Cedar Valley Gems

Cedar Valley Rocks & Minerals Society
Cedar Rapids, Iowa

CEDAR VALLEY GEMS **OCTOBER 2015** **VOL. 41, ISSUE 8**

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

Next CVRMS Meeting Tues. October 20

7 pm
Rockwell Collins 35th St. Cafeteria

Featured Speaker **Dr. Brian Witzke**
"Dinosaurs of Iowa"

At our September meeting Bill Desmarais wowed us with his descriptions of digging dinosaur bones in Alberta Provincial Park. At our October 20 meeting Dr. Brian Witzke will lead us across the Cretaceous Seaway to its eastern shore to discuss the "*Dinosaurs of Iowa*". Bones fragments from 5 dinosaurs have been discovered in Iowa. What are they and what do they tell us about Iowa during the Cretaceous??

Earth's mineralogy unique in the cosmos

New research reported by Carnegie Institution predicts that Earth has **more than 1,500 undiscovered minerals** and that the exact mineral diversity of our planet is unique and could not be duplicated anywhere in the cosmos. Minerals form from novel combinations of elements. These combinations can be facilitated by both geological activity, including volcanoes, plate tectonics, and water-rock interactions, and biological activity, such as chemical reactions with oxygen and organic material. Because of the numerous physical, chemical, and biological factors that control our planet's mineral diversity, Earth's mineralogy is probably **unique in the cosmos.**

For more info see http://www.sciencedaily.com/releases/2015/08/150826113615.htm

2015 CVRMS Rock and Mineral Auction "our biggest ever"

On September 19-20 the CVRMS concluded their most successful Rock and Mineral auction in club history! The 1231 lots that were offered by 20 sellers brought in over $40,500. The club's commission from the sales, plus all the profits from material that Clarence Burns donated, added over $11,000 (minus expenses) to our coffers (some of which will go the club's scholarship fund). Over 90 bidders attended the auction at the Amana RV Park and Event Center in Amana, Iowa, to vie for a huge selection of agates, rocks, fossils, minerals, and geodes as well as rock working equipment. The auction offered collectors,

A lot of rocks under bid at the 2015 CVRMS Rock and Mineral Auction.

dealers, estates, and others an opportunity to liquidate portions of their collections while providing many lucky auction participants an opportunity to purchase a wide variety of rocks and equipment. Although this year's auction had to compete with the Denver Gem and Mineral Show, a large crowd was in attendance and the items being auctioned brought good prices. Many thanks to all of the volunteers who set up tables, chairs and lots, auctioned, moved rocks, spotted, clerked, cashiered, gave out bid cards, provided food and drink, and cleaned up afterwards and to Clarence, whose donated material brought the club over $4,000. You made this year's auction a success.

CVRMS Regular Meeting

September 15, 2015

President Marv Houg called the meeting to order at 7:10 at Rockwell cafeteria. New members Bob & Kathy Silvan and rejoining member Rick Austin were recognized. The secretary's minutes were approved as published. Treasurer Dale Stout reported a balance of $7,876.81 in checking. A motion was made by Tom Whitlatch and seconded by Dave Roush to accept the treasurer's report. Carried.

PROGRAM: The meeting broke for a program by Bill Desmarais on his summer dinosaur dig with paleontologist Phil Curry, his wife, palaeobotanist and palynologist Eva Koppelhus, and others at Provincial Park in Canada. Bill subtitled his program "A Study in Awesome." He explained that 49 dinosaur species have been discovered in a 35 square mile area – a space that is 17 miles long and 4 miles wide at the widest. 250 complete skeletons have already been taken out and 263 more are ready. As always, Bill's program was excellent.

AUCTION: Marv announced set-up would start at 8:30 Friday, September 18. Marv, Dale, Bill, Dave, Tom, AJ Johnson, and Sharon Sonnleitner plan to be there. AJ will do security.

FIELD TRIPS: 34, including about 12 Augustana students, attended the Conklin field trip. The next field trip will be a joint MAPS/CVRMS trip October 11 at Klein. A maximum of 60 are allowed, so reservations need to be made with Marv.

NEW BUSINESS: The TAKO (Take a Kid Outdoors) event, sponsored by River Products and our club is October 3 from 10-11:30, with lunch until 12. Bill, Dale, AJ¸ Ray and possibly Sharon will help. The Waterloo quarry event is October 4.

ANNOUNCEMENTS: Geodefest is September 25-27 at Hamilton, Illinois.

A motion was made by AJ and seconded by Bill to adjourn at 9:17.

Respectfully submitted,
Sharon Sonnleitner, Acting Secretary

Rock Calendar

CVRMS Events for October,2015

Oct. 3 - TAKO "Rockin' Rocks and Fossils"
River Products Co. Kline Quarry, Coralville
10 am—12 noon

Oct. 4 - Basic Materials Sunday at the Quarry
Raymond Quarry 6900 Dubuque Rd, Waterloo
10 am—4 pm (set-up at 9 am)

Oct. 11 - CVRMS/MAPS Field Trip
River Products Co. Kline Quarry, Coralville

2016

Apr. 16-17 - CVRMS Gem, Mineral, and Fossil Show
Hawkeye Downs, Cedar Rapids
Sat. 8:30 am - 6 pm; Sun. 9:30 am - 5 pm.
Theme: **Fossil Plants & Petrified Wood**

Sept. 17-18 - CVRMS Rock and Fossil Auction
Sat. 9 am - 7 pm; Sun. 10 am - 4 pm.
Amana RV Park & Event Center
39 - 38th Ave, Amana

Other Rock Hound Events

Oct. 10-11 - FAIRFIELD, IA Sac & Fox Lapidary Club Annual Show. Sat 9 am - 6 pm; Sun 9 am - 5 pm. Fairfield Arts & Conven tion Cen-ter, 200 N. Main St., Fairfield. Contact: Betty Morris, (641) 233-0366(641) 233-0366; www.sacandfoxlapidary.com

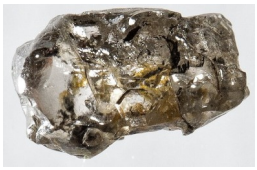
Nov. 14 - MAPS Meeting
Ronneberg Restaurant, Amana
Lunch **12:00**: meeting **1:00**: program **2:00**
Program: Ithiel Catiri—dinosaur discovery and restoration
Tour of Edelstein Treasures

2016

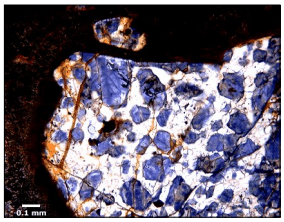
April 1-3 - MAPS Expo XXXVIII
Sharpless Auctions
Exit 249 I-80, Iowa City, Iowa
Theme: **Mesozoic Era**
Keynote Speaker: Phil Currie
NOTE: Hotel Show moved to Clarion Hotel

Ringwoodite: *one of the most important minerals in the Earth ?*

Ringwoodite (a high-pressure phase of $Mg_2SiO_{4)}$ is a "rare" mineral that forms from olivine under very high pressures and temperatures, such as those present in the transition zone in the Earth's mantle, 250—400 miles below the surface. It was first discovered in 1969 in a meteorite, the Tenham (Australia) chondrite, as veinlets of quenched shock-melt cutting the rock's matrix and replacing olivine. It was probably produced by shock metamorphism during the collision of asteroids in space. In March, a research group discovered hydrous ringwoodite encased in an unusual 100 million year-old diamond from Brazil. The water trapped in the mineral's structure (about 1.5% by weight) doesn't seem a lot, however it is believed that ringwoodite is the most abundant mineral phase in the lower part of Earth's transition zone.



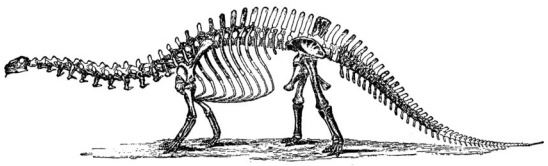
Diamond in which the ringwoodite was discovered



Taiban Chondrite with crystals of ringwoodite

Though the find suggests that the mantle transition zone that the diamond came from could contain a lot of water, it was the first and only ringwoodite specimen from the mantle scientists have ever analyzed. Ringwoodite synthesized in the lab at conditions appropriate for the transition zone has been found to contain up to 2.6 weight percent water. Prof Joseph Smyth of the University of Colorado has spent many years studying ringwoodite and similar minerals synthesised in his laboratory. He said: "***I think it's stunning! It implies that the (Earth's) interior may store several times the amount of water in the oceans. It tells us that hydrogen is an essential ingredient in the Earth and not added late from comets."***

To see if the transition zone really is a deep reservoir for water, researchers conducted experiments on water-rich ringwoodite, analyzed seismic waves traveling through the mantle beneath the United States, and studied numerical models. They discovered that downward-flowing mantle material is melting as it crosses the boundary between the transition zone and the lower mantle layer. Northwestern University geophysicist Steve Jacobsen and University of New Mexico seismologist Brandon Schmandt have found deep pockets of magma around 400 miles beneath North America — a strong indicator of the presence of H_2O stored in the crystal structure of high-pressure minerals at these depths. Their study combined Schmandt's analysis of seismic data from the Earthscope USArray, a network of over 2,000 seismometers across the U.S., with Jacobsen's laboratory experiments, in which he examined the behavior of mantle rock under conditions designed to simulate the high pressures and temperatures present at 400 miles below the Earth's surface. ***"I think we are finally seeing evidence for a whole-Earth water cycle, which may help explain the vast amount of liquid water on the surface of our habitable planet. Scientists have been looking for this missing deep water for decades,"*** says Jacobsen



CVRMS Board Meeting

September 29, 2015
Present: Marv Houg, Dale Stout, Ray Anderson, Dave Roush, Jay Vavra, Sharon Sonnleitner
Called to order at 7:20 by Marv

OLD BUSINESS: Marv noted the TAKO (Take a Kid Outdoors) event is October 3 at Klein Quarry from 10:00 to 11:30, with lunch at 11:30. Helpers should arrive between 9:15 and 9:30. Ray will recruit people from the Geological Survey to supplement club helpers.

Auction: The sale totaled $40,589 from 1,231 lots, our largest sale ever. Material donated to the club by Clarence Burns sold for over $4,000, which together with commissions, brought the club's portion to about $11,000. It was agreed the club would pay for the truck that was used to haul stored material and Joy Cumming's piece of equipment to Amana. Marv expressed thanks to all who helped make the auction such a resounding success.

The following are on the list of people who are confirmed for or interested in selling at the next auction, September 17-18, 2016:

Club (Clarence Burns) – 150
Dwight Schumm – 4 (contracted)
Bruce Birkemeyer – 50 (contracted)
Dennis Hembrough – 25 (contracted)
Doris Juhl – 150-175
Larry Krohn – 100
Phil Oliver – 100
Cindy Bogner (Zobacs) – 100?
Doug DeRosear – 20?
Frank Riddle – 10
Tom Gotshalt – 10
Wes Greenfield – 100?

FIELD TRIPS: A joint MAPS/CVRMS field trip to Klein Quarry is set for October 11.

SHOW: Three dealers who requested additional tables at the last show have been contacted for their input on their ideal space. Since Clarence Burns has retired and ZRS will be absent this year, the floor plan will be gone over to see how we can accommodate their requests.

Adjourned at 9:15.

Respectfully submitted,
Sharon Sonnleitner, Acting Secretary

The Sixth Extinction

Paleontologists characterize mass extinctions as times when the Earth loses more than three quarters of its species in a geologically short time, as has happened only five times in the past 540 million years or so. Many scientists think that we may be experiencing a **sixth mass extinction,** an idea championed by Elizabeth Kolbert in her book *The Sixth Extinction*. This assertion is supported by recent work at Stanford University **(**news.stanford.edu/news/2015/june/mass-extinction-ehrlich-061915.html**).**

Employing results from a 2011 study published in *Nature*, the group used highly conservative estimates to prove that species are disappearing faster than at any time since the dinosaurs' demise, and likely due to human activity. The research concludes that, over the last century, species of vertebrates are dying out up to 114 times faster than they would have without human activity. A human population growing in numbers, per capita consumption, and economic inequity has altered or destroyed natural habitats. The long list of impacts includes:

- Land clearing for farming, logging and settlement
- Introduction of invasive species
- Carbon emissions that drive climate change and ocean acidification
- Toxins that alter and poison ecosystems

Now, the specter of extinction hangs over about 41% of all amphibian species and 26% of all mammals, according to the International Union for Conservation of Nature, which maintains an authoritative list of threatened and extinct species. Despite the gloomy outlook, there is a meaningful way forward, according to researcher Paul Ehrlich and his colleagues. "Avoiding a true sixth mass extinction will require rapid, greatly intensified efforts to conserve already threatened species, and to alleviate pressures on their populations—notably habitat loss, over-exploitation for economic gain and climate change," the study's authors write

1860's photo of a recently killed Tasmanian Tiger (now extinct)

modified from:
http://www.memphisgeology.org/images/rocknews0715.pdf

Spotlight Gemstone: Beryl

Beryl is a mineral composed of beryllium aluminum cyclosilicate with the chemical formula $(Be,Na,Li,Ce)_3Al_2SiO_6$. With a hardness of 7.5 to 8.0, the hexagonal crystals of beryl may be very small or range to several meters in size. Pure beryl is colorless, but it is frequently tinted by impurities to produce a full spectrum of colors.

One of the most important gem minerals, Beryls are named for their color; **emerald** (green), **aquamarine** (greenish blue to blue), **morganite** (pink to orange), **red beryl** (red), **heliodor** (yellow to greenish yellow), **maxixe** (deep blue), **goshenite** (colorless), and **green beryl** (light green). Emerald and aquamarine are the most popular, and compared to other gemstones, emeralds are second only to diamonds in terms of the dollar value imported into the United States. Occasionally, chatoyant specimens (showing a band of bright reflected light caused by aligned inclusions in the stone) of beryl are found that can be cut into cabochons to produce interesting cat's eyes.

Beryl is found in igneous and metamorphic rocks in many parts of the world. The finest **Emeralds** have traditionally come from Colombia. Brazil also produces Emeralds, and the two most classic old-world localities of Emerald are Egypt (Cleopatra's Mines) and Austria. Other important deposits are in Afghanistan, China, Russia, Norway; and Mozambique.

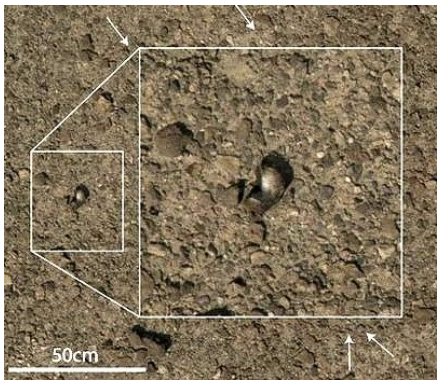
Despite the relatively abundant supply of fine **Aquamarine,** good crystals still demand a premium. Outstanding specimens are found in Brazil and Pakistan. Beautiful Aquamarine crystals come out of China, Russia, Burma (Myanmar), Nigeria, and Madagascar. U.S. localities include Colorado, Idaho, California, Connecticut, and Massachusetts. Excellent **Morganite** comes from northern Afghanistan and Minas Gerais, Brazil. The finest Morganite in the U.S. comes from Pala and Mesa Grande Districts in California. Some of the finest **Heliodor** and **Golden Beryl** come from Minas Gerais, Brazil, the Russian Ural Mountains, and Ukraine. In the U.S., **Heliodor** comes from Connecticut. **Goshenite** is found in Pakistan, China, Brazil, Burma (Myanmar), and Namibia. **Red Beryl** only comes from Utah. In the U.S., some of the New England pegmatite localities were known to have produced giant Beryl crystals near Albany, Maine, Alstead, New Hampshire; and Groton, New Hampshire.

FOSSILFINDER
More Eyes, More Information, More Discoveries

The Search and discover fossils at Lake Turkana, Kenya

Members of the public are being invited to help hunt for fossils in the Kenyan desert, in an online citizen science initiative called **Fossilfinder** (http://www.fossilfinder.org).

Volunteers will sift one million images from the arid Turkana Basin, a key area for fossils of early human ancestors. These photos were taken by archaeologists using a special aerial camera system mounted on kites, drones and other devices. "*It's an opportunity for the public to take part in this immense search for new fossil material at Lake Turkana,*" Dr. Andrew Wilson from the University of Bradford. "*This is a huge amount of material that couldn't be searched by any one person, and it couldn't really be searched effectively by a computerized system on its own*."



Example image includes a fish vertebra (enlarged) and fossil bone fragments identified by arrows.

The Turkana Basin, which is rich in fossil-containing deposits, stretches from northern Kenya into southern Ethiopia. The particular area the researchers are concentrating on contains many fossils between 1.4 and 1.8 million years old. This is a period known for the emergence of the first three species in the Homo genus, as well as key developments like the appearance and spread of tool use among our early ancestors. "*There are major questions to be answered,*" said Dr. Randolph Donahue, another team member from Bradford. "*What's the relationship of these different species? Which one turns out to be our ancestor?*" "***Maybe if somebody finds a new fragment from the latest 1.4 million-year-old hominin, they'll get a chance to be on the committee that names it***," said Dr. Adrian Evans, University of Bradford.

from http://www.bbc.com/news/science-environment-34179594

What in the World?

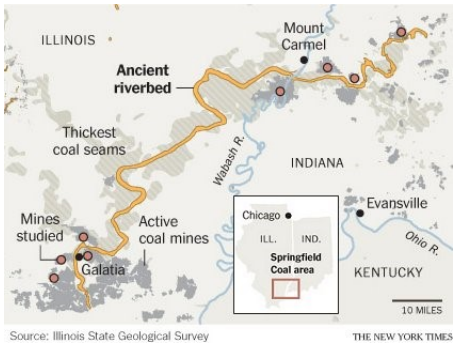
This is a natural rock exposure in Iowa, about 4 feet across and 6 feet high. What is it and were is it??

- see next month's newsletter for the answers and a feature article telling its story.

September Photo

Last month's mystery photo was a 1960's view of the Rockford Brick and Tile Company's shale pit in Rockford Iowa. The large machine is a "Shale Shaver" that cuts shale from the rock face to be processed for bricks and tiles. The shale unit is the Juniper Hill Member of the Devonian Lime Creek Formation. It is overlain by the Cerro Gordo Member and a thin skin of Owen Member. The pit is now owned by the Floyd County Conservation Commission and is operated as a fossil and prairie park. Many small fossils of the "Hackberry Fauna" weather out of the Cerro Gordo Member rocks and can be collected. For more information see http://www.fossilcenter.com/index.html#.

Largest Fossil Forest Discovered in Illinois



In the clammy depths of a southern Illinois coal mine lies the largest fossil forest ever discovered, at least 50 times as extensive as the previous contender. Smithsonian Institution scientists are mapping out an ecosystem from the Pennsylvanian period, 307 million years ago. The forest lies entombed in a series of eight active mines which produce the Springfield Coal, a coal bed that underlies much of Illinois and two neighboring states from 250 to 800 feet underground and has been heavily mined for decades. To date it has only been sampled in the vicinity of Galatia, Illinois, but researchers think it extends more than 100 miles in one direction, and its width has not been ascertained. The forest developed along a river as wide as the Mississippi. As the climate grew drier with rising temperatures in the late Carboniferous period, rainfall became seasonal and filled the river with silt, burying the forest. The burial was incremental and gradual, hardly ruffling the fern leaves that it entombed in mud and that can be seen, down to the smallest frond, on the ceilings of the coal mines. Huge fossilized trees still stand rooted in their original but compacted soil, surrounded by the litter of leaves that once fluttered down. Scientists have explored a five-mile transect, starting at the ancient riverbank. Moving away from the river, a dense thicket of seed ferns gives way to tree ferns and low ground cover. Farther out, tree ferns are dwarfed by forest giants called scale trees.And yet the fossil leaves show much less chewing by insects than the vegetation in our modern backyards. Animals had barely evolved herbivory, the habit of eating live plants, and instead subsisted on putrefying remains in the fetid swamp. The reach of the Springfield forest should allow scientists to undertake ecosystem-wide analyses in a way never before possible in landscapes so ancient, and such studies may help them predict the effects of global warming today. For additional information see http://www.mnh.si.edu/highlight/riola/.

Ask a Geologist

by Ray Anderson aka "Rock Doc", CVR&MS Vice President

Biggest Earthquake of the Year in Chile

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 rock-doc.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, regardless of if it is chosen for the column.

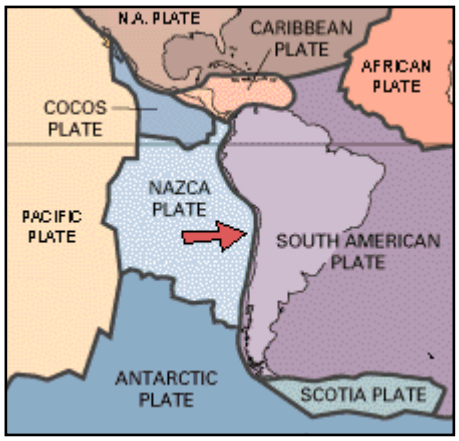
***Rona** asked, I heard there was a big earthquake in Chile. Why do they have so many there??*

On September 16 last month the largest earthquake recorded on Earth in 2015 struck Chile with a moment magnitude of **8.3**. Called the **Illapel earthquake**, it occurred 29 miles offshore from Illapel, Chile, at 10:54 pm local time. The initial quake lasted three minutes, and was followed by several aftershocks greater than magnitude six. The Chilean government reported 13 deaths, 6 missing, and 9,000 people left homeless. Tall buildings swayed and car alarms were set off in Buenos Aires, 690 miles away, and the earthquake was felt in São Paulo, more than 2,600 1,600 miles away. Tsunami watches, warnings, and advisories were issued in Ecuador, Peru, New Zealand, Fiji, Solomon Islands, Hawaii, California and Japan. The first tsunami waves arrived on the Chilean coast within minutes. A wave 15 feet high was observed along the coast of Coquimbo, and several cities reported flooding, with several large fishing vessels swept into the streets of Coquimbo, which reported heavy damage. In the town of Tongoy, large areas along the sea front were destroyed. Across the region at least 500 buildings were destroyed, while dozens of beachfront homes in Los Vilos were damaged or destroyed. Only small waves and no damage were reported in California and Hawaii.

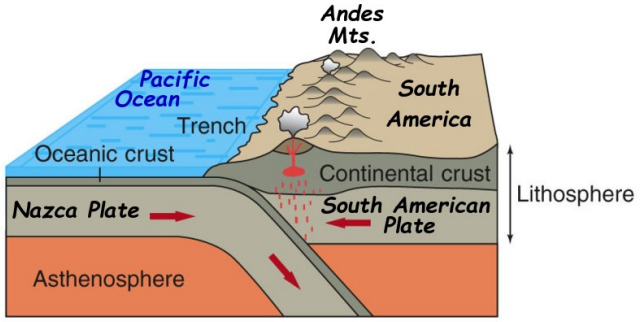
The Pacific Coast of South America experiences many earthquakes, as plate tectonics push the Nazca Plate (which underlies the Pacific Ocean to the west) under the South American Plate (see illustrations). As the Nazca plate subducts beneath South America, some of it melts, producing the volcanoes that form the Andes Mountains. The plate movement is not always smooth, and some time it gets stuck, releasing earthquake energy when it finally slips free.

The Illapel earthquake was centered about 500 miles north of the site where the worlds largest recorded earthquake, with a magnitude of **9.5**, occurred in May of 1960. That earthquake killed 1,655 people, including 61 in Hawaii and 132 in Japan killed by the ensuing Tsunami.

For information on recent or past earthquakes anywhere on earth or to learn more about earthquake safety or processes see http://earthquake.usgs.gov/



Map showing crustal plates around South America. Red arrow shows Nazca Plate movement direction.



Cross section showing the Nazca Plate subducting below the South American plate, melting, and forming the Andes Mountains

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Club meetings are held the 3rd Tuesday of each month from September through November and from January through May at 7:00 p.m. at the Rockwell Collins 35th Street Plant Cafeteria, 855 35th St NE, Cedar Rapids, Iowa. The December meeting is a Christmas dinner held on the usual meeting night. 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

October Meeting:
Rockwell Collins 35th St. Cafeteria
OCTOBER 20
"Dinosaurs of Iowa"
Dr Brian Witzke

Ray Anderson, Editor
812 Dewey Street
Iowa City, Iowa 52245