Cedar Valley Gems

Cedar Valley Rocks & Minerals Society

Cedar Rapids, Iowa

cedarvalleyrockclub.org

CEDAR VALLEY GEMS **MAY 2019** **VOL. 45, ISSUE 05**

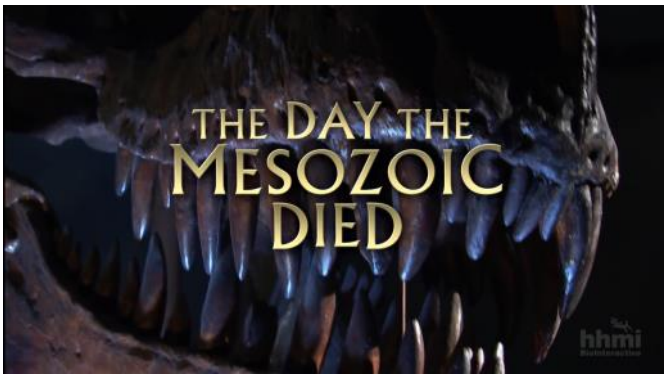
Ray Anderson, Editor: rockdoc.anderson@gmail.com

Next CVRMS Meeting Tues. May 21

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

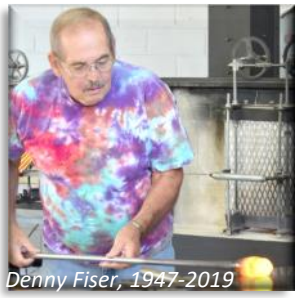
featured video

The Day the Mesozoic Died



This video tells the story of the detective work that solved the mystery of what caused the disappearance of the dinosaurs at the end of the Cretaceous period. Shot on location in Italy, Spain, Texas, Colorado, and North Dakota, it traces the uncovering of key clues that led to the discovery that an asteroid struck the Earth 66 million years ago, triggering a mass extinction of animals, plants, and microorganisms. Science practices in geology, physics, biology, chemistry and paleontology all contributed to the solution to this compelling mystery. The video runs for about a half hour, leaving time at the meeting for the auctioning of numerous fine silver and stone necklaces and earrings produced by CVRMS member Denny Fiser who recently passed away. Read more about the auction and procedures in the column to the right.

Member Denny Fiser, who passed away Mar. 23, donated 21 sterling necklaces and 1 pair of earrings that he made, with the stipulation that they go to members, with the proceeds to go to the CVRMS scholarship fund. To honor his wishes, the items will be offered for silent auction at our May 21 meeting in Hiawatha. Click the link to view the numbered items. Members who can't be there can send a max bid to Dale. He will enter bids by the minimum increment up to your maximum; i.e., if your max is $20 and the 1st bid at the meeting is $4, with a minimum increment of $.25, Dale will enter $4.25 for you. If someone outbids you, he will enter $.25 more than that bid, and so on until no one outbids you or your maximum has been reached.


Denny Fiser, 1947-2019

CVRMS Apr. 16 Meeting

Hiawatha Community Center

Order called by President Marv Houg at 7:15 pm

Introduction of new members or guests: Lee and Brenda Countryman; Rich and Marion Patterson.

Minutes of last meeting reviewed. Motion to approve by Tom Whitlatch, 2nd by Sheri Mealhouse. Minutes approved.

Treasurer's report by Dale Stout. Report of show proceeds and expenses with a current checking account balance of $17,474.66. Motion to approve report by Bill Desmarais, 2nd by Tom. Report approved.

Monthly program Ray Anderson Iowa's Underground.

Door Prize won by Lee Countryman.

Old Business:

Recap of show. Lots of compliments from various sources. From The fabulous Potluck (thanks to everyone who stepped up) to the dealers speaking highly of the show. Kudos to our junior member Timothy Dryden who entered a case and requested that it be judged by the federation judges. He was presented with an award at the awards banquet and a check for $100 from the American Federation.

Another kudo to Tiffany Adrain who was the scholarship honoree from the Midwest Federation. She received two $4000 scholarships to be distributed to two students of her choice. They in turn gave their appreciation speeches at the banquet.

Computer report: New club laptop is up and running and is performing well. Total cost $625; less than approved amount.

Auction stuff: Auction is full to the brim. Marv is already taking names for 2020 auction. Marv reminded everyone to spread the word that it is open to the public.

New business

Motion made by Jay Vavra, second by AJ Johnson that we conduct a show in 2020. Motion approved The club will sponsor a show March 21 and 22, 2020. Recommendation from the board is that ***meteorites*** be the theme for the 2020 show. 2nd by Lisa Blunt. Motion approved.

Summer picnics. Discussion regarding whether lapidary should be the activity for the June picnic. General discussion about other possible activities. Consensus was that last year was not successful since there was no organization or equipment. There will be lapidary at the June picnic. Members encouraged to bring a rock to polish or cut. Also, club members who have portable equipment were asked to bring it

Denny Fiser donated to the club a number of his creations, silver and stone, with a request that they be auctioned to club members. They are listed with pictures on the club's website. Absentee bid may be made by contacting Dale and giving him the maximum amount that you would be willing to give.

Field Trip: Bill is organizing another bus trip to the Henry Dorley Zoo in Omaha on October 6, Sunday. The bus will leave about 6:00 a.m. and return about 9 p.m. More information for the curious at **www.Omahazoo.com.**

Adjournment: Motion to adjourn by AJ 2nd by Tom. Meeting adjourned 9:15 p.m.

Respectfully submitted, *Dell James*, Secretary

CVRMS Board Minutes Apr 30

Called to Order at 7:22 at the home of Marv Houg

Members present Rick Austin, Marv Houg, Dale Stout, Ray Anderson, Bill Desmarais, Sharon Sonnleitner, Jay Vavra

Rock Show follow-up: Discussion of scholarship amounts based on ~90% of Show profits, and based on By-Law guidance, U of IA=$4900, Cornell=$3500, VAST=$2000. Ray moved to present these numbers for Membership approval. The discussion led to the acknowledgement that the Club By-Laws should be updated; Marv appointed Sharon, Bill, Jay, and Rick to a committee for the review. Dale stated that all Show bills have been paid. It was noted that Frontier Fossils and Phil Oliver would not be dealers at next year's show. Marv will prepare a list of dealers interested in filling the spots, and they will be discussed at the next board meeting.

September Auction: A list of consignors and lots was discussed. We have all the lots that we can handle in 2 days. Jay said that about ½ the contracts have been received. Future auction dates thru 2021 are on Club's website. Sharon will handle lunch and dinner as last year. We will charge a sales tax on all purchases (except to those with tax permits) - Sharon will include notice on auction flyer.

TAKO Rockin' Rocks: Board members signed up to help at Klein Quarry on May 18; Dale will send email to solicit other club volunteers. We will use existing handouts and Marv will bring show-and-tell rocks. Arrive about 8:30 am, program from 9:00 to noon. Club volunteers will be allowed to stay and collect until about 4:00. Sharon will put last year's TAKO quarry handout on our web page.

Oct 6 Bus Trip to Omaha: Bill said we have 19 of 56 seats filled for the bus trip to the Henry Doorly Zoo and Aquarium, he thinks it will fill. We leave at 6:00 am; we can make a Des Moines pickup if necessary; contact Bill if you want to be picked up in Des Moines. The club is providing the bus, which if full costs $40.71/seat.

Summer Picnics: Marv booked Ellis Overlook Shelter (June). Dale will book Squaw Creek (July) and Morgan Creek (August).

Other Items: (1) Auction of Dennis Fiser Jewelry at May club meeting will begin with a $5:00 minimum bid. (2) The club will compile and post on our web site a list of all the presentations by club members. Marv created a form for recording these presentations. (3) After a discussion it was decided that the Club would update our First Aid kit for field trips and other activities.

Motion to adjourn by Ray, second by Bill.

9:25p.m. meeting adjourned

Respectfully submitted
Ray Anderson, Very Acting Secretary

Four Legged Whale Ancestors Discovered - An Evolutionary Link Between Land And Sea

Whales belong in the ocean, right? That may be true today, but cetaceans (whales, dolphins, porpoises) actually descended from four legged mammals that once lived on land. New research published in ***Current Biology*** reports the discovery in Peru of an entirely new species of ancestral whale that straddled land and sea, providing insight into the weird evolutionary journey of our mammalian friends. Whales originated more than 50 million years ago from artiodactyls – land-dwelling, hooved mammals. Initially, whales' ancestors resembled small deer, with four toes, each one ending in a small hoof. One particular fossilized "missing link" found in India suggests that the last whale precursors took to the water in times of danger but came onto land to give birth and eat. They would spend considerable time wading in shallow water, foraging for aquatic vegetation and invertebrates, and eventually small fish and amphibians. The oldest prehistoric whale fossils date from 53 million years ago, and were found at sites in the northern Indian Himalayas, and present-day Pakistan. The fossil record tells the story of a gradual transition from wading to living most of the time in deeper water, like otters or beavers, while retaining the ability to walk on land. Around 42 million years ago, and still land-worthy, the newly discovered *Peregocetus pacificus* set off on an epic journey to the other side of the world. In the Middle Eocene era (roughly 48 to 38 million years ago), Africa and South America were half as far apart, but that is still an impressive swim for an animal less than three meters long that was not completely adapted to marine life. The hind limbs of 42.6 million-year-old *P. pacificus* were not much shorter than its front legs, and it had tiny hooves on each toe and finger, suggesting that it was still quite capable of hoisting itself out of the water and trotting about on land. However, other features of the skeleton suggest that it was well adapted to an aquatic life. For example, its hind feet bones had ridges to which ligaments and tendons would attach, suggesting it had webbed feet. Its beaver-like tail bones bear signs that its tail was used as a powerful aid to swimming, though there is no evidence as to whether or not it had a tail fluke like today's whales. *P. pacificus* was carnivorous, as its sharp, scissor-like teeth demonstrate. It likely ate large bony fish, as many whales do today. *P. pacificus*, however, has teeth that resemble those of modern carnivores, with canines, pre-molars and molars that have complex cusps. Today's exclusively aquatic cetaceans all have a row of many, simple, peg like teeth, and they don't chew their prey, instead just grab and swallow it whole. https://www.sciencealert.com/four-legged-whale-ancestors-discovered-their-evolutionary-link-between-land-and-sea

Artistic reconstruction of newly discovered *Peregocetus pacificus*.
(Alberto Gennari/Cell Press)

Spotlight Gemstone: Emeralds

May's birthstone, the emerald, is one of the most regal of all, one which denotes life and love. It is also one of the most valuable (the very highest quality emeralds can be more expensive than diamonds). Emeralds are the deep green variety of the mineral beryl [$Be_3Al_2(Si_6O_{18})$], colored by the element chromium. Emeralds are very hard, 7.5-8 on the Mohs scale. The best emeralds are found in South America, having been cherished by the Inca and Aztec peoples, who regarded emerald as a holy gemstone. In contrast, *"Cleopatra's Mines"* in Egypt had already been exhausted by the ancient Egyptians, so that when they were rediscovered in the 19th century, there was simply nothing left! These are only a few of the cultures which treasured this gemstone. In Roman times, emerald was associated with Venus, goddess of beauty and love. Its pigment was so venerated that Pliny remarked that green *"gladdened the eye without tiring it!"* It is also valued in the Catholic Church, green being considered the most elemental and natural of the colors used in their worship. The Vedas, Hinduism's oldest scriptures, acknowledge the healing powers of emeralds, promoting well-being as well as good fortune. Emeralds are also highly prized in Islam - green was the Prophet Muhammed's favorite color, and all dwellers of paradise are said to be dressed in green. In the 1960s, the

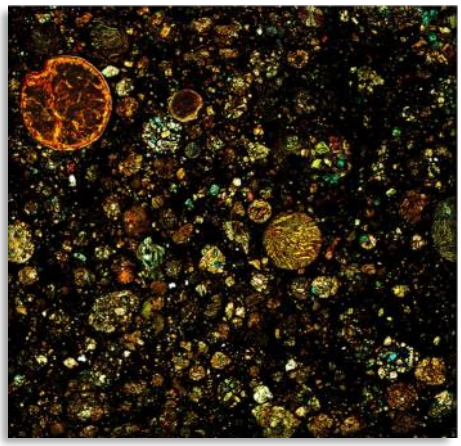
The world's largest uncut emerald

American jewelry industry changed the definition of "emerald" to include the green vanadium-bearing beryl as emerald. As a result, *vanadium emeralds*, purchased as emeralds in the United States, are not recognized as such in the UK and Europe. In America, the distinction between traditional emeralds and the new vanadium kind is often referred to as "*Colombian Emerald.*"

What in the World?

What in the World is this organic gemstone??
Some say it's the ***most valuable gemstone***!!

April's Photo



April's "What in the World" photo was a microscope image of a thin section from chondrite meteorite **NWA4637**. Chondrites constitute more than 80 percent of the meteorites observed to fall to Earth. They derive their name from the chondrules that virtually all of them contain. Chondrules are tiny beads of melted material, often smaller than a rice grain, that actually formed before asteroids developed early in our solar system's history. This is a **type-3, L-group ordinary chondrite**. The chondrules are well defined and display a variety of textures and have experienced very little metamorphic heating. Chondrite thin sections examined under a microscope are beautiful to behold. Seeing them close up is like discovering a striking new galaxy. This image was the **Earth Science Picture of the Day** on February 5.

Rock Calendar
CVRMS EVENTS OF INTEREST

2019

May 05—CVRMS field trip to Klein Quarry.
River Products' Klein Quarry
Coralville, Iowa
See information on Page 8

May 18—TAKO "Rockin' Rocks & Fossils"
River Products' Kline Quarry
Coralville, Iowa
https://takeakidoutdoors.org/events/rockin-rocks-fossils/?eID=94

May. 21 - CVRMS Monthly Meeting
Feature video
"The Day the Mesozoic Died"
followed by Auction of Dennis Fiser Jewelry
Hiawatha Community Center 7:15 pm
See information on Page 1

June. 18 - CVRMS Pot Luck Picnic
Ellis Park Overlook Shelter
"Lapidary—rock cutting and polishing"
we eat at 6:30 pm

Sept. 21-22—CVRMS Rock Auction
Amana RV Park and Event Center
Amana, Iowa
http://www.cedarvalleyrockclub.org/auction.htm

Sept. 27-29 - Geode Fest and Rock Show
Chaney Creek Boat Access
Illinois Highway 96 N
Hamilton, Illinois
http://www.keokukiowatourism.org/

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.

Jay Vavra wondered, *"I know the **Law of Superposition** (*a given rock unit is younger than the one it rests on*) is a principle of geology, but what did people believe before that??"*

Rock Doc replied: *"**The Law of Superposition** may seem pretty obvious, but it was formally proposed in the 17th century by Nicolaus Steno, a Danish priest who served as the bishop of north Germany and Scandinavia. Steno was a "Renaissance man" who travelled extensively in Europe and worked with a number of notable scientists and thinkers of the time including the likes of Galileo. His enquiring mind and observational skills led him to improve the understanding of human anatomy and medicine, but his fascination with the world around him led him to make some extremely important insights into the age and formation of the Earth. His published accounts of how layers of rock (strata) are formed, challenged much of the established view on the formation of the Earth and life upon it. Until Steno and his contemporaries, the idea that the Earth was extremely old and that fossils represented once living organisms was not accepted. The Biblical view of life and the formation of the Earth dominated, a viewpoint that 200 years later led to Darwin's delay in the publishing of his theory on evolution and still holds sway with many people today. Those people believe that "in the beginning God created the heaven and the earth. And the earth was without form, and void." On the first day of creation "God said, 'Let there be light', and the light he called Day and the darkness Night." On the second day he created the sky and the seas and on the third the land and plants. On day four God created the Sun, Moon, and stars, on day five sea creatures and birds, and on the sixth day animals and Man. In his '**Dissertationis prodromus**' in 1669, Steno is credited with four of the defining principles of the science of stratigraphy.*

Nicolaus Steno
1638-1686

1. The law of superposition states that in an undeformed stratigraphic sequence, the oldest strata will be at the bottom of the sequence."

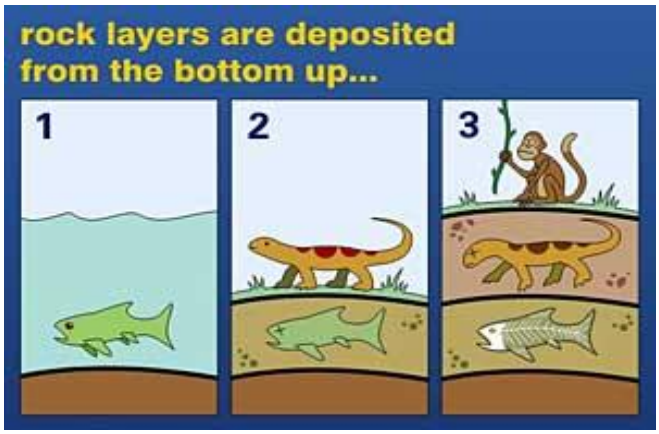
2. The principle of original horizontality states that layers of sediment are originally deposited horizontally under the action of gravity."

3. The principle of lateral continuity states that "layers of sediment initially extend laterally in all directions; in other words, they are laterally continuous."

4. The principle of cross-cutting relationships states that "a geologic feature which cuts another is the younger of the two features."

Because of these observations, Nicolaus Steno is considered one of the founding fathers of modern geology. Although there are rare exceptions to each, these principles form the basis of modern understanding of the vast majority of geologic strata. Science has identified a host of evidence that the biblical account, as stated, is not an accurate record of how these geologic strata formed. Faith is not science, regardless of one's beliefs.

The Law of Superposition



There are a lot of different ways to look at our planet's warming climate – such as more extreme weather events, increasing levels of vegetation in the Arctic, and even shifting seasons. Now we just got a new metric showing the severity of the situation. A group of scientists has came together to discuss what we can learn about the environment by peering back into Earth's history. Looking back to the last time Earth's atmosphere had this much carbon dioxide in it, the scene is rather dramatic: there were trees growing at the South Pole, sea levels were up to 66 feet higher, and global temperatures were 5-6°F above what they are today. That paints a worrying picture about how much CO^2 we've got in our air, and how our world might continue to change as temperatures go up. Researcher Jane Francis, from the British Antarctic Survey, based her analysis on a finding of plant fossils and sedimentary records dating from the Pliocene epoch, between 5.3 million and 2.6 million years ago. She and her colleagues found fossil leaves of southern beech. They were growing in an atmosphere with 400 ppm [parts-per-million] CO^2. Last year the carbon dioxide in our atmosphere reached 410 ppm, thought to be the highest level in the last 800,000 years. As we continue to burn fossil fuels, the carbon dioxide levels continue to rise. So far we haven't seen the high sea level and temperature of the Pliocene, or any vegetation at the South Pole, but both are rising at a geologically rapid pace, and it looks like they will reach those past levels. "*If you put your oven on at home and set it to 400°F, the temperature doesn't get to that level immediately,*" said Martin Siegert from Imperial College. "*It takes a bit of time. And it's the same with Earth's climate. If you ratchet up the level of CO^2 at 400 ppm, it won't suddenly get to an equilibrium overnight. It will take maybe 300 years or so.*" Indications are that when these South Pole forests were growing, there were no ice sheets in Greenland or west Antarctica. Summertime temperatures in Antarctica would have been around 41° F, compared with the 5° to -4° F they are today. While some aspects of the changing climate are now inevitable, recent studies have shown that there could still be a chance to limit this CO^2/temperature rise, although the window is closing fast. And scientists are staring down the barrel of this new climate reality, as emphasized by palaeoclimate scientist Alan Haywood. "*After studying the Pliocene for 21 years, and all things being equal in the decades ahead, I will experience first hand a climate state that has not existed for more than three million years*," he said. https://www.sciencealert.com/there-were-trees-at-the-south-pole-the-last-time-there-was-this-much-co2-in-the-air

According to Argentinian paleontologist Ricardo Martinez, of the University of San Juan, the fossils are approximately 220 million years old, belonging to "*an era of which we know little.*"

There are almost ten different individuals, it's a mass of bones, there's practically no sediment, said Argentinian paleontologist Ricardo Martinez. (Representational image: Reuters)

A site containing the 220-million-year-old fossilized remains of nearly a dozen dinosaurs has been discovered in western Argentina, researchers said in late April. "*There are almost ten different individuals, it's a mass of bones, there's practically no sediment*," said Argentinian paleontologist Ricardo Martinez. "*It's very impressive*." According to Martinez, of the University of San Juan, the fossils are approximately 220 million years old, from a time near the end of the Triassic Period, "*an era of which we know little,*" he said. "*This discovery is doubly important because there are at least seven or eight individuals of dicynodonts, the ancestors of mammals, the size of an ox*." He said there were also remains of archosaurs (reptiles that could be the ancestors of great crocodiles "*that we do not know about yet*"). The find was discovered in September of last year in San Juan province, about 680 miles west of Buenos Aires. The site is between one and two yards in diameter and about the same depth, leading scientists to speculate it was a former drinking hole at a time of great drought, and that the creatures died of weakness at the spot. Argentina has been a rich source of fossils from the Triassic, Jurassic and Cretaceous eras over the years — most of creatures not found in the northern hemisphere.
https://www.financialexpress.com/lifestyle/science/rarest-220-million-year-old-dinosaur-fossils-unearthed-in-argentina/1552196/?utm_source=quora&utm_medium=referral

This ancient Sea Creature had 18 Tentacles that Funneled Food into its Gaping Mouth

Scientists have discovered a 518-million-year-old fossil found in South China that looks like a monster from Star Wars. They describe it in a new study. The creature, called *Daihua sanqiong*, sat on the ocean floor like a sea anemone, pulling in unsuspecting prey with 18 long tentacles. The animal could be an ancestor of comb jellies: carnivorous, predatory blobs that zigzag through the ocean. Upon first glance, this fossilized sea creature looks more like the **Sarlacc** from Star Wars' "***Return of the Jedi***" than any animal on Earth today. According to a recent study, the *Daihua sanqiong* – which lived 518 million years ago and was first discovered about a decade ago in southern China's Yunnan Province – had 18 long tentacles that branched away from its gaping maw. About the size of a half-dollar, *Daihua sanqiong*'s flower petal-like appendages were covered in large hairs called cilia that the animal likely used to bring in unsuspecting prey. According to the new study, those hairs may indicate that the sea monster is an ancestor of an equally creepy underwater denizen that still swims in the ocean today: the comb jelly. Only one other creature has been known to have large ciliary structures like the ones on *D.sanqiong, c*omb jellies. Comb jellies, "gelatinous blobs" that have no skeleton, are also called ctenophores (ctenophore is Greek for "comb bearer"), and have eight comb rows of fused cilia that swaddle their sides. The cilia undulate in synchrony to propel the animal forward through the water, sometimes reflecting sunlight to give the rows a rainbow-like appearance. The cilia reach up to ¼ inch long, the largest known cilia in any animal. The fact that today's ctenophores and the flower-like *D.sanqiong* both had long cilia is a clue that modern-day comb jellies evolved from something that sat on the sea floor with tentacles like sea anemones. In *D.sanqiong*, the cilia were large enough to fulfil different functions, they likely helped the animal move or catch its prey. They could entangle their prey with long, snaking tentacles, and modern comb jellies are even known to swallow members of their own species. Comb jellies' place on the tree of life is often disputed among scientists but most believe that they were among the first animals to evolve on the planet. Their similarities to *Daihua sanqiong* argue that modern comb jellies may have come from a long, strange line of ocean dwellers. Modern comb jellys are found in every ocean environment around the globe. Researchers believe that the likeliest explanation of how the sedentary *D.sanqiong* with a skeleton evolved into a free-swimming bone-less jelly is that hundreds of millions of years ago tentacles evolved into comb rows and its mouth ballooned outward to become the main body sphere seen in comb jellies today. The study's authors believe that their findings are strong evidence that comb jellies are related to corals, sea anemones, and jellyfish. They concluded that *D.sanqiong*'s ancient tentacles are the same tentacles that you see on corals and sea anemones today.

The Sarlacc from Star Wars' "*Return of the Jedi*" .

A fossil specimen of *Daihua sanqiong*, which some scientists think is an ancestor of the comb jelly.

Modern cone jellies range in size from a fraction of an inch to almost 5 feet in length

An artists' reconstruction of Daihua sanqiong's environment 500 million years ago

https://www.businessinsider.com.au/ancient-sea-creature-18-tentacles-comb-jelly-ancestor-2019-3?r=US&IR=T

Here's Why Deadly Pyroclastic Flows From Volcanoes Travel So Sickeningly Fast

It wasn't ash that killed the victims of volcano Vesuvius in Pompeii and Herculaneum in 79 CE. It wasn't lava. It was something called pyroclastic flows - extremely hot clouds of volcanic gas and debris that can move at insane speeds. Pyroclastic flow speeds are so intense, they seem to defy the laws of physics, given the high static friction of volcanic particles. Now volcanic researchers have figured out how it works - those hot currents generate a layer of air at their base, over which they glide almost without friction. "*Here we show, through large-scale experiments and numerical multiphase modelling, that pyroclastic density currents generate their own air lubrication,*" the researchers explained in their paper. "*This forms a near-frictionless basal region*." Given how deadly pyroclastic flows can be moving up to 450 mph at temperatures up to 2,000°F; studying them isn't exactly simple. Direct observations are out of the question, and their size and speed, seen in the below video, makes scaling them for a laboratory setting difficult. But volcanologists are clever people, and a team worked out how to simulate pyroclastic flows in a laboratory at Massey University in New Zealand using a large-scale experimental setup. They mined volcanic particles from the Taupo eruption in 232 CE, heated them up to as high as 300°F, and sent them barreling down a 40-foot chute, 2,200 to 2,870 pounds per experiment. This chute was equipped with sensors, including high-speed cameras, to observe the dynamics at play in the flow. As it turned out, within the flow there were extremely high shear rates - the rate at which layers in a fluid flow past each other. When shear increases, so does air pressure; and when shear rates are at their highest, that pressure produces a cushion of air just above the ground, pushing particles away from each other, with denser volcanic dust layers sliding over the top of it. "*Once it is established, and this happens in just a few milliseconds*," Gert Lube of Massey University told *The Guardian*, "*this air film lubricates the pyroclastic flow somewhat in the same way as gas streaming through little holes in an air-hockey table lubricates the hockey puck*." The team then took this information and ran it through computer simulations at varying speeds and heights, including scales seen in real volcanic eruptions. They determined that basal air lubrication is "*probable*" in natural pyroclastic flows over most of the distance they travel, no matter the terrain. It's a discovery that could aid in hazard assessment and mitigation by allowing more accurate calculations of pyroclastic flow speeds and runout distances. And it might not just be applicable to volcanic flows. "*Discovery of the air-lubrication mechanism opens a new perspective on the known extreme runout potential of these lethal currents*," the researchers wrote in their paper. "*The efficiency of air lubrication in our comparably slow experimental flows suggests that it must be present in other types of long runout mass flows, including snow avalanches and fast-flowing landslides.*"
https://www.sciencealert.com/here-s-why-pyroclastic-flows-from-volcanoes-travel-so-sickeningly-fast

CVRMS Field Trip to Klein Quarry on May 5

The CVRMS is sponsoring a field trip to collect at the Klein Quarry on May 5. Meet at the main entrance to Klein at 8:45 am to sign in and get safety instructions. Enter the quarry at 9:00 am. This is a lock-in quarry; that is, the gate is locked behind us and no one can enter or leave (except in an emergency) until noon, when a group will be let out. Others can come in at that time if they are waiting at the gate. Everyone will leave at about 4:00 pm. ***There is a limit on the number of attendees. Please contact Marv Houg ASAP if you plan on attending:***
M_houg@yahoo.com

Field Trip Rules & Requirements are strictly enforced.

To participate in the field trip you must be a member of the Cedar Valley Rock and Mineral Society and sign a waiver. Also we are going to be enforcing strict safety requirements such as everyone must have a hard hat on, a bright safety vest, and hard shoes (steel toed is preferred). No open toed sandals or tennis shoes will be allowed. Also long pants will be required, no shorts will be allowed. Some type of safety glasses and gloves are recommended. NO EXCEPTIONS TO THESE RULES

NOTE: If you do not have the safety equipment - you DO NOT go in. All safety equipment to be worn at all times while in the quarry! New quarry rules - no one under 12 years of age. Please stay away from the walls at all times as loose rocks and boulders do fall and walls spontaneously collapse. This is a "***hard-rock***" working quarry. All field trippers must have the appropriate safety equipment. All children should be closely supervised.

To save time, if you have not filled out the CVRMS Waiver form yet this year and are going to participate, please go to the website (www.cedarvalleyrockclub.org), print off the form and fill it out in advance, and bring it with you.

Possible finds include: millerite, coral heads, horn corals, brachiopods, bryozoans, trilobites, crinoids and maybe cephalopods, fish parts, and blastoids. Useful tools include: rock hammers, cold chisels, sledges and pry bars. Bring your own water and lunch.

Booklet on Klein Quarry see TAKO at Klein Quarry-https://www.cedarvalleyrockclub.org/index.html.

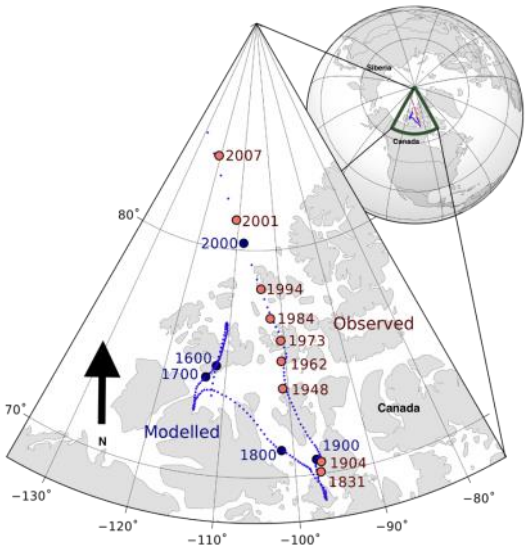
Where is the Klein Quarry.

Travel to I-80 in Iowa City/Coralville. The quarry is just south of I-80 at the Coral Ridge Mall exit. turn south at the mall entrance till you get to Highway 6 (the south edge of the mall) and turn west toward Tiffin then turn left (south) Deer Creek Road. If you go under the Interstate, you have gone too far. Take Deer Creek Road (340th Street) to the south past the intersection with 340th Street and continue south then follow the signs.

Contact Marv with any questions: m_houg@yahoo.com.

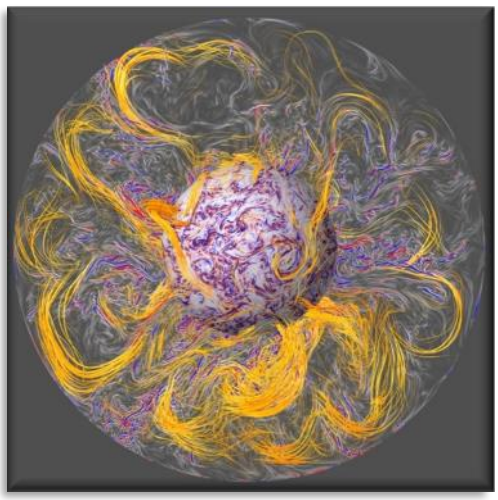
Earth's North Magnetic Pole Is Moving Fast, And We Might Finally Know Why

In the Hollywood blockbuster *The Core*, the planet's core suddenly stops rotating, causing Earth's magnetic field to collapse. Then bursts of deadly microwaves cook the Colosseum and melt the Golden Gate Bridge. While "nearly everything in the movie is wrong," according to Justin Revenaugh, a seismologist from the University of Minnesota, it is true that Earth's magnetic field shields the planet from deadly and destructive solar radiation. Without it, solar winds could strip Earth of its oceans and atmosphere. But the planet's magnetic field isn't static. The Earth's north magnetic pole (which is not the same as geographic north) has led scientists on something of a goose chase over the past century. Each year, it moves north by an average of about 30 miles. That movement makes the World Magnetic Model (which tracks the field and informs compasses, smartphone GPS, and navigation systems on planes and ships) inaccurate. Since the next planned update of the WMM wasn't until 2020, the US military requested an unprecedented early update to account for magnetic north's accelerated gambol. Now authors of a new study have gained insight into why magnetic north might be moving – and are learning how to predict these shifts.



Tracking movement in the Earth's core

Earth's magnetic field exists thanks to swirling liquid nickel and iron in the planet's outer core some 1,800 miles beneath the surface. Anchored by the north and south magnetic poles (which tend to shift around and even reverse every million years or so), the field waxes and wanes in strength, in response to what's going on in the core. Periodic and sometimes random changes in the distribution of that turbulent liquid metal can cause idiosyncrasies in the magnetic field. If you imagine the magnetic field as a series of rubber bands that thread through the magnetic poles and the Earth's core, then changes in the core essentially tug on different rubber bands in various places. Those geomagnetic tugs influence the north magnetic pole's migration and can even cause it to veer wildly from its position. So far, predicting these magnetic-field shifts has been a challenge. But in the new study, the geophysicists Julien Aubert and Christopher Finlay attempted to simulate the physical conditions of Earth's core by having supercomputers crunch 4 million hours' worth of calculations. The researchers knew that the movement of heat from the planet's interior outward could influence the magnetic field. In general, this happens at about 6 miles per year. But they found that sometimes there are pockets of liquid iron in the core that happen to be much warmer and lighter than the surrounding fluid. If the difference between these hot, less dense bits of fluid and their colder, denser counterparts is great enough, the warm liquid can rise very quickly. That rapid motion then triggers magnetic waves that careen toward the core's surface, causing geomagnetic jerks. "*Think about these waves like vibrating strings of a musical instrument,*" Aubert said.



Earth's core, as represented by a computer simulation. (Aubert et al./IPGP/CNRS Photo library)

Magnetic north is important for navigational models

Keeping tabs on magnetic north is imperative for European and American militaries because their navigation systems rely on the WMM. So too do commercial airlines and smartphone GPS apps, to help pilots and users pinpoint their locations and navigate accordingly. That's why the British Geological Survey and the National Oceanic and Atmospheric Administration update the WMM every five years. The early update requested by the US military was completed February 4. But even with these periodic updates, geomagnetic jerks make it tough to keep the model accurate, Aubert said. His group's new model could address that problem by helping to predict how Earth's magnetic field might evolve. "*Within the next few years, we envision that it should indeed be possible for our groups … to capture past jerks and predict the future ones with improved accuracy*," Aubert said.

https://www.sciencealert.com/we-might-finally-understand-why-earth-s-magnetic-field-regularly-jerks

Cedar Valley Rocks & Minerals Society will hold its **2019 consignment Auction** on **September 21st - 22nd** in the Morton Building at the Amana RV Park, Amana, IA. The auction assists collectors or families of collectors dispose of their collections. Knowledgeable club members act as auctioneers. Auctions typically attract about 100 bidders and about 1200 lots will be auctioned.

Viewing is **Friday night Sept. 20 from 5:00 - 7:30 pm** , **Saturday morning Sept 21** from **7:30 - 9:00 am.** and **Sunday morning Sept 22** from **8:00 - 9:00 am**. The **Saturday Auction** runs from **9:00 a.m. to about 8:00 pm**, with **hot food available during the day** and a **dinner offered from 5:30 - 6:00 pm**. The **Sunday Auction** runs from **9:00 am to about 3:30 pm,** again with **hot food available**.

Cash, credit card (with small service fee) or good checks are accepted for payment. If you can't stay for those special lots you want, you can leave a maximum bid, and a club member will bid for you up to your maximum.

State sales tax of 7% will be added to all items. Bidders who provide Iowa tax permits are exempt.

Motel rooms are available in Amana, but they are sometimes sold out. Motels are also available in Little Amana (15 minutes away), Cedar Rapids & Iowa City (each about 25 minutes away).

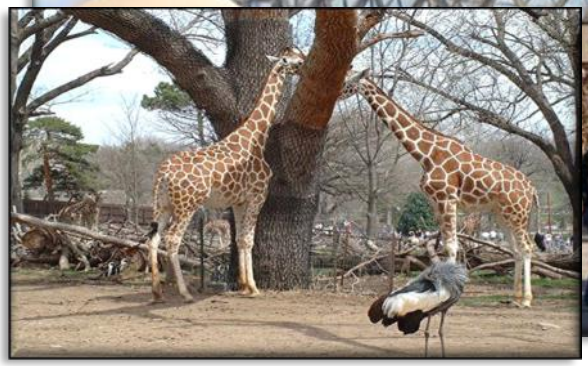
Since each sale has several consigners, the sale rotates among the consigners. All lots are numbered, and an order of sale is available at viewing on Saturday morning. **Equipment sales** begins at **2:00 pm on Saturday**.

If you have a collection to dispose of, please contact **Marv Houg** or **Sharon Sonnleitner** (*see contact information on page 12*). The club does all the advertising and sets up the Friday before the auction. A 25% commission is charged for non-members, and 20% is charged for members or families of members who have belonged to the club for at least 2 years.

Profits from the auction provide scholarships for University of Iowa and Cornell College geoscience students and to assist VAST (the Grant Wood AEA Van Allen Science Teaching Center).

"Bill's Big Bus Boogie" 2019

Omaha's Henry Doorly Zoo and Aquarium



The 2019 **"Bill's Big Bus Boogie"** adventure will take CVMRS members on a field trip to **Omaha's Henry Doorly Zoo and Aquarium** on **Sunday, October 6, 2019**. Consistently ranked one of the world's best zoos, Omaha's Henry Doorly Zoo and Aquarium is the ultimate interactive zoo experience and a biological park leading the nation's conservation efforts. Visit the world's largest indoor desert and nocturnal exhibits along with one of North America's largest indoor rainforests. Other world-class exhibits include the **Scott Aquarium**, **Hubbard Orangutan Forest and Gorilla Valley**, **Lozier IMAX® Theater**, **Durham's Bear Canyon**, **Berniece Grewcock Butterfly and Insect Pavilion**, and more. Explore **Kingdoms of the Night** featuring the world's largest indoor swamp, a canyon and massive caves. Experience **Skyfari**, the aerial tram that transports guests to a new view of Omaha's Henry Doorly Zoo and Aquarium. Plan your visit in advance by downloading our free mobile app - available through Apple's App Store and Google Play. The club will pay for the bus, for those whose club membership dues are paid up as of **May 1, 2019**, and they need only pay museum admission. If the bus is not full by **September 1,** the trip will be opened to the public for $25/seat. Registration for the trip is **now open,** so contact **Bill Desmarais** at **319-365-0612** or desmarais_3@msn.com if you are interested in participating. If you would like to be picked up in Des Moines, contact Bill Desmarais. Departure and arrival times and details of the trip will follow in future club meetings, newsletters, and on the club website.

Click for link to downloadable zoo map

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

2019 Officers, Directors, and Committee Chairs

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Vice President.	Ray Anderson (rockdoc.anderson@gmail.com)	337-2798
Treasurer	Dale Stout (dhstout55@aol.com)	365-7798
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Director '21	Bill Desmarais (desmarais_3@msn.com)	365-0612
Sunshine	Dolores Slade (doloresdslade@aol.com)	351-5559
Hospitality	Karen Desmarais (desmarais_3@msn.com)	365-0612
Webmaster	Sharon Sonnleitner (sonnb@aol.com)	396-4016

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

Next Meeting:
MAY 21
Hiawatha Community Center
video
"The Day the Mesozoic Died
followed by Auction of Dennis Fiser Jewelry

Ray Anderson, Editor
2155 Prairie du Chien Rd. NE
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