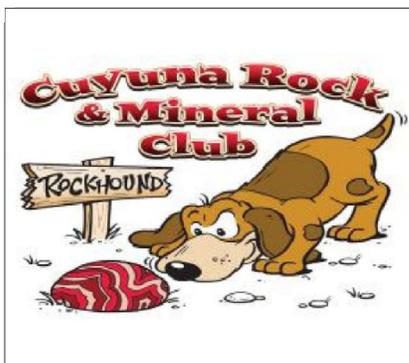


The Agate Explorer

January 2024



IT'S TIME!

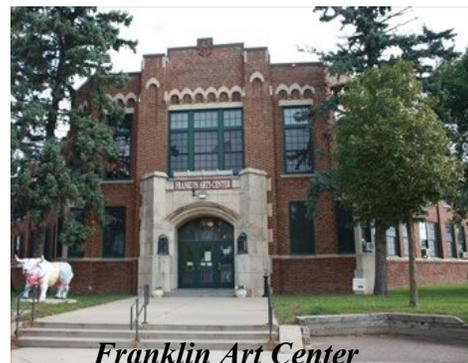


DON'T DELAY, RENEW YOUR MEMBERSHIP TODAY!

Dues are due!

The yearly dues of \$20 per household are due. Please pay online at www.cuyunarockclub.org, bring it to a meeting (if you are paying cash, PLEASE put it in an envelope with your name on it, so your account will be credited), or mail it to:

Cuyuna Rock, Gem, and Mineral Society,
1001 Kingwood St., Ste. B-40
Brainerd, MN 56401.



Franklin Art Center

Club Information

Website-www.cuyunarockclub.org
Email-cuyunarockgemclub@gmail.com

Meeting Place

Lower level
Franklin Arts Center
1001 Kingwood St, Brainerd, MN 56401

Directions

.4 mile east of Business Hwy. 371 & Hwy. 210 intersection.
(Castle turret water tower.)

Date/Time

the 2nd Saturday of each month at 2 p.m. unless otherwise noted.

Club Dues

\$20/ family
Free /unaccompanied juniors
Membership runs from Jan. 1-Dec. 31st.

January Meeting

Saturday, January 13

10:00—Clubhouse, Rock Room
Open & Rock Wrappers
(wire wrapping group)

12:00 noon—Board Meeting

2:00— General Meeting
Speaker Jon Hellerman
on photographing stones

2024 Field Trips



Trips are in the planning stages. Where would you like to go? When would you like to go?

The Club is also looking for field trip coordinators. These people would look for locations to rockhound and organize the trip. It would not be necessary to go on every trip.

Assistance given by Board members.
Call/text Ed Opatz at 320-250-1363.

Looking For Food Truck

for the weekend of the 2024 Cuyuna Rock Show, May 11-12. We already have a long-time food vendor, Butts & Buns BBQ secured, and are looking for



another vendor with totally different food from that business.

If you find a food vendor who is willing to work the show, please contact Ed Opatz at 320-250-1363.

Club Calendar

January 13—meeting date, speaker Jon Hellerman on taking photos of rock specimens

February 10—meeting date, speaker Steve Huber on rock carving

March 9—meeting date

April 13—meeting date

Information subject to change.



Club Purpose:

To foster an interest (& encourage young & old) to study earth science, enjoy the art of lapidary, hunting for rocks, and semi-precious stones. We also strive to use what we know and acquire to further educate everyone who has an interest in our hobby.

We are a not-for-profit organization.

Cuyuna Rock, Gem & Mineral Society
Meeting Minutes
Saturday, November 11, 2023

Board Meeting

Call to Order- The meeting was called to order at 12:25pm by President Ed Opatz. Present were: Treasurer Kevin Martini, Secretary Joanie Hanson, & board members at large Judi Laurence & Vern Iverson.

Veteran's Day- The flag was displayed and all current and past veterans stood and were honored. The National Anthem was played at the general meeting.

A motion passed to approve the minutes from the October meeting.

Treasurer's Report- will be posted at the rock club. A motion was passed to pay the monthly bills.

Rock show – Plans are beginning to accelerate for the May 2024 rock show. We are going to ramp up security and contracted the table rentals. Reviewed show costs.

Joanie and Lori took part in the Franklin Halloween event. We gave out about 500 polished rocks to the kids and show cards to the parents/adults. It was lots of fun and good P.R. for the rock club.

Franklin Holiday show/open house is Nov 18.

Meeting adjourned at 1:05pm.

General Meeting

Call to Order- The meeting was called to order by President Ed Opatz. There were 23 members present.

Since it was Veteran's Day, we put up the flag and played the National Anthem in honor of all past and present veterans at the meeting.

Treasurer's Report- Will be posted at the rock club.

Elections for 2024/2025: President-re-elected Ed Opatz, Secretary re-elected Joanie Hanson, 1 Year term (2024) Board members-at-Large: Re-elected Vern Iverson, newly elected Alan Busacker and Mike Stanwood. Thankyou to Judi Laurence and Jo Schwalboski for your service as board members.

Silent Auction- Members were able to bring and sell rock related items during the elections.

Show updates- Discussed security training, volunteering, door prizes, ticketing, hand stamps for both gates.

Nov 18 is the Franklin Holiday show and open house.

Holiday/Christmas Party is December 16. Potluck and White Elephant gift exchange.

Door prizes- Gary P., Pete J., Keith L., Ruby S., Zeke S., Jaiden M.

Meeting was adjourned at 3pm.

Respectfully submitted,
Joanie Hanson, Secretary

Gem Encyclopedia
Jadeite



One of two distinct minerals commonly known as jade, jadeite is the rarer and harder variety. Rich green jadeite, known as "imperial jade," is also the most highly valued. However, durable jadeite can be found in many colors and is well-suited for both intricate carvings and cabochons.

Jadeite is one of the two minerals popularly described as jade. The other is nephrite. Although they have some similarities, these materials have distinct properties.

People across the world have used both jadeite and nephrite for tools, ritual objects, and jewelry for millennia. The Chinese have utilized nephrite since the Neolithic era and may have worn carved nephrite bangles as far back as 4,000 years ago. The Olmecs, Maya, and Aztecs of ancient Meso-America made ceremonial objects and jewelry from jadeite.

The Chinese and Meso-Americans valued nephrite and jadeite, respectively, not just for their physical properties. They came to symbolize excellence and the greatest values of these cultures. For example, the Aztecs characterized eloquence as "a scattering of jades." The Chinese sage Confucius (551-479 BCE) compared jade to a gentleman esteemed by all for his qualities.

However, these cultures didn't refer to these materials as "jade" or group them together. How did these two gem materials become associated?

Jadeite and nephrite both occur in Europe. The authors of a 2017 study have documented the trade of jadeite axe heads from sources in Italy across Europe during Neolithic times. However, as Giancarlo Sette writes, European knowledge and use of both jadeites and nephrites disappeared over time — until the 16th century and the Spanish arrival in the Americas.

For thousands of years, Chinese artisans worked nephrite into utilitarian and artistic objects as well as jewelry. Much of the traditional Chinese folklore and symbolism associated with jade originated as the folklore of nephrite. However, in the mid 18th century, a new green gemstone from neighboring Burma (now known as Myanmar) entered China. The Chinese came to prize this material. As it turns out, this was jadeite.

Gemologist Jill Hobbs notes that the Chinese distinguished these two materials: nephrite was known as yu, while jadeite from Burma was known as fei-ts'ui. However, European merchants trading with China at this time grouped both materials under the now-

commonplace term "jade" because of their apparent similarities. It was not until 1863 that the French mineralogist Alexis Damour distinguished jade as two distinct minerals — jadeite and nephrite. The term "jadeite" was coined after jade.

The term "jade" still enjoys widespread use both in the gem trade and in everyday parlance. However, gemologists should distinguish between nephrite jade and jadeite jade.

Jadeite pieces are very tough. Although nephrite has greater resistance to breaking, jadeite usually has a Mohs hardness great enough to resist scratches from the most common jewelry hazard: household dust. Both jadeite and nephrite have excellent wearability, but jadeite is somewhat better suited for jewelry, especially ring use, because of its greater hardness.

Although the US lifted the Tom Lantos Block Burmese JADE (Junta's Anti-Democratic Efforts) Act of 2008 in 2016, new sanctions were applied in April 2021. This round of new US sanctions targeted the Myanmar Gems Enterprise (MGE), a state-owned entity and subdivision of the Ministry of Mines responsible for all gemstone mining, distribution, and marketing in Myanmar. These sanctions do apply to jadeites imported from Myanmar after April 2021.

Jadeites can occur naturally in many colors, but green enjoys the greatest popularity. "Imperial jade" of deep green color from Myanmar is very rare and expensive, and its translucency is highly prized. Apple green and lavender or mauve colors are also popular.

Seldom seen in jewelry, chloromelanite is an opaque, dark green to black jadeite. Nevertheless, lapidaries occasionally carve it into decorative objects.

Green jadeite boulders may have a brown skin due to weathering. Lapidaries often use these for carvings. The colors in such stones can sometimes have a mottled look.

A purplish jadeite/quartz gem rock occurs in Bursa, Turkey. It's unique to this location. Its composition can vary from 40% to 60% jadeite.

Notable gem-quality sources include the following:

Myanmar: source of "imperial jade."

Guatemala: rare blue stones.

Russia: apple green-colored material at some localities; also fine translucent, Cr-rich material at the Kantegir River, West Sayan.

San Benito County, California: lenses and nodules in chert, various colors.

France; Italy; Japan; Kazakhstan; Mexico; Turkey.

<https://www.gemsociety.org/article/jadeite-jewelry-and-gemstone-information/>

We've Entered a New Era: The Lunar Anthropocene

For almost half a century, the term "Anthropocene" has been informally used to describe the current geological epoch. The term acknowledges how human agency has become the most significant factor when it comes to changes in Earth's geology, landscape, ecosystems, and climate. According to a new study by a team of geologists and anthropologists, this same term should be extended to the Moon in recognition of humanity's exploration (starting in the mid-20th century) and the growing impact our activities will have on the Moon's geology and the landscape in the near future.

<https://www.universetoday.com/164766/weve-entered-a-new-era-the-lunar-anthropocene/>

Metal Detecting for Detecting Rocks

I first realized the value of a metal detector when I saw an amazing gold specimen labeled "The Dragon." It was perfectly crystallized, about seven inches high and Bryan Lees, a Collector's Edge dealer, said it would likely sell for six figures. He said it had been found in the Colorado Quartz mine, near Mariposa, California, by miners using metal detectors.

That got my attention. Bryan made arrangements for me to visit the mine to watch miners using metal detectors to scan the walls of the old tunnels and then attack any spot that responded. That was a few years ago and those guys are still having success finding hot spots in that mine!



This is not the only "strike" I've seen made using a metal detector. My son Evan lives on a hillside that has an old gold mine on it. He has used his metal detector to find enough pieces of gold ore worth processing.

In Arizona, a couple of fellows were rock hunting with metal detectors in the Richmond Basin silver mining district north of Globe, Arizona. They hit it using metal detectors!

Silver nuggets had been collected by the Apaches hundreds of years ago and in the 1800-1900s silver mines operated here. The nearby town of Globe was so named because a large rounded chunk of native silver reminding them of a globe was found near there.

Tiny nuggets of native silver were still found in Richmond Basin, so a couple of them decided to check it out. They walked the washes

Opening Soon!



Rock & Art

*Bringing Rocks, Gems, & Lapidary
Arts together for you!*
(Downtown, St. Cloud)

4500 million years ago the Earth's core and crust formed. Dense metals sank to the center of the Earth and formed the core, while the outside layer cooled and solidified to form the Earth's crust.

in the entire Basin with their detectors. They found one or two small heavy, dull black rocks of tarnished native silver. They decided to get serious and organized a small group of collectors with detectors to check the entire area including the surrounding open desert.

They found several more small silver nuggets before their efforts paid off when they found two large masses of native silver each weighing in at over 100 pounds. The pieces were less than two feet underground.

The pieces had weathered out of an as yet unknown vein of silver and been buried by years of weathering.

Finding these two masses of silver would make anyone jump for joy.

But the best was yet to come. One of the fellows was about done for the day and was scanning the ground as he walked to his vehicle when signals stopped him in his tracks. He was getting wide-ranging signals from something big. This time, they dug down less than two feet and uncovered a mass of silver you only dream about. The silver mass they exposed was almost three feet long, well over a foot wide and many inches thick. The find of a lifetime!

Once exposed and wrapped for protection, it took five guys hours to haul this treasure across the rough desert to a vehicle. When they finally weighed it on the scale, it hit an amazing 417 pounds!

Now that's what I call a successful day in the field with a metal detector.

<https://www.rockngem.com/can-metal-detectors-detect-rocks/>



**SeashellsbyShelly
Rock & Crystal Shop**
2625 County Road 37 NE
Monticello, MN
Open Mon 12-4, Fri 3-6
Sat 11-5, Sun 12-3
ph 763-295-2440
Huge shop with tons of inventory!
Rock cutting services and a dark room with
fluorescent minerals!
Seashellsbyshelly.com

Minnesota Rock Shops

- Agate City** 721 7th Ave., Two Harbors
218-834-2304
- Agate Trails of Fellerer Creations** 471
Arrowhead Ln, Moose Lake 320-279-3553
- AM Rock Shop** 710 E River Rd, Anoka
763-421-2807
- Art & Soul** 5124 202 Main St Stillwater,
651-275-0255
- Beaver Bay Agate Shop** 1003 Main St.,
Beaver Bay 218-226-4847
- Christy's Crystals** 407 N Riverfront Dr,
Mankato 507-720-1061
- Designed In Stone** 841 Forest Ave E Suite
110, Mora 651-248-8768
- Dream in Jasper Crystal Shop** 107 N
Meridian St, Belle Plaine 763-301-1058
- Enchanted Rock Garden** 1228 E 66th St,
Richfield 612-866-1140
- Jon's Gem Emporium** 184 North Hwy
10, Motley 218-640-1047
- Magic Mushrooms in the Crystal Garden**
171 Lake St N, Big Lake 612-805-7111
- MO'R Designs** 2100 Snelling Ave N
Suite 13, St Paul 651-294-3069
- Naturally Unique** 137 Western Ave N,
Park Rapids 701-429-0409
- Rocks and Things** 201 N Rum River Dr,
Princeton 763-389-0979
- Rocks & Tools SeashellsbyShelly Rock
and Crystal Shop** 2625 County Rd 37 NE,
Monticello 763-295-2440
- Sacred Sage and Crystals** 118 Broadway
E, Little Falls 320-360-3611
- Sample's Agates Gem and Mineral Shop**
18581 MN-371, Brainerd 218-821-6623
- Taylor's Falls Bead Store** 364 Bench St,
Taylor's Falls
- Those Blasted Things** 924 Kniss Ave.,
Luverne 507-283-4027
- Twin Pines Trading Post** 31049 Front St,
Pequot Lakes 218-839-0829
- Uncle Tom's Rock Shop** 2746 Hoffman
Dr. NW, Owatonna 507-451-2254
- ZRS Fossils and Gifts** 3018 Lyndale Ave
S, Minneapolis 612-824-1068

Rocks Gems Fossils Minerals

JON'S GEM EMPORIUM

Call Or OPEN FRI AND 218-
Text To SAT 10-6 SUN 12-5 640-
Shop Off Hours Motley, MN 1047

Beautiful Agate is Really Dino Egg



A mineral specimen that's been in the collections for 175 years has turned out to also be a dinosaur egg, collected long before these were first scientifically recognized and potentially one of the first complete eggs ever found.

The egg and where it was dug up also hold clues as to how the biggest dinosaurs ever to exist would have nested.

Collected in central India, the mineral measuring around 15 centimeters across was notable for its almost perfectly spherical shape and beautiful light pink and white banded interior. But until recently, the specimen was not thought to hold much other significance.

Robin Hansen, a mineral curator, visited a mineral show in France and then realized the importance of the specimen.

'While I was looking around the show, a dealer showed me an agatized dinosaur egg, which was spherical, had a thin rind, and dark agate in the middle,' recounts Robin. 'That was the lightbulb moment when I thought: "Hang on a minute, that looks a lot like the one we've just put on display!"'

On closer inspection with dinosaur experts Professor Paul Barrett and Dr. Susannah Maidment, they agreed that the specimen was about the right size and shape, and that the thin layer around the agate looked like a shell. There was another tantalizing clue in that two other large, spherical objects had once been clustered close to this one.

While the team tried to delve deeper by using a CT scanner, the density of the agate meant that it was simply impossible to see any finer details.

But based on the knowledge of where the specimen was collected, its age at about 60 million years old and its general features, they are pretty certain that it is a dinosaur egg. The size, shape and surface features of the eggshell are consistent with those of titanosaur eggs from China and Argentina. The most common dinosaurs living in India at the time it was laid were titanosaurs, which suggests that it must be a titanosaur egg.

'This specimen is a perfect example of why museum collections are so important,' explains Robin. 'It was identified and catalogued correctly as an agate in 1883 using the scientific knowledge available at the time.'

'It is only now that we have recognized that this specimen has something extra special - the agate has infilled this spherical structure, which turns out to be a dinosaur egg.'

Robin decided to trace back the origins of the specimen. She found that it was collected by a Charles Fraser, who lived in India between 1817 and 1843. These dates are significant. It

means that it was collected at least 80 years before dinosaur eggs were first scientifically recognized, and potentially before the word 'dinosaur' even existed.

Dinosaur eggshells have likely been used unknowingly by humans for thousands of years, and as reptiles it was long suspected that dinosaurs laid eggs. But it was not until 1923 that scientists first confirmed this for certain when entire nests were uncovered in Mongolia.

Growing up to 37 meters long and weighing somewhere in the region of 57 tons, titanosaurs were truly massive animals. Because of this, they had all sorts of adaptations to support themselves and survive on land.

But one of the most curious features of these gigantic creatures was the size of their eggs. Despite being the largest living land animals ever to exist, they laid surprisingly small eggs.

'It seems really weird because these would've been huge animals,' explains Paul, 'but what they were doing instead is laying a lot of eggs. Many living animals we know use this trade off, in which they either invest in a small number of larger eggs or a large number of smaller eggs.'

'It looks like titanosaurs adopted a strategy of laying large clutches of about 30 or 40 small-ish eggs.'

This means that rather than reproducing like a blue whale or an elephant, which give birth to a single large baby after a prolonged pregnancy, the titanosaurs were reproducing more like sea turtles or crocodiles.

'Dinosaurs have the advantage that they just can just lay a lot of eggs in one go very quickly, and could probably lay several of those really large clutches a year,' says Paul. 'It looks like they just laid a lot of eggs and hoped that some of them made it to adulthood, rather than laying one or two that they then had to invest a lot more parental care in when hatched.'

At the time this egg was laid, the world was a vastly different place. During the Late Cretaceous (100-66 million years ago), India was a massive, continent-sized island drifting across what is now the Indian Ocean on its collision course with Asia.

The island is interesting in that, while it was full of creatures like crocodiles, mammals, turtles and lizards, the diversity of dinosaurs on it was incredibly limited.

'As far as we know, the dinosaur fauna of Cretaceous India was abundant but not particularly diverse,' explains Paul. 'There are lots of titanosaur fossils and there's evidence for a number of different predatory dinosaur groups. But there's no confirmed evidence for any bird-hipped dinosaurs at all - so no ankylosaurs, no horned dinosaurs, no ornithomimid dinosaurs.'

'It looks like either they never made it to India before it split off from the rest of Gondwana, or they did make it and became extinct in India for some reason. We don't know why, but they're just not there.'

The environment at the time on the island would likely have been highly seasonal. But the most significant aspect dominating large parts would have been a massive amount of volcanic activity.

'A major area of central western India is called the Deccan Traps,' explains Robin. 'This is a massive basaltic flood plain where there was lots of volcanic activity with huge lava flows that covered the whole area.'

'In terms of minerals, there are many that are found in geodes in the Deccan Traps. This is where there was a gas bubble in the lava that then - as the rock solidified around it - became a cavity. These cavities were later infilled with different minerals, including agate.'

Intriguingly the fossils of titanosaurs have been found in between these layers of basaltic rock. This suggests a cycle, in which after the volcanoes erupted and spewed lava over the landscape, the titanosaurs returned and recolonized the area, before more volcanic activity covered the land once more.

It's been suggested there was a reason that the dinosaurs continuously returned to this area of volcanic activity time and again. Once more, the egg agate could be a clue.

'My understanding is that paleontologists assume that the ground would've been warm, which would've been perfect for laying eggs in,' says Robin.

This would tally with the way in which these massive dinosaurs likely incubated their eggs. Despite laying lots of eggs, it would have been impossible for the animals to actually sit on them to keep them warm. Instead, it seems they were relying on the toasty volcanic soils.

This would also help explain how the egg agate formed. It's possible that shortly after a titanosaur laid its eggs in the warm sands, a nearby volcano erupted. The debris and lava it ejected would have smothered the landscape, including the unfortunate nest.

This volcanic rock would have then solidified, with the egg remaining intact within. After all the internal structures and embryo rotted away, silica-rich water must have repeatedly percolated through the rock and the shell of the egg. This filled the void, creating the banded agate specimen that was eventually dug up tens of millions of years later.

<https://www.geologyin.com/2023/04/rock-containing-stunning-agate-turns.html#:~:text=Dinosaur%20Fossils-,%22Rock%22%20Containing%20Stunning%20Agate%20Turns%20Out%20To%20Be%2066%2Dfirst%20complete%20eggs%20ever%20found.>

Minerals Used in Every Day Life

Three Essential Metals Used in Medicine

Iron—Iron is one of the most vital minerals in our bodies, and medical applications are mined from iron ore. Although the average person consumes between 8-18 milligrams of iron per day, there are certain cases where it may be necessary to add in more iron to your diet. For example, iron supplements are used to treat low blood levels—which is caused by pregnancy, poor diet, blood loss or the inability to absorb iron.

Zinc—Zinc is a metal found in every tissue of the body. It is often called a “trace element,” because very small amounts of zinc are needed to support a healthy life-style. Zinc can be used to treat a number of severe medical conditions, such as:

Crohn’s disease
Down syndrome
Hansen’s disease
Alzheimer’s disease
Ulcerative colitis or inflammatory bowel disease
Attention deficit-hyperactivity disorder (ADHD)

Hypogeusia (or a reduced ability to taste things like sweet, sour, bitter, or salty substances)

Research also suggests that zinc stimulates the activity of at least 100 different enzymes in the human body, which can prevent further risks related to these diseases.

Platinum - Platinum is a precious metal that has been used in a variety of medications and tools since the early 1970s. Its dense, malleable properties are essential to the production of pacemakers, catheters, stents and even cancer therapies.

According to the International Journal of Cancer Research and Treatment, platinum-based agents are used in more than 50 percent of the world’s anticancer drugs. Cisplatin—along with its successor drug, carboplatin—also use platinum complexes in the treatment of common tumors, such as breast, ovarian and lung cancer.

Although these healthy metals made improvements in the field of medicine, there’s still a greater demand for its applications in other industries.

<https://www.angloamerican.com/futuresmart/stories/our-industry/our-products/metals-in-medicine>



More information is available at:
www.paramountarts.org



**Intro to Lapidary:
The Art of Working with Stones**
Tues., Jan. 23-Feb. 20
6-8 p.m.
Fee: \$145
Instructor: **Jim Magnuson**
Beginner,
no prior experience needed

Wire Wrapping Stones
Saturday, Feb. 24
9 a.m.—3 p.m.
\$95

Instructor:
Jo Schwalboski
Beginner,
no prior experience needed Ages 14+



Man Kept Rock For Years Thinking it Was Gold

A man who kept a rock for years in the hope that it was gold got a very pleasant surprise. The rock was actually much more valuable – because it was a rare meteorite.

David Hole found the meteor while prospecting in Maryborough Regional Park near Melbourne, Australia in 2015.

Three years later he took the rock, which weighed 37.5 pounds despite being just less than 15.5 inches long, to the Melbourne Museum to get it identified. It was here that geologists identified it as a 4.6 billion-year-old meteorite.

Melbourne museum geologist Dermot Henry told The Sydney Morning Herald: “It had this sculpted, dimpled look to it. That’s formed as it came through the atmosphere.”

Researchers later published a paper detailing the find, and have named the rock Maryborough after the town near where it was found.

In a media release from the museum, Birch said: “When you consider all the events this chunk of rock has experienced since its formation 4.6 billion years ago, it’s really mind-boggling that we get the opportunity to hold it and study it today.”

The meteorite is one of only 17 ever recorded in the Australian state of Victoria, making it extremely valuable to science.

<https://www.joe.co.uk/news/man-keeps-rock-for-years-hoping-its-gold-but-it-turns-out-to-be-even-more-valuable-413316>

There are Club members who teach lapidary related classes at the Paramount in St. Cloud. Here are the upcoming classes:

In Memorandum

Sharon Smith
Died November 26th



Sharon was a long-time member of the Cuyuna Rock, Gem, & Mineral Society, joining in the late 1990’s. She was a knowledgeable resource to the rock community, particularly of her favorite, the Lake Superior agate.

She previously held the office of vice president, and was a long time Cuyuna Rock Show chairperson.

Sharon also edited books for authors in the agate community, including Brad Cross and Karen Brzys.

**Cuyuna Rock, Gem,
& Mineral Society**
on the Web
www.cyunarockclub.org

Agates From Around The World

Lead Pipe Springs Thundereggs
*China Lake Naval Reserve,
Wingate, Southern California*

There are several locations around China Lake area near Wingate that produced thundereggs.



The Lead Pipe Spring site is known for the thundereggs with brick red to brown with bright bluish agates sometimes with shadowing effects.

Since the sites are located on Navy/Air Force lands collecting is not allowed. In the past there had been some guided collecting trips arranged with a local navy club. It’s not known if such tours are still ongoing. There was a big pit where Germans mined large thundereggs with agate cores for carving purposes.

<https://www.sailorenergy.net/Agates/AgatesThundereggCACHinaLake01.html>

Sunshine Requests

If you know someone who could use a little sunshine—birth, illness, surgery, family death—please contact Joanie Hanson at 218-831-2665.



We’re on Facebook!
**Cuyuna Rock,
Gem & Mineral Society**

*is a closed group, so you must ask to join.
After being approved you can
follow the members’ posts and add your own
information.*

Board Members for 2024

President—Ed Opatz
Term ends 1-1-26



Vice-President—
Lori DuBois
Term ends 1-1-25



Secretary—
Joanie Hanson
Term ends 1-1-26



Treasurer—Kevin Martini
Term ends 1-1-25



Director—Alan Busacker
Term ends 1-1-25



Director—Vern Iverson
Term ends 1-1-25



Director—
Mike Stanwood
Term ends 1-1-25



The Club is always looking for places to pick Lake Superior agates or other Minnesota rocks. If you know of somewhere that we can get permission a group to pick, please call Ed Opatz at 320-250-1363. A stipend is paid to the landowner.

Bench Tip—Eye This



Use a small empty eye drop bottle for flux. Soldering has never been easier. Just drip it on and solder away.

<https://www.ganoksin.com/article/jewelry-making-bench-tips/>

Rock Room

This Club is unique because it has its own rock store. Here is an inventory of what is available for Club members to purchase. Stop in when you come to the Clubhouse!

Grit and Polish
Oregon Geodes
Chalcedony
Desert Rose
Plume Agate
Yellow Jasper
Bruno Jasper
Owyhee Picture Jasper
Brazilian Agates
Amethyst
Obsidian
Mineral specimens
Hauser Bed Agate
Thundereggs
Mexican Geodes
Montana Petrified Wood
Montana Moss
Tee Pee Canyon Agate
Slabs of all sizes and types
Septarian Nodules—Utah
79 Bed Geodes—Oregon
Moroccan White Agate
Mexican Luna Lace Agate
Small Botswana Agate
Smokey Quartz crystals - Colorado

Snowflake Obsidian
Utah Petrified Wood
African Blue Lace Agate
Carnelian Agate
Tiger Eye—red and blue
Tiger Eye—gold & blue Variegated
Obsidian



Condor Agates
Agua Nueva Agates
Polychrome Jasper
Tabasco Agate Pairs
Sunset Jasper
Noreena Jasper
Tiger Iron
Kumerha Jasper
Swazi Agate
Calandria Agate (Mexico)
New Moroccan Agate

New!
Bear Canyon Agate

Unnamed Montana Jasper
Royal Imperial Jasper



Diamond Facts

- ◆Diamond is a different form of carbon.
- ◆The word diamond comes from the Greek word meaning unbreakable.
- ◆Diamond is the hardest natural material known and is often used for industrial cutting and polishing tools.

◆Diamond has a hardness of 10 on Mohs scale of mineral hardness, with 1 being the softest (talc) and 10 being the hardest.

◆Diamond is the best known heat transfer among naturally occurring substances.

◆Most of the Earth's natural diamond deposits are found in Africa.

◆Around 57,000 lb. of diamonds are mined around the world every year that are worth billions of dollars.

<https://www.sciencekids.co.nz/sciencefacts/chemistry/diamond.html>

California State Fossil

Fossil: Saber-Toothed Cat (*Smilodon californicus*)
Age: Pleistocene **Year Designated:** 1974

Fossils of the Saber-Toothed Cat (*Smilodon californicus*) are abundant at the La Brea Tar Pits in Los Angeles. *Smilodon* is one of the most recognizable of the ferocious saber-toothed cats which roamed the Americas up until 11,000 years ago. They could weight up to 350 kg and had massive, 8 inch long upper canine teeth which they used to prey on large ice age mammals.



<https://www.fossilera.com/pages/state-fossils>

The World of Jasper



Blue Mustang Southeast Oregon

Classic Blue Mustang shows blue skies and tan hills. Some red and black dendrites are possible, as well as some

patterning that leans towards a Rocky Butte Picture Jasper patterning, with brown and yellow speckling.

https://thegemshop.com/products/blue-mustang-picture-jasper-rough-rock-per-lb?_pos=15&_sid=075de5e9a&_ss=r

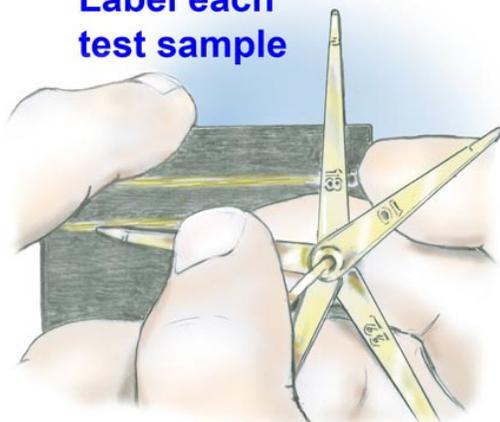
Use the Touchstone Method for Testing Purity in Karat Gold

There are a few scientific methods for precisely determining karat gold purity, some destructive (fire assay) and others nondestructive (X-ray fluorescence). Both methods require costly equipment, special procedures and a well-lit and ventilated area. A simpler method for determining gold purity in jewelry is the “touchstone” testing process, an age-old technique that is relatively nondestructive to jewelry and offers quick results.

Use with care: Touchstone testing incorporates the use of acids, so pay close attention to safety. Careful procedures are a must.

Touchstone testing is based on the fact that 24k gold resists all but the strongest acids. The purer the gold, the stronger the acid required to dissolve it. Measured strengths of nitric acid are used to test for 14k and lower.

Label each test sample



Each known test sample is labeled on the needle. Rub the known samples onto the stone and label each on the testing stone.

Aqua regia, a mixture of one part nitric acid and three parts hydrochloric acid, is used to test higher karat purity through the process of comparison and elimination.

To conduct touchstone testing, you’ll need an

acid testing kit (available through jewelry tool suppliers), a well-ventilated area, two glass beakers, water, baking soda, protective gloves, 320-grit abrasive paper, safety goggles, and paper towels.

Your testing kit includes a set of testing needles. Each needle has a karat gold sample on its tip and the karat value stamped on the side. Use yellow gold needles for testing yellow gold, and white gold needles for testing white gold.

Begin by checking the gold jewelry piece for other stampings (e.g., quality marks or manufacturer’s marks) and make note of characteristics such as heft, color and reflectivity. If you suspect the item may not be gold, use an engraving tool and make a small notch in an unobtrusive place on the jewelry to expose fresh metal. Next, put on protective gloves and place a drop of acid from the 18k gold testing bottle over the small notch. A highly effervescent green reaction indicates base metal, and no further testing is required.

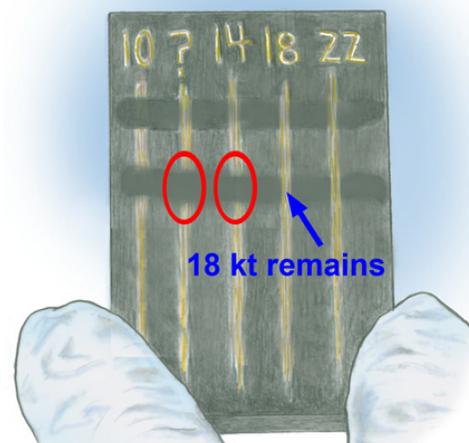
If there is little or no reaction, the piece is likely karat gold, and the next test is for purity. Follow these steps:

- Rub the jewelry of unknown karat purity gently back and forth on the testing stone to leave a thin, but clearly visible, metal sample. Use care to take this sample from a place not clearly visible on the jewelry and away from solder joints.
- With a testing needle, draw a question mark on the touchstone that represents the unknown metal.
- Start with the 14k testing needle and rub a layer next to the unknown. Label it “14.”
- Repeat this process, making a layer and then labeling with the 18k, 22k, and 10k testing needles. Now choose the bottle labeled for testing 10k and lightly swipe the applicator across all the samples.
- After approximately 20 to 40 seconds, place the touchstone in a mixture of baking soda and water to neutralize the acid in one beaker, then rinse in water in the other beaker.

- Blot the touchstone with paper towels and observe. The 10k sample has dissolved, but the unknown metal is still visible. This confirms the unknown metal is finer than 10k.
- Next, choose the bottle labeled for testing 14k and swipe it across the samples just below the first test.
- Allow enough time for the acid to react and neutralize, then rinse and blot the touchstone and observe. The acid has dissolved both the 10k and 14k samples. The unknown metal is therefore 14-karat or slightly higher.

Always prepare the touchstone for its next use by cleaning it thoroughly. Remove the metal from the stone’s surface by placing it facedown on a piece of 320-grit abrasive

Unknown = 14 kt, <18 kt



Analyze the test results to determine the karatage.

paper on a flat surface. Apply moderate pressure and sand it in a circular motion until sample layers are no longer visible. Neutralize, rinse and blot dry before replacing in the kit. Always follow the manufacturer’s directions for the proper care, storage and handling of acids.

<https://www.gia.edu/bench-tip-use-the-touchstone-method-for-testing-purity-karat-gold>



Volcano Mount Etna Eruption

Earth is a volcanic world. Some 40 to 50 volcanoes are erupting on any given day, says the Smithsonian Institution’s Global Volcanism Program, which tracks eruptions around the world. As of October 2023 (the most recent update), the program noted 46 volcanoes were erupting.

Left is Mount Etna in Italy during its December 2023 eruption. The name comes from the Greek Aitne, from aithō, “I burn.”

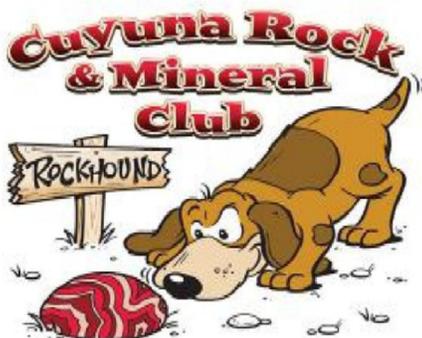
Etna’s geological characteristics indicate that it has been active since the end of the Neogene Period (i.e., for about the past 2.6 million years).

<https://www.newsweek.com/nearly-50-volcanos-erupting-same-time-1844365>

<https://www.britannica.com/place/Mount-Etna>

Marcia Opatz, Editor
Cuyuna Rock, Gem
& Mineral Society
1001 Kingwood Street
Suite B-40
Brainerd, MN 56401

FIRST CLASS MAIL



The Agate Explorer

January 2024
Official Publication of the Cuyuna Rock,
Gem & Mineral Society



Members of AFMS & MWF

**Club Officers
& Board of Directors**
cuyunarockgemclub@gmail.com

President: Ed Opatz
opatz1@att.net
320-250-1363

Vice-President: Lori DuBois
waboos.dubois@gmail.com
(320) 237-4761

Secretary: Joanie Hanson
secretarycuyunarockgemclub@live.com
218-831-2665

Treasurer: Kevin Martini
treasurer@cuyunarockclub.org
kjspumanti69@gmail.com
218-770-8917

Director: Alan Busacker
Director: Vern Iverson
Director: Mike Stanwood

Newsletter Editor: Marcia Opatz
theisma@hotmail.com
320-250-8120

Notes from the President

It's a new year again! What are my new year resolutions? Hum...maybe to keep organizing my rocks at home? Work less, so I'm closer to full retirement? What are yours? Maybe you could make one that you volunteer time at the Club.

If you weren't able to make the Christmas party, we had a good time, with plenty of food, gifts, and fun.

Also, in the new year we are thinking about field trips. I would REALLY like some help in this department. Are you interested in researching a place for a group to go? Call me, text me, or email me. (That information is on the right.) We like to have several agate picks in central Minnesota, and at least one longer trip. Sometimes it's a week or more, but people can come and go as their schedule allows.

The Club has insurance, which is a plus for a landowner. If a Club member does something stupid on a field trip (not closing the gate, so the cows get out, for instance), the insurance will cover it. It doesn't cover Club members' injuries. Also, the Club pays a stipend to a landowner for allowing the Club to pick agates on their private property.

The Club would like to be able to collect Mary Ellen jasper and binghamite. Is anyone interested in pursuing this? It might include phone calls, and checking what/where it is legal.



Ed Opatz