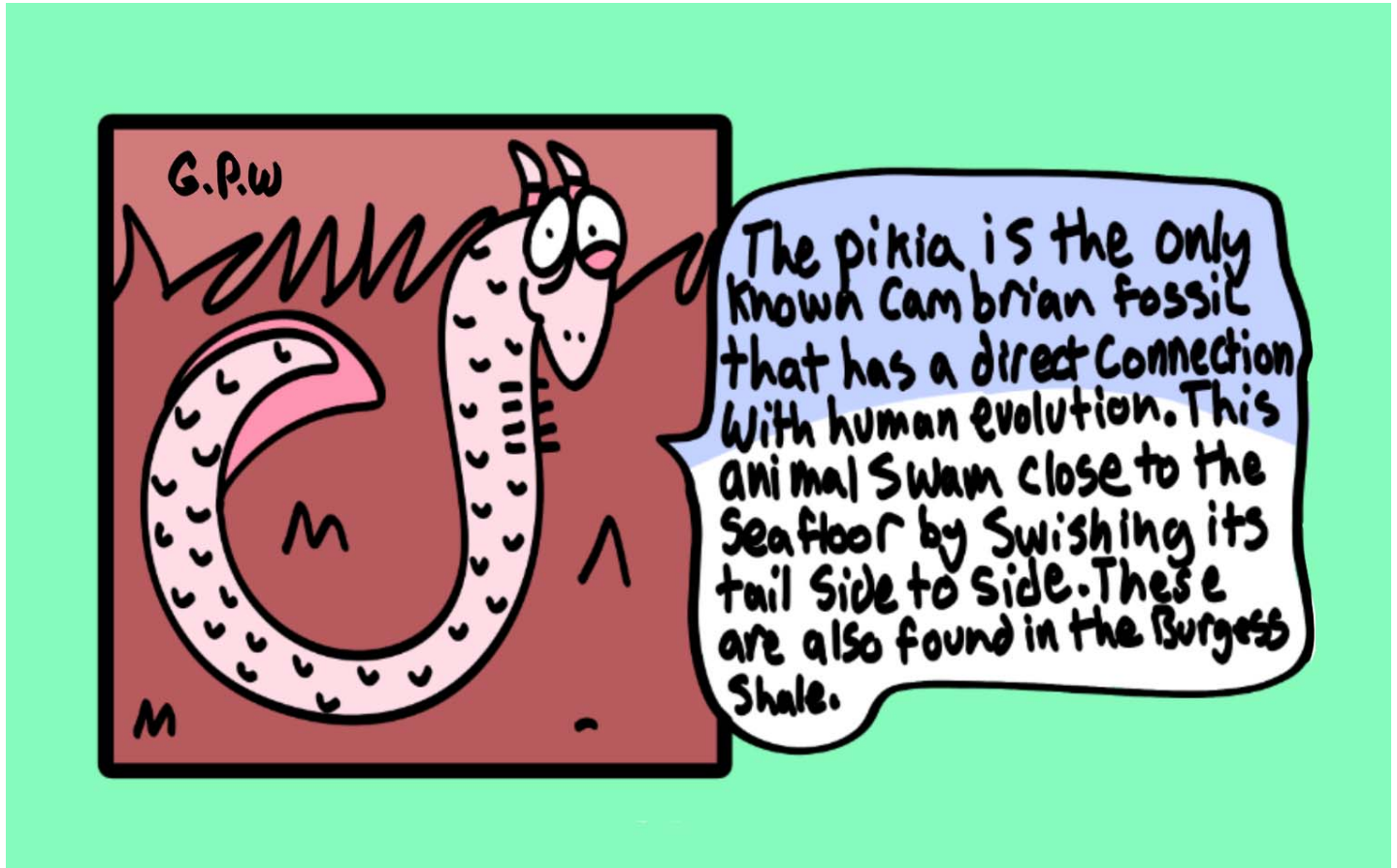
*Editor's Note: Eian is a Jr. Geologist that has been in the club for about a year. He likes to collect rocks and to work on the rocks he finds. He is in 6th grade and likes math and science.*



## Fossil of the Month: Pikaia

Charlotte Small, age 15

Starting this month, every newsletter will contain an excerpt from Charlotte Small's new comic *Grey's Prehistoric World*. If you like, you can read more of her comic on Webtoon.com, [https://www.webtoons.com/en/canvas/greys-prehistoric-world/list?title\\_no=847316&webtoon-platform-redirect=true&page=1](https://www.webtoons.com/en/canvas/greys-prehistoric-world/list?title_no=847316&webtoon-platform-redirect=true&page=1).



## Denver Gem & Mineral Show Recap

This year's show has come and gone. It was well attended, and folks enjoyed seeing **Gem Minerals: Nature's Bling**, along with the wide variety of rocks, minerals, and fossils.

Mark your calendars for next year's show, September 12-15, 2024. It will be at a new location at the Westin in Westminster, much closer and easier to get to – plus free parking.

Here are photos from September's show.

Club President Brian Walko at his talk on New Mexico fluorescent minerals. Credit: Dennis Gertenbach







Brian Walko and Gerry Naugle's fluorescent mineral display, short wave. Credit: Brian Walko



The show's fluorescent minerals display crew, including Brian Walko (second from the left) and Gerry Naugle (right). Credit: Mark Jacobson



Beautiful aquamarine, a great example of this year's show them, Gem Minerals; Nature's Bling. Credit: Mark Jacobson

## The **INVERTED TOPOGRAPHY** of The Pawnee Grasslands

Char and Mel Bourg  
Geology Consultant: Dr. Peter Modreski, ret. USGS

What if I said to you that the landform pictured below was once a stream bed.  
To that you might say, "No way." And I will say, "**Yes, way.**"





One day earlier this year, Char was using Google Earth to scope out a new area of the Pawnee Grasslands in the east section. She noticed some oddly shaped landforms with a very sinuous, snake-like shape. Originally, she thought these were just your normal streambeds, but when changing the view to ground level, she was surprised to see that the landform is a ridge. She said to herself, we *have* to go look at this in person.



The weather earlier this year was unusually wet, so we had to wait until the roads dried out before heading over to the area. When the weather finally stabilized, we drove to an area south of Keota, Colorado. That area seems to be populated with quite a few of these unusual landforms. The ridges in the area stand out in sharp contrast to the surrounding landscape which is rather flat. One of the ridges we explored stands approximately 25 feet above the surrounding terrain...an easy climb. When we reached the top of the ridge, we looked at each other and said, “Yes, this really looks like a dry stream bed, but it’s on a ridge!”

When we returned home, research on the web found that the ridges are called **topographic inversions**. Other names for this kind of formation are **exhumed topography**, or **inverted relief**. Whatever you prefer to call it, the ridge was once a stream bed, and they can be found all over the world...even on Mars.

The part of Colorado where these landforms are found is called the Colorado Piedmont. Richard F. Madole describes the Colorado Piedmont as “an erosional inlier.” It is distinguished by having been stripped of the Miocene fluvial rocks (Ogallala Formation, that includes the Arikaree Formation and the White River Group) that cover most of the adjoining Great Plains and by having a surface that is topographically lower than the surrounding regions.<sup>1</sup>

### How did the erosion happen?

“It could have been fairly gradual, bit-by-bit, erosion away from all these more easily eroded, finer-grained sediments over the past million or so years. The wetter times during the colder glacial periods would have generated more runoff, hence more erosion, than in the drier times. But even in the drier times, wind action removing the fine sediment particles would also have played a role. The entire time since the deposition of the last sediment layers on the Great Plains has overall been a time of erosion and removal of the sedimentary cover, as opposed to sediment deposition.”  
Courtesy, Dr. Pete Modreski

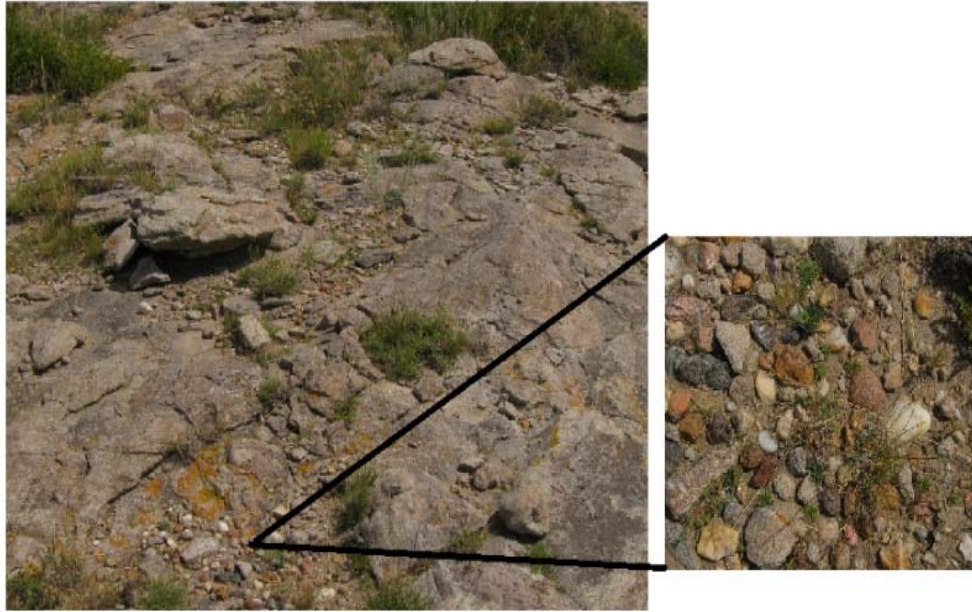
### So why didn’t the stream bed erode like the rest of the rest of the land?

Sometimes minerals flowing in stream water are deposited onto the stream bed as particles, such as **silcrete (dissolved silica)** or **ferricrete (iron oxides)**, or by **pedogenesis (soil formation)**. The deposition of these particles bond the stream bed rocks together, called **duricrust**, and it is this duricrust that gives the stream bed an erosion-resistant quality. This is especially true if the cementation takes place when the stream flows through a depression.

This picture is what the surface of the top of the ridges looks like. All the rounded rocks in the picture got their “roundness” from being tumbled in the ancient stream. The picture to the right is a closer view of the water-tumbled rocks.

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<sup>1</sup> An inlier is described as an area of older rocks surrounded by younger rocks. Inliers are typically formed by the erosion of overlying younger rocks to reveal a limited exposure of older underlying rocks. Richard F. Madole (January 1991), Quaternary “Nonglacial Geology – Conterminous United States,” in *Quaternary Nonglacial Geology, Conterminous US; Geology of North America*, vol. K-2, ed. Morrison, R.B., Geological Society of America, chapter 15, p. 444-462.



These rocks are not native to the area. They were brought to the area by streams that exited the mountains to the west. The rocks are igneous and metamorphic and are native to the mountains to the west.

These non-native rocks were deposited by the South Platte, Cache La Poudre, Big Thompson, and St. Vrain Rivers, their tributaries, and intermittent streams in the Piedmont. "These Tertiary-age, east flowing streams are the analogues of the modern South Platte River system. These sedimentary strata were deposited throughout the Tertiary (Paleogene + Neogene) Period, and later...eroded/dissected by the same river system during the time of melting of the Front Range valley glaciers (Late Pleistocene; last million or so years)." Courtesy, Dr. Modreski.

It was this erosion process that removed the surrounding terrain and left the resistant stream beds as a ridge.

With all this information in hand, both of us will have to make several more trips over the area of the inverted topographic stream beds. We will certainly have a new outlook on them, and they will be even more interesting. I've also heard that there are inverted stream beds further north, very close to the Pawnee Buttes.

Hmmm, gas up the Jeep, Mel!

## **Crawford, Nebraska Fairburn Agates and Fluorescent Chalcedony Field Trip Report**

September 30 – October 1, 2023

Article and photographs by Brian Walko, field trip leader

The high plains of Northwest Nebraska greeted us with perfect weather for our field trip. About 40 members from the Flatirons Mineral Club, Colorado Mineral Society, and Littleton Gem & Mineral Club attended. Kevin Notheis, his rockhound, Daisy, and I arrived a day early to scout some new fluorescent chalcedony collecting areas.

Kevin Notheis scouting for chalcedony





We started at Toadstool Geologic Park; world famous for its Oligocene White River Group fossils. After an orientation and strong reminder that all fossil collecting was prohibited by law, the group explored the Brule formation looking for mammal and turtle fossils.



Toadstool Geologic Park entrance



Brule formation

Next, we headed to the Chalcedony Beds. This was to familiarize the members with the terrain because we would be returning that evening in the dark for fluorescent chalcedony collecting.

The remainder of the day was spent searching several agate beds for the illusive Fairburn agate. Unfortunately, only one small Fairburn was found. But everybody collected plenty of prairie agate, petrified wood, jasper, and chert.



Agate hunters

There are two methods for agate hunting. One is to slowly walk around and scan the ground for any agates. The second is to sit down amongst the agates and turn every rock over hoping there is agate banding on the flip side.

Evan James of CMS found a piece of chert with embedded marine fossils. Evan found this by turning over a black rock. The flip side was chert with the fossils.

Chert with embedded marine fossils





Back at Toadstool Park, we relaxed, ate dinner, and waited for the sunset. Emilyn Bubb found a wood toad which would bring us good luck for our night fluorescent collecting adventure.



Andrew MacGregor and Kevin Notheis deciding on which freeze dried dinner to eat.



Emilyn with a toad in her hand

At sunset we all met back at the Chalcedony Beds. Chalcedony fluoresces best under shortwave ultraviolet light (UV). Most people had longwave UV flashlights. All UV flashlights need a filter to allow only the ultraviolet light to pass and block the other bands of light including white light. The first people to see the green fluorescence had filtered flashlights. As the sky turned to darkness, everybody started detecting some green glow from the chalcedony. Then they would bring their pieces over to Tony Bubb and he would light it up with 35 watts of shortwave UV.



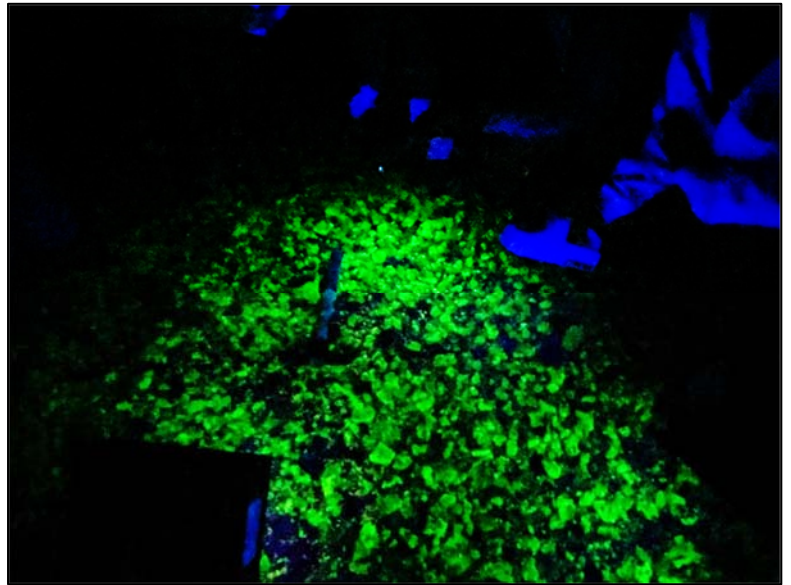
Left: Sunset at Toadstool Park. Right: Tony Bubb illuminating the chalcedony.



As Tony scanned the ground with the shortwave UV light, trip members were amazed that the entire ground they were walking on was fluorescing brilliant green.



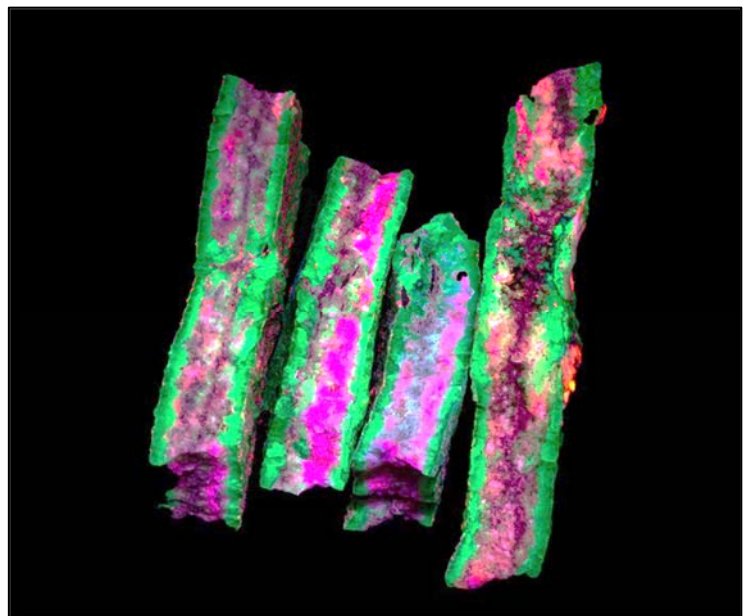
Watermelon chalcidony beds



Fluorescent chalcidony bed

After returning to Toadstool Park, Brian took a group of people to an area that contained watermelon chalcidony.

Watermelon chalcidony is formed in cracks of the Chadron formation's highly silicate volcanic ash. The chalcidony is deposited along the sides of the cracks. If there is a gap, calcite will be deposited in the center. It only fluoresces under mid-wave ultraviolet. As the watermelon prospectors collected pieces, they would bring them to Brian to grade the quality of the specimens.



Left: Brian Walko grading pieces of watermelon chalcidony. Right: High grade watermelon chalcidony.





Agate Reservoir

The second day we headed to Agate Reservoir. Some local natives were reluctant to let us pass to the agate beds. A couple of toots of the horn, and they let us go by.

Agate Reservoir is a depression that was dammed to provide cattle irrigation water. The banks of the dam contain agates from the original gravel bulldozed to make it. We scouted from the low water line to the dam; however, the best agates and petrified wood came from the prairie on the other side of the dam.



Local natives guarding the agate beds.

It was a great trip. The FMC runs this trip every other year. If you are interested in a high plains adventure, look for the October 2025 trip announcement.

## Dinosaur Ridge Field Trip Report

Gerry Naugle, trip leader

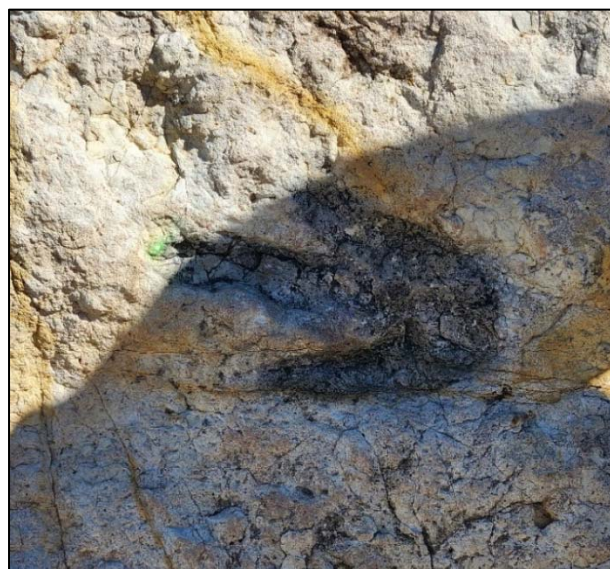
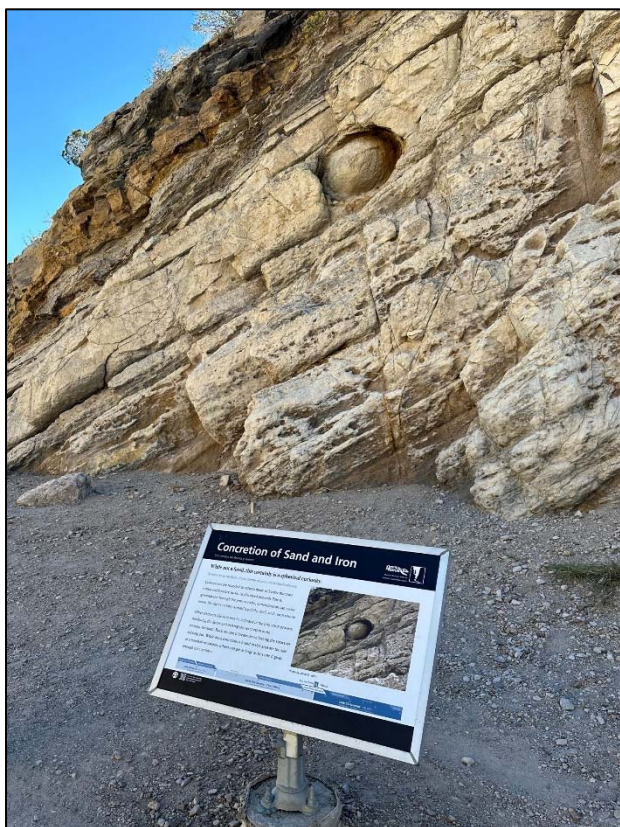
Eleven club members enjoyed the field trip to Dinosaur Ridge on October 7. The weather was great, and the tour by our experienced volunteer at Dinosaur Ridge was wonderful.

The **Team Marsh** vs **Team Cope** in the **Fossil ID competition** ended up in a dead tie, as both teams received an equal number of data points for their identification. All contestants received first place King Soopers gift cards. You “shouldda” been there, it lasted only 5 minutes, but it was intense!



Stegosaurus at Dinosaur Ridge. Credit: Carol Oakes





One of over a thousand dinosaur tracks on Dinosaur Ridge. Credit: Sharon Dooley

No, it's not a dinosaur egg. It's a large concretion in the sandstone. Credit: Sharon Dooley

## Flatirons Mineral Club 2023 Field Trip Season Summary

Will Rehm



Happy Geology Club Image, created with Bing AI

The Flatirons Mineral Club had a very successful 2024 field trip season that was notable for several reasons. We tested new ideas, expanded our trip leader talent pool, and doubled the number of trips we offered in 2023.

Highlights of our 2023 season included:

- A trip catalog designed to reflect member ideas. Thanks for your input, everyone!
- More trips. We had 12 field trips in 2023 - about double what we did in 2022.
- Joint trips and inter-club collaborations.
- Expansion of our trip catalog to include libraries and public outreach.
- Development of a larger field trip talent pool. Also, a 2023 field trip leader was issued the FMC Rockhound of The Year award. Congratulations to this year's recipient, Tony Bubb, and his capable assistant Emilyn.
- Publication of more field trip summaries in the club's monthly newsletter. This helps everyone connect with the trips even if they could not attend themselves. Special thanks go to all our field trip leaders for these summaries; they are important tools.
- Development of an FMC Field Trip Database with about 170 field trips. We used this for our '23 planning and will keep adding to it for the future. Many thanks to FMC members for providing ideas about places to include in the database.
- A portfolio approach to trip planning that emphasized a variety of field trips to accommodate youth to senior members, and everyone in-between.
- A balanced catalog of local, mid-distance, and long-distance field trips.

Also, many thanks to FMC field trip participants who took pictures during the field trips and shared them for publication in our newsletter summaries. We have some amazing photography talent in the club!

#### **FMC 2023 Field Trips**

Edgar Experimental Mine, Brian Walko Leader  
CU Map Library & USGS Repository. Led by Will Rehm  
Phoenix Mine AND Argo Mill & Tunnel, led by Will Rehm  
Hartsel Blue Barite, with Anita Colin  
Magnetite Ridge, with Dennis Gertenbach  
NCAR Boulder, with Will Rehm  
Big Thompson, led by Tony Bubb (*2023 FMC Rockhound of the Year*) and Emilyn  
Florissant Fossil Quarry. led by Rebecca Stanton  
Calumet Iron Mine, with Johny Reyes and Doran Adams  
Crawford Nebraska Agates, led by Brian Walko  
Dinosaur Ridge "Bone Wars", with Gerry Nagle  
North Table Mountain, led by Dennis Gertenbach

#### **2024 Planning**

The progress we made in 2023 puts us in a strong position for 2024. As we start thinking about '24, we'll bring all our field trip leaders together to review process and catalog improvements we can make, capture things that worked well in '23, and plan ways we can keep making our field trips better.

In a similar manner, during the off-season, we'll be surveying members to capture their ideas and thoughts for 2024. Please stay tuned and start jotting down your most awesome ideas for 2024 trips, collaborations, and new kinds of collecting, educational, and community things we can try out next year.



## 2023 Denver Gem & Mineral Winners in Special Competitions

Judy Knoshaug for the Denver Gem & Mineral Show Committee

### Best of Species Trophy:

Thumbnail: Kent Havens (brazilianite, Minas Gerais, Brazil)  
Toenail: Hannah Brodhagen (legrandite, Ojuela Mine, Durango, Mexico)  
Miniature: Hannah Brodhagen (aquamarine, Gilgit, Pakistan)  
Cabinet: Kent Havens (aquamarine, Kunar, Afghanistan)  
Large Cabinet: Kent Havens (smoky quartz/amethyst, South Carolina)  
Self-Collected: Nancy Kimber (topaz, Topaz Mountain Gem Mine, Park County, Colorado)  
Best of Colorado: a 1st Place Tie -  
    Hannah Brodhagen (barite, Book Cliffs, Mesa County, Colorado)  
    Bill Davis (topaz, Topaz Mountain Gem Mine, Park County, Colorado)  
Gem Fossil: Nancy Kimber (rhodochrosite snail, Crimea, Ukraine)  
Organic Gem: Nathanael Brodhagen (amber, Dominican Republic)

Best Fossil: Lesley Sebol (*Priscacara serrata*, Perch, Kemmerer, Wyoming)

### Prospector Trophy:

1st Place: Hannah Brodhagen (wulfenite, Red Cloud Mine, La Paz County, Arizona)  
2nd Place: Randy Kokkinen (azurite, Graphic Mine, Luna County, New Mexico)

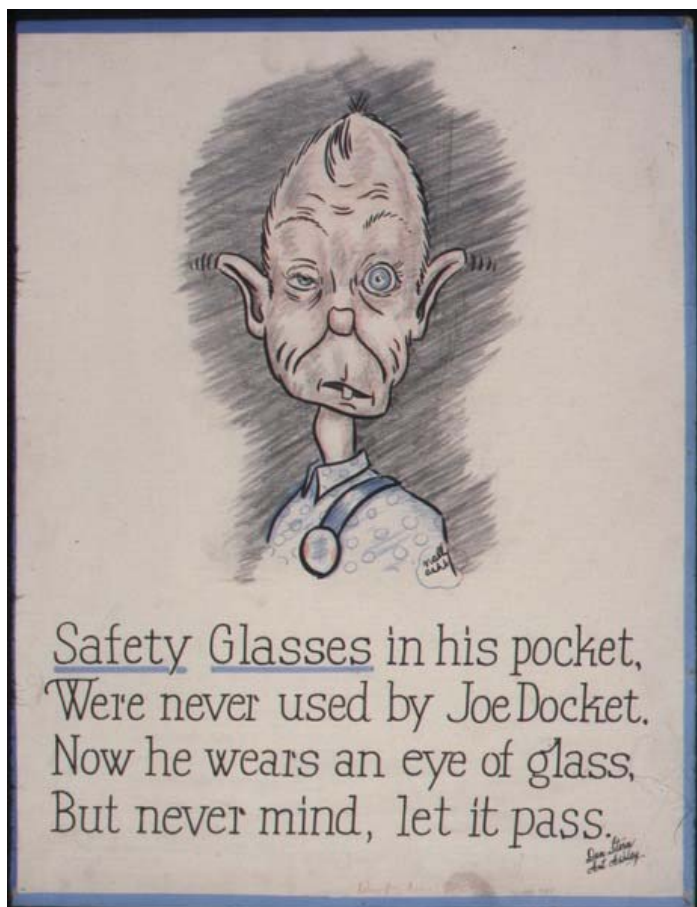
Congratulations to this year's winners.

## Safety: Smart Rockhounds Wear Safety Glasses

When you are out in the field pounding rocks, trimming specimens with a hammer and chisel, or cutting, grinding, and polishing rocks at home – anything that creates rock chips or dust – be sure to wear safety glasses. You don't want to end up like this poor guy!



Credit: Office for Emergency Management. War Production Board,





## Rocky Mountain Federation of Mineralogical Societies News

As are most clubs in Colorado, the Flatirons Mineral Club belongs to the Rocky Mountain Federation of Mineralogical Societies (RMFMS). Benefits to belonging to the RMFMS include participation in a number of annual contests, including the bulletin contest that many of our members have placed. The RMFMS also offers clubs liability insurance and a very reasonable rate.



As stated in the October 2023 issue of the *Rocky Mountain Federation News*, the RMFMS seeks

- To bring about a closer association of the Earth Science Groups in the Rocky Mountain region.
- To increase and disseminate knowledge about minerals and other geologic materials.
- To encourage mineral study, collecting, and fashioning as a *hobby*.
- To sponsor local organizations interested in similar purposes.
- To encourage all clubs to publish bulletins and newsletters.
- To continue building up and promoting the use of the Federation Library of slide programs, videos, CDs, and DVDs to each member club.
- To distribute information and suggestions on the preparation and arrangement of specimens and materials for exhibit and display.
- To provide information and assistance to clubs holding Gem and Mineral Shows.
- To encourage clubs to support the American Federation of Mineralogical Societies Scholarship Foundation Fund.
- To promote the concept that all members of all clubs are members of the RMFMS and the AFMS, and to encourage individual members and clubs to take responsibility for asking questions or making known that help is needed. To encourage more contact between those working at the Federation level, between clubs, and between club members.
- To keep the members informed of problems and activities regarding the use of Public Lands.
- To continue to support Federation-sponsored programs.

The Rocky Mountain Federation is composed of a membership of approximately 9,000 members in the following states: Arizona, Arkansas, Colorado, Kansas, Nebraska, New Mexico, Nevada, North Dakota, Oklahoma, South Dakota, Texas, Utah, and Wyoming.

The work of the Federation is directed by the Executive Committee, composed of: President, Vice-President, Secretary, Treasurer, Historian, State Directors, and the two immediate Past-Presidents.

Clubs that belong to the RMFMS automatically belong to the American Federation of Mineralogical Societies, along with clubs in six other regional societies.

## American Federation of Mineralogical Societies News

Each year, the American Federation of Mineralogical Societies (AFMS) holds a national show and convention hosted by one of the seven regional societies. In 2024, the show will be hosted by the Californian Federation of Mineralogical Societies and the Ventura Gem and Mineral Society. So, mark your calendar for May 24-26, 2024 to come to the Ventura County Fairgrounds for a great show with displays from around the country, dealers from California and beyond, and field trips before and after the show.









Would you like a subscription to Rock & Gem magazine? You can get a discounted rate, plus support the AFMS, by using the form below.

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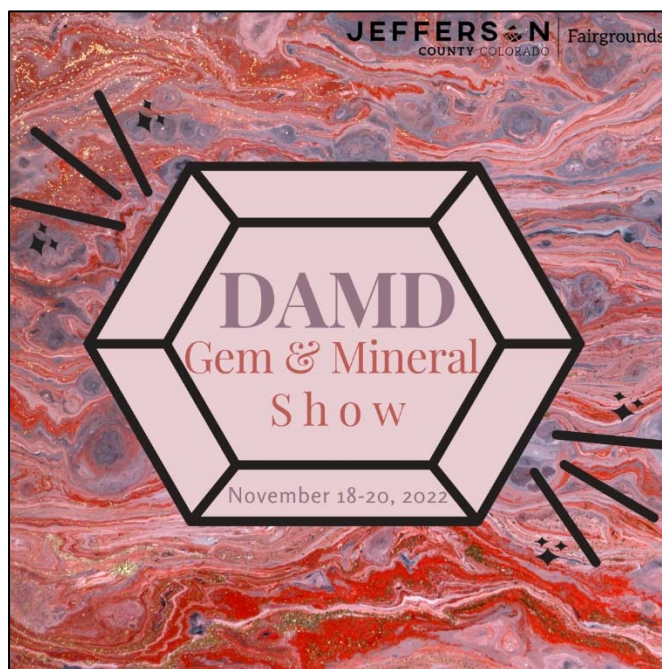
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## Other Rockhounding Events and Activities in the Area

Thanks to Pete Modreski for providing information about many of these events. If you plan to attend any of these activities, please check their websites for the latest updates before you go.

- **November 14 (Tuesday)** at 4 pm, the **Western Museum of Mining & Industry** in Colorado Springs presents **Matt Mayberry**, director of the Colorado Springs Pioneers Museum, with his talk **To Power a City: Coal Mining in Colorado Springs**. His presentation examines the history and development of coal mining operations in present day Colorado Springs. Please call 719-488-0880 if you have any questions.  
<https://fareharbor.com/wmmi/items/213075/>
- **November 16 (Thursday)** at 2 pm, the **Denver Museum of Nature and Science** continues its Earth Science Colloquium with a presentation by **Vince Matthews**, former state geologist, about "**Land of Ice: The Magnificent Wonders of Colorado's Glacial Landscape**." In the VIP Room, in-person only, all are welcome, Museum admission not required; check in at the Security Post.
- **November 16 (Thursday)**, 7:00 p.m. is the **Colorado Scientific Society** November meeting with a talk about **Glaciers and Rock Glaciers** by **Bob Anderson**, University of Colorado. The meeting will be in-person meeting at Calvary Church in Golden and also available via Zoom; see <https://coloscisoc.org/> for details. All are always welcome.
- **November 17-19 (Friday-Sunday)** is the Denver Area Mineral Dealers Gem and Mineral Show, 10-5 Friday and Saturday, 10-4 Sunday at the Jefferson County Fairgrounds, Exhibit Hall, 15200 W. 6th Ave., Golden. No admission charge.



- **November 18 (Saturday)** 1-4 p.m. is a **Free Mineral ID Day** at the Mines Museum. "Let us identify the most mysterious specimens in your collection!" All are welcome; museum admission is always free. Limit 3 specimens per visitor; only identification assistance will be provided, we will not offer value assessment. **Please note that this event is one week later than originally planned.**

# Officers, Directors, and Other Volunteers

---

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## Mineral Specimens for Grab Bags

Don Mock  
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### Show Kid's Corner Chair

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## Denver Show Club Table

open

## A friendly reminder to pay your 2024 annual dues

Dues are still only \$18 per individual and their immediate family. You can pay in two ways:

**PAY** Gerry Naugle, Treasurer and Membership Chair, at any FMC monthly meeting. Gerry is at or near the sign-in table when you enter the room for the monthly meetings.

**SEND** a check made to "Flatirons Mineral Club" or "FMC" to P.O. Box 3331, Boulder, CO, 80307. Please do not send cash in the mail.



Your 2024 dues must be received by January 20th, 2024 in order to stay current with the member benefits, which include electronic club newsletters containing the information about club activities, club field trips, annual show opportunities, silent auction opportunities, the annual club summer picnic, and access to the club website. Your receipt is your new annual 2024 FMC membership card.





Flatirons Facets  
P.O. Box 3331  
Boulder, CO 80307-3331

## First Class Mail

## *Upcoming Events*

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Date	Event	Location
Tuesday, November 14 at 7:00 pm	Towel Show, our annual show-and-tell, page 2	Mountain View Unted Methodist Church, 355 Ponca Place in Boulder
Wednesday, November 15 at 6:30 pm	Jr. Geologists meeting, preparing for the Rocks & Rails Show and learning more about igneous, sedimentary, and metamorphic rocks, page 9	Mountain View Unted Methodist Church, 355 Ponca Place in Boulder
Friday through Sunday, December 8-10	Rocks & Rails, our annual show. Information about the show starts on page 3. See the back page for a show flyer with show times.	Boulder County Fairgrounds, 9595 Nelson Road in Longmont
Tuesday, December 19, 7:00 pm	Holiday party and gift exchange, page 6	Mountain View Unted Methodist Church, 355 Ponca Place in Boulder

# ROCKS & RAILS

**December 8-10 10am – 5pm**

**Adults \$8 ::: Children 12 & Under Free with paid Adult**

**Seniors Over 60 \$5 ::: Discount Multi-day Passes Available**

**Flatirons Mineral Club  
2023 Annual**

## Rock & Mineral Show

Gem and mineral dealers,  
Exhibit displays, grab bags,  
children's activities including  
games, dig site, spin the wheel,  
fossils, meteorites, lapidary tools,  
jewelry, fluorescent mineral  
display, and more!

Bring your mineral treasures  
In for mineral identification.



[flatironsmineralclub.org](http://flatironsmineralclub.org)

FREE  
PARKING

DOOR  
PRIZES!

**Boulder Model Railroad Club  
46th Annual**

## Model Railroad Exposition

Come one, come all, and enjoy the  
Boulder Model Railroad Club (BMRC)  
Exposition where you can see different  
Model Train Layouts for the young and  
old alike. The show will also have many  
displays of Model Train related items to  
both teach and entertain everyone. This  
includes many vendor tables where  
you can purchase railroad-related items  
just in time for the Holidays.



[bouldermodelrailroadclub.org](http://bouldermodelrailroadclub.org)

**ATM & Food Service Available at the Show**

**BOULDER COUNTY FAIRGROUNDS LONGMONT**

**MAIN EXHIBIT BUILDING** 9595 Nelson Road Longmont, CO 80501

**Bad Weather? Call 303-591-2830 to see if we're open**

