

Cedar Valley Gems



Cedar Valley Rocks & Minerals Society

Cedar Rapids, Iowa

cedarvalleyrockclub.org

CEDAR VALLEY GEMS

OCTOBER 2018

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

Next CVRMS Meeting Tues. Oct. 16

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

featured speakers:

Jane Gilotti

and students from the

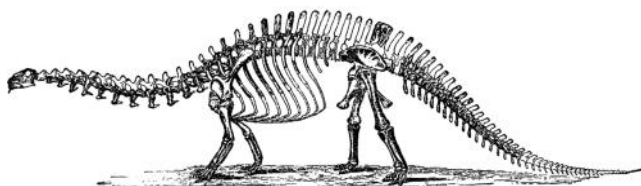
University of Iowa

Department of Earth and Atmospheric Sciences

Geological Field Work and Research Aided by CVRMS



Dr. Gilotti and her students will make presentations discussing field and research activities at the University of Iowa that were funded in part by grants from the Cedar Valley Rocks and Minerals Society.

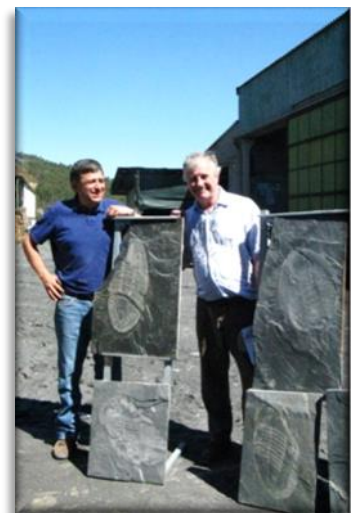


A roofing slate quarry in the Arouca Geopark (northern Portugal) includes a unique Ordovician (465 million years ago) fossil lagerstätte (a rock with exceptionally well-preserved



fossils) that has revealed new information on the social behavior of trilobites. A study "*Giant trilobites and trilobite clusters from the Ordovician of Portugal*" by Juan Gutierrez-Marco and others published

in the May 2009 edition of *Geology*, described the largest trilobites ever found, which in life would have reached up to 35 inches. The study suggested that the trilobites, including six different species that lived in the area of Gondwana close to the South Pole during the Ordovician, may be examples of polar gigantism. Additionally, numerous examples of monotaxic and polytaxic size-segregated trilobite clusters were also found, some containing as many as 1000 specimens. These reveal a very diverse social behavior, including hiding from predators and synchronous molting and reproduction, demonstrated for the first time in five contemporary families of three different trilobite orders from a single formation.



CVRMS Sept 17 Meeting CVRMS Board Minutes Sept 25

Hiawatha Community Center

Called by President Marv Houg at 7:20
at Hiawatha Community Center

The meeting was called to order by Marv Hoag, President

New members and guests were introduced-Chrysal Krsek:
Welcome.

Approval of minutes-no minutes were available since many
members did not receive newsletter.

Door prize won by AJ.

Program Dr. Steve Spangler *"Exo Planets Do we have
friends out there?"* An AU equals 93 million miles.

Treasurer's report by Dale. Current checking balance
\$655.38. Auction report not completed and is not re-
flected in balance.

Auction \$38,958 gross. Further more detailed results will
be forthcoming. Marv thanked everyone for all of their
help in making it a success.

2019 Show report Ray and Sharon working on registration
packets and providing information to potential partici-
pants. Progress being made.

Tom requested that club send a delegate to the Springfield
Midwest Federation Show Marv asked for volunteers.
Dolores Slater volunteered and will let Marv know for
sure.

Field Trips Marv has lined up two field trips to Klein and
Conklin quarries. September 23 and October 14. Call
Marv if interested.

Motion to adjourn by AJ, 2nd Tom.

Meeting adjourned 9:25p.m.

Respectfully submitted, Dell James, sec

Called at 7:05 at the home of Marv Houg

Present: President Marv Houg, Dale Stout,
Ray Anderson, Bill Desmarais, Dell James, Jay Vavra,
Sharon Sonnleitner, Rick Austin

Auction report:

Total 1333 lots, Gross returns \$38,958.

Discussion regarding how to improve our procedures?

Sharon requests that sellers have their articles on premises

early enough so numbers can be put on by 4:00. Order of
sale could then be ready for evening preview. Discussion.

Jay will send out email with explanation that numbers will be
placed before 4:00p.m.

This will be addressed in contract and we need to enforce the
contract. Jay will work on it.

2019 Show

Show page will soon be up on our website. Many details
need to be worked out. Ray and Sharon working on registra-
tion packets. Request welcome letter from others. Improve
map information. Sharon has camping information at Haw-
keye Downs. Discussed suggestions for possible self-led field
trips. Sharon will list interests that are located away from
here but may be good stopping places for travelers. Do both
federations have raffle prizes offered? Sharon will check. Do
they have silent auctions too? Menus-banquet will be with
registration. The AFMS Cracker Barrel gathering will be com-
bined with our Pot Luck on meeting Friday. It is a meet and
greet. We will charge \$3.00 for non members. Sharon will
check with Hawkeye about beer and wine for Pot Luck meet
and greet. Details to be worked out. Speaker will be Ray
Anderson on Geodes in keeping with our theme. Estimated
about \$1500 cost to club for hosting meeting. Marv suggest-
ed that a show committee be formed. Ray and Sharon will
put one together.

Bill's Big Bus Boogie is essentially full. Maybe one opening.

Sharon suggested a stop be made in Anamosa. Bill will check
to see if possible to do that and will let people know. A fu-
ture long distance trip was proposed and discussed. Sugges-
tions welcomed

Miscellaneous

501C3 status: Do we need it? advantages? disadvantages?
process for application? Marv will look into.

Floyd the Noid is on back burner for now.

Kids programs: Ray and Bill have done a number of them this
summer. Marv asked that they keep a record of their talks.

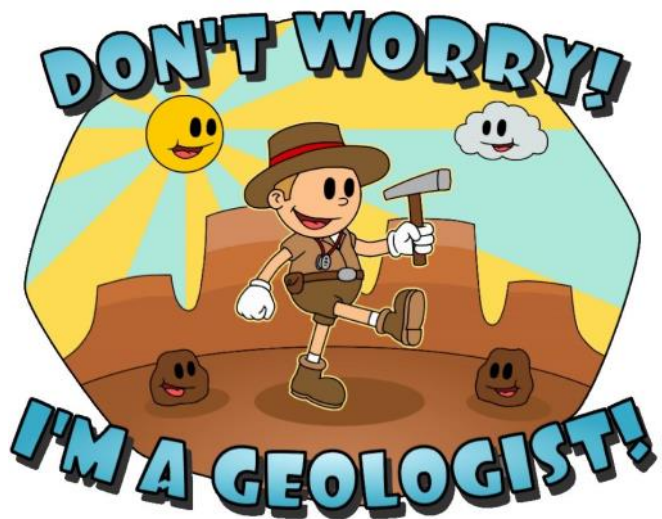
Sharon will look into awards deadlines for special publications
particularly the pamphlet that Ray put together for the Klein
Quarry.

Rick showed the various samples for banquet table favors.

Various T-shirt designs were discussed. Some samples by Dell
and Ray were reviewed. No decision made. Ray will tweak.

Motion to adjourn by Rick, second by Bill. Meeting adjourned
9:30p.m.

Respectfully submitted, Dell James, sec.



Geologists Identify the Mineralogy of Mercury



Geologists from the University of Liège have been able to determine the nature of the minerals present on the surface of the planet Mercury. Their study, published in 2017 in the journal *Nature Geoscience*, was based on experiments conducted in laboratory at extreme temperatures, to reconstitute the conditions observed during the crystallization of magmas. NASA's **Messenger spacecraft** revealed geochemical diversity across Mercury's volcanic crust. Near-infrared to ultraviolet spectra and images have provided evidence for the Fe²⁺-poor nature of *silicate minerals*, *magnesium sulfide minerals* in hollows, and a darkening component attributed to *graphite*, but existing spectral data is insufficient to build a mineralogical map for the planet. The geologists investigated the mineralogical variability of silicates in Mercury's crust using crystallization experiments on magmas with compositions and under the reducing conditions expected for Mercury. They found a common crystallization sequence consisting of *olivine*, *plagioclase*, *pyroxenes* and *tridymite* for all magmas tested. Depending on the cooling rate, they suggest that lavas on Mercury are either fully crystallized or made of a glassy matrix with phenocrysts. Combining the experimental results with geochemical mapping, they identified several mineralogical provinces: the **Northern Volcanic Plains and Smooth Plains**, dominated by *plagioclase*, the **High-Mg** province, strongly dominated by *forsterite*, and the **Intermediate Plains**, comprised of *forsterite*, *plagioclase* and *enstatite*. This implies a temporal evolution of the mineralogy from the oldest lavas, dominated by mafic minerals, to the youngest lavas, dominated by plagioclase, consistent with progressive shallowing and decreasing degree of mantle melting over time.

<https://www.nature.com/articles/ngeo2860>

Spotlight Gemstones: Tourmaline / Opal

November's Birth Stones

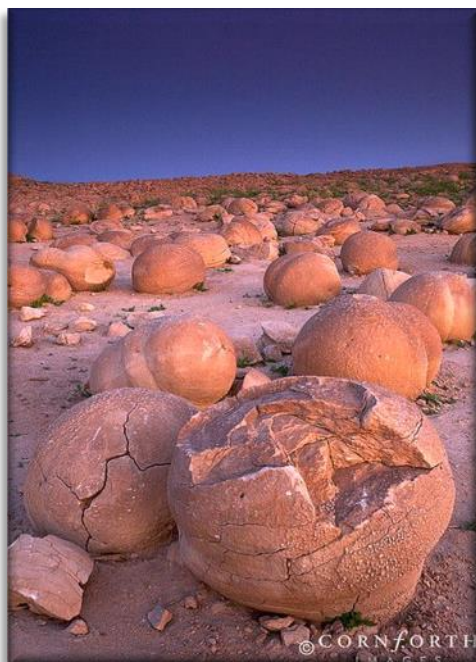


If you were born in November you may choose from 2 birthstones, tourmaline or opal.

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 white 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?

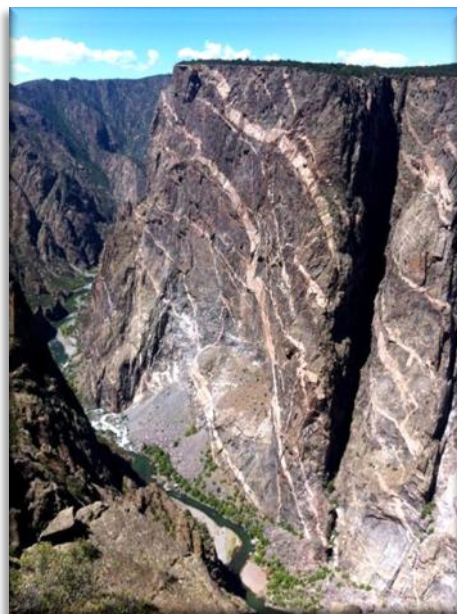


What in the World are these pumpkin-looking geologic features and where are they??

September's **What in the World?** was Painted Wall in the Black Canyon of the Gunnison National Monument. It is the greatest cliff in Colorado, averaging about 2,250 feet from rim to river. Cliff is carved from gneiss interlaced with pegmatite dikes. Deep fissures to right of center are controlled by weathering along joints.

[\(click for USGS report\)](#)

September's Photo



Rock Calendar 2018 CVRMS EVENTS OF INTEREST

Oct. 16 - CVRMS Monthly Meeting
Feature Program
University of Iowa Geology Students
Hiawatha Community Center 7:15 pm

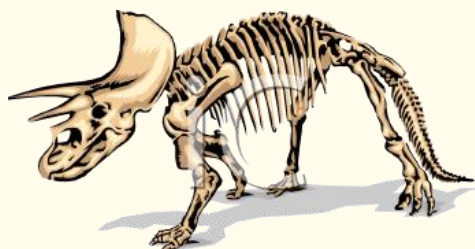
Oct. 6-7- MWF Show & Convention
In Conjunction with
Lincoln Orbit Earth Science Society Show
Springfield, IL

Oct. 7- BMC Sunday at a Quarry
"Everyone's a Miner"
Raymond Quarry
"Raymond, IA
10 am-4 pm

Nov. 4-CVRMS Fall Field Trip
Milwaukee Public Museum
Milwaukee, Wisconsin
see p. 11 for details

Nov. 20 - CVRMS Monthly Meeting
Feature Program
Phil Kerr
"Pleistocene History of Iowa"
Hiawatha Community Center 7:15 pm

Dec. 11 - CVRMS Monthly Meeting
Feature Program
"CHRISTMAS PARTY"
Hiawatha Community Center 6:30 pm



Ask a Geologist

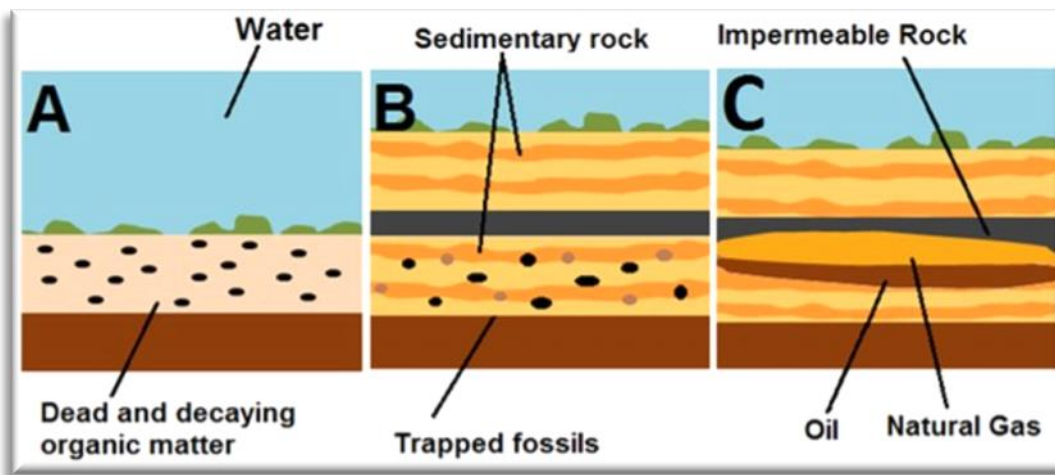
by Ray Anderson aka "Rock Doc", CVRMS Vice President

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.

A question was asked of the Quora Digest (<https://www.quora.com/>): How is it that if oil is a product of prehistoric plants and such, that it exists 8,000 feet below the surface of the Earth, while the materials (fossilized) that are supposed to have produced it are by comparison, sitting on the surface of the earth?

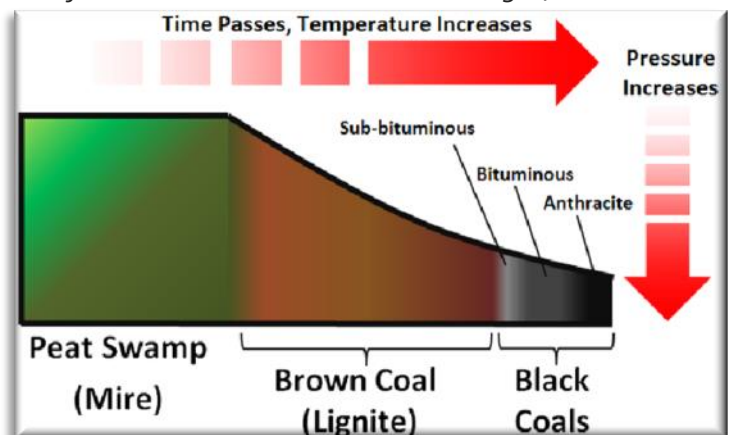
Answer: by C Stuart Hardwick, SciFi author and science nerd.

Oil and natural gas are the product of plankton (and to a much lesser extent, other sea life), the corpses of which have been raining down on the sea floor for hundreds of millions of years. Where conditions and geology cooperated, this endless rain of captured sunlight in the form of fats and carbohydrates was buried in sediments, carried deep enough to be transformed into petroleum by time, heat, and pressure, and in some cases, was then trapped and sometimes uplifted,



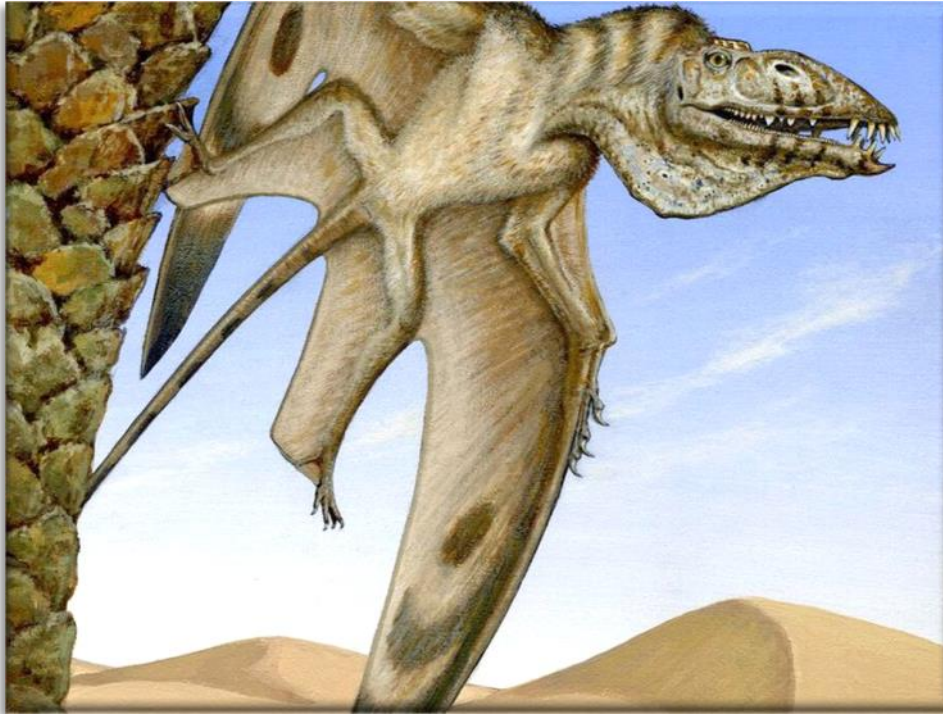
forming surface seeps and buried deposits, just waiting for the drill. 70% of oil and gas was formed in warm, shallow seas that existed from 250 million to 66 million years ago, while 20% formed at the start of the Cenozoic, about 65 million years ago. 8,000 feet doesn't seem very deep when you consider the time, the fact that it formed on

the sea bottom, and how far a tectonic plate can move in a year. There is no more recent oil because it requires millions of years to "cook" and because the conditions to produce it have not existed on a large scale more recently. There is very little any older because it gets lost to various processes, not least of which is being overheated and cooked into graphite. Most coal is older. Coal deposits formed from land plants living in swampy forests and wetlands during the creatively named Carboniferous, 290 million to 350 million years ago. Coal formed in a similar manner to oil and gas, but at the surface, where dead ferns, shrubs, vines, trees, and algae, were progressively buried while being partially consumed by several types of bacteria. Over time, thick mats of rotting vegetation formed peat (just as they still do) which was further compressed until the water was squeezed out and bacterial decay was halted. Continued compression and chemical action of time converted this carbon-rich mass into the various types of coal we mine today. Again, while the energy stored in coal was all laid down at the surface, 290 million years is long enough for strata to become deeply buried, folded, etc.



Rare Desert Pterosaur Fossil Discovered in Utah

Researchers in Utah have unearthed one of the most detailed pterosaur (aka pterodactyl) fossils found to date, a discovery that tells us the first known vertebrates to take to the skies were more diverse and widespread than previously thought. While dinosaurs ruled the land, pterosaurs ruled the heavens during the late Triassic and Jurassic periods. Unlike the dinosaurs, whose heavy bones make pretty good fossils, we don't



know much about the early evolution of the pterosaurs. Their fine bones were easily pulverized, meaning we have bits and pieces of just 30 pterosaurs dating from the Triassic, roughly 220 million years ago. The new find comes from a rock formation on public land in north-eastern Utah known as the Saints and Sinners Quarry. Hundreds of millions of years ago, it's believed the area was an oasis in a massive dune-covered desert, drawing animals from all over the place during droughts. Some such visitors were preserved as fossils after dying at the hands of predators or getting stuck in the mud as the water dried up. According to a press release, the area is so jam packed with thousands of Triassic bones researchers don't pluck them out of the rock one at a time. Instead, they remove large chunks of rock and bring them back to their lab at Brigham Young University in Provo, Utah, where they painstakingly

remove the fossils from the stone. That's what paleontologists were doing when they discovered the new pterosaur species, *Caelestiventus* (heavenly wind) *hanseni*. After chiseling out five crocodile fossils from one slab, they realized they had found something rare in the 200 to 210 million-year-old rock. They found part of the little pterosaur's face, the complete roof of the skull, the complete lower jaw and part of a wing, which they detail in the journal *Nature Ecology & Evolution*. At one site the size of a good sized living room they removed 18,000 bones, but only one pterosaur. The amount of the pterosaur recovered was unprecedented. Researchers typically find only tiny or fragmentary fossils of pterosaurs, like a finger bone or vertebrae. But the new specimen likely died in soft sand or sediment that hardened into rock, keeping the specimen intact. The pterosaur bones were so delicate they couldn't remove them completely from the rock because they would fall apart. Instead they left them encased in sandstone, getting 3-D images of the bones with a CAT-scan, which they used to make models of the fossils. The scans reveal some interesting info about the flying beast. The fossil was apparently a juvenile with a wingspan about five feet wide, likely the largest pterosaur of the era (however, in later times, pterosaurs would evolve to reach the size of small airplanes). The animal had 112 teeth and the size and shape of its brain indicates it could see well, though its sense of smell was poor. It was also reported that a bony crest on its lower jaw suggests that the animal also had a pouch similar to a pelican's, used either to make vocalizations or to carry prey. It's believed the animal probably hung around the watering hole, snapping up any smaller critters stopping by to quench their thirst. But it's the habitat the animal lived in that's most exciting for paleontologists. Other pterosaur specimens dating back to the Triassic all come from what used to be coastal areas in Greenland and Europe. The fact that the new specimen was found in what used to be a vast desert suggests that the pterosaurs were evolving earlier than previously thought and moved into specialized ecological niches. Those fragmentary bones are from the Jurassic period, meaning *Caelestiventus hanseni's* line was able to weather the Triassic-Jurassic mass extinction event when huge numbers of species went extinct. It turns out the pelican-like pterosaur was a rare genetic survivor, just like its delicate bones.

<https://www.smithsonianmag.com/smart-news/rare-desert-pterosaur-fossil-discovered-utah-180969995/>

Researchers Accidentally Kill The Oldest Animal Ever Discovered While Trying To Figure Out It's Age

Scientists discovered a shellfish that was more than 500 years old but accidentally killed it in the process of finding that out. As science advances and evolves more quickly than most of us can keep up with, it has left us wondering



what's next. Things we previously thought were unattainable are now starting to feel inevitable. Concepts that were once reserved for science fiction movies such as time travel and eternal life. When it comes to eternal life, or at the very least living longer, it really does feel as if we're getting close. Humans live much longer, on average, than they have done in the past and some scientists believe that the first person who is going to make it to 150 years old is already alive and walking around somewhere.

However, some members of the animal kingdom have a leg up on the human race. Not too long ago, scientists found the oldest animal ever discovered, a species of Icelandic clam known as an ocean quahog. It was an incredible 507-years-old. Notice the use of

the word "was." That's because, as reported by *The Independent*, the scientists at Bangor University in the UK managed to kill the creature while trying to figure out its age. On top of that, they managed to get the age wrong, something that has recently been corrected. Calculating the age of the clam is apparently very similar to how you would carry out such a process with a tree, count the rings. They form on the animal's shell and originally, scientists counted the marks on the inside.

Some of those marks were so close together that it made counting them extremely difficult. On their second attempt, the rings on the outside of the shell were counted, and the age of the clam jumped from 405 to the correct 507, meaning it was around before Henry VIII was the king of England. Even though the clam is the oldest animal to ever be discovered, it's highly unlikely that it's the oldest to have ever



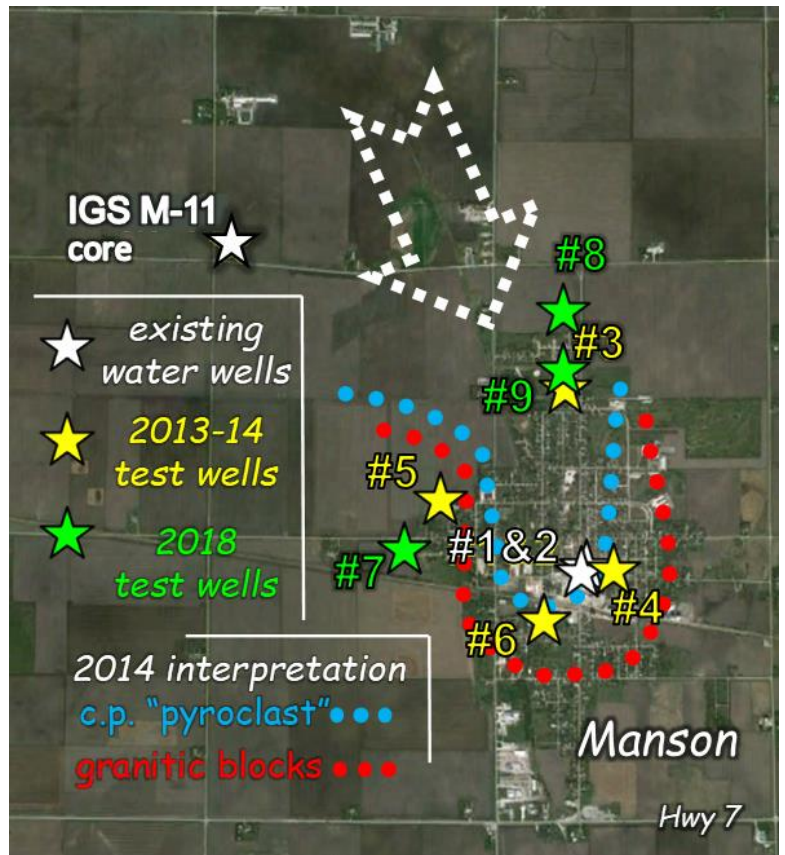
lived. Even though a great many clams were brought back from the expedition during which it was discovered, fisherman trawl those areas around Iceland all the time and have likely discarded clams that have been around even longer.

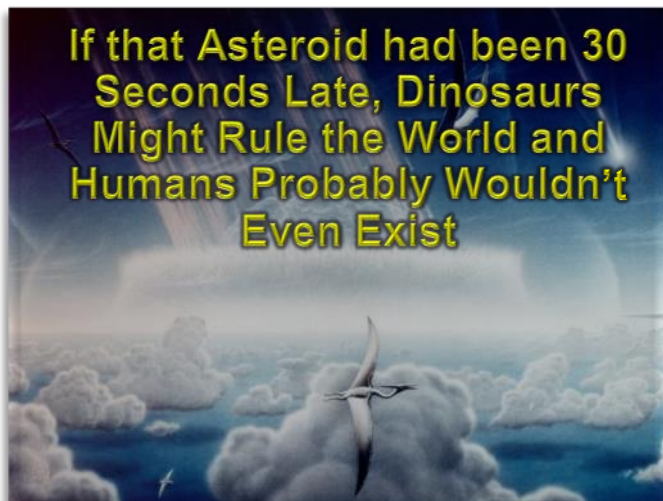
https://www.therichest.com/things/researchers-kill-oldest-animal-ever-discovered/?utm_source=quora&utm_medium=referral

What's New In Iowa Geology ??

Manson Drills 3 More Dry Wells

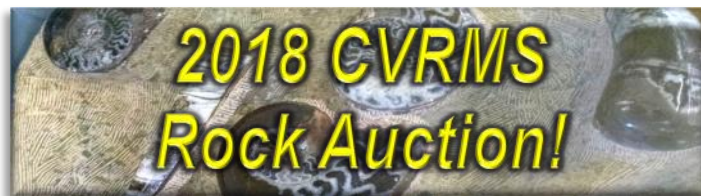
The City of Manson, in southern Pocahontas County, has been engaged in a fruitless search for an additional source of drinking water for over 15 years. Manson is located well within the Manson Impact Structure (a 74-million-year-old meteorite crater and a notoriously difficult area to find groundwater). The town was fortunate to encounter an abundant source of high-quality water at a depth of about 1,000' when its first town well was drilled in 1905. This water, while high in fluorite, is naturally soft. In 1928 a second well was drilled very near the first and it encountered the same aquifer. Recent research has determined that the aquifer encountered by the two Manson wells was a debris flow of rocks and related materials that cascaded off the crater's central peak when it formed. The porous debris flow was apparently recharged with soft rainwater about 2.5 million years ago, before the glaciers covered the region with glacial drift. Eventually the steel well casing installed during construction of the 1905 well deteriorated and a steel liner was installed. Over the years the water level in the well slowly dropped, with the pump being lowered when necessary. Although hundreds of feet of water remains in the well, the pump can be lowered no farther because the diameter of the pump is larger than the well's steel liner. Since State regulations require 2 dependable sources of water for municipalities, in the late 1990s Manson began to search for funding to drill an additional well. The first drilling attempt in 2013 (Manson #3) experienced drilling problems. It did eventually encounter the Manson aquifer but did not produce significant water. In 2013 test well #4 was drilled, only one block from the existing water wells, but it was also dry, as was a third attempt (Manson #5). A fourth well (Manson #6) was drilled in 2014 but also failed to produce water. After these expensive failed attempts the city employed a geologic consultant who produced a more-detailed gravity anomaly map of the area and interpretations to assist in identifying future water well drilling targets. This year, drillers tested 3 of these targets (Manson #7, #8, and #9) with drill holes of 1100', 1113', and 1140' respectively, none producing usable quantities of water. The aerial photo on the right shows the City of Manson and the surrounding area, the location of the 1905 and 1928 water wells (white), the test wells drilled in 2013 and 2014 (yellow), and the three wells drilled this year (green). The 2014 interpretation of the extent of the two water-bearing units (the "central peak pyroclast" and underlying "granitic blocks") are shown as blue and red dotted lines and the direction that they flowed down from the central peak shown as a white dashed arrow. The aquifer's pyroclastic upper unit was sampled in the IGS M-11 core in 1992. To date only one of the three wells drilled this year has been logged by IGS geologists, so it is not yet known if the wells encountered the aquifer unit, but they did not produce water like the two existing town wells, which have been steadily producing soft water for up to 113 years. Stay tuned to learn what the town of Manson will do next to continue to furnish potable water to the town and area.





Location is everything, for both homeowners and dinosaurs. If you are a Cretaceous period dinosaur, it's better for your long term survival to have a giant asteroid hit in the middle of the ocean instead of just off the coast of Mexico. Had that meteorite come just half a minute later, it would have hit somewhere in the Pacific. While it would have made some killer waves (literally), at least it wouldn't have killed as many dinos. These new findings came to light in a BBC documentary, *The Day the Dinosaurs Died*, featuring the scientists who have been drilling into the underwater crater. Back in 2016, geophysicists Jo Morgan from Imperial College London and Sean Gulick from the University of Texas drilled deep into the ocean floor to figure out more about the impact. They've been analyzing the samples they brought back ever since. One of the leading theories for the mass extinction of non-avian dinosaurs is that there was a massive impact event that caused a series of catastrophic events that devastated the largest flora and fauna communities. About 66 million years ago the Chicxulub crater was formed off the coast of Mexico, in a sedimentary basin with thick sequences of limestone and gypsum. The giant impact vaporized the rocks producing carbon and sulfur dioxide from the limestone and gypsum. Many dinosaurs died from the explosive force of the asteroid when it hit the Earth (the equivalent to about ten billion Hiroshima-sized nuclear bombs) but many died later, too. All dust thrown into the atmosphere along with the sulfur dioxide released would have reflected sunlight producing a rapid, worldwide cooling causing many more deaths as the world began to freeze. The lack of sunlight led to dramatic cooling of the planet, by over 15°C on a global average, 11°C over the ocean, and 28°C over land. As the dust and sulfur dioxide settled out of the atmosphere, the greenhouse effect from the carbon dioxide that remained would have raised atmospheric temperatures far beyond the already hot Cretaceous climate, effects that lasted for a thousand years or more. Our ancient mammalian ancestors survived the temperature extremes, a lineage that would someday produce humans. But the evolution of humans may not have been possible if that meteor had shown up 30 seconds later and blasted into ocean crust instead of the sedimentary basin.

from <https://www.popsi.com/dinosaur-asteroid-late?CMPID=ene090418>



Last month the CVRMS held its annual Rock Auction at the Amana RV Park & Event Center, and **again it was a great success**. Bidders paid almost \$39,000 for 1,333 lots of rocks, fossils, minerals, and equipment over the weekend of Sept 15-16. Final figures are not yet in, but the auction grossed over \$8,000 for the club, with profits going to scholarships for geology students at University of Iowa and Cornell College and funding assistance for the Grant Woods Van Allen Science Teaching Center (VAST). A final report on the Auction will be presented at the CVRMS October monthly meeting. People have already committed lots for the next year's Rock Auction, to be held on September 14-

15, 2019. Many thanks to all club members and others who worked hard for the success of this year's auction.



Utaspis Trilobite Preparation Sequence

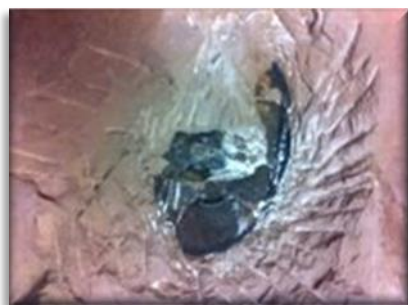


Below is an example preparation sequence of a large (2 3/4 inch) *Utaspis marjumentis* trilobite from the Marjum Formation of Utah. It was collected by Matt Heaton of FossilEra.com in the spring of 2013 from a private lease in Utah's House Range. He prepared this sequence of photos to show how much skilled work goes into a quality fossil even after it has been found.

About 7 hours in. It's possibly the most frustrating trilobite I've ever prepped. I've been ready to chuck it across the room several times. The shell is tissue paper thin, and even using dolomite at 15 PSI causes it to start to flake up. I have to stop every 30 seconds to try and stabilize it with glue. It's nerve racking as I think if I hit it at the wrong angle half the shell will just flake off and I'll lose a spectacular specimen.

12 hours of work into the *Utaspis* and it's almost fully exposed.

The two halves of the split trilobite have been glued back together and the head is partially exposed after an hour of work using air abrasives under microscope.



Completed *Utaspis* post shell restoration and matrix cleanup. This one is going in the personal collection



About 14 hours in and getting closer to completion. Just needs more matrix cleanup

<https://www.fossilera.com/pages/utaspis-trilobite-preparation-sequence>

"Bill's Big Bus Boogie" 2018 Milwaukee County Museum

The Milwaukee Museum Field Trip Bus
will leave from Cedar Valley World Travel
6100 7th St SW, Cedar Rapids
Sun. Nov. 4—6:30 a.m.—return: ~ 9:00 p.m.
monitored parking available



Almost all the seats are filled for the 2018 incarnation of "**Bill's Big Bus Boogie**," the CVMRS members' field trip to the **Milwaukee County Museum** on Sunday, **November 4, 2018**. The museum features the **Hebior Mammoth**, a fossil found less than 30 miles from the Museum on a farm in the small town of Paris in Kenosha County, that is among a group of important finds that help date the early presence of humans in North America. One popular display is "**Continents, Oceans and Life in Motion: A New View of the Third Planet**," the first museum display in North America to use plate tectonics as a central theme for the presentation of earth science to the public. The Museum's 150,000 square feet of exhibit space also includes an opportunity to visit **Africa**, stroll through the bustling **Streets of Old Milwaukee** of a century past, witness a **modern-day pow-wow**, stroll amid free-flying butterflies from around the world in the **Puelicher Butterfly Wing**, and **more!** The temporary exhibit "**Maya: Hidden Worlds Revealed**" is open, allowing visitors to rediscover this ancient civilization, view hundreds of authentic artifacts, and participate in hands-on activities such as exploring tombs or building an arch, & more. A new **Special Frog Exhibit will be Available for Our Visit!**

Brilliant orange, bright blue, dazzling red — frogs come in an astonishing array of colors! This vivid assortment of hues hints at the remarkable diversity that exists among the frog species. From lush rainforests to parched deserts, frogs survive in nearly every environment on Earth, using surprising to bizarre strategies. **Learn more about the Frog Exhibit at www.mpm.edu.**

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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:

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