Cuyuna Rock, Gem and Mineral Society

The Agate Explorer

November 2023

November Meeting Saturday, November 11

10:00—Rock equipment available for use; Rock Wrappers
12:00 noon—Board meeting
2:00—General Meeting: Elections and Silent Auction

If you are at least 18 years of age and have been a member for at least one year, you qualify for a position on the board. Positions that are on the ballot are president (2 year position), secretary (2 year position), and three board members at large (one year positions). To nominate someone (including yourself, please contact Dan Hammond (320-285-7583) or Lilly Peterson (320-533-1271).

The silent auction is an opportunity for Club members to sell any rock related items they want, and keep the entire sale price.

Franklin Holiday Open House & Sale
Saturday, November 18 10 a.m.—2 p.m.

Club members can set up a table free to sell any craft or rock items. Please call Ed Opatz at 320-250-1363 to reserve a space.

The Club is also looking for anyone who would like to help with the spinning wheel, rock saw, or geode cracker at this event.

Rock Wrappers

Open gathering for wire wrappers starting at 10 a.m. on meeting Saturdays.
Hang out with other wrappers, and work on your projects.
(Bring all supplies needed.)
Learn tricks to make wrapping easier, a new design, or perhaps a new place to find supplies.

All skill levels welcome!

Looking For Bids

on 120 eight foot tables and sixty five chairs for the weekend of the 2024 Cuyuna Rock Show, May 11-12. Would need to be delivered on Friday morning, May 10, and picked up on Monday morning, May 13. If you find a company who is willing to provide these, please contact Ed Opatz at 320-250-1363.

Club Calendar

November 11—meeting date; elections; silent auction
November 18— Open Studio Saturday at Franklin Arts
Cuyuna Rock Club rock/craft sale 10 a.m.—2 p.m.
December 16—Christmas party
(Please note change of weekend.)

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.

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 September 9, 2023

Board Meeting

Call to Order- The meeting was called to order at 12:00 pm by President Ed Opatz via phone. Present were Vice-President Lori DuBois, Treasurer Kevin Martini, Secretary Joanie Hanson and Board members- Vern Iverson and Judi Laurence.

Approve minutes- A motion was passed to approve the minutes from the August meeting.

Treasurer's Report- Kevin presented the treasurer's report- it will be posted at the rock club. A motion was passed to pay the bills for the month.

Rock room concerns- Vern asked for more help with the rock room and other items we sell during meetings.

Sales sheets for clothing inventory just like the rock room? / inventory/ t-shirt company – we will do these like the rock room sales slips. A slip will need to be filled out for each total purchase.

A motion was passed for Vern to order new t-shirts.

Rock club files/ past presidents- We are reviewing and organizing the club archives.

Franklin Halloween activities Tuesday, Oct 31 4-6:30pm - Kids will be trick or treating in the building on Halloween. We will have a table set up to give out either rocks or candy on the main level.

Food vendors- We are starting to look at potential food vendors for the 2024 show.

General Meeting

Call to Order- The meeting was called to order at 2:000 pm. 24 members were present.

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

The nominating committee for elections are- Dan Hammond (302-285-7583) and Lilly Peterson (320-732-3740). Call them to let them know if you would like to run for the board of directors. This election is for president, secretary, and the 3 board members-at-large.

Vern has asked for more help with clothing sales/inventory, as well as more help in the rock room during meetings. Please consider volunteering to help with these activities. Reviewed use of rock club machinery rules- Dan Hammond. All members must be trained on the machines before use, or demonstrate knowledge of the machines. All equipment must be cleaned after use.

Joanie is looking for volunteers to help with Franklin "trick or treating" Tuesday Oct 31, 4 -6:30pm.

Show and tell- several members had items for "show & tell".

Door Prizes were won by- Christine Reisz, Jane Gislason, Judi Laurence, Alan Busacker and Justin Reisz.

Speaker-Bill Tromley on Binghamite, Minnesota's Tiger Eye.

Respectfully submitted,
Joanie Hanson

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.

November Birthstone *Topaz*

Yellow topaz is one of the modern birthstones for November, alongside citrine. Many also consider topaz (all colors) as the traditional birthstone for November.

Topaz is a naturally occurring neo-silicate mineral that occurs as a prismatic crystal. The word "topaz" likely comes from the Sanskrit word "tapas" which means "fire;" however, some believe "topaz" may be derived from the Greek word "topazos." Yellow topaz is often confused for citrine, but they are different gemstones.

Yellow topaz ranges in color from golden yellow to reddish-orange. Yellow is the color most associated with topaz, which is also known as "golden topaz" or "Imperial topaz." Before advances in modern gemology, all yellow and brown gems were just referred to as topaz. Since then, it has been discovered that there are actually many different distinct yellow gems, but the association with yellow and topaz has stuck around.

Topaz, regardless of its color, measures 8 on the Mohs scale, and is therefore very durable. It also has a high refractive index - meaning, it sparkles! - so it's perfect for a variety of jewelry options.

Generally, yellow topaz is hard enough for daily wear and will not scratch easily. However, topaz (all colors) has perfect cleavage, which means it can chip. To prevent chipping, choose a setting like a bezel that protects the corners and edges.

https://www.gemsociety.org/article/birthstone-chart

Earth's Hidden Eighth Continent

Zealandia had so much promise as the eighth continent on Earth. Well, it did—until about 95 percent of the mass sunk under the ocean. While the majority of Zealandia may never host inhabitants—at least, not land-based ones—the would-be continent is now no longer simply lost. Researchers recently finished mapping out the northern two-thirds of Zealandia, wrapping up the documentation of the nearly two million square miles of the submerged land mass.

Zealandia's history is quite closely tied to the ancient supercontinent of Gondwana, which broke up hundreds of millions of years ago. Zealandia followed suit—roughly 80 million years ago, according to the latest theory. But unlike neighboring Australia or much of Antarctica, Zealandia largely sunk, leaving only a small portion of what many geologists believe should still be dubbed the eighth continent.

New Zealand makes up the most recognizable above-water portion of Zealandia, although a few other islands in the vicinity are also part of the maybe-continent in question.

The latest research dredged the northern two-thirds of the submerged area, pulling up pebbly and cobbley sandstone, fine-grain sandstone, mudstone, bioclastic limestone, and basaltic lava from a variety of time periods. By dating the rocks and interpreting magnetic anomalies, the researchers wrote, they were able to map the major geological units across North Zealandia. "This work completes offshore reconnaissance geological mapping of the entire Zealandia continent," they said.

The researchers found the sandstone roughly 95 million years old from the Late Cretaceous period and a mix of granite and volcanic pebbles from up to 130 million years old during the Early Cretaceous period. The basalts are newer—they're about 40 million years old and from the Eocene period.

Along with the mapping, the paper says that the internal deformation of both Zealandia and West Antarctica show that stretching led to the subduction-style cracking of the plates that welcomed ocean water to form the Tasman Sea. Then, a few million years later, further Antarctica break-away continued to stretch the crust of Zealandia until it thinned enough to break apart and seal the largely underwater fate of Zealandia. This goes against the prevailing theory of a strike-slip breakup.

According to Science Alert, the stretching direction varied by up to 65 degrees, which may have allowed the extensive thinning of the continental crust.

As scientists in New Zealand may tell you, just because Zealandia is largely underwater, doesn't make it any less of a geological marvel.

https://www.popularmechanics.com/science/environment/a45226285/eighth-continent-zealandia-mapped/

PARAMOUNT
CENTER FOR THE ARTS

There are Club members who teach lapidary related classes at the Paramount in St. Cloud. Here is the upcoming class:
More information is available at:
www.paramountarts.org

Wire Weaving Stones
Sat., Dec. 9 9:00 am - 3:00 pm
Instructor: Jo Schwalboski
Fee: $95
No prior experience needed; Ages 14+

Explore the beautiful technique of stone wire weaving! Choose from 100's of unique stones in fun colors and shapes, to weave in ornate designs using copper or brass wire (silver wire upgrade option available for an additional charge the day of class).
Jo will provide all of the techniques, tips, tools, and materials for you to walk away from class with a completed piece that you will be proud to wear or give as a gift!
All materials to create one wrapped stone are included in the cost of tuition.
*Upgrade options of stone size and type, along with silver wire are available for an additional cost at the time of class.

Upcoming Midwest November Rock Shows

11-12—FREEPORT, IL: North West Illinois Rock Club; Eagles Club; Sat. 9-5, Sun. 10-4; Free Will Donation; contact Brian Green, (815) 821-2208; Email: bgreen57@hotmail.com
18-19—MADISON, WI: Madison Gem & Mineral Club; Alliant Energy Center in Exhibition Hall; Sat. 9-5, Sun. 10-5; $4 Adults, under 13 Website: www.madisonrockclub.org

The World of Jasper
Purple Cow
McDermitt, Oregon

Purple Cow jasper is the name for a colorful agate and jasper that is collected from a site in McDermitt, Oregon. It will often feature a mixture of red, purple, green and yellow coloration, with a variety of additional colors possible.

Arizona State Fossil

Fossil: Petrified Wood (Araucarioxylon arizonicum)
Age: Triassic
Year Designated: 1988
Arizona is famous for it's vast petrified forest, so it makes sense that Arizona's state fossil would be the most plentiful species of fossil tree in that forest, Araucarioxylon arizonicum. Petrified wood is fossil wood that has been turn to a fossil via permineralization. That is the organic wood material was replaced with minerals by water after it was buried. The Petrified Forest National Monument is located north of I-40 east of Holbrook and is from the Triassic age, approximately 200 million years ago.

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

Receding Lake Powell Reveals 'Extremely Rare' Fossils

The receding waters of Lake Powell have revealed some extremely rare fossils from the Jurassic period.

Paleontologists had been documenting fossil tracks in the Glen Canyon National Recreation Area in Utah when they came across a bonebed containing fossils of a tritylodontid—an extinct mammal-like reptile that lived 180 million years ago.

The fossils, which include bones and teeth, are extremely rare and the first tritylodontid bonebed to be found in Utah's Navajo Sandstone, a geological formation in the Glen Canyon, the National Park Service (NPS) reports.

These fossils are some of the most important discovered in the United States this year—not just because they give researchers insight into the species but because they shed light on the history of Lake Powell's changing shorelines.

The bonebed was previously submerged by Lake Powell, which, due to prolonged drought in the area, has seen declining water levels in recent years.

Paleontologists found the fossils in March. They happened to be in "the right place at the right time," the NPS said, before a record amount of snowmelt flooded the lake, making it impossible to access. Lake Powell is replenished seasonally by snowmelt flowing down from the surrounding mountains through the Colorado River. While river flows have been low for many years, this year saw a record amount of snowmelt that accumulated through a particularly wet winter.

This meant that paleontologists had a very short amount of time to recover the fossils before they would be completely submerged once again.

"Studying these fossils will help paleontologists learn more about how early mammal relatives survived the mass extinction at the end of the Triassic Period and diversified through the Jurassic Period," the NPS said. Several hundred pounds of rocks containing the fossils were removed from the site and taken to labs for more research.

The fossils will become part of the Glen Canyon NRA museum collection to be housed at the Prehistoric Museum in Price, Utah.
Lake Powell is surrounded by huge geological formations that contain many more uncovered fossils.

"The most famous and abundant fossils known from Glen Canyon NRA are the footprints of meat-eating dinosaurs in the Glen Canyon Group," the NPS said in a statement. "This series of sedimentary rocks, named after their exposures along the canyon itself, were laid down by rivers, lakes, streams and deserts from the Late Triassic Epoch through the Early Jurassic Epoch. One of the largest mass extinctions in Earth's history happened during this period."

While the drought in the southwestern United States poses many concerns over a water shortage, the receding water levels in some reservoirs and lakes have revealed some interesting findings.

https://www.newsweek.com/receding-lake-powell-extremely-rare-fossils-1834475

Gem Encyclopedia

Hessonite

Before the discovery and popularization of emerald-green tsavorite in the late 1960s to 1970s, orangish hessonite was the most popular gem variety of the unpopular grossular garnets. Unfortunately, that didn't amount to much. Even this gem's name (including an archaic variation, essonite) reflected its inferior reputation in the gem world. Its name comes from the word hesson, which literally means "inferior" in Ancient Greek. Hessonites can have a lower hardness than other types of garnets as well as other more well-known jewelry stones, like quartz and topaz.

Hessonite's orange may range from honey yellow to a reddish-brown, hence its cinnamon moniker. In past centuries, hessonites were one of several varied gems called jacinth or hyacinth. (In modern times, these terms receive little use but most commonly refer to orange-red to red-brown zircon).

In past decades, hessonites and other earth-tone gemstones haven't enjoyed the popularity of their brighter colored counterparts. However, fashions change. In the 1990s, the discovery of bright orange mandarin garnets, a variety of spessartite, saw an increased interest in orange gems.

While mandarin garnets are rare and expensive, hessonites offer a more readily available, relatively inexpensive option. In addition, a renewed demand for earth-tone jewelry also increased interest in these gems.

Since hessonites can have a hardness below 7, they are susceptible to scratches from everyday hazards, like common household dust. In jewelry pieces, these gems should have protective settings. Otherwise, hessonites make beautiful and relatively inexpensive gemstones.

Although isometric like all garnets, hessonites, like other grossulars, may show anomalous double refraction (ADR) due to strain.

Usually included, sometimes heavily, some hessonites may also contain eye visible inclusions. However, unless they affect structural integrity, such inclusions don't usually detract from hessonite's value.

Hessonites may display a visual effect that resembles roiled or disturbed water within the stone. This roiled appearance has also been referred to as a "heat wave" or "whisky in water" effect. Although similar effects may occur in other gemstones, its appearance in a garnet may help confirm its identification as hessonite. Such gems may appear more translucent than transparent.

However, please note that some relatively recent discoveries of hessonites lack this roiled effect. These include specimens from Afghanistan and Orissa, India. These gems have greater transparency than roiled specimens. So, the absence of a roiled effect in a garnet may not rule out hessonite. Scientists have synthesized numerous garnet varieties, including grossulars. However, synthetic grossulars, including hessonites, aren't likely to be found in jewelry use. For more information on other synthetic garnets, see the section on synthetics in our main garnet gem listing.

While hessonites aren't rare or too expensive, and lab-created grossulars aren't common, gems with strong symbolic associations may motivate dishonest vendors to sell simulants sell simulants made of even more plentiful, cheaper materials. (See, for example, cross-shaped staurolites). Be wary of dyed glass, plastic, or synthetic quartz imitations of hessonites, especially if purchased online.

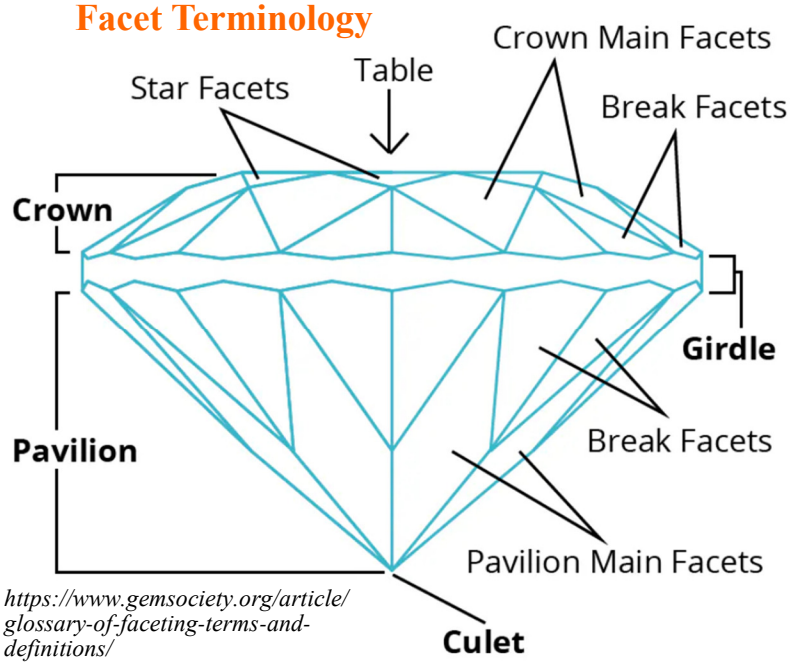
Garnets typically receive no gem treatments. However, grossular garnets, including hessonites, are occasionally enhanced. For example, reports have noted hessonites with clarity enhancing fracture fillings, including polymer fillings intended to stabilize highly fractured, low-grade material for cutting.

A 1997 experiment demonstrated that heating purplish rhodolite garnets, an almandine-pyrope blend, may produce a "hessonite-type brownish color" at around 600° C. However, rhodolites have greater hardness (7-7.5) and command higher prices. Thus, you won't likely encounter heated rhodolites offered as hessonites.

Where are Hessonites Found?
Canada, Sri Lanka, and Tanzania are major sources of gem-quality hessonites.
Other notable producers include Afghanistan; Australia; Brazil; China (Altay Mountain Range); India; Italy; Madagascar; Myanmar; Pakistan; Russia; United States (San Diego County, California; Washington).

https://www.gemsociety.org/article/hessonite/

Facet Terminology



https://www.gemsociety.org/article/glossary-of-faceting-terms-and-definitions/

Agates From Around The World

Plasma Agate

Clear Creek
Central California

Plasma agate is a fairly rare material; there never was a commercial deposit. Stones were collected by rockhounds and others on public land. The Federal Government closed the area to collecting several years ago.

The best of the material is green with perhaps a bit of brown or tan and is highly agatized. The material is characterized by unique and interesting patterns.

https://stonetreasuresbythelake.com/pages/plasma-agate#:~:text=Plasma%20agate%20is%20a%20fairly,to%20collecting%20several%20years%20ago.

Lapidary Safety Tips

Lapidary safety tips should be followed before a grinding machine is turned on and used. It's important to know what is being cut and what health hazards might be associated with it. Many lapidaries start in the profession as a hobby, either by watching others or by teaching themselves. One thing that can be missing in this training is learning safety procedures.

Over the years I have heard many people in the rock community say they will never cut certain stones because of all the inherent dangers that are contained within the material. The reality is the dangers are not in handling the materials themselves but in the processing. The dangers can easily be handled with proper education, gaining knowledge of what is in each stone before cutting, and how to properly stay out of harm's way with the correct protective gear.

Many stones used in lapidary work may contain radioactive minerals, asbestos, beryllium, sulfur, cinnabar (mercury), and various other harmful elements that can cause health problems if not handled properly. Everything can have risks, even some common items around the house have potential risks — smoke detectors contain radioactive elements, ceramics like tiles and pottery may contain uranium in the glazes, and for years, dishware had radioactive minerals used in the bright coloring. People are familiar with these materials and are comfortable having them around because they know the proper precautions are taken so they can be used as everyday items. The same can be said with many common lapidary materials.

Stones like pietersite, tiger's eye, marra mamba, and serpentine contain asbestos. Society has been trying to remove old asbestos-containing products such as insulation in homes and buildings for years. This is because asbestos is a fine fiber mineral that when turned into dust and goes airborne, has been linked to lung cancer, mesothelioma, and asbestosis. Stones like Clear Creek plasma agate contain various minerals, one of them being an attractive bright red cinnabar which is a mercury sulfide and can be dangerous if you breathe in the dust. It is most dangerous though when breathing in the fumes when the stone is heated to over 400°F. Mercury was utilized by gold miners in the extraction process of gold from the quartz host stone. Members of the quartz mineral group, one of the most common materials and contained in the majority of lapidary materials, is known to cause silicosis. Silicosis is a lung disease caused by inhaling large amounts of crystalline silica dust. It is not curable but is very preventable.

When cutting cabochons, it's important to know which materials are unsafe to handle, but for the most part, the majority can be cut with the right precautions. First, setting up your workspace with proper ventilation is

key. Everything you do should protect your breathing.

Next, wearing rubber latex gloves or nitrile gloves to protect from skin irritations is not a bad practice. It might not always be effective for those who like to hold the stones by hand as they cab because the gloves tend to rip easily when close to the wheels. If you cab using dop sticks, these gloves can help keep your skin from being overly exposed.

Eye gear is ALWAYS warranted, not just for avoiding the collection of dust particles in your eyes, but to also protect from small chips and shards flying off the grinding wheels that can cause a great deal of eye damage.

The number one article of gear that should ALWAYS be worn is a respiratory mask. The N95 might be adequate for most things. (The 95 number stands for 95 percent of all dust particles.) However, I would suggest using the P100 mask with replaceable filters. These masks will block out 100 percent of all particles in the air and protect you from harmful dust.

A waterproof apron will keep you dry and keep lapidary materials off your clothing. Ear guards not only protect your hearing by blocking machine noise, but they also keep your ears clean and free from compiling dust or particles.

In addition to wearing protective gear, keeping a clean shop is just as important. If you are cutting up materials that contain carcinogens such as Tiffany stone which contains beryllium, always clean all the surfaces in your workspace where dust has collected. This way, there won't be a transfer of dust to your hands, and will avoid accidental ingestion later.

A complete set of protective gear includes a P100 respirator, eye protection, ear protection, a waterproof apron, and gloves. All these items can easily be found at your local stores, such as Home Depot, Lowes or Ace Hardware, and online on Amazon and eBay. Wearing all the correct protective gear and keeping a clean work area should help ensure a safe, healthy hobby.

https://www.rockngem.com/lapidary-safety-tips/

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

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
Taylors Falls Bead Store 364 Bench St, Taylors 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

Is Your Artifact Really a Geofact?

By Jim Brace-Thompson

As a boy spending summers on Grandpa's Illinois farm, I found artifacts within fields of soy beans and corn. Artifacts are man-made objects that often had a practical purpose, such as pottery, weapons, or everyday tools. The artifacts I found were arrowheads. Much later, after a move to California, I found what seemed to be crude artifacts on the hardscrabble floor of the Mojave Desert, but there were so many of them. Did Native Americans use the Mojave as a dumping ground for all their reject arrowheads?

As it turned out, what I saw in the desert weren't artifacts but geofacts: natural rocks that resemble things crafted by people. They may be rocks that appear to have holes drilled into them, hollow concretions that look like bowls, or—in the case of what I was finding—pieces of jasper that looked like they had been knapped by human hands. But the only hands that touched these were my own.

The chipped edges were made by natural forces as stones tumbled and smacked against other stones, perhaps in a flash flood. In some instances, a rock not native to one area was moved from another area and dinged along the way by glaciers. Or stones can chip from pressure if buried beneath other stones.

Which are artifacts and which are geofacts? (Answer: The two white ones are artifacts.)

Geofacts can lead to arguments among anthropologists. For instance, chipped stones have been found at Calico Early Man Site in California. Some consider these to be artifacts. However, they tend to be crude and some are found in beds dated at 100,000 to 200,000 years old. Other scientists insist that age is far too old and that no humans had populated the Americas at that time. They consider these chipped stones to be geofacts.

Who's right? Here's your invitation to become an anthropologist and join the debate!

https://www.rockngem.com/rock-gem-kids-is-your-artifact-really-a-geofact/

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

"Impossible" Rocks Have Been Found On The Volcanic Island Of Anjouan

In the southwestern Indian Ocean, the volcanic island of Anjouan is home to a strange geological mystery. On the island, residents and geologists keep finding a type of rock that shouldn't be there.

The island formed on an ocean basin, when tectonic plates shifted away from each other and magma moved up and cooled to form basalt, of which the island is made. On Anjouan you should not expect to find the sedimentary rock quartzite, a type of sandstone made from quartz sand grains that have been collected in river deltas, before being compressed into quartzite over time. The island's basalt does not contain any quartz, and the island itself is too young to have formed a sizeable river delta.

And yet, on the island geologists have reported for perhaps over a century that they have found quartzite in abundance.

In 1900 geologists reported unusual rocks that could have been quartzite, though the documentation was too poor to know for sure. In 1969, geologists found a large formation of "sandstone" on the island near the town of Tsembehou, which was later found to be quartzite. Then in 2017, French geologist Patrique Bachèlery found more quartzite at a nearby ridge.

Setting out a few years later, geochemist at Columbia University's Lamont-Doherty Earth Observatory Cornelia Class started to investigate. Sure enough, she and her team found quartzite within minutes, and an abundance of it up along the ridge.

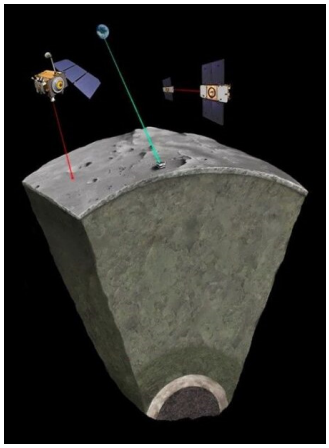
"This is contrary to plate tectonics," Class said in a Columbia University press release. "Quartzite bodies do not belong on volcanic islands."

Residents told Class that they find the rocks all the time, and use it to sharpen their knives, pointing them in the direction of yet more quartzite. Mapping it out, Class found that the amount of quartzite was "almost half a mountain".

As yet, there isn't a definitive explanation for the quartzite. A chunk of quartzite from continental crust must have found itself deposited in the ocean basin, and then raised up 4,000 meters (13,123 feet) above the seabed by the igneous basalt, yet Class told Live Science that the chemistry of the island's basalt rocks don't show an association with continental crust, calling the find "something we consider impossible, but then we find it, and once we find it, we have to explain it." Aging the quartzite will help determine when it was deposited, and hopefully how it came to be the only volcanic island in the world with a chunk of continent – possibly from the breakup of ancient continent Gondwana – sitting on it.

https://www.iflscience.com/impossible-rocks-have-been-found-on-the-volcanic-island-of-anjouan-71191

It's Official: Scientists Confirm What's Inside The Moon



Well, the verdict is in. The Moon is not made of green cheese after all.

A thorough investigation published back in May has found that the inner core of the Moon is, in fact, a solid ball with a density similar to that of iron. This, researchers hope, will help settle a long debate about whether the Moon's inner heart is solid or molten, and lead to a more accurate understanding of the Moon's history – and, by extension, that of the Solar System.

"Our results," wrote a team led by astronomer Arthur Briaud of the French National Centre for Scientific Research in France, "question the evolution of the Moon magnetic field thanks to its demonstration of the existence of the inner core and support a global mantle overturn scenario that brings substantial insights on the timeline of the lunar bombardment in the first billion years of the Solar System."

Probing the interior composition of objects in the Solar System is most effectively accomplished through seismic data. The way acoustic waves generated by quakes move through and reflect from material inside a planet or moon can help scientists create a detailed map of the object's interior.

We happen to have lunar seismic data collected by the Apollo mission, but its resolution is too low to accurately determine the inner core's state. We know there is a fluid outer core, but what it encompasses remains under debate. Models of a solid inner core and an entirely fluid core work equally well with the Apollo data.

To figure it out once and for all, Briaud and his colleagues collected data from space missions and lunar laser ranging experiments to compile a profile of various lunar characteristics. These include the degree of its deformation by its gravitational interaction with Earth, the variation in its distance from Earth, and its density.

Next, they conducted modeling with various core types to find which matched most closely with the observational data.

They made several interesting findings. Firstly, the models that most closely resembled what we know about the Moon describe active overturn deep inside the lunar mantle. This means that denser material inside the Moon falls towards the center, and less dense material rises upwards. This activity has long been proposed as a way of explaining the presence of certain elements in volcanic regions of the Moon. The team's research adds another point in the "for" tally of evidence.

And they found that the lunar core is very similar to that of Earth – with an outer fluid layer and a solid inner core. According to their modeling, the outer core has a radius of about 362 kilometers (225 miles), and the inner core has a radius of about 258 kilometers (160 miles). That's about 15 percent of the entire radius of the Moon.

The inner core, the team found, also has a density of about 7,822 kilograms per cubic meter. That's very close to the density of iron. Curiously, in 2011 a team led by NASA Marshall planetary scientist Renee Weber found a similar result using what were then state-of-the-art seismological techniques on Apollo data to study the lunar core. They found evidence of a solid inner core with a radius of about 240 kilometers, and a density about 8,000 kilograms per cubic meter.

Their results, Briaud and his team say, is confirmation of those earlier findings, and constitute a pretty strong case for an Earth-like lunar core. And this has some interesting implications for the Moon's evolution.

We know not long after it formed, the Moon had a powerful magnetic field, which started to decline about 3.2 billion years ago. Such a magnetic field is generated by motion and convection in the core, so what the lunar core is made of is deeply relevant to how and why the magnetic field disappeared.

Given humanity's hope to return to the Moon in relatively short order, perhaps we won't have long to wait for seismic verification of these findings.

The research has been published in Nature. A version of this article was first published in May 2023.

https://www.sciencealert.com/its-official-scientists-confirm-whats-inside-the-moon

ROX BOX

A place to advertise rock items to sell or trade and to inquire about items to purchase.

The Cuyuna Rock, Gem, and Mineral Society accepts no responsibility for any dissatisfaction that may occur by either party, sell or buyer. The Society does not profit in any way by sales transactions.

For Sale: 5 spools (10 yards each) of chain in a variety of colors. Includes jump rings and clasps. $25 for all. Also some sterling silver chain. Please call Marie Israel at 218-924-4017.

Wanted: Rock Saw, 14-16 inch blade and tumbler, 20+ pounds. Contact Mike Stanwood at 218-821-4775.

Wanted: Polished Lake Superior agates, pea size and smaller. Contact Bev Williams, hazelewj@yahoo.com, or 218-821-5684.

For Sale: I have many pieces of equipment for sale—saws, tumblers, flat laps, and grinder/polisher/sanders. I also have many wheels and motors. Contact Ed Opatz at 320-250-1363 or opatz1@att.net

Volunteer Needed

The Club is looking for someone to be a field trip coordinator. This person would look for locations to rockhound and organize the trip. It would not be necessary to go on every trip, but have contact information available. Assistance given by Board members.

Call/text Ed Opatz at 320-250-1363.

65 million years ago dinosaurs went extinct. Many species were wiped out by the after-effects of a meteorite impact, or perhaps several impacts. The impact(s) set off chains of earthquakes, tsunamis and volcanic eruptions, throwing dust and acid into the atmosphere, creating an impact winter. The dust blocked out the sunlight, plants could no longer photosynthesize, and food chains collapsed. After that mammals evolved rapidly and filled the evolutionary niches left behind.

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.

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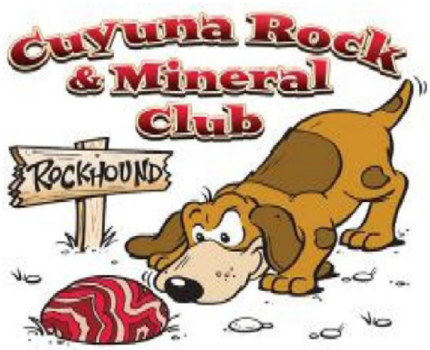

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Members of AFMS & MWF

Notes from the President

I just recently found out that one of our Club members found gold at a Club field trip! I did know that gold can be found in the state, but haven't known anyone who found any while on one of our field trips.

Please take the time to come to the November meeting on the 11th. The day includes the elections and a silent auction. It's important that we have a good board of directors to run the Club. If you aren't there to vote you can't complain if things are not run the way you want. And the silent auction is always fun. Members are allowed to bring any rock related item to sell, taking all the money of the sale for themselves.

The Christmas party in December includes a white elephant gift exchange. Start planning now. The gifts may or may not be rock related.

If you have any requests or ideas for meeting speakers, please let me know. The Club pays a stipend to speakers, so they are not donating their time.

Marcia and I will be going to the Quartzite and Tucson rock show this winter. If you have a request you can let us know and we can look while we are there. Most of the time we can find what people want, but there is no guarantee.

Ed Opatz

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