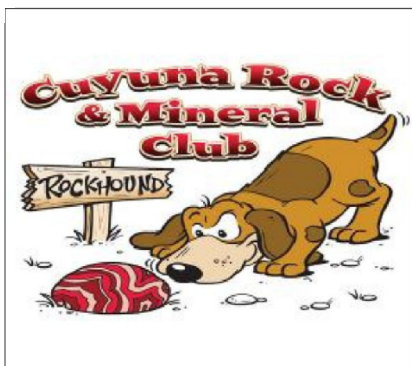


The Agate Explorer

October 2023



October Meeting Saturday, October 14

10:00—Rock equipment available for use; Rock Wrappers
12:00 noon—Board meeting
2:00—General Meeting: speaker Ben Torrens on making bismuth



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!

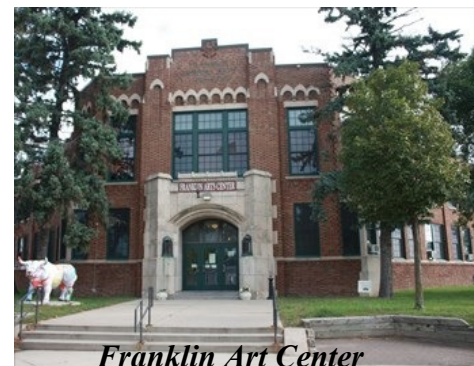


Volunteer Needed

The Club is looking for someone to be a field trip coordinator. This person would look for locations to rock-hound 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.



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.



Rock Garage Sale

Saturday, September 30
10am to 4pm
Members Cindy & Butch Goldenstein
916 7th Ave. N., St. Cloud

NO EARLY SALES!!

Almag oil, Brazilian agate, Mexican coconut agate, Lake Superior agate, Montana agate, Mexican lace agate, Green agate, Green tree agate, Obsidian, Petosky stone, Mookaite, Petrified wood, Arizona wood, granite, Scenic agate. Tiered display shelf PLUS more, as things are being discovered.

Club Calendar

- October 14**—meeting date; Speaker Ben Torren on how to make bismuth
- November 11**—meeting date; elections; silent auction
- December 16**—Christmas party



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, August 12, 2023**

Board Meeting

Call to Order- The meeting was called to order at 12:30 by President Ed Opatz. Present were Vice-president Lori DuBois, Treasurer Kevin Martini, Secretary Joanie Hanson, Board members Vern Iverson, Jo Schwalboski, and Judi Laurence.

Approved minutes from the July meeting.

Treasurer's Report- Posted at the rock club. A motion was passed to pay the bills for the month. Any club business over twenty miles (example: Spinning wheel at the Moose Lake show) will be reimbursed for gas- motion passed.

Elections for 2024- president, secretary, 3 board members. Need nominating committee.

Holiday party date change- to December 16- motion passed.

Club logo patch- Phil Gotch. Keith Bartel owns copyright- permission to use- Ed will contact Keith.

Tal Lucken knows the printer of our large metal signs- still has design.

Cuyuna State Recreation Area- looking at possibility of permission to hunt Binghamite in the area- Ed will be looking into this.

Facebook marketing for the rock show. Marcia is looking for help with this from someone that know how to navigate Facebook.? possible speaker during dinner the evening before the rock show on the showmanship of selling.

**7-Year-Old Girl Finds
2.95-Carat Diamond at State Park**

When Aspen Brown turned seven years old, she wanted to celebrate her birthday at the Crater of Diamonds State Park in Murfreesboro, Arkansas. Little did she know that she would receive the birthday gift of a lifetime while exploring the state park's grounds.

According to a news release from the park, Aspen found a 2.95-carat golden brown diamond (which she got to keep!) while visiting the park with her dad and grandmother on September 1, 2023.

Aspen's dad, Luther Brown, told the park that his daughter wanted to take a break to cool off. "She got hot and wanted to sit down for a



minute, so she walked over to some big rocks by the fence line," he explains. "Next thing I know, she was running to me, saying 'Dad!

Dad! I found one!'" According to the release, the gem was about the size of a green pea and was located on a pathway along the northeast side of the search area. "There was no skill required for her to find it," Luther says. "She was just in the right place at the right time."

<https://www.brides.com/young-girl-finds-diamond-arkansas-state-park-7969181#:~:text=A%207%2DYear%2DOld%20Girl,Diamonds%20State%20Park%20in%202023>

General Meeting

Call to Order – the meeting was called to order at 2:11pm by Pres. Ed Opatz. There were 35 members present.

Welcome to new members.

Treasurer's Report-will be posted at the rock club. Kevin reviewed the expenses for the month.

The holiday party/ meeting date was changed to December 16, Potluck, 11am-arrive, 12 noon- eat, white elephant gift exchange afterwards.

Need 2 people for the nominating committee for elections- president, secretary, 3 board positions. If you want to run for the board the requirement is that you be 18yrs old or over and a member for a year.

Franklin Art Center has posted a new non-smoking policy that includes all indoor and outdoor spaces, including the parking lot. No use of any smoking materials on any of these spaces. You can smoke on the public road but do not leave cigarette butts on the ground. Dispose of them appropriately.

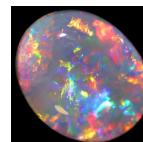
Speaker- Mike Braun and Lily Peterson on cabochons.

Facebook marketing- looking for someone who is proficient with social media with marketing for the rock show.

Show and tell.

Door prizes-Cody Austin, Merlin Thorn, Vern Iverson, Todd Moyer.

Respectfully submitted,
Joanie Hanson, Secretary



**October Birthstone
Opal**

Opals are in a class by themselves. As a species, opal is so unique its patterns have their own descriptive vocabulary. More than any other gem, each opal is distinctly individual. Opals are also the most delicate gemstones commonly worn and require special care.

Perhaps due to their dynamic appearance, opals are associated with light and magic. As such, some credited opals with healing properties, especially for the eyes. Some believed that opals could even make the wearer invisible. While some cling to negative superstitions about opals, others wear them for good luck.

Some opals can display the phenomenon known as play-of-color, dazzling flashes of color that move as the stone is turned. Opals are the only gems that can show this effect, but not all opals do.

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

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.

For Sale:

See Garage Sale on page 1.

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



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

More information is available at:
www.paramountarts.org

Wire Wrapping Stones

Sat., Oct. 28, 2023; 9:00 am - 3:00 pm
Instructor: Jo Schwalboski Fee: \$95
No prior experience needed; Ages 14+

Join us as we dive into the exciting world of stone wire wrapping! Choose from 100's of unique stones in fun colors and shapes, to wrap 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.

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!

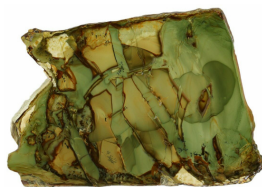
All materials to create one wrapped stone are included in the cost of tuition.

*Upgrade options of stone size and type, along with silver wire are available for an additional cost at the time of class.

The World of Jasper Morrisonite

Morrisonite Jasper comes from the famous Morrison Ranch area. The Morrison Ranch is above the Owyhee Mountains of southeastern Oregon, in Malheur County near the Idaho border.

Morrisonite Jasper is a semiprecious gemstone material named after James Morrison,



an old timer who lived in and explored the area for 50 years. Though the rock was first available in the early 1930's, it wasn't actually claimed until 1964.

Morrisonite is formed in rhyolite seams and cracks and is confined to small areas, although the surrounding territory is of the same formation. There were five mines that Morrisonite came from, each claim

yielded very different colors and patterns.

The area is very rugged and the Morrisonite area is perched on the side of the hill. Mining was very difficult. The Morrisonite area has been closed by the BLM as it is too dangerous.

<https://www.barlowsgems.net/morrisonite-and-carrasite-cabochons/#:~:text=Morrisonite%20Jasper%20is%20a%20semiprecious,t%20actually%20claimed%20until%201964.>



Agates From Around The World
Calandria Agate
Matachi, Chihuahua, Mexico

The name Calandria comes from an old Mexican story about a singer named Anatia, who sang as beautifully as the Mexican bird Calandria. When she died, they found beautiful agates while digging her grave, and from there they named them Calandria.

Calandria agates belong to a group of three agates localities that are similar, these are Calandria, Casas Grandas and Parcelas agates. Calandria are more colorful and more interesting than Casas and Parcelas, they have a lot of nice variations, but most of the stones about 95 % are quartz in a common crystalline form, then absolutely pure chalcedony or chalcedony with a very pale almost invisible agate pattern. Only about 5 % of the found stones are quality collection

stones. Unfortunately, Calandria often have a big amount of cracks, especially in larger sizes there are very few clean stones. The stones here are mostly yellow, white, blue, pink, black and white and rarely even purple. Calandria agates have several totally unique types; perfect deep parallax effects (absolutely amazing patterns in pure chalcedony), Purple Passion (one of the most purple agate in the world and that in the combination with pink and blue-white, often with crystals of quartz, amethyst and smoky quartz) and Fuzzy agates (flakes, snow - thousands of circles and balls in chalcedony are as if drawn by a snow brush which creates amazing details) for me the most interesting effect.

<https://jaminthefield.com/en/story/mexiko-mexico-chihuahua-matachi#:~:text=The%20name%20Calandria%20comes%20from,there%20they%20named%20them%20Calandria.>



Alaska State Fossil

Fossil: Woolly Mammoth (Mammuthus primigenius)

Age: Pleistocene

Year Designated: 1986

The Woolly Mammoth or Mammuthus primigenius was a species of mammoth. The common name for the extinct elephant genus Mammuthus. It was about the size of a modern day elephant, covered in fur and lived from 400,000 years ago to as recent as 4,000 years ago. It first evolved in Eurasia and entered Alaska from Siberia over the Bering Land Bridge around 65,000 years ago. It's fossils are frequently found in Alaska by gold miners after being washed of stream banks.

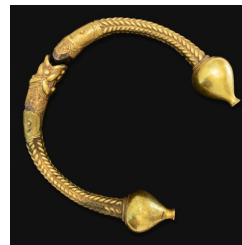
<https://www.fossilera.com/pages/state-fossils>

Waste Worker Discovers 'Spectacular' 2,500-Year-Old Gold Necklaces

Archaeologists from the Archaeological Museum of Asturias were notified, who took a closer look at the strange discovery and called in experts from institutions in northern Spain.

"This discovery is very important because, for the first time, we know the exact origin of two of these valuable objects, the maximum symbol of prestige for pre-Roman communities, and the context in which they were deposited.

"Its will allow us to solve many enigmas about which we were missing data," investi-



gators into the find told El Pais. "It is a window that has been opened to a part of the history hitherto hidden from the Iron Age." The Iron Age lasted from around the 5th to the 2nd century BC.

Torcs were usually made of expensive materials and were most commonly worn by Celtic and Germanic nobles.

<https://www.newsweek.com/waste-worker-discovered-spectacular-2500-year-necklaces-1826281>

Mammoth Cave National Park: A 350-Million-Year-Old Time Capsule in the World's Longest Cave System

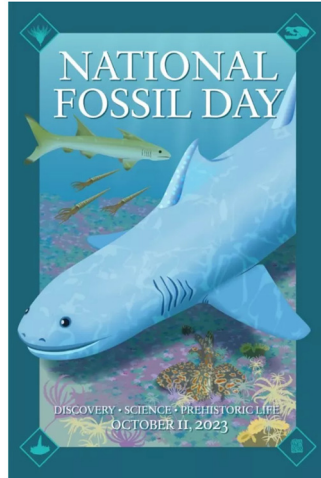
Visitors to Mammoth Cave National Park (MACA) in south central Kentucky are often struck by the immensity of the naturally formed underground passages that make up a cave system which at over 400 miles in length, is the longest cave system in the world. Early cave explorers include pre-historic people from the Late Archaic and Early Woodland period, who used the cave for shelter, exploration and mineral resources. After the rediscovery of Mammoth Cave by settlers in the early 1800s, the cave was used as a salt-peter mine until after the War of 1812. Afterwards, the cave became an early destination in which people from around the country took guided tours by lantern light to marvel at the cave's never-ending splendor.

Mammoth Cave was designated as a national park on July 1st, 1941 and has welcomed millions of visitors through its dark and mysterious passageways. The park has grown to 52,830 acres (21,380 ha) of lush mixed-deciduous/coniferous forests which includes portions of the most biological diverse riverways in North America, the Green and Nolin Rivers.

The mission of Mammoth Cave National Park is to preserve, protect, interpret, and study the internationally recognized biological and geologic features and processes associated with the longest known cave system in the world, the park's diverse forested karst landscape, the Green and Nolin rivers, and extensive evidence of human history; and to provide and promote public enjoyment, recreation, and understanding.

The geologic history of Mammoth Cave began approximately 14 million years ago, during the Miocene epoch, when the early Green River began to erode through the sandstone and shale layers protecting the softer limestone beds below. As streams to the southeast across the sinkhole plain dissolved through those softer carbonate rocks forming a series of underground waterways, these would flow to the northeast in the direction of the developing Green River valley and its associated water table. These cave passages cut through limestones and sandstones deposited as far back as 350 million years ago, during the early Carboniferous period when the supercontinent Pangea was nearing completion. As Pangea was forming 350 million years ago, Kentucky was located south of the equator and much of the area at this time was submerged beneath a tropical sea that was

connected with other bodies of water as far east as Scotland and Russia. However, as the continents collided to form the supercontinent, these waterways were sealed up, forming new depositional environments.



The cave-forming rocks represent the Mississippian period (359-323 mya) include, from oldest to youngest the St. Louis Formation, Ste. Genevieve Formation, Girkin Formation, and Big Clifty Sandstone. Outside of the Mammoth Cave system, Mammoth Cave National Park also includes rocks representing the very end of the Mississippian period and the beginning of the Pennsylvanian period. The combination of the Mississippian and Pennsylvanian geologic periods is also referred to as the Carboniferous period, so named from the massive coal beds found worldwide dating to these geologic horizons.

Until recently, the most recognized paleontological highlights from Mammoth Cave were somewhat limited to fossils of Pleistocene animals. These fossils include evidence of a wide variety of bats (such as the extinct Stock's vampire bat), sabertoothed cat, short-face bear, peccary, tapir, and mastodon. Early cave explorers did note the amazingly preserved Mississippian invertebrates which include a diversity of articulated crinoids, blastoids, horn corals, brachiopods, and nautiloid cephalopods. However, it is the recent research into the Mississippian fossil shark record of Mammoth Cave that inspired in the 2023 National Fossil Day artwork. In a short period of time, paleontologists have identified more than 100 species of ancient cartilaginous fishes (from the class Chondrichthyes) from nearly every geologic horizon that forms Mammoth Cave, among them one of the largest sharks to have lived during the Mississippian period as well as a number of new shark species found only at Mammoth Cave National Park!

When people think of field work in paleontology, they tend to picture vast dusty badlands with teams of paleontologists digging for fossils into colorful outcrops of sandstones, mudstones, and shales under a vast open bright sky. At Mammoth Cave, however, explorers traverse narrow passages that stretch miles underground, where natural light does not reach. Some of these passageways at Mammoth Cave still have flowing underground rivers that continue to create new subterranean routes. These kinds of cave environments create new challenges for paleontological research. Cave paleontologists are both cavers and paleontologists, using equipment and techniques reflecting both roles. Tight cave passages, climbs, and descents all limit the field gear that can be brought. Exploring these

passages also means that a team could spend much of a day in cave passages and must plan accordingly. Therefore, a cave paleontology field team must balance how much space to give fossil collecting tools, food, water, and caving equipment in small packs, while also wearing cave helmets with head lamps, gloves, and knee pads for safety while traversing cave passageways. Tools tend to be limited to small chisels and rock hammers to gently extract the delicate fossil teeth. Occasionally, a portable lightweight battery-powered circular saw is needed to cut a small block containing a shark fossil.

A large portion of Mammoth Cave can easily be accessed on well-established trails, but to get to the area where known shark fossils occur today means going off-trail into passages that are very narrow or have a low ceiling. For some of these shark fossil sites, a paleontologist must crawl on hands and knees for almost a half a mile to get to them. There are also some sites where paleontologists must descend through a narrow drill borehole on ropes. To reach yet another shark fossil location, paleontologists use small kayaks to traverse underground rivers, where shark teeth and spines line the passage walls and ceiling. To bring the fossils back to the surface, the samples are placed into cotton-lined specimen tubes made of a tough plastic, or into plastic cases for larger specimens. Once the fossil samples reach the surface, they are cleaned and catalogued for study in the park's museum.

The unique cave environment within Mammoth Cave allows for extraordinary preservation of fossils of ancient sharks. The constant even temperatures, slow erosion rates, and protection from external erosional forces (precipitation, wind, and sunlight) are ideal conditions for the variety of teeth, spines, and even skeletal cartilage of sharks and their kin. The 100+ species identified so far from Mammoth Cave have been found in four of the five geologic horizons that make up the cave systems within the park. The older, Middle Mississippian St. Louis and Ste. Genevieve Formations presently have the greatest diversity of sharks, which may in part be due to these rocks representing deeper marine waters just prior to the formation of Pangea. By the Late Mississippian, represented by the Girkin and Haney Formations, Pangea had more or less formed and these rocks were deposited in shallower marine waters. Only a few sharks have been found within them to date.

Several new species have been identified from Mammoth Cave. One of these new shark species was found by Mammoth Cave National Park Superintendent Barclay Trimble. Referred here as "Trimble's shark", this new species is a member of the ctenacanth shark family, a group of sharks that first appeared during the Devonian period (approximately 400 million years ago); this group went extinct at the end of the Permian period (252

mya). The name “ctenacanth” translates to “comb-spine”, which is derived from the prominent dorsal fin spines that bear comb-like denticles on the back of the spines, near the apex. “Trimble’s shark” is unique in having a tooth crown that is more like some modern sharks with complex ridges and smaller cusps between the middle and side cusps but the tooth base/root still retains features seen in older ctenacanths. Based on the tooth dimensions, “Trimble’s shark” would have been 6-7 feet in length.

Another new chondrichthyan identified from Mammoth Cave is a species of *Janassa*. *Janassa* is found almost worldwide from the Mississippian period to the Permian period. Complete skeletons with body impressions of *Janassa* have found in Permian rocks in Germany and England, suggesting this fish had a body design similar to modern skates although more closely related to modern ratfish. The fossil of *Janassa* found in the Ste. Genevieve Formation at Mammoth Cave represent a species which has teeth with a larger

number of fine ridges and a more rounded cusps compared to other *Janassa* species found within the same time period. The Mammoth Cave *Janassa* would have been approximately 1-2 feet long, and based on the gut contents of the more complete skeletons, fed on brachiopods (“lamp shells”), snails, and bryozoans (“moss animals”).

One of the largest sharks to have swam the ancient Mississippian seas was *Saivodus striatus*. Until recently, much of what we knew about this large ctenacanth shark was only from isolated teeth that have been found in Europe and North America. However, at Mammoth Cave National Park, a partial skull of *Saivodus* was found in one of the side passages with a nearly complete lower jaw that was almost a half meter long (2 feet) with teeth about 2.5 centimeter (1 inch) wide! The dimensions of this fossils suggest this particular individual was at least as large as the average sized living white shark (*Carcharodon carcharias*) which is today’s largest predatory fish at 4 to 5 meters (15-16 feet) in length.

However, larger teeth of *Saivodus striatus* have been found throughout Mammoth Cave National Park, from the oldest St. Louis Formation to the youngest Haney Formation, suggesting these sharks exceeded the largest white shark recorded with estimated body lengths between 8-10 meters (20-26 feet) in length. Even larger teeth of *Saivodus* found in Ireland suggest it could have reached possibly 11 meters (36 feet) in length!

The *Saivodus* and other chondrichthyan fossils from Mammoth Cave offer important information on how marine vertebrates adapted to the changing environments during the formation of Pangea as well as insights on how individual species lived in these environments. As we continue to explore the underground passages of Mammoth Cave, new discoveries are expected to continue, allowing us an even more accurate reconstruction of our ancient past.

<https://www.nps.gov/articles/000/fossils-of-the-2023-national-fossil-day-artwork.htm>

Archeologists Have Unearthed the Largest Dinosaur Footprint in the World



Dinosaur footprints dating back more than 100 million years have been discovered in Glen Rose, Texas. Archeologists have uncovered around 70 new dinosaur footprints at the Ball Room and Denio track sites in Dinosaur Valley State Park, south of Fort Worth.

According to scientists, the three-toed footprints belong to an *Acrocanthosaurus*, a dinosaur measuring more than 33 feet and weighing almost 7 tons. The largest footprints, resembling those of an elephant, most certainly belonged to a *Sauroposeidon*, a dinosaur that could reach 98 feet in length and weigh more than 50 tons. According to Paul Baker, a member of the Dinosaur Valley State Park, these newly discovered footprints are the largest that park staff have ever seen.

Since the discovery, scientists have renewed their analysis and extended the search radius in search of potential new tracks. As CHRON reports, Glen Kuban, a researcher who has been studying dinosaur tracks in the park for 40 years, and a member of the Dallas Paleontological Society, has been tasked with mapping and molding the footprints for further study.

<https://www.en-vols.com/en/inspirations-en/culture-en/dinosaur-footprint-tracks-texas/#:~:text=Archaeologists%20have%20uncovered%20around%2070,and%20weighing%20almost%207%20tonnes.>

A 7-Year-Old Discovers a 2.95-Carat Diamond While Visiting a State Park

A lucky youngster got the birthday gift of a lifetime when she discovered a 2.95-carat golden brown diamond in Arkansas.

The budding gemologist discovered the diamond while celebrating her seventh birthday at the Crater of Diamonds State Park in Murfreesboro, Arkansas, according to a news release from the park.



Aspen Brown’s September 1 discovery “is the second-largest registered by a park guest this year, topped only by a 3.29-carat brown diamond discovered in March,” says the release.

“Brown was visiting the park with her dad and grandmother to celebrate her birthday,” the release reads. “Brown picked up a gem about the size of a green pea from a pathway along the northeast side of the search area.”

Park officials later confirmed that Brown had indeed discovered a diamond, the release said.

“Aspen’s diamond has a golden-brown color and a sparkling luster. It is a complete crystal, with no broken facets and a small crevice on one side, created when the diamond was formed,” Waymon Cox, assistant park superintendent, said in the release. “It’s certainly one of the most beautiful diamonds I’ve seen in recent years.”

Aspen isn’t alone in her discovery: One or two visitors discover diamonds at the park each day, according to the release. Over 75,000 diamonds have been found at the site since a farmer first identified diamonds on the land.

The 37-acre field where visitors can search for treasures is the eroded surface of a volcanic crater, according to the park. In addition to diamonds, other precious gems like amethysts and garnets also occur there as a result of the site’s unique geology.

<https://www.cnn.com/2023/09/09/us/golden-brown-diamond-arkansas-trnd/index.html>

Upcoming Midwest October Rock Shows

7-8—SPRINGFIELD, IL: LOESS Lincoln Orbit Earth Science Society; Orr Building Illinois State Fair Grounds; Sat. 10-6, Sun. 10-5; \$2 Srs/Kids \$1; Email: LOESSpresident@gmail.com

7-8—CABOT, AR: Central Arkansas Gem, Mineral & Geology Society; Veterans Park Event Center; Sat. 9-6, Sun. 10-5; \$3; Website: www.centralarrockhound.org

13-15—WARREN, MI: Michigan Mineralogical Society; Macomb Community College Sports & Expo Center; Fri. 9-6, Sat. 10-7, Sun. 11-5; \$8; Website: www.michmin.org/show-info

13-15—MOUNT IDA, AR: Chris Wood; Mount Ida, 1210 Hwy 270 E ; Fri. 11-5, Sat. 9-5, Sun. 10-5; Free; Email: Bearisgrateful@gmail.com

14-15—TOPEKA, KS: The Topeka Gem & Mineral Society; Stormont Vail Event Center; Sat. 10-6, Sun. 10-5; \$6; Website: www.TopekaGMS.org

20-22—DANVILLE, IN: American Gem, Mineral & Jewelry Shows LLC; Hendricks County Fairgrounds; Fri. & Sat. 10-6, Sun. 11-4; \$7, Under 11 free; Website: www.americangemshow.com

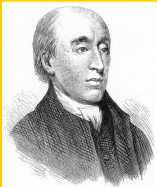
20-22—SPRINGFIELD, IL: Mid America Paleontology Society MAPS; Illinois State Fair Grounds; Fri. 9-5, Sat. 8-5, Sun. 8-3; Free; Website: www.midamericapaleo.org

20-22—MASON, MI: Central Michigan Lapidary & Mineral Society; 700 East Ash St; Fri. 1-7, Sat. 10-6, Sun. 10-4; \$5, under 13 free; Website: www.MichRocks.org

21-22—DES MOINES, IA: Des Moines Lapidary Society; Iowa State Fairgrounds; Sat. 9-5, Sun. 10-4; \$6, Under 13 free; Website: www.DMLapidary.org/OurShow

28-29—SPRINGFIELD, MO: Ozarks Gem & Mineral Society; Springfield Expo Center, Sat. 10-5, Sun. 10-4:30; \$5, Under 5 free; Website: https://ogms.rocks/

28-29—CRYSTAL, MN: Retail show; Anoka County Gem & Mineral Club; Crystal Community Center; Sat. 10-5, Sun. 10-4; free; Email: martha@rock-biz.biz



The Scottish naturalist James Hutton (1726-1797) is known as the father of geology because of his attempts to formulate geological principles based on observations of rocks. A key site was

Siccar Point, a sea cliff east of Edinburgh where horizontal layers of red sandstone rest on near-vertical folded layers of gray slate and sandstone. Hutton concluded that the gray rocks had been deposited horizontally, uplifted, folded, tilted, eroded, and again covered by the ocean, from which the overlying sandstone accumulated. He recognized that these processes must have taken a very long time. The boundary between the two rock sequences is called an unconformity.

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 specimen
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



Unnamed Montana Jasper
Royal Imperial Jasper

New!
Bear Canyon Agate



Gem Encyclopedia

Chrysoprase

A variety of chalcedony, chrysoprase is a cryptocrystalline quartz gemstone. Transparency ranges from nearly opaque to nearly transparent. Its colors range from apple to olive green and nearly pure greens with medium tones.

Sometimes, you may encounter the term "prase" used to describe chrysoprase gems with darker tones. However, prase is also used to refer to green chalcedonies colored by chlorite inclusions found in Europe.

With no cleavage and a hardness of 6.5-7, chrysoprases make excellent gems for any type of jewelry. However, since some stones may have a hardness below 7, using protective settings for a ring would be advisable. Gems with a hardness below 7 are susceptible to scratches from everyday wear as well as a very common hazard: household dust.

While some chalcedony varieties, such as mtorolite from Zimbabwe, may derive their green color from chromium, chrysoprases get their color from nickel.

Laboratories can synthesize quartz, including chalcedonies, and this material does appear in jewelry. However, consumers looking for chrysoprases are more likely to encounter simulants, natural gemstones or lab-created materials that look like chrysoprases but with

distinct chemistry and/or crystal structures. In fact, the most commonly encountered look-alikes are other varieties of chalcedonies dyed green to simulate these stones.

Chrysoprases themselves may also be used to simulate other, more expensive gemstones. For example, very fine, highly saturated chrysoprases have been misidentified (or intentionally marketed) as "imperial jade". Jadeite pieces will command much higher prices than chrysoprases. Since these two gems have distinctive properties despite appearances, gemologists can readily distinguish these materials.

Most chrysoprase sold today comes from Australia. The most notable sources from this country include the following: Queensland: Greenvale; Marlborough. Western Australia: Yandramindra, Wingleina, Kalgoorlie.

Other gem-quality sources include the following: Brazil; Kazakhstan; Myanmar; Poland; Russia; Tanzania. United States: Arizona; California.

<https://www.gemsociety.org/article/chrysoprase-gem-information/#:~:text=Laboratories%20can%20synthesize,distinguish%20these%20materials.>



Kids' Corner

Make Eggshell Geodes

Who doesn't love to create geodes?! They're fun and exceptionally pretty. They're also a lesson in crystallization and solubility. Because this experiment calls for boiling water, adult supervision is recommended.

For this project, use three eggs and crack them lengthways to provide the most surface area. Put the yolk and whites in a separate container and refrigerate to use later. Use hot water to wash the inside of the eggshell and gently peel away the inner eggshell membrane to prevent it from spoiling and ruining the crystals.

In a quart-sized pan, boil four cups of water. Stir in one and three-quarters to two cups of borax (sodium borate) into the solution and stir constantly, while still on the heat, until the borax mostly dissolves. There should be a little left on the bottom after everything else is incorporated into the solution. This is called a supersaturated solution. Re-



move from the heat and allow to cool for 10 minutes.

Pour approximately three-quarters of a cup of the hot solution into five glass bowls or pint mason jars and add a couple of drops of food coloring to each one. Place the eggshell halves into the solution (one might have to have two in one bowl) and set these somewhere they won't be disturbed. After a day or two, you'll notice the borax crystals forming all around the eggshell. Remove from the bowl after the desired amount of crystals have formed. Store in a cool, dry place away from sunlight.

<https://www.rockngem.com/simple-geology-activities-for-kids/>

McDermitt Caldera May be Among The World's Largest Known Lithium Reserves

A trio of volcanologists and geologists from Lithium Americas Corporation, GNS

Science, and Oregon State University reports evidence that the McDermitt Caldera, on the Nevada/Oregon border, may host some of the largest known deposits of lithium on Earth. In their project, reported in the journal *Science Advances*, Thomas Benson, Matthew Coble and John Dilles studied parts of the caldera and developed a theory to explain how so many lithium deposits were formed in the area.

Over the past few decades, lithium has become a highly valued soft metal, due primarily to its use in a wide variety of battery types. Because its value has continued to increase, scientists working for mining companies such as Lithium Americas Corporation have been looking for sources.

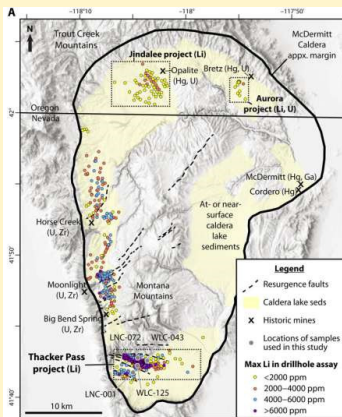
The McDermitt Caldera is approximately 45 kilometers long and 35 kilometers wide. Prior research has suggested it formed as part of the Yellowstone hotspot, which led to the formation of a sequence of calderas. Its origin dates to approximately 19 million years ago. In 2017, another team of researchers found evidence that one part of the caldera called

Thacker Pass could be among the largest sources of lithium ever found. Lithium Americas obtained a stake at the site and began testing mining operations. Soon thereafter, they ran into opposition from locals and Native American groups, but eventually won the right to mine at the site.

Since that time, the research team has been collecting and analyzing samples, looking for the best place to begin major mining operations. But to find it, they and many other experts in the field believe they must find an explanation for how the lithium got there in the first place. In their paper, the researchers suggest a theory—one Lithium Americas plans to use to begin its mining operations.

Their theory posits that after a volcano erupted, a hydrothermal enrichment occurred—magma deep underground pushed its way to the center of what is now the caldera, leading to the formation of the Montana Mountains. As that happened, faults, fissures and fractures were created, allowing lithium to seep up toward the surface. This process also transformed much of the smectite into illite (different forms of clay minerals), which wound up along the southern rim of the basin. That, they conclude, explains why lithium is so abundant there.

<https://phys.org/news/2023-08-evidence-mcdermitt-caldera-largest-lithium.html>



The current geological era is the Cenozoic, which is itself broken down into three periods. We live in the most recent period, the Quaternary, which is then broken down into two epochs: the current Holocene, and the previous Pleistocene, which ended 11,700 years ago.

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 Seashells by Shelly 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 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
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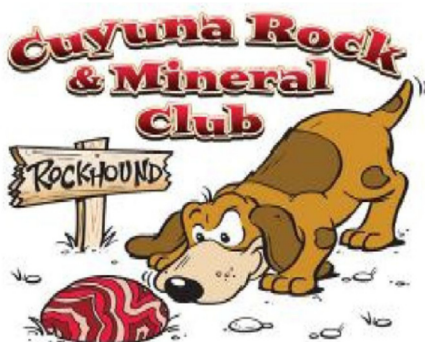
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Notes from the President

After spending quite a bit of time vending at shows in the last six weeks I got to thinking about how important security is to keeping vendors' material safe. We just got done with the Minnesota Mineral Club's show and there was at least one shoplifter caught. We also experienced a family of shoplifters, where the parents were teaching their children, when we vended this spring in Wisconsin. Many of you probably don't know that one half of one of my expensive Starry Night agates was stolen at the Moose Lake show in July. So, I was wondering what else we can do for security at our show. If you have any ideas, please let me know. Marcia did suggest that we try to get a speaker for the night before the show for the vendors and offer it for all the members doing security for the show.

Now that a lot of the state has finally gotten some rain we could go looking for Lake Superior agates. Does anyone have anywhere that we could look this fall? If it's a farm field it would have to not have a crop on it. Don't forget that the Club will pay a \$100 stipend to the owner who will let a group pick on their property.

The yearly elections are coming up in November. The positions that are to be voted on are president and secretary, which are two year positions and all three directors at large, which are one year terms. The only requirements are that you have been a member of the Club for at least one year, and are 18 years or older. Please consider contributing by running for one of these offices.



Ed Opatz