Cedar Valley Gems

Cedar Valley Rocks & Minerals Society

Cedar Rapids, Iowa

cedarvalleyrockclub.org

CEDAR VALLEY GEMS **OCTOBER 2024** **VOL. 50, ISSUE 10**

Ray Anderson, Editor: rockdoc.anderson@gmail.com

Next CVRMS Meeting
Tues. Oct. 15
7:00 pm

Hiawatha Community Center
101 Emmons St., Hiawatha - 7:15 pm

featured presentation

"The Geology of the Saylorville Spillway"

by **Ray Anderson**

The **Saylorville Spillway** is the emergency overflow channel for the Saylorville Reservoir near Des Moines. Like the **Devonian Fossil Gorge**, several flooding events have cut downward exposing sequences of the underlying rocks.

Lake Baikal, the World's Deepest Lake

Lake Baikal, located in Siberia, Russia, is the deepest lake in the world with a maximum depth of 5,387 feet. It holds an astounding volume of 5,670 cubic miles of water, accounting for approximately 20% of the world's unfrozen freshwater reserve, more than **all** the Great Lakes of North America combined. This ancient lake, over 25 million years old, lies in a rift valley formed by the Baikal Rift Zone, where tectonic

activity continually pulls the Earth's crust apart. The rift zone's continuous movement has caused the lake's basin to deepen over millions of years. In geological terms, the rift is young and active, it widens about 0.16 inches per year. The fault zone is also seismically active; hot springs occur in the area and notable earthquakes happen every few years Unlike many other lakes, Baikal has never been covered by an ice sheet. This means that its sediments have not been disturbed or eroded by glacial action, allowing it to maintain its depth. As a result of these factors, Lake Baikal holds the title of the world's deepest freshwater lake, with a maximum depth of 5,387 feet. Lake Baikal is home to thousands of species of plants and animals, many of them endemic to the region. It is also home to Buryat tribes, who raise goats, camels, cattle, sheep, and horses on the eastern side of the lake, where the mean temperature varies from a winter minimum of −2° F to a summer maximum of 57° F. The unique geological features of Lake Baikal contribute to its significant depth and biodiversity, making it a natural wonder and a UNESCO World Heritage Site.

CVRMS Meeting September 17 — Minutes —

MEETING CALLED TO ORDER: 7:20 pm by president Marv Houg. New members and guests: Dave O'Donnel and Doug Carlson.

TREASURERS REPORT: checking account balance $3,860.76. Motion to accept and second. Vote to accept approved.

PROGRAM: "*Solar, Lunar, & other Astronomical Eclipses*" by Rick Austin. Good questions, comments, and discussion followed.

2024 ROCK AUCTION, SEPT 21-22: Set up Friday starting at .8:30 am, Dell will provide lunch, viewing 5:00-7:30 pm with pizza. Help needed Friday through Sunday.

BILL'S BIG BUS BOOGY TRIP: October 5, leave from Cedar Valley World Travel at **6:30 am *SHARP***; return about 6:00 pm. **Bring a sack lunch**. 36 members signed up so far.

SUNDAY AT THE QUARRY: Basic Materials open house at the Raymond Quarry near Waterloo October 6. Several members will participate. Bill will present programs.

GEODE FEST 2024: September 27-29 at First Christian Church parking lot in Keokuk. Dealers and geode hunting.

CVRMS MEETING HOSTESSES NEEDED: Hosts needed to bring refreshments to January, February, and April 2025 meetings. Contact Kim Kleckner.

LIST MORE SHOWS AND ACTIVITIES: It was suggested that shows and activities by nearby rock clubs be listed in future newsletters. Dale sends out notices via email. Ray will include more in future newsletters.

MOTION TO ADJOURN: 8:40pm by AJ and seconded. Meeting adjourned.

Respectfully Submitted.
Ray Anderson, Acting Secretary

CVRMS Board Meeting Sept. 24 — Minutes —

MEETING CALLED TO ORDER: 7:10 pm by Marv Houg at his house. Board members present, Dell James, Kim Kleckner, Matt Burns, Sharon Sonnleitner, Jay Vavra, Dale Stout,.

SHOW FOR NEXT YEAR 2025:.Ray will try to get recently discovered mammoth for display. Question was asked what kind of Ice Age stuff can we get for displays since our theme is Ice Age? Lake Superior agates were suggested.

2024 AUCTION RECAP: Lots of neat stuff. We had 2 thefts this year. Just to be on the safe side we will restrict backpacks from entering the building. Kim Hanna volunteered to be monitor. 100 bid numbers were given out. Auction total was $47,272.

OLD BUSINESS: Ray and Bill will let Marv know about requests for program presentations. Kim requests that she limits herself to elementary grade.

GEODE FEST: will be this weekend (Sept. 28-29) at Keokuk, and MAPS will be Oct. 18th to 20th in Springfield, Illinois.

FIELD TRIPS: Matt reported that the Belleview sand and gravel pit could be in the future. Matt will call regarding the necessity of PPE (Personal protective equipment).

CHRISTMAS PARTY: will be on Dec. 10th, the **2nd Tuesday**. Sharon has volunteered to make two turkeys plus gravy. Kim will make mashed potatoes. Dell will do the stuffing. Jeff will do the ham.

REDUCING AUCTION TIME: Suggestions for how to reduce the length of the auction. Stick to 1200 limit; combine lots if consigner is over their limit. Or cut down the numbers of lots to less than 1200.

NEW BOARD MEMBER: Laura Halliday was suggested as a possible nomination to replace Bill Desmarais, who is stepping down from the CVRMS Board of Directors at his term's end this year.

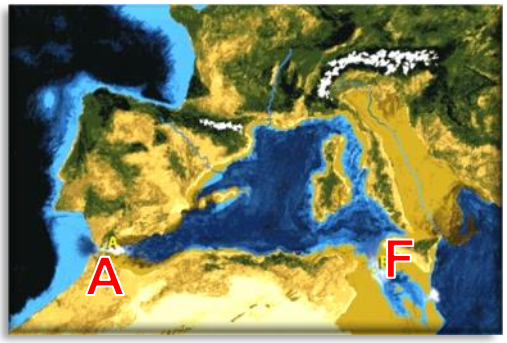
MEETING ADJOURNMENT: Motion to adjourn by Jay, 2nd by Matt. Meeting adjourned 9:45 pm.

Respectfully submitted
Dell James, Secretary

The Agate Dude himself made an appearance at the 2024 CVRMS auction, and he even purchased some stones. President Marv Houg is a fan of the Agate Dude's Sunday live-streamed agate sales show, so we managed to get a photo of the two. Which one is the agate dude and which one Marv??

Zanclean Flood - The flooding of the Mediterranean Sea 5.33 million years ago

The **Zanclean Flood** (also known as the "Zanclean Deluge") is a catastrophic flood that is thought to have refilled the Mediterranean Sea 5.33 million years ago, at the end of the Miocene and base of the Zanclean Plateau and the Pliocene, and ending the Messinian salinity crisis. The term was coined by Maria Bianca Cita in 1972 during the Deep Sea Drilling Program study that specifically investigated the transition between the Messinian and Zanclean ages in the Mediterranean. The Mediterranean underwent numerous cycles of drying and refilling during the Late Miocene, with the Zanclean Flood being the last refill. During the Messinian period, about six million years ago, the water level in the Mediterranean Sea dropped as much as 10,000 feet from its current level. Evidence of this can be found in evaporite deposits, accumulated due to the drying of sea water, and in canyons carved by many rivers and up to 6,500 feet deep, now completely submerged. According to this model, when the water of the Atlantic Ocean exceeded the barrier that kept isolated the internal seas in the Mediterranean basin, which had become dry due to increased evaporation, the basin underwent a massive flood. A channel opened through the current Strait of Gibraltar that brought ocean water from the Atlantic Ocean along a path of over 150 miles. The Mediterranean Sea was completely filled in an estimated period of several months to two years. The increase in sea level in the basin may have reached speeds of even more than 35 ft/day. The water flowed rapidly with a drop of several kilometers and with a flow rate far greater than the current flow of the Iguazu Falls or Niagara Falls, although studies on the underground structure of the Strait of Gibraltar show that the flood flow channel descended rather gradually towards the bottom of the basin, not forming any steep waterfalls. Image: Artist's interpretation (above) of the flooding of the Mediterranean Sea through the Strait of Gibraltar (**A**) and the Strait of Sicily (**F**) that occurred about 5.3 million years.



Geologists do not generally believe that the Strait of Gibraltar is the direct result of tectonics (there is no fault or subduction zone).

Spotlight Gemstone: Tourmaline & Opal

October's Birth Stones

If you were born in October you may choose from 2 birthstones, tourmaline or opal. TOURMALINE is a crystalline boron silicate mineral compounded with elements such as aluminium, iron, magnesium, sodium, lithium, or potassium. It is a six-member ring cyclosilicate having a trigonal crystal system, occurring as long, slender to thick prismatic and columnar crystals that are usually triangular in cross-section, often with curved striated faces. The style of termination at the ends of crystals is sometimes asymmetrical, called hemimorphism. Tourmaline is distinguished by its three-sided prisms; no other common mineral has three sides. Prism faces often have heavy vertical striations that produce a rounded triangular effect. Tourmaline is classified as a semi-precious stone, and the gemstone comes in a wide variety of colors. Varieties include schorl (brownish-black to black), dravite (dark yellow to brownish-black), rubellite (red or pinkish-red), indicolite (light blue to bluish-green), verdelite or Brazilian emerald (green), and achroite (colorless). In all, 32 tourmaline group endmembers are recognized. Bicolor or tricolor tourmaline crystals are also found. OPAL is a hydrated amorphous form of silica ($SiO_2 \cdot nH_2O$). Its water content may range from 3 to 21% by weight but is usually between 6 and 10%. Because of its amorphous character, it is classed as a mineraloid, unlike crystalline forms of silica, which are classed as minerals. It is deposited at a relatively low temperature and may occur in the fissures of almost any kind of rock, being most commonly found with limonite, sandstone, rhyolite, marl, and basalt. The internal structure of precious opal makes it diffract light. Depending on the conditions in which it formed, it can take on many colors. Precious opal ranges from clear through white, gray, red, orange, yellow, green, blue, magenta, rose, pink, slate, olive, brown, and black. Of these hues, the black opals are the most rare, whereas whites and greens are the most common. It varies in optical density from opaque to semitransparent. Fossils are sometimes replaced or coated by opal.

What in the World?

What in the World is this strange structure developed in shaley rock?

September's Photo

September's **What in the World** photo showed several ***Summerland cannonballs***. Found near Summerland, British Columbia, they were formerly thought to be volcanic bombs, but are now believed to be formed by basalt dripping into a slurry of volcanic ash.

ROCK CALENDAR
CVRMS EVENTS OF INTEREST

2024

Oct 5 — Bill's Big Bus Boogy 2024
CVRMS Bus Trip to the Grotto of the Redemption and Calkins Nature area
Details on page 10 of this newsletter

Dec. 6 — Sunday at the Quarry
BMC Raymond Quarry 10 am –4 pm
6900 Dubuque Road, Raymond Iowa

Oct. 15 — CVRMS Monthly Meeting
Hiawatha Community Center 7:15 pm
"The Geology of the Saylorville Spillway"

Nov. 19 — CVRMS Monthly Meeting
Hiawatha Community Center 7:15 pm
Program to be announced
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Dec. 10 — CVRMS Christmas Party
Hiawatha Community Center 6:00 pm
Details in next month's Newsletter

2025

Jan. 21 — CVRMS Monthly Meeting
Hiawatha Community Center 7:15 pm
Program to be announced

Feb. 18 — CVRMS Monthly Meeting
Hiawatha Community Center 7:15 pm
Program to be announced

Mar. 18 — CVRMS Monthly Meeting
Hiawatha Community Center 7:15 pm
Cornell College Students and Staff
Program to be announced

Ask a Geologist

by Ray Anderson aka "Rock Doc", CVRMS Vice President

Ask a Geologist is a monthly column that gives CVRMS members an opportunity to learn more about a geologic topic. If you have a question that you would like addressed, please send it to rockdoc.anderson@gmail.com, and every month I will answer one in this column. Please let me know if you would like me to identify you with the question. I will also try to respond to all email requests with answers to your questions.

Since no one posed any questions to ***Ask a Geologist*** last month, I was free to choose a topic that I thought you would find of interest. The idea of a period in Earth history when the entire planet was frozen has been around since the early 1960's, however it didn't rise to geologic prominence until 1998 when Harvard professor Paul Hoffman and co-workers published an article in *Science* on a sequence of Paleoproterozoic sedimentary rocks in Namibia and their deposition in a Snowball Earth environment. I have followed the Snowball Earth story for many years. and think that you might enjoy this recent paper on the topic.

'Snowball Earth': The Best Evidence Yet May Have Just Been Found

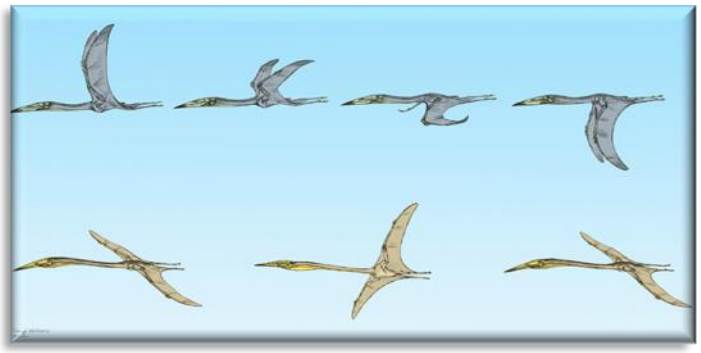
By Jess Cockerill

For nearly 60 million years, our home planet was likely frozen into a big snowball. Now, scientists have discovered evidence of Earth's transition from a tropical underwater world, writhing with photosynthetic bacteria, to a frozen wasteland, all preserved within the layers of giant rocks in a chain of Scottish and Irish islands. The team, led by researchers from University College London, examined more than 2,000 grains of zircon from 11 sandstone samples, taken from up to 200 meters within the 0.7 miles Port Askaig formation, and the older, underlying Garbh Eileach formation, which is 70 meters thick. These formations are part of the Dalradian Supergroup of Scotland and Ireland, a chain of geological formations spanning from Donegal in Ireland in a north-easterly line up through the center of Scotland, exposed to the surface in places like the Scottish island Garbh Eileach, where the researchers found their evidence. Grains of zircon deposited in sedimentary layers can be used to determine the age of a rock layer. As zircon forms, it rejects any lead from nestling within its structure. But it always contains a degree of uranium, which eventually decays into lead at a constant rate over time, even if it's nestled within lead-hating zircon. So any lead found within zircon indicates decay from uranium, which provides an excellent record of time passing. This technique revealed the rocks in the Port Askaig and Garbh Eileach formations were laid between 720 and 662 million years ago, a bracket of time during which Earth underwent drastic climatic change, the Sturtian glaciation. This was the first of two worldwide *'freezes'* that may have kickstarted multicellular life on Earth, so finding such a well-preserved geological archive of this time so close to the surface is pretty exciting (not to mention convenient). "*Our study provides the first conclusive age constraints for these Scottish and Irish rocks, confirming their global significance,"* says Elias Rugen, an earth sciences PhD candidate at UCL. Before the upper layers of rock were deposited during the *"unimaginable cold"* of the Sturtian glaciation, which some believe was a Snowball Earth event, the older layer of carbonate rocks formed in tropical waters, Elias explains. *"These layers record a tropical marine environment with flourishing cyanobacterial life that gradually became cooler, marking the end of a billion years or so of a temperate climate on Earth,"* he says. "*Most areas of the world are missing this remarkable transition because the ancient glaciers scraped and eroded away the rocks underneath, but in Scotland by some miracle the transition can be seen*." The age constraints they've defined for these rocks could mean the site becomes marked as the official starting point of the Cryogenian Period. *"These rocks record a time when Earth was covered in ice. All complex, multicellular life, such as animals, arose out of this deep freeze, with the first evidence in the fossil record appearing shortly after the planet thawed,"* says UCL geochemist Graham Shields. *"The retreat of the ice would have been catastrophic. Life had been used to tens of millions of years of deep freeze. As soon as the world warmed up, all of life would have had to compete in an arms race to adapt. Whatever survived were the ancestors of all animals,"* says Shields.

A view of Garbh Eileach, the largest island in the Garvellach island chain where the gradational transition into snowball Earth is recorded.

https://www.sciencealert.com/snowball-earth-the-best-evidence-yet-may-have-just-been-found

'Remarkable' Fossils Offer Clues to Perplexing Pterosaur Question



Pterosaur species *Inabtanin alarabia* flaps its wings, while *Arambourgiania philadelphiae* uses them to soar

Among the many hot debates in paleontology is just how winged pterosaurs could fly. Some experts speculate that the largest among them may not have even been able to fly at all, similar to present day ostriches and similar dinosaurs. Now, we are getting new clues into the different ways that pterosaurs got off the ground and into the sky, thanks to some well-preserved specimens. Two different large-bodied pterosaur species, including one that is new-to-science, indicate that some flew by flapping their wings, while others soared more like modern vultures. The findings are detailed in a study published September 6 in the peer-reviewed *Journal of Vertebrate Paleontology*. *"Pterosaurs were the earliest and largest vertebrates to evolve powered flight, but they are the only major volant group that has gone extinct,"* study co-author and University of Michigan paleontologist Kierstin Rosenbach said in a statement. *"Attempts to-date to understand their flight mechanics have relied on aerodynamic principles and analogy with extant birds and bats."* The fossils were first uncovered in 2007 by study co-authors Jeff Wilson Mantilla of Michigan's Museum of Paleontology and Iyad Zalmout from the Saudi Geological Survey. The *"remarkable"* specimens date back roughly 72 to 66 million years ago to the Late Cretaceous period. Over time, they were three-dimensionally preserved within two different sites of what was once the nearshore environment on the margin of Afro-Arabia. This ancient landmass that included both Africa and the Arabian Peninsula broke apart about 30 to 35 million years ago. Using high-resolution computed tomography (CT) scans, the team analyzed the internal structure of the wing bones.

https://www.popsci.com/science/pterosaur-fly/

Rock Used as Doorstop For Decades Turns Out to Be Worth Over $1 Million

They say one's trash is another's treasure, but a chunk of "rock" used to keep a door open for decades is a treasure by pretty much any metric you might care to use. The 7.7 pound stone was found in a stream bed in southeast Romania by an elderly woman, who brought it home and put it to use. Her discovery turned out to be one of the biggest intact chunks of amber in the world, according to a report by *El Pais*. Its value? Somewhere in the region of $1.1 million. Amber is tree resin from millions of years in the past. Over time, the highly viscous substance fossilizes into a hard, warm-hued material widely recognized as a gemstone. In Romania, pieces of amber can be found around the village of Colti in sandstone from the banks of the River Buzau, where it has been mined since the 1920s. Known as **rumanite**, this amber is famed and prized for its wide array of deep, reddish hues. The elderly woman who found this particular rumanite nugget lived in Colti, where it remained performing a function so humble that it was missed even by jewel thieves who once targeted the home, reports say. After the woman died in 1991, the relative who inherited her home suspected the doorstop might be more than meets the eye. On learning what he had, he sold the amber to the Romanian state, which had it appraised by experts at the Museum of History in Krakow in Poland. According to these experts, the amber is likely between around 38 and 70 million years old. *"Its discovery represents a great significance both at a scientific level and at a museum level,"* Daniel Costache, director of the Provincial Museum of Buzau, told *El Pais*. Classified as a national treasure of Romania, the nugget has had a home at the Provincial Museum of Buzau, the county in which the relic was found, since 2022. The discovery resembles that of a man in Michigan, who kept a large piece of rock as a doorstop, only to find out decades later that he was keeping his doors in place with a meteorite worth $100,000. A chunk of amber worth over a million dollars isn't a bad score, either, really. Just imagine how many doorstops you could buy.

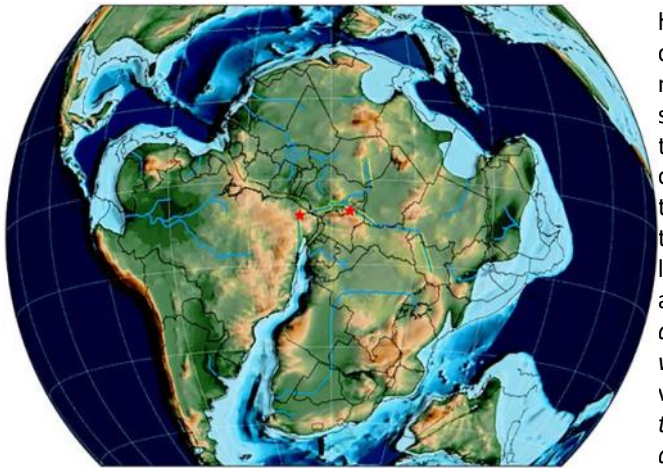
The chunk of amber.

https://www.sciencealert.com/rock-used-as-doorstop-for-decades-turns-out-to-be-worth-over-1-million

Matching Dinosaur Footprints Found 3,700 Miles Apart Reveal Earth's Past

In January 1912, German geophysicist Alfred Wegener proposed an idea the scientific world thought was wacky. After scrutinizing similar-looking fossils of plants and animals on different land masses, he wondered if perhaps the continents had once been joined together before somehow separating into a new configuration. His work was roundly scorned, and dismissed as *"delirious ravings."* Now, of course, the idea of continental drift is accepted as established science, with many different lines of evidence all pointing in the direction of Wegener's supercontinent, now known as Pangea. Paleontologists have just identified another example that would have delighted the geophysicist; almost identical sets of dinosaur footprints have been found in Cameroon in Central Africa and in Brazil in South America, separated by a distance of about 3,700 miles. These two locations define one of the last places dinosaurs could cross between the land masses freely before the continent of Gondwana, a fragment of Pangea, broke away completely, some 120 million years ago. Together, there are more than 260 footprints, stamped into the mud of riverbanks by ornithopod, sauropod, and theropod dinosaurs across what might have been the last land bridge connecting Africa to South America. *"We determined that in terms of age, these footprints were similar,"* says paleontologist Louis Jacobs of Southern Methodist University. *"In their geological and plate tectonic contexts, they were also similar. In terms of their shapes, they are almost identical."* The metamorphosis of Earth's continental configuration was not a one-and-done event, but a long, ongoing process that continues to this day, with the continents continuing to slowly move around the globe. We can piece together past arrangements by looking at features such as the shapes of and alignments of shorelines, matching mountain ranges and rock types that are similar across continents, and even fossils that are similar to each other as Jacobs and his team have done here. From lines of evidence such as these, scientists have determined that Africa and South America started to split apart from each other around 140 million years ago. Rifts formed in the crust, and a gap between the two pieces of Gondwana started to widen. In these cracks, magma flowed up from below, hardening into a new crust that would form the floor of the Atlantic Ocean. As the two new continents continued to separate, the points at which animals could move between them became smaller and fewer. *"One of the youngest and narrowest geological connections between Africa and South America was the elbow of northeastern Brazil nestled against what is now the coast of Cameroon along the Gulf of Guinea,"* Jacobs explains. *"The two continents were continuous along that narrow stretch, so that animals on either side of that connection could potentially move across it."* To find those points of passage, he and his colleagues made a careful study of the published literature. They reconstructed the sundering of the continents, making the case for a connection point between Borborema in Brazil and Cameroon. Then, they studied the dinosaur tracks in both regions, comparing them, and finding that they matched. Because of this connection, we can extrapolate that other, perhaps less heavy-footed animals could follow similar paths. This, the team says, means that the two places formed what they have named the Borborema-Cameroon dinosaur dispersal corridor – one of the very last places animals could move between the continents before they split apart completely. *"This study places dinosaur tracks in a context to elucidate an appropriate path of biogeographical exchange between what would soon (geologically) become separate continents,"* the researchers write in their paper. *"We have tracked dinosaur footprints from the time they were impressed in mud along rivers and lakes over 120 million years ago, in localities originally contiguous and on a single landmass but some 1000 kilometers apart. Today, these sites of fossil preservation are on two continents separated by 6000 kilometers and an ocean."* The paper, titled "**The Early Cretaceous Borborema-Cameroon Dinosaur Dispersal Corridor,"** has been published in the *New Mexico Museum of Natural History and Science Bulletin*, as a tribute to late paleontologist Martin Lockley, who was an avid scholar of dinosaur tracks. This paper will not be made available online.

A long ornithopod trackway in the Sousa Basin in Brazil.



The stars represent the two sites found to have similar dinosaur tracks.

https://www.sciencealert.com/matching-dinosaur-footprints-found-3700-miles-apart-reveal-earths-past

Just 5 Impacts on Mars Sent Hundreds of Meteorites to Earth

Meteorites that strike Earth don't always come from the deepest regions of our solar system, sometimes they originate from one of our closest planetary neighbors. In fact, researchers over the years have recovered hundreds of rocks that got their start on Mars. Now, experts believe they have sourced around 200 of those meteorites to five specific impact craters located in two volcanic regions on the Red Planet. With more analysis, researchers believe these samples will help them better understand the geological history of Mars. Previous attempts to trace Martian meteorite origins have proven largely unsuccessful because they relied on a technique called spectral matching, in which a material's composition is compared based on the patterns of light they are capable of emitting or absorbing. Trying to do this for a source that is millions of miles away and covered in dust, however, made the results unreliable and difficult to obtain. But in a study published on August 16 in the journal *Science Advances*, a team from the University of Alberta calculated that around half of the 10 known Martian meteorite subgroups here on Earth come from specific areas of Mars. The findings rely on improved Martian physics modeling, which is key to understanding the ejection process resulting from an asteroid impact. Researchers combined this better understanding of ejection dynamics with remote sensing data detailing the geological makeup of Mars to narrow down the meteorites' origins. According to Chris Herd, a study co-author, professor of earth and atmospheric sciences at the University of Alberta, this "*major advance*" unlocked the ability to revise previous, limited calculations. *"I call that the missing link, to be able to say, for example, the conditions under which this meteorite was ejected were met by an impact event that produced craters between roughly 16-38 miles across,"* he said. While one might think only comparatively gigantic impacts are strong enough to send hunks of a planet beyond its atmosphere, that's actually not the case. But thanks to 8 mi/s ejection speeds, even a blast that only results in a 5-mile-wide crater is theoretically powerful enough for rocks to escape Martian gravity, enter into an orbit around the Sun, and eventually find themselves pulled towards Earth. Astronomers believe Mars faced 10 events that flung debris into space in the planet's recent history. *"Now, we can group these meteorites by their shared history and then their location on the surface prior to coming to Earth,"* Herd explained. Researchers are now confident that five of those craters, spread throughout a pair of volcanic regions known as Tharsis and Elysium, are likely responsible for the roughly 200 meteorites detailed in the study. Armed with this new information, researchers can now begin revising Martian chronology in ways that may affect timing, duration, and details of many separate planetary events throughout its existence. Herd said additional analysis may allow them to reconstruct Martian volcanic stratigraphy—the record of a planet seen through its geological layers. *"This will fundamentally change how we study meteorites from Mars,"* Herd said.

https://www.popsci.com/science/mars-meteorites-on-earth/

Second Largest Diamond, 2,492 Carats, Unearthed In Botswana

Just a few weeks ago, the world's second largest diamond, created in Earth's core, was discovered in Botswana. The largest diamond was unearthed by miners more than 100 years ago, in 1905. The newly mined diamond, weighing just about a pound, was a **2,492-carat stone**. It was discovered by Lucara Diamond Corp. of Vancouver, British Columbia, which owns the mine in Botswana. Mined about 300 miles north of the capital of Botswana in the Karowe mine, which has produced other large rough stones of significance

The 2,492 carat diamond from the Karowe mine

(including the 813-carat Constellation diamond), the rough stone plays second only to the famed 3,106-carat Cullinan diamond that was mined in South Africa in 1905. The Cullinan diamond, named after Thomas Cullinan, chairman of the mining company that found it, was a sensation when it was discovered. The stunning blue-white stone, with incredible clarity, was later cut into multiple stones – a feat that took more than eight months. Those stones were all assigned a number and several were eventually put into the British Crown Jewels. In fact, the Cullinan I and II were set into the Sovereign Scepter and the Imperial State Crown in 1910 and remain so today. The diamond was discovered by Lucara using advanced high technology X-ray devices that have recently been employed by diamond miners. That technology, Mega Diamond Recovery X-ray Transmission technology, along with a new grinding process that is designed to more easily separate diamonds from rock slabs, has propelled Lucara to the top of the list when it comes to finding big stones. According to an article in the ***New York Times***, in 2015, Lucara unearthed a 1,109-carat diamond, and in 2019, it found a 1,758-carat black diamond. Both of those stones were magnificently cut into multiple diamonds and sold to a luxury brand for inclusion in its exquisite jewelry. It is expected that this newest diamond could have the same fate. It is also estimated that it could sell for **tens of millions of dollars**. The diamond, which has not yet been named, was presented first to the world from the office of President of Botswana, Mokgweetsi Masisi. In a press release issued by Lucara, William Lamb, President and CEO, said "*We are ecstatic about the recovery of this extraordinary 2,492 carat diamond. This find not only showcases the remarkable potential of our Karowe Mine, but also upholds our strategic investment in cutting -edge XRT technology. The ability to recover such a massive, high-quality stone intact demonstrates the effectiveness of our approach to diamond recovery and our commitment to maximizing value for our shareholders and stakeholders."*

https://www.forbes.com/sites/robertanaas/2024/08/25/second-largest-diamond-2492-carats-unearthed-in-botswana/

2024 CVRMS Rock Auction; Success !

Some Preliminary Totals from the 2024 CVRMS Auction

Saturday Sept 21, 9:00 am-9:45 pm Sunday Sept 22, 9:00 am-4:00 pm
Total number of consigners—24
Total number of Lots—1296
Total number of Bidders—100

Auction Sales
Sat: $29,472
Sun: $17,800
Total: $47,272

Average Price/lot: $36.48

Items at $500 or above:

large fluorite display piece—$1,700
pair large dryhead agate—$800
hydraulic geode cracker —$750
agatized coral Georgia/Florida line—$680
polished Mexican agate pair—$500

Comparison to Previous Years:

	2022 Totals	2023 Totals	2024 Totals
Total $	$50,918	$53,051	$47,272
#of Lots	1249	1454	1296

"Bill's Big Bus Boogie" 2024
Calkins Nature Area Museum & The Grotto of the Redemption

The **2024** edition of **"Bill's Big Bus Boogie"** on **Saturday, October 5** will take CVRMS members on two of Iowa's best *Rock Hound* attractions. First we will visit the **Calkins Natural Area** just east of **Alden** in **Hamilton County** and tour their exceptional Museum. Then, we will travel down the road to **West Bend** in **Palo Alto County** to visit the spectacular **Grotto of the Redemption.**

Calkins Natural Area Museum

Grotto of the Redemption

Itinerary for Big Bus Boogie-2024 Saturday, October 5

We will be riding on a 56 passenger bus

6:30 am **Depar**t Cedar Valley World Travel (2602 29th St SW, CR)

8:00 am **Arrive at Calkins Nature Area** near Alden

9:00 am **Program** on Archaeology; ***Iowa natives and artifacts***
Tour Museum and other attractions

11:00 am **Depart** Calkins Nature Area and proceed to West Bend

SACK LUNCH ON BUS

12:30 pm **Arrive at Grotto of the Redemption** in West Bend
Tour Grotto and
Saints Peter and Paul Church

2:30-3:00 pm **Depart** West Bend and head for **Cedar Rapids**

6:00 pm **Arrive** at Cedar Valley World Travel

The deadline for signing up for this field trip has passed, but if you have registered and will not be able to attend PLEASE email Director Bill Desmarais at (desmarais_3@msn.com) and inform him that you will not be joining us.

It will be another great and memorable "Bill's Big Bus Boogie" field trip!

Bill's Big Bus Boogie 2024
will leave from Cedar Valley World Travel;
6100 7th St. SW, Cedar Rapids
Sat. Oct. 5 - **6:30 a.m. SHARP** and **return ~6:00 p.m.**
monitored parking available

The Bus will NOT stop for lunch, so bring a sack lunch !
No LARGE coolers

2024 Duck-Billed Dino with Absolutely Enormous Honker Unearthed in Mexico

A newly described duck-billed dinosaur unearthed in Mexico has an epic schnoz to rival that of Yoshi from Super Mario World. The dino, named *Coahuilasaurus lipani* after the region where it was found and the Lipani Apache tribe that lives there, also has unique tooth-like spikes jutting from the roof of its mouth. These spikes that may have been used to eat rough and woody plants in tropical forests 73 million years ago. Paleontologists first unearthed the partial skull of *C. lipani* in the 1980s in the Parras Basin but previously described it as another genus. In the new study, published in the journal *Diversity*, researchers took a second look at the fossil, which had been housed in the collections at the National Autonomous University of Mexico since its discovery. Newer analysis techniques allowed them to reclassify the fossil. Claudia Serrano, lead author of the study, was present during the first description of the specimen in 2006. *"When we started working on the material again, we decided 'no, this is different,'"* Serrano said. While the partial skull consists only of the dinosaur's snout, this section of the skull is useful in identifying the differences between species, similar to how a bird's beak can reveal a lot about the bird as a whole. The sharp angle of the dinosaur's snout was key to differentiating *C. lipani* from other species. The scientists also found the distinct tooth-like protrusions projecting from the roof of the mouth, which hadn't been emphasized in the previous analysis. These protrusions may mean that *C. lipani* was specialized to eat tough plants like palms that flourished in the tropical conditions of the late Cretaceous period when the big-nosed dino lived, around 73 million years ago. Duck-billed dinosaurs, also known as the "*cows of the Cretaceous*," would have roamed the forests of Mexico at a time when sea levels were higher and temperatures were warmer, according to a statement. Serrano estimates they would have been around 26 feet long, or about the size of two sedans. This discovery adds to a growing list of dinosaurs that are unique to Mexico, Serrano said. Discoveries like that of *C. lipani* and other Mexico-specific species have started to overthrow the assumption that dinosaur species were wide-ranging, the study authors wrote in their paper. Large animals usually have large ranges, that goes for the bison that used to roam from Canada down to Mexico. But instead, individual dinosaur species appear to have had relatively small ranges. Differences in climate, geographical barriers, or perhaps something about the way dinosaurs reproduce may have contributed to their small ranges, but paleontologists still don't quite understand why they stuck to one area, Serrano noted.

The tooth-like projections on the bill of Coahuilasuarus may have helped it eat tough plants, such as palm trees

https://www.livescience.com/animals/dinosaurs/duck-billed-dino-with-absolutely-enormous-honker-unearthed-in-mexico

The Rise and Fall of Lake Paratethys, the Largest Ever

When continental plates collided about **12 million years ago,** they not only raised new mountains in central Europe, they also created the largest lake the world has ever known. This vast body of water, the **Paratethys Sea**, came to be home to species found nowhere else, including the world's smallest whales. Two new studies reveal how the ancient body of water took shape and how changes around it helped give rise to the elephants, giraffes, and other large mammals that roam the planet today. To piece together this timeline, paleooceanographer Dan Palcu of the University of São Paulo and his colleagues at the main campus gathered clues from geologic and fossil records. At its greatest extent, the body of water, which some scientists believe was an inland sea, stretched from the eastern Alps to what is now Kazakhstan, covering more than one million square miles. That's an area larger than the modern-day Mediterranean Sea, they write in Scientific Reports. Their analysis also estimates that the lake once held more than 420,000 cubic miles of water, more than 10 times the volume found in all modern freshwater and saltwater lakes combined. But climate change has caused the lake to shrink dramatically at least four times in its 5 million-year history, with water levels falling by as much as 250 meters between 7.65 million and 7.9 million years ago. During that greatest shrinking episode, the lake lost up to a third of its water and more than two-thirds of its surface area. This caused the salinity of the water in the central basin of the lake, which closely matches the contours of the present-day Black Sea, to skyrocket from about a third of the saltiness of today's oceans to a level equal to that of seawater. These changes wiped out many aquatic species, including numerous species of single-celled algae and other small, free-floating organisms, the researchers report. Creatures that could survive in brackish water, including some mollusks, survived to repopulate the lake when it expanded during wetter periods, Palcu says. The Paratethys soon became home to a wide variety of mollusks, crustaceans and marine mammals found nowhere else on Earth. Many of the whales, dolphins and seals that lived there were miniature versions of those found in the open ocean, says evolutionary biologist Pavel Gol'din of the Schmalhausen Institute of Zoology in Ukraine, who was not involved in the work. One species, the 10 foot-long *Cetotherium riabinini* (3 feet shorter than today's bottlenose dolphin), is the smallest whale ever found in the fossil record. Such dwarfism may have helped these animals adapt to a shrinking Paratethys, Gol'din says. The climate changes that triggered the lake's shrinkage also affected the evolution of land animals, says evolutionary biologist Madelaine Böhme of the University of Tübingen. As water levels dropped, newly exposed shorelines became grasslands and evolutionary hotspots.

Ray Anderson, Editor
2155 Prairie du Chien Rd. NE

Next Meeting:
TUESDAY OCT. 15
Hiawatha Community Center
"The Geology of the Saylorville Spillway"
by Ray Anderson
Cedar Valley Rocks and Minerals Society

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Club meetings are held the 3rd Tuesday of each month from September through November and from January through May at 7:15 p.m. Meetings are held at the Hiawatha Community Center in the Hiawatha City Hall, 101 Emmons St., Hiawatha IA. The December meeting is a potluck dinner held on the 1st Tuesday at 6:30. June, July, and August meetings are potlucks held at 6:30 p.m. at area parks on the 3rdTuesday of each month

CEDAR VALLEY ROCKS & MINERAL SOCIETY

CVRMS was organized for the purpose of studying the sciences of mineralogy, geology, and paleontology and the arts of lapidary and gemology. We are members of the Midwest (MWF) and American (AFMS) Federations. Membership is open to anyone who professes an interest in rocks and minerals.

Annual dues are $15.00 per family per calendar year. Dues can be sent to:

Dale Stout
2237 Meadowbrook Dr. SE
Cedar Rapids, IA 52403

CVRMS website:
cedarvalleyrockclub.org