



COULEE ROCK CLUB - PEBBLE PUSHER

What: Coulee Rock Club Meeting

When: Second Saturday of the Month
(September—May)

Next Meeting: November 9

Where: 515 Quincy, Onalaska WI
Community Center

Time: 9:30 AM—Noon

Inside this issue:

Page 1:

President's
Message

PRESIDENT'S MESSAGE

Page 2:

Show & Tell

November greetings to all,

Page 3:

Fossil Field
Trip

Our first measurable snowfall is upon us- that usually means rock collecting is on hold till Spring again 😊. It's pretty...just early in my mind. We had a good October meeting with lots of "show and tell" rocks and fossils. It's always fun to hear about and see club members awesome finds.

Page 4:

Officers

Saturday will be our last regular meeting if the year since December is traditionally a dinner and gift exchange. So your input and help are needed to wrap up club agenda items.

Page 5:

Burgess Shale
Fossils

Reminder that we are in need of a new treasurer and Pebble Pusher editor. Please consider helping out with either of these club positions. Both Clay and Frank would be happy to help you get started in either capacity. Its important to have these filled before we move onto the new year.

Page 6:

WI Fossils,
Quiz Answers

A big thank you to all who have volunteered to make this a successful year so far.

Page 7:

Birthstones

Until then...have a gneiss day!

Page 8:

Pulpi Geode

Sally Frisby president

Page 9:

Brad's Bench
Tips

You might be a rockhound if...

---You thought about giving out rocks for Halloween.

Page 10:

Calendar



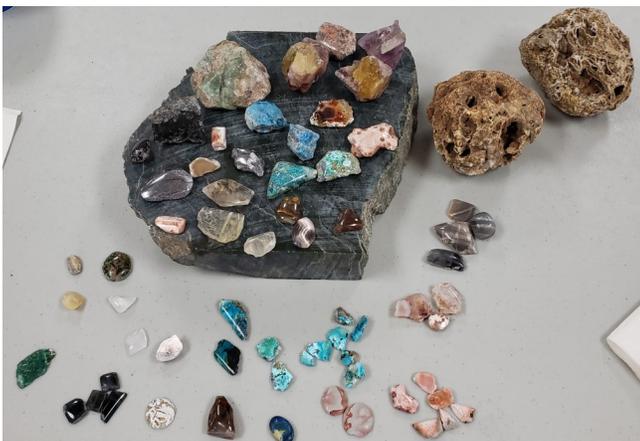
Show & Tell



Geode Seeds
 Guaranteed to grow*

Water regularly for 3 million years
 Leave dry for next 3 million years
 Continue to repeat cycle
 Fertilizer optional
 Harvest after 400,000,000 years

*full refund if returned after 400,000,000 years



Fossil Field Trip—Whitewater State Park

I fell down on getting many photos during the event as I was a single parent for the day. There had been approximately 40 or more people collecting fossils on Saturday October 19th. Many children were involved and it was a joy to see them get excited about their fossil discoveries.

-Jonathan Amberson





The purpose of the organization is: to stimulate scientific and educational interest in geology, mineralogy, paleontology, lapidary arts, archaeology, to promote the opportunity of the study of these sciences, and to assist individuals in furthering these purposes, to be a social and recreational organization, to promote safety and support efforts to preserve our land and its resources. The Coulee Rock Club may provide speaker services, subscriptions to local libraries; gem, mineral and fossil specimens for study; study materials related to earth science to local schools and scholarships to Winona State University. Club members may also participate in donations to the AFMS Scholarships and the MWF Endowment Fund. The Coulee Rock Club recognizes the importance of continuing educational opportunities for all, especially the junior rock hounds interested in the hobby. The Coulee Rock Club is also happy to be a sponsor and participant of the Rock, Gem, and Mineral show held the first full weekend in June every year. All ages welcome.

2019 Coulee Rock Club Officers

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Email or mail all articles, field trip stories, pictures, meeting minutes and presidents message to Clay Denham following each months meeting or anytime for stories/articles to be published in the "Pebble Pusher" in that months edition. The "Pebble Pusher" is published monthly (September through May). Articles from the "Pebble Pusher" may be republished if proper credit is given.

Member Benefits:

Meet other dedicated rock hounds to share good stories and good food; our meetings are potluck

- Learn about rocks, gems, and minerals from others who have worked and collected in this field for many years.
- Learn best places to find specimens and get help identifying your specimens.
- See fantastic specimens brought in by our members to share and discuss.
- Join field trips to local collection spots.
- Find your very own rocks, minerals, and fossils.



Scientists Identify a Mineral Signature for Finding Burgess Shale-Type Fossils

Scientists have identified a mineral signature for sites that are more likely to contain rare fossils that preserve evidence of soft tissue — essential information to understanding ancient life.

Much of what we know about the earliest life on Earth comes from the organic remains of organisms without hard parts. Yet the vast majority of fossils rely on hard tissue such as shells, teeth, and bones for their preservation. Soft tissue parts, such as eyes and internal organs, tend to decay before they can fossilize. This also is true for organisms made up entirely of soft tissue, such as worms.



A major exception to this is the Burgess Shale in Canada, a 508 million-year-old deposit that contains a trove of fossils, some with shells but the majority without, from the Cambrian explosion of animal diversity on Earth. The Burgess Shale and similar deposits have provided the basis for a wellspring of scientific research.

In a new study published in the journal *Geology*, researchers at Yale, Oxford, and Pomona College suggest that the sedimentary rocks that contain these fossils carry a specific signature — which can be used to find other Burgess Shale-type deposits.

“This discovery is important because it will help us to narrow the search for exceptionally preserved fossils in thick sequences of Cambrian and Precambrian rocks, which harbor critical clues to the early evolution of animal life on Earth,” said co-author Derek Briggs, Yale’s G. Evelyn Hutchinson Professor of Geology and Geophysics and curator at the Yale Peabody Museum of Natural History.

The first author of the study is Ross Anderson of Oxford, a former graduate student at Yale. Additional authors are Nicolás Mongiardino-Koch of Yale, Nicholas Tosca of Oxford, and Robert Gaines of Pomona College.

The researchers examined more than 200 Cambrian rock samples using powder X-ray diffraction analysis to determine their mineralogical composition, comparing rocks containing Burgess Shale-type fossils that include preserved soft-tissues with those that only contained their fossilized shells or skeletons.



The findings revealed that Burgess Shale-type deposits are generally found in rocks rich in the mineral berthierine, one of the main clay minerals identified by a previous study as being toxic to decay bacteria. “Berthierine is an interesting mineral because it forms in tropical settings when the sediments contain elevated concentrations of iron,” Anderson said. “This means that Burgess Shale-type fossils are likely confined to rocks that were formed at tropical latitudes and that come from locations or time periods that have enhanced iron.”

The researchers identified a mineral signature that enabled them to predict with 80% accuracy whether a particular Cambrian sedimentary rock is likely to contain Burgess Shale-type fossils. In addition, the researchers said their findings may have applications beyond our own planet. Mars probes and other space missions looking for evidence of life on other planets could use the mineral blueprint in the search for types of rocks that might be more conducive to preserving delicate, decay-prone fossils. The NASA Astrobiology Institute, a NASA Earth and Space Science Fellowship, the National Science Foundation, the Leverhulme Trust, the Yale Institute for Biospheric Studies, and the Yale Peabody Museum of Natural History provided support for the study.



Which Dinosaurs and Prehistoric Animals Lived in Wisconsin?

Wisconsin has a lopsided fossil history: this state teemed with marine invertebrates until the late Paleozoic Era, about 300 million years ago, at which point the geologic record comes to a screeching halt. It's not that life in Wisconsin went extinct; it's that the rocks this life would have been preserved in were actively eroded away, rather than deposited, up until the cusp of the modern era, meaning that no dinosaurs have ever been discovered in this state. Still, this doesn't mean that the Badger State was entirely devoid of prehistoric animals, as you can learn by perusing the following slides.

Calymene

The official state fossil of Wisconsin, Calymene was a genus of trilobite that lived about 420 million years ago, during the Silurian period (back when vertebrate life had yet to invade dry land, and ocean life was dominated by arthropods and other invertebrates). Numerous specimens of Calymene were discovered in Wisconsin in the early 19th century, but this ancient arthropod didn't receive official government recognition until 150 years later.



Small Marine Invertebrates

Geologically speaking, parts of Wisconsin are truly ancient, with sediments dating back over 500 million years to the Cambrian period--when multicellular life was just beginning to flourish and "try out" new body types. As a result, this state is rich in the remains of small marine invertebrates, ranging from jellyfish (which, since they're composed entirely of soft tissue, are rarely preserved in the fossil record) to corals, gastropods, bivalves and sponges.



Mammoths and Mastodons

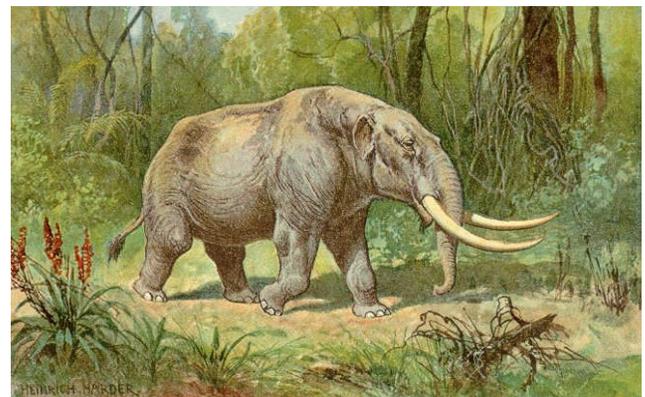
Like many other states in the central and western United States, late Pleistocene Wisconsin was home to thundering herds of Woolly Mammoths (*Mammuthus primigenius*) and American Mastodons (*Mammut americanum*), until these giant pachyderms were rendered extinct at the end of the last Ice Age. The fragmentary remains of other megafauna mammals, such as ancestral bison and giant beavers, have also been discovered in this state.



thoughtco.com 4/17

Glacial Landform October Quiz Answers:

- 1) Esker
- 2) Kame
- 3) Drumlin
- 4) Lateral Moraine
- 5) Terminal Moraine
- 6) Outwash Plain
- 7) Erratic
- 8) Cirque



NOVEMBER BIRTHSTONES

Topaz



Topaz was traditionally the birthstone for November, and remains the November birthstone in modern gemology, though this modern November gemstone is specifically described to be *yellow* topaz. The history of topaz as the stone for November goes back to the old Arabic, Hebrew, Italian, Roman, Polish and Russian calendars. Before the gemstone found its way into these ancient calendars, topaz was both the zodiac stone for Sagittarius, as well as the zodiac sign's planetary stone, having been associated with the planet Jupiter and the god of the same name. In the medieval period the name *topaz* referred to any yellow gemstones, but the birthstone of November is now limited to topaz that is the transparent silicate mineral of aluminum and fluorine. Being a yellow stone, this gemstone for November is a symbol of optimism, and was closely associated with the sun and the zodiac sign Sagittarius, a zodiac sign noted for its boundless energy and optimism. In addition, the November stone is believed to enhance both physical and spiritual strength.

Citrine



Like topaz, citrine was also traditionally regarded as birthstone for November, and remains a November birthstone in modern gemology. This birthstone of November is the yellow variety of transparent quartz, a mineral group which includes amethyst. While a lot of gemstones purported to be citrine are widely available in the market, this gemstone for November is in fact extremely rare. The gemstones represented to be the November gemstone in stores may in fact be smoky quartz or inexpensive amethyst subjected through heat treatment. The genuine November stone is believed to rid a person of self-destructive tendencies and stimulate creativity.

Cat's Eye



Cat's eye is the birthstone for November in the Hindu calendar. Also known as cymophane, this November birthstone is the yellow variety of chrysoberyl, a mineral group which includes alexandrite, the color-changing gemstone. The gemstone is distinguished for its chatoyancy or iridescent luster, which gives the November stone resemblance to the eye of the cat, hence the name *cat's eye*. Cat's eye is amongst the hardest of minerals. In fact, this birthstone of November is the third hardest gemstone on earth, next only to diamond and corundum (sapphire and ruby). A yellow gemstone, the November gemstone is a symbol of optimism, and is believed to transform negative sentiments into positive thoughts, thereby amplifying good luck.

Pearl



Pearls are typically round white stones that occur, not by geologic activity, but by biological processes. The white gemstones are formed when foreign bodies, like sand, are lodged inside shelled mollusks, which coat the foreign particles with calcium carbonate to relieve the discomfort. While the white precious stones used to be the traditional birthstones for the months of February and November, the white gems are now designated as the modern birthstones for the month of June, both in the US and Britain, as well as in the Hindu calendar. South sea pearls can be very expensive, but cultured freshwater pearls may be rather affordable.



The World's Largest Geode Formed When the Mediterranean Sea Disappeared, New Study Reveals

In an abandoned mine in southern Spain, there is a room of pure crystal. To get there, you'll have to descend deep into tunnels, climb a ladder into an inconspicuous hole in the rocks and squeeze through a jagged tube of gypsum crystals barely wide enough for one person. If you make it that far, you'll be standing inside the world's largest geode: the Pulpí Geode, a 390-cubic-foot (11 cubic meters) cavity about the size of a cement mixer drum, studded with crystals as clear as ice and sharp as spears on every surface. While you may have never stood inside a geode, you've probably held, or at least seen, one before. "Many people have little geodes in their home," Juan Manuel García-Ruiz, a geologist at the Spanish National Research Council and co-author of a new paper on the history of the Pulpí Geode, told Live Science. "It's normally defined as an egg-shaped cavity inside a rock, lined with crystals." Those crystals can form after water seeps through tiny pores in a rock's surface, ferrying even tinier minerals into the hollow interior. Depending on the size of the rock cavity, crystals can continue growing for thousands or millions of years, creating caches of amethyst, quartz and many other shiny minerals. The crystal columns at Pulpí are made of gypsum — the product of water, calcium sulfate, and lots and lots of time — but not much else has been revealed about them since the geode's unexpected discovery in 2000. In a study published Oct. 15 in the journal *Geology*, García-Ruiz and his colleagues attempted to shed some new light on the mysterious cave by narrowing down how and when the geode formed.



García-Ruiz is no stranger to giant crystals. In 2007, he published a study on Mexico's fantastical Cave of Crystals, a basketball-court-size cavern of gypsum beams as big as telephone poles buried 1,000 feet (300 m) below the town of Naica. Uncovering the history of that "Sistine Chapel of crystals," as García-Ruiz called it, was made easier by the fact that the crystals were still growing in the mine's humid bowels. At Pulpí, however, the mine was completely dry, and the geode's crystals had not grown in tens of thousands of years. On top of that, the geode's gypsum spikes are incredibly pure — so translucent that "you can see your hand through them," García-Ruiz said. This means they do not contain enough uranium isotopes to perform radiometric dating, a standard method of analyzing how different versions of elements radioactively decay to date very old rocks.

"We had no idea what happened," García-Ruiz said. "So, we were required to make a cartography of the entire mine to understand its very complicated geology." The researchers analyzed and radiometrically dated rock samples around the mine for seven years to figure out how the area had changed since its formation hundreds of millions of years ago. The team's driving question: Where did the calcium sulfate in the Pulpí Geode come from? Ultimately, the researchers narrowed down the geode's formation to a window of about 2 million years (not bad for the 4.5-billion-year-old calendar of geologic time). The crystals must be at least 60,000 years old, the team found, because that was the youngest age of a bit of carbonate crust growing on one of the largest crystals in the geode. Since the crust is on the outside of a crystal, the crystal below must be even older, García-Ruiz explained. Meanwhile, the composition of other minerals in the mine suggests that calcium sulfate was not introduced to the area until after an event called the Messinian Salinity Crisis — the near-total emptying of the Mediterranean Sea that is believed to have occurred about 5.5 million years ago. Based on the size of the gypsum crystals, it's likely they started forming less than 2 million years ago, through a very slow-growing process called Ostwald ripening, in which large crystals form through the dissolution of smaller ones, García-Ruiz said. For an everyday example of this process, peer into your freezer. When ice cream ages past its prime, small ice crystals begin to break away from the rest of the treat. As more time passes, those small crystals lose their shape and recombine into larger crystals, giving old ice cream a distinctly gritty texture. The Pulpí Geode may not be as tasty as ice cream, but merely knowing that magical places like this exist comes with its own sweet satisfaction. Thanks in part to the research team's mapping efforts, tourists are now allowed to visit the Pulpí Geode, and García-Ruiz certainly wouldn't blame you for doing so. Squeezing past the jagged gypsum gateway and into the geode's cavity for the first time several years ago, García-Ruiz recalled one feeling: "euphoria."



Brad's Bench Tips for November

WINDING JUMP RINGS

If you need a few jump rings the same size, it's easy to grab a round rod and wind as many as you need. But when you need a lot of them, some form of winder saves a lot of time. A variable speed screw gun makes quick work of winding the coils. Screw guns are quite inexpensive at discount stores and are remarkably handy for odd jobs in the shop and around the house.

To wind a coil, just bend a right angle on the end of the wire about a half inch long and insert this into the screw gun chuck. Then wind slowly, keeping a tight coil. I like to rest the end of the mandrel on the edge of the table or bench pin. Finally, one note of caution. If you are winding an entire length of wire, be careful as you get near the end of the wire. If the end passes under your thumb, it can cause a nasty scratch or cut.

And for a nice set of mandrels, look for a set of Transfer Punches. The set has 28 sizes, from 3/32 inch to 1/2 inch, and is only about \$12. In the US it is available from Harbor Freight as item number #3577, and in Europe, it's available from MZS in the Netherlands as item number 250575.



TOUCHING UP A BEZEL

Pumice wheels are good for touching up a bezel after you've set the stone. The hardness is about 6 on the Moh's scale, less hard than quartz, so it shouldn't scratch any of your agates or jaspers. However, I'd avoid or be real careful of using pumice near the softer stones like turquoise, amber, howelite, etc.

If you're unsure about the hardness of your wheels, test them on a piece of glass. Glass is about 5 ½ on the Moh's scale, softer than quartz. So if the wheel doesn't harm glass, it's safe for use on the quartzes and harder stones.

My preference is the one inch diameter ones such as those shown at riogrande.com/Product/AdvantEdge-Pumice-Wheels-Medium/332722?pos=2

Work Smarter & Be More Productive With Brad's "How To" Jewelry Books
[Amazon.com/author/bradfordsmith](https://www.amazon.com/author/bradfordsmith)



CALENDAR OF EVENTS

November 2-3, 2019: Sturtevant, WI; Racine Geological Society Annual Show, Fountain Banquet Hall, 8505 Durand Ave, Sat 10-5, Sun 10-4

November 8-10, 2019: Humble, TX; Houston Gem & Mineral Society Retail Show, Humble Civic Center, 8233 Will Clayton Pkwy, Fri 10-6, Sat 10-6, Sun 10-5

November 9-10, 2019: Freeport, IL; North West IL Rock Club Annual Show, Highland Community College, 2998 West Pearl City Road, Student Conference Center / Parking Lot A, Sat 9-5, Sun 10-4

November 15-17, 2019: Golden, CO; Denver Area Mineral Dealers, Jefferson County Fairgrounds, 15200 W 6th Avenue, Fri 10-5, Sat 10-5, Sun 11-4

November 22-24, 2019: Crestwood, KY; KYANA Geological Society Annual Show, Camp Crestwood, 7206 Clore Lane, Fri 10-5, Sat 10-5, Sun 12-4

November 30-December 1, 2019: San Francisco, CA; Pacific Crystal Guild Show and Sale; San Francisco County Fair Bldg, 1099 9th Ave (at Lincoln Way), Sat 10-6, Sun 10-4

December 6-8, 2019: Hudson, FL; Withlacoochee Rockhounds Annual Show, Veterans Memorial Park, 14333 Hicks Rd, Fri 9-5, Sat 9-5, Sun 9-5

December 14-15, 2019: Franklin, TN; Mid-Tennessee Gem & Mineral Society Annual Show, Williamson County Ag Expo Park, 4215 Long Lane, Sat 9-6, Sun 10-5

December 20-22, 2019: San Diego, CA; Gem Faire Inc Wholesale and Retail Show, Scottish Rite Center, 1895 Camino del Rio S, Fri 12-6, Sat 10-6, Sun 10-5

January 10-12, 2020: Globe, AZ: Annual show; Gila County Gem & Mineral Society; Gila County Fairgrounds, 900 Fairgrounds Rd.; Fri. 9-5, Sat. 9-5, Sun. 10-4

January 18-19, 2020: Fredericksburg, TX: Annual show; Fredericksburg Rockhounds; Lady Bird Johnson Park at the Pavilion, Hwy.16 South; Sat. 9-6, Sun. 10-4

January 24-26, 2020: Tyler, TX: Annual show; The East Texas Gem & Mineral Society; Tyler Rose Garden Center, 420 South Rose Park Dr.; Fri. 9-5, Sat. 10-6, Sun. 10-5

February 8-9, 2020: Oak Harbor, WA: 55th Annual ; Whidbey Island Gem Club; Oak Harbor Senior Center, 51 SE Jerome St.; Sat. 9-5, Sun. 9-4

February 15-16, 2020: Antioch, CA: Annual show; Antioch Lapidary Club; Contra Costa County Fairgrounds, 1201 West 10th Street; Sat. 10-5, Sun. 10-5

February 22-23, 2020: Vallejo, CA: Annual show; Vallejo Gem & Mineral Society; Solano County Fairgrounds, Mc Cormack Hall, 900 Fairgrounds Drive; Sat. 10-5, Sun. 10-5

March 6-8, 2020: Newark , CA: Annual show; Mineral and Gem Society of Castro Valley; Newark Pavilion, 6430 Thornton Ave.; Fri. 10-6, Sat. 10-6, Sun. 10-5