



Cedar Valley Gems

Cedar Valley Rocks & Minerals Society

Cedar Rapids, Iowa

cedarvalleyrockclub.org

CEDAR VALLEY GEMS

FEBRUARY 2019

VOL. 45, ISSUE 2

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

Next CVRMS Meeting Tues. Feb. 19

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

featured video

National Geographic Presents *Life After Dinosaurs*

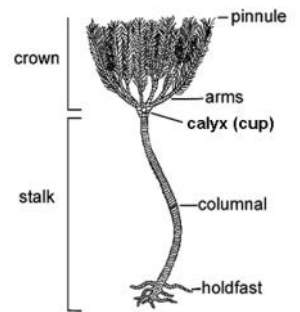
At this meeting we will view the TV Documentary *Life After Dinosaurs* (2008), aired on the National Geographic Channel and focusing mostly on mammals, both during and after the age of dinosaurs. CGI graphics and many clips are shared with the Science Channel's program *Mammals vs Dinos*. Ray Anderson will lead a discussion of the program following the video



Leptictidium an extinct genus of small mammals stands beside the scientist while two *Europlemur*, early primates, stand off to the side.



Again this year Vice-President Ray Anderson will be spearheading a CVRMS project to convince the Iowa Legislature to designate the crinoid as Iowa's State Fossil. The "Crinoid for State Fossil" bill will be sponsored in the Iowa Senate by Senator Joe Bolkcom and in the House by Representative Mary Mascher. Bills have not yet been introduced, but it is time for **all you "friends of the crinoid" to contact your legislators and encourage them to support the bill.** Fossil crinoids from Iowa, especially from Le Grand, Burlington, and Gilmore City are among the finest ever collected, and are displayed in museums all over the world. Crinoid fossils can be found in rocks that underlie much of Iowa, even by novice collectors. A new page has been added to the CVRMS web site that provides information about crinoids (living and as fossils from Iowa) as well as information on the bill and how to identify and contact your legislator.



structure of a crinoid

FLOYD THE 'NOID



Project mascot "Floyd the Noid" says "please contact your legislators, and talk to others about contacting their legislators about supporting the crinoid bill."

<http://cedarvalleyrockclub.org/crinoids.html>

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CVRMS Jan. 15 Meeting

Hiawatha Community Center

Called by President Marv Houg at 7:15

Guests: Timothy & Becky Dryden and two ??

Secretary's Report: No Secretary's report from December because of the holiday party.

Treasurer Dale Stout reported a balance of \$12,382.66 in checking. Motion was made by Terry Baty and seconded by Jay Vavra to accept the Treasurer's report..

Program: Ray Anderson presented "Geology of the Mary Ellen Jasper."

MSHA Training: Marv reported MSHA training will be held March 21st or 25th at a place yet to be determined. [It has since been set for March 25 at Ladd Library at 2 and 5:30.]

Crinoid as State Fossil: Ray announced Senator Joe Bolkcom and Representative Mary Mascher will work on bills to proclaim the Crinoid as the state fossil.

Show:

Sign-ups for workers and displays were passed. Marv announced the Saturday catered dinner will cost \$13. Ray is working on field trips to Cornell's museum, UI's Iowa Hall and Paleontology Repository, and Devonian Fossil Gorge. Registrations are coming in. Commemorative t-shirts are available for order. Kim Klecker has posted the show on Facebook and asked others to share it. There will be some competitive exhibits in addition to regular exhibits. We need items for the pebble pit,

silent auction, and door prizes. We are completely out of door prizes; popular items include agates, slabs, minerals, jewelry and fossils, especially corals. A potluck, with dealers and MWF/AMFS members as our guests, will be held Friday at 6:30, followed by a program.

The club submitted Tiffany Adrain for MWF Honor Awardee. She has been selected the winner and will pick two graduate students who will each receive a \$4,000 scholarship from the AFMS Scholarship Foundation. The students will be invited to the Saturday night banquet (Tiffany will be out of town), and if the MWF doesn't pick up the cost, the Board will consider the club picking it up.

Egg Carton Day: Egg Carton Day has been set for February 17 at 2:00 at Sharon Sonnleitner's house. About 10 people are needed to help assemble egg carton collections which we sell at the pebble pit. Snow date is February 24. Notify Sharon if you can help.

Field Trip: Marv announced a possible field trip in late April to Doug DeRosear's, 2¼ hours away. Doug has outstanding fossils, agates, geodes and minerals.

TAKO: A Take a Kid Outside event at a River Products quarry will be held May 18 from 9:00-12:00. Volunteers are needed to assist kids with collecting and to set up a few displays. Last year Ray created a brochure for the kids.

Correspondence: Marv read a thank-you from the woman who club members helped at the Squaw Creek summer potluck after she had fallen from her bike in the parking area. She had severe injuries and is recovering well. Bill Desmarais announced the VAST center had given us more specimens from discontinued kits.

MWF Delegate: Kim volunteered to be the club delegate to the MWF meeting on March 23.

Adjournment: AJ made a motion to adjourn. 2nd by Tom. Adjourned at 9:15.

Respectfully submitted, Sharon Sonnleitner, Acting Secretary

NOTE: BOARD MEETING WAS POSTPONED BY INCLIMATE WEATHER, TWICE—so no board minutes

Order NAME _____

____ Federation Member ____ ALAA ____ Dealer ____ CVRMS

2019 COMMEMORATIVE T-SHIRT ORDER FORM

Order Deadline: March 1

COMMEMORATIVE T-SHIRTS. Available by pre-order only.




Color: White Design on Antique Royal Blue
Gildan Ultra Cotton Tee

Please Enter the **Quantity** of Each Size You Want

Small	Medium	Large	XL	2X	3X	TOTAL Number	@	Total Cost
							\$18	\$

Send FORM and PAYMENT (or bring to a meeting) to:
Sharon Sonnleitner
4800 Sunset Dr SW
Cedar Rapids IA 52404

New Study Pushes the Origins of Feathers Back by 70 Million Years



The pterosaur studied has four different feather types over its head, neck, body, and wings, which would have generally had a ginger-brown color

In a new study published in the journal *Nature Ecology and Evolution*, an international team led by Professor Baoyu Jiang of Nanjing University shows that pterosaurs had at least four types of feathers in common with their close relatives the dinosaurs, pushing back the origin of feathers by some 70 million years. Pterosaurs and dinosaurs are closely related reptiles that lived from about 230 to 66 million years ago. Using Laser-Stimulated Fluorescence, the team produced images that vividly revealed the form of the wing membrane, showing that its generally ginger-colored feathers were preserved in place. The study concluded that pterosaurs had at least four types of feathers: (1) simple filaments ('hairs'), (2) bundles of filaments, (3) filaments with a tuft halfway down and (4) down feathers. These four feather types are known from two major dinosaur groups - the plant-eating ornithischians and the theropods (which include living birds). Despite careful searching, the team was unable to find any anatomical evidence that the four feather types they identified were in any way different from the feathers of dinosaurs, including those of birds. "We ran some evolutionary analyses and they showed clearly that the pterosaur pycnofibres are feathers, just like those seen in modern birds and across various dinosaur groups." Thus, they came to the conclusion that pterosaurs must share an evolutionary origin with dinosaurs, around 250 million years ago, 70 million years older than previous estimates.

<https://www.hku.hk/press/press-releases/detail/18876.html>

Spotlight Gemstones: Amethyst

February's Birth Stone



February's birthstone, **amethyst**, is the purple variety of the mineral quartz, its most famous and valuable gem variety. Quartz in other colors include gemstones such as **citrine** (yellow), **rose quartz** (pink), and **smoky quartz** (gray). The purple of amethyst is most often caused by iron impurities, though it can also be colored by natural radiation exposure. Amethyst is sometimes heat treated to deepen the color, or to transform it into citrine. Some forms of amethyst may also change to a light green color upon heat treatment (called **prasiolite** or "**green amethyst**"). Amethyst is mined in many locations, some of which produce distinct color styles. For example, amethyst from Uruguay has a deep purplish-blue color, as does amethyst from Arizona. Amethyst from deposits that have since been exhausted in Russia, is known as "**Siberian amethyst**", a very deeply reddish and bluish colored stone which commands a high price. African amethyst is generally more deeply colored than the South American variety. Amethyst is the official gemstone of Ontario and can be found near Thunder Bay, where rock hounds can collect the gem from open-pit mines. Thunder Bay Amethyst can contain blood-red inclusions of iron oxide. Some amethyst from a few locations may slightly fade in color upon prolonged exposure to light. The color distribution of amethyst is sometimes uneven, and this is often taken into account when cutting a stone. Due to the abundance of amethyst, it is usually clean and free of flaws or inclusions. Because of this, amethyst with any visible flaws or inclusions should be avoided. Amethyst can occur in huge flawless crystals, and gems of all sizes have been faceted. Amethyst is sometimes heat treated to deepen the purple color and transform lighter colored stones into deeper hues. More often though, amethyst is heat treated to produce citrine and the green quartz (prasiolite). Amethyst is faceted into many cuts, and is used in all forms of jewelry including rings, necklaces, earrings, bracelets, and pendants. Many large gems weighing several hundred carats have been cut from amethyst. Ornamental objects are also occasionally carved from large pieces. Lower quality amethyst is an important bead gem and can also be cut into cabochons. Tumbled beads of purple amethyst mixed with white quartz are also used as necklaces and bracelets.

http://www.minerals.net/gemstone/amethyst_gemstone.aspx

What in the World?

January's Photo



What in the World is this winding trail and where does it go??



Last month's "what in the world" photo showed a U of IA geoscience student walking on Proterozoic rhyolite porphyry at Johnson's Shut-Ins State Park in Missouri's St. Francois Mountains. These rhyolites formed during Yellowstone-like caldera eruptions about 1.5 billion years ago. Water-borne sand and gravel carried by the East Fork Black River cut deeply into this resistant rock, carving potholes, chutes and a canyon-like gorge.

Rock Calendar CVRMS EVENTS OF INTEREST

2019

Feb. 19 - CVRMS Monthly Meeting
Feature Video
"Life after Dinosaurs"
Hiawatha Community Center 7:15 pm

Mar. 19 - CVRMS Monthly Meeting
Feature Program
"CVRMS & Field Work at Cornell College"
by Cornell Geology Students
Hiawatha Community Center 7:15 pm

Mar. 21-24—AFMS/MWF Annual Meeting
Ramada Inn
Cedar Rapids
see p. 10 for details

**Mar. 23-24—CVRMS Rock, Fossil,
and Mineral Show**
Hawkeye Downs
Cedar Rapids
see p. 10 for details

Apr. 16 - CVRMS Monthly Meeting
Feature Program
"to be announced"
Hiawatha Community Center 7:15 pm

May 21 - CVRMS Monthly Meeting
Feature Program
"to be announced"
Hiawatha Community Center 7:15 pm

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.

I recently read an article in the Jan 2019 issue of the "**Rock Rustlers News**", the newsletter of the **Minnesota Mineral Club**. A friend, **Dr. Bill Cordua** from the University of Wisconsin-River Falls, writes a column in the newsletter called "**On the Rocks.**" Last month he wrote about a **Rock with the Pox**, and I thought you might enjoy reading it. *Ray*

Agate pickers often encounter a rock that looks as though it has the measles or chicken pox (figure 1). It's not mysterious – it is a rock well known in the Lake Superior region and goes by the name "ophitic basalt". As is true for most



Figure 1. above-Cobble of ophitic basalt. below-ophitic basalt drill core from 2707 feet below Guthrie County, Iowa



rocks, it has a neat story to tell. As one would suspect from the name "basalt," it is linked to the 1.1 billion year old volcanic event tied to the opening of the MidContinent Rift. Rocks from this event are exposed along both the north and south shore of Lake Superior, extending as far south as Taylors Falls in Minnesota. "Ophitic" refers to the splotchy texture. The spots are crystals of the mineral augite, a member of the pyroxene group. The augite contains many elongated inclusion of plagioclase feldspar. It is also generally altered to secondary minerals such as chlorite and actinolite due to heat during the lava flows' burial deep in a pile of warm volcanic rocks. The term "ophitic" was first used way back in 1798 by French geologist Abbe Pelassou, who was studying volcanic rocks in the Pyrenees. The word comes from the Greek "ophis" meaning "snake" because Pelassou felt the rocks resembled the skin of a snake. The term was later refined by other geologists to describe the unique texture described above. In most ophities the larger crystals are augite, but in a few cases they are olivine. In the 1800's geologists recognized rocks with this texture occurring frequently in the Lake Superior region. The massive Greenstone Flow of Isle Royale and the Keweenaw Peninsula have ophitic textures. Blocks of this material are common on the old copper mine dumps there. Closer to home lava flows exposed at the overlook on highway 8 just south of Taylors Falls show excellent ophitic texture, inside Interstate Park. By the way, "trap rock" is a quarryman's term for massive basalt. How this texture forms is a matter of some importance, as it illustrates the sequence of events during the crystallization of basaltic magma. Ophitic textures are quite pretty when viewed under the microscope in thin slices (figure 2). The texture shows that abundant rectangular plagioclase crystals formed first, then were engulfed by the later growth of the augite. Apparently relatively few augite crystals were forming. When few crystals of a mineral are forming, those that do form are able to grow relatively large. The plagioclase continued to form along with the augite. This texture requires relatively slow crystallization. Since lava flows cool at the surface one might ask how they can show textures suggesting they cool slowly. The flows with ophitic textures are rather thick – the Greenstone Flow is locally 400 meters (1300 feet) thick for example. These massive outpourings of basalt can make deep lava lakes. Ophitic flows in Michigan, for example, average 33 meters (108 feet) thick, where the average thickness of all flows is 10-11 meters (32- 36 feet). The tops, bottoms and edges of these lava ponds cool fast against the air or ground, but the centers are well insulated and can take years to solidify.

Figure 2. Microscope photo of ophitic basalt. Small light crystals are plagioclase feldspar. The large brownish crystals are augite. Field of view is about 2 mm



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© 2018 Dr. Bill Cordua Funny picture



As was reported in last month's newsletter, the volcano Anak Krakatau had been spewing ash and lava for months prior to a tremendous increase in earthquake activity after mid December. On 22 December, from 12:00 to 18:00 local time, a total of 423 eruptions were recorded before at 21:09 when a 158-acre section of its south-west side suddenly collapsed into the sea. This collapse and resulting underwater landslide produced a tsunami that devastated coastal towns on Indonesia's Sunda Strait, which connects the Java Sea to the Indian Ocean. It transformed the volcano into basically a flat pancake of its former self. It was just the latest eruption of Anak Krakatoa, which had been active sporadically since emerging from the sea in the 1920s. After the collapse, the volcano that used to tower more than 1,100 feet into the sky was now just a quarter of that size. Dwikorita Karnawati, head of Indonesia's meteorological agency, told *The Guardian* that the volcano had been belching lava and ash for months until the chunk of its south-west side collapsed. "This caused an underwater landslide and eventually caused the tsunami." Øystein Lund Andersen, a nature photographer who regularly takes shots of volcanoes in the area, posted dramatic before and after images of the volcano on Twitter. On the left, you can see the volcano in May 2018 before the collapse, and another image captured just a few days after its collapse and tsunami. "It looks like a giant hand basically flattened the volcano".



Image-comparison of Anak-Krakatau before and after collapse, showing the major changes to the volcanic island.
First photo captured 5th August and second photo taken 11th January by @EarthUncutTV

The height of the volcano prior to the eruption was measured at 1,110 feet high in September, 2018; after the blast it was only 360 feet high when measured on January 11, 2019, according to the Center for Volcanology and Geological Disaster Mitigation. The island had also lost three-quarters of its volume, according to the center, having shed between 5.2 billion and 6.3 billion cubic feet of material during the eruption on December 22. Residents along the coast also didn't see or note any warning signs — until the waves began to arrive. The tsunami with waves of up to 45 feet tall slammed into the Indonesian islands of Java and Sumatra. As of 31 December, the tsunami death toll was listed as 437, with 14,059 reported injured, 24 missing, and 10,000 evacuated as their houses had been either damaged or destroyed. 41 schools were turned into evacuation centers, and the Indonesian government estimated that the total damage caused by the tsunami exceeded \$25 million. This episode has reportedly spurred calls for an improvement in Indonesia's tsunami-warning apparatus. Because it was a volcano and not an earthquake that triggered the tsunami, no warning was issued.

<https://bgr.com/2019/01/17/indonesia-volcano-tsunami-photos/>

Ancient Shark With Spaceship-Shaped Teeth Named After Vintage Video Game

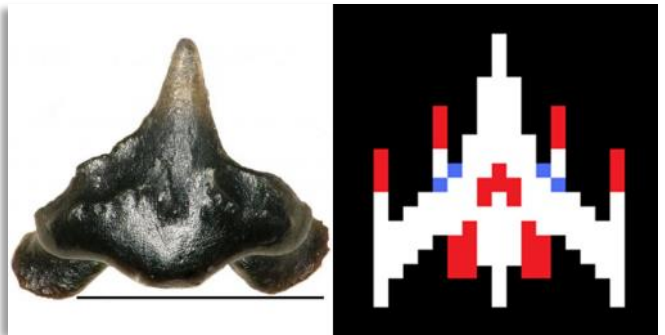
A newly described freshwater shark from the Cretaceous Period had teeth that resembled the iconic *Galaga* video game space-fighter. Remarkably, the remains of this shark were found in the same pile of debris that contained Sue the *T. rex*—the largest and most complete fossil of the species ever found. Introducing *Galagadon nordquistae*, a newly discovered freshwater shark that swam in the Cretaceous rivers of South Dakota some 67 million years ago. It wasn't very big, measuring around 12 to 18 inches in length, and it likely scoured the riverbed in search of small fish, snails, and crayfish, according to new research published today in



Artist's depiction of *Galagadon* swimming along the river floor.
Image: Velizar Simeonovski, Field Museum

the *Journal of Paleontology*. The scientists who discovered *Galagadon* said the shark is related to modern-day carpet sharks. All that's left of *Galagadon* are two dozen tiny teeth, which were found in the same sediment that yielded Sue, the famous *T. rex* skeleton. The remains of this fearsome tyrannosaurus were uncovered 20 years ago in the Hell Creek Formation of South Dakota. Smartly, the leftover sediment from this work, called the matrix, wasn't thrown away, and was instead stored at the Field Museum in Chicago for safekeeping. Recently, a team of scientists and volunteers decided to take a second look at this two-ton pile of dirt in hopes of finding some fossils—which turned out to be a good idea. As noted, only the teeth of *Galagadon* remain. Its other body parts are long gone, mostly because cartilage doesn't preserve very well. Paleontologist Terry Gates, the lead author of the new study, and his colleagues inferred the size, shape, and behavior of *Galagadon* by comparing

its teeth to those of similar shark species, both extinct and extant. "Thankfully, the shark teeth in our study indicate a close relationship to living carpet sharks so we have reasonable inferences on their ancient lifestyles," said Eric Gorscak, a paleontologist at the Field Museum and a co-author of the new study. "Teeth are usually good indicators of diet for obvious reasons. These kinds of reconstructions are usually harder with other extinct animals, such as non-avian dinosaurs, in that they differ quite significantly from most living animal analogues." *Galagadon*'s teeth are less than a millimeter across, so they could've been easily overlooked. "so tiny, you could miss it if you weren't looking really carefully," Karen Nordquist, a retired chemist and a volunteer who helped to find the teeth in the sediment, said in a statement. "To the naked eye, it just looks like a little bump, you have to have a microscope to get a good view of it." Nordquist was struck by the shape of these teeth, which reminded her of the spaceships in *Galaga*. Her colleagues appreciated the comparison, and they decided to name the shark after the classic video game and Nordquist herself. *Galagadon* and *T. Rex*, as this finding suggests, were contemporaries. The discovery of a freshwater shark in this part of the world, however, is challenging conventional thinking about the environment in South Dakota at the time. Sue, it was thought, lived and died near a lake that formed from an evaporating river, but the presence of *Galagadon* suggests the region was connected to the sea, likely by a river, allowing sea-based sharks to move inland and evolve a capacity to live in freshwater. "It may seem odd today, but about 67 million years ago, what is now South Dakota was covered in forests, swamps and winding rivers," said Gates in a statement.

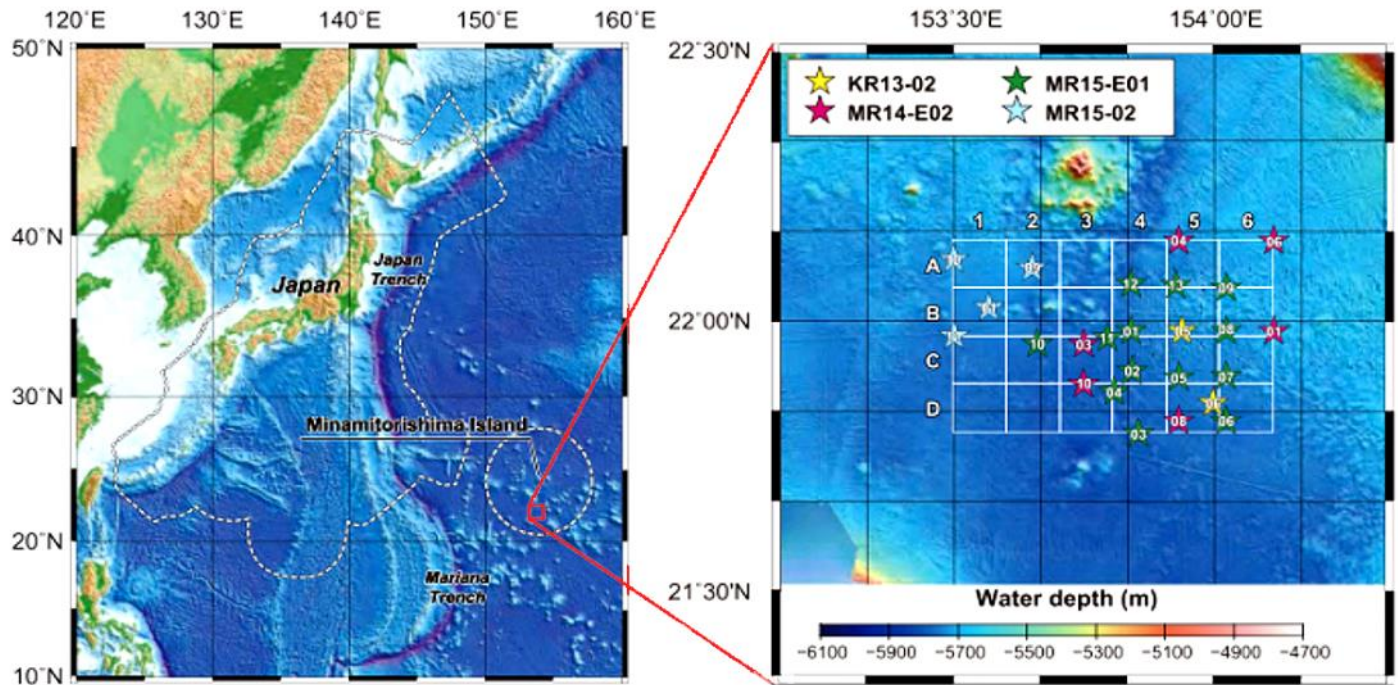


Left: One of the tiny fossilized teeth of Galagadon.
Right: The Galaga starfighter

"*Galagadon* was not swooping in to prey on *T. rex*, *Triceratops*, or any other dinosaurs that happened into its streams. This shark had teeth that were good for catching small fish or crushing snails and [crayfish]." The discovery is also important because it'll help scientists "understand the diversity and potential dynamics of ancient ecosystems, especially in the context of non-avian dinosaurs such as world famous Sue the *T. rex*," said Gorscak. "The sharks described in our paper help inform the evolutionary history of modern carpet sharks, a group of sharks that currently live around southeast Asia and Australia but we now know to have had a larger range in their millions of years history." Future discoveries could shed more light on *Galagadon* and its habitat, but for now, the discovery of an ancient shark within the same sediment that held Sue the *T. rex* seems unreasonably appropriate.

<https://gizmodo.com/ancient-shark-with-spaceship-shaped-teeth-named-after-v-1831931460>

Japan Finds Huge Rare-Earth Mineral Deposit That Can Supply The World For Centuries



Researchers reported having found hundreds of years' worth of rare-earth materials underneath Japanese waters — enough to supply to the world on a “semi-infinite basis. Rare-earth metals are crucial in the making of high-tech products such as electric vehicles and batteries, and most of the world has relied on China which supplies 95% of the world's resource. The materials sit in a roughly 965-square-mile Pacific Ocean seabed near Minamitorishima Island, which is located 1,150 miles southeast of Tokyo, revealed a study published in the journal *Nature* in April 2018. According to Japanese researchers, the seabed contains more than 16 million tons of rare-earth oxides. That's equivalent to 780 years' worth of yttrium supply, 620 years of europium, 420 years of terbium and 730 years of dysprosium, it added. The discovery “has the potential to supply these metals on a semi-infinite basis to the world,” the study said. However, extracting those metals from the seabed is an expensive affair, the Journal reported. Rare-earth minerals were formed initially by supernova explosions before Earth came into existence. When Earth was formed, the minerals were incorporated into the deepest portions of the planet's mantle, a layer of rock beneath the crust. Tectonic activity has moved them closer to the surface. These minerals are buried 20,000 feet below the ocean surface, and while the Japanese researchers who discovered the deposits claim they have also created an efficient method to extract these minerals, questions remain as to how this method could be scaled. Currently, there are no profitable methods of producing rare earth minerals embedded more than 16,000 feet below the seabed. Based on current methods, producing only 1000 tons of metals would require mining more than one million tons of mud. The only thing holding Japan back from using its newly found deposit to dominate the global market for rare-earth minerals is the challenge involved in extracting them. The process is expensive, so more research needs to be done to determine the cheapest methods, Yutaro Takaya, the study's lead author, told The Journal.

<https://www.nature.com/articles/s41598-018-23948-5>

Texas Couple's Home Showcases Nation's Largest Fine Mineral Collection

For the past 13 years, Rockwall, Texas, residents Jim and Gail Spann have poured their passion into building a fine mineral collection that has to be seen to be believed. The Spanns have some of Earth's rarest minerals and rocks beautifully displayed in rooms all over their spacious Rockwall home. It's a massive collection, with more than 12,300 rocks and minerals sitting delicately in over 70 gorgeous display cases throughout the residence. The Spanns recently



added 9,000 square feet to their home for entertaining and to accommodate their fast-growing collection of minerals. The collection houses some of their rarest rocks and award-winning displays, with rocks the size of a thumbnail to those as large as a boulder. Most all of the rocks and minerals at the Spann home have a captivating story of how they were mined. For the Spanns, that's the true joy of being mineral collectors: to share the story and science behind the rock. They want nothing more than for people to learn and become excited about rocks and minerals. "We want people to fall in love with the beauty and science of minerals just as we did 13 years ago," Gail said. <https://blueribbonnews.com/2018/09/nations-largest-fine-mineral-collection/>



Becoming a Rock Collector

I like to collect rocks, and so do many other people I know. While you can purchase rock collecting starter kits, rock collecting is a great free activity. It's a fun excuse to go out into nature; many rock collectors like to travel to different places in order to collect different types of rocks. Some rock collectors like to learn all about the rocks they collect, while some base their collection on looks. What kind of collector are you? I think of a rock collector as someone who compiles rock and mineral specimens as an end in itself. Rock collectors come in a couple of models:

The rockhound is the most familiar: someone who enjoys hunting for unusual, rare or valuable minerals in organized group trips to mines. Rockhounds swap specimens with other collectors and may sell small amounts of material. Some tend to acquire piles of "bulk rough" that they may process later, but others may maintain exquisite cabinets of fine mounted minerals. They are hobbyists who may graduate to become dealers.

The lapidary collects rocks to make things with them. I would include jewelers in this category too: people who cut crystals and gemstones into jewelry making. They are hobbyists who may graduate to become artisans.

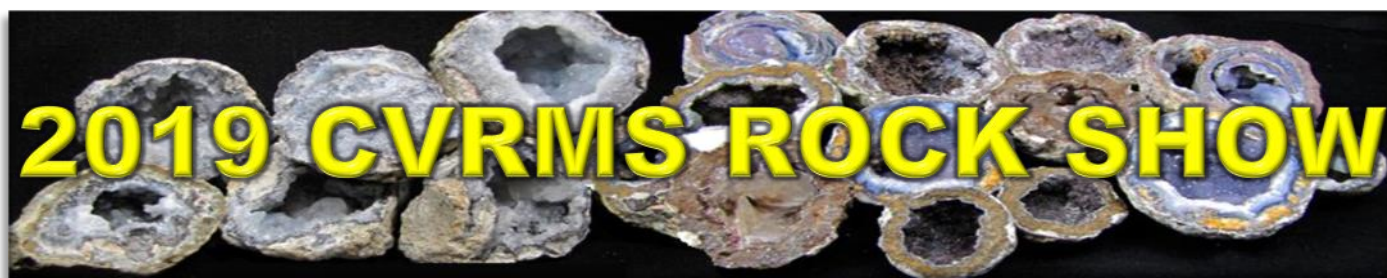
That said, some people collect rocks as a means to an end. I don't call them rock collectors, although they certainly care about rocks:

Geologists do study and collect rocks, but they aren't rock collectors. Their collections have scientific or professional, not personal purposes.

Mineral dealers aren't rock collectors, even if they dig up their own material. Their collections are for sale, not for pleasure.

In some locations, rock collecting is forbidden. I've learned I can collect the forbidden or unfeasible, thanks to the camera. Photographing a rock and then leaving it behind allows me to collect without collecting. Photography protects the environment and gives me ample room at home to display the rocks I truly love. A word about the rock and mineral photos on the Web. Photos of rocks are generally good examples of the rock types you'll see in the field. The same is not true for minerals, however. Mineral photos tend to favor spectacular specimens.

<https://www.thoughtco.com/rock-collectors-a-collection-1441155>



Cedar Valley Rocks & Minerals Society's 55th Annual Rocks, Fossils, and Minerals Show

"GEODES: IOWA'S MYSTERIOUS STATE ROCK"

The 2019 Show will be held March 23rd-24th, 2019
 at Hawkeye Downs, Cedar Rapids.
 Hours are 8:30am to 6:00pm on Saturday March 23, 2019
 9:30am to 4:00pm on Sunday March 24, 2019

<p>PROGRAMS Programs on Theme-Related Topics Call ahead or check our website for Speakers & Times</p> <p>DEMONSTRATIONS Tumbling Glass Bead Making Cabbing, Beading Silversmithing Flint Knapping Geode Cracking</p> <p>PEBBLE PIT FOR KIDS 1¢, 5¢, 10¢, 25¢, & 50¢ Items \$1 Rock & Mineral Kits</p> <p>HOT FOOD Hawkeye Downs Concessions</p>		<p>DISPLAYS Geodes Minerals Crystals Fossils Amethyst Crinoids, Artifacts Petrified Wood Polished Stones Spheres, Agates</p> <p>SILENT AUCTION Geodes, Minerals, Crystals, etc.</p> <p>DONATIONS REQUESTED Adults \$3.00 Students \$1.00 (12-18) Children Free (Under 12) Youth Groups Free (w/adult)</p>																				
<p>PROFITS GO TO SCHOLARSHIPS NOT RESPONSIBLE FOR ACCIDENTS</p>	<p>SLUICE FOR MINERALS (Kids & Adults) MANY ITEMS FOR SALE, INCLUDING:</p> <table border="0"> <tr> <td>Books</td> <td>Fossils</td> <td>Jewelry</td> <td>Minerals</td> <td>Book Ends</td> </tr> <tr> <td>Opal</td> <td>Agates</td> <td>Carvings</td> <td>Seashells</td> <td>Petrified Wood</td> </tr> <tr> <td>Slabs</td> <td>Geodes</td> <td>Crystals</td> <td>Tumblers</td> <td>Lapidary Equip.</td> </tr> <tr> <td>Gems</td> <td>Beads</td> <td>Spheres</td> <td>Meteorites</td> <td>Jewelry Findings</td> </tr> </table>	Books	Fossils	Jewelry	Minerals	Book Ends	Opal	Agates	Carvings	Seashells	Petrified Wood	Slabs	Geodes	Crystals	Tumblers	Lapidary Equip.	Gems	Beads	Spheres	Meteorites	Jewelry Findings	<p>CHILDREN MUST BE ACCOMPANIED BY AN ADULT ONLY SERVICE DOGS ALLOWED</p>
Books	Fossils	Jewelry	Minerals	Book Ends																		
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associated with the Rock Show this Year, CVRMS is Hosting the:

AMERICAN ASSOCIATION OF MINERAL SOCIETIES' NATIONAL SHOW

and the

MIDWEST FEDERATION OF MINERALOGICAL AND GEOLOGICAL SOCIETIES ANNUAL MEETING

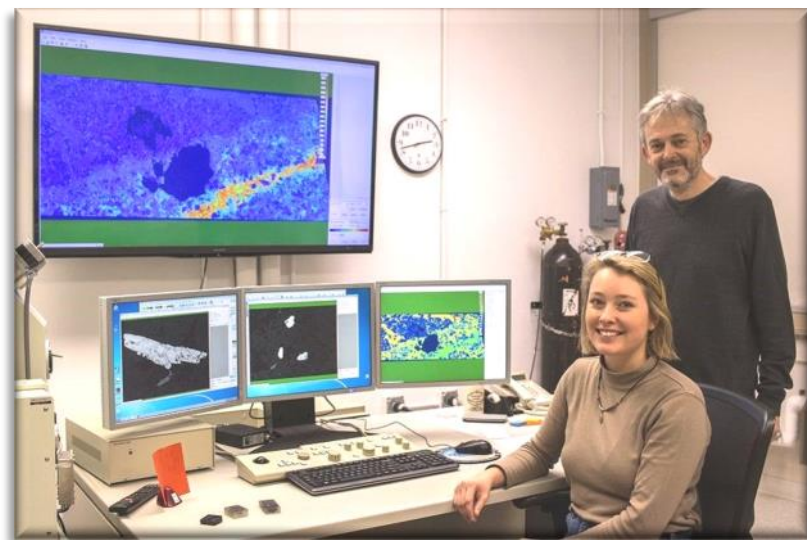
March 21-23, 2019 Ramada, Cedar Rapids

see <https://www.cedarvalleyrockclub.org/AFMSHome.html> for details and registration

What's New In Iowa Geology ??

U of IA Geoscientists Study NE Iowa Rocks

Around 1 billion years ago, a titanic rift in the Earth's crust threatened to create a new ocean across central North America. Associated with the rifting, magma surged upwards through numerous associated fractures, cooling to form huge masses of igneous rock, including in the area now called the Northeast Iowa Intrusive Complex. Iowa Geological Survey geologist (and friend of the CVRMS) Ryan Clark explained that the complex stretches for more than 6,000 square miles, underlying 10 counties with offshoots in two more. Aeromagnetic testing conducted in the 1960s showed the general shape and size of the formation, but technology then didn't allow for high-resolution imaging.



UI geochemistry Professor David Peate and third-year geology student Allison Kusick study x-ray imagery of the New Jersey Zinc core.

New higher resolution aeromagnetic and gravity surveys have allowed interpretations to be more precise, but understanding the characteristics of the actual rocks is critical to refining these interpretations. Only one core has been extracted from these rocks; drilled in Clayton County in 1961 by New Jersey Zinc it encountered the rocks of interest at a depth of 1,830 feet and penetrated over 700 feet of olivine cumulate. Ryan and fellow researchers at the U.S. Geological Survey and University of Iowa Department of Earth and Environmental Sciences have recently amped up to study these rocks using state-of-the-art analytical equipment. One of their first goals is to determine when these rocks solidified from magma, their age. UI geochemistry Professor David Peate and third-year geology student Allison Kusick, have the task of analyzing composition

and abundance of minerals in the rock to make this age determination. *"If you're trying to date [the core], you need crystals that incorporate elements in certain ways,"* Peate said. Peate and Kusick used an electron microscope and X-ray imagery to create detailed maps of crystals in the Osborne Core. They tested for zirconium-rich minerals, only microns in diameter, to determine the size and abundance of these minerals. A similar and probably related formation in Minnesota called the Duluth Complex has been dated using similar techniques, measuring the decay of uranium into lead, to be about 1.1 billion years old. The Duluth Complex lies at or near the surface, unlike the deeply buried Northeast Complex. *"If they're the same age, there's a good chance similar mineralization as to what happened up there happened here as well,"* Peate said. Clark said that like the Minnesota rocks, the Northeast Iowa Complex may contain copper, nickel, sulfite, and platinum group elements, as well as possible precious metals, which has the potential to bring an economic boon to northeast Iowa in the future. *"The Duluth Complex is generating a lot of revenue, not only for the mineral industry but for the state ..."* Clark said. *"If something like that were to happen here in Iowa, it would be a major economic benefit. It could be decades down the line, if at all."* Peate said his team is waiting for the government shutdown to end so they can resume correspondence with USGS and see if there is a possibility of additional drilling. The primary goal of the research, however, is not economic. Because the Osborne Core was found in an offshoot of the complex, Clark said, there's no guarantee the main body would even have minerals similar to those found in the core. *"Our purpose is to understand what we have here and, secondarily, if someday we need to use those metals, we'll know they're here,"* Kusick said. <https://dailyiowan.com/2019/01/16/science-rocks-ui-geologists-work-to-uncover-the-secrets-of-a-6000-square-mile-underground-rock-formation/#continue?fbclid=IwAR0bYf3bS-3mCsFMCmGLOHTCavTo9hbCDcU1Hem0R1g3OAK5ePDsIRw9wyc>

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Vice President. ...	Ray Anderson (rockdoc.anderson@gmail.com)	337-2798
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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., at the Hiawatha Community Center in the Hiawatha City Hall, [101 Emmons St., Hiawatha IA](#). The December meeting is a potluck dinner held the 2nd Tuesday at 6:30. June, July, and August meetings are potlucks held at 6:30 p.m. at area parks on the 3rd Tuesday 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



Ray Anderson, Editor
2155 Prairie du Chien Rd. NE
Iowa City, Iowa 52240-9620