

Cedar Valley Gems

Cedar Valley Rocks & Minerals Society
Cedar Rapids, Iowa

[HTTP://WWW.CEDARVALLEYROCKCLUB.ORG/](http://www.cedarvalleyrockclub.org/)

CEDAR VALLEY GEMS

JANUARY 2016

VOL. 42, ISSUE 01

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

Next CVRMS Meeting Tues. January 19

7:00 pm

Rockwell Collins 35th St. Cafeteria
featured speaker

Dr. Steven Spangler

U of IA Dept. of Physics and Astronomy
"An Up-Close Look at Pluto: Last of the
(onetime) Nine Planets"

Those of us who came of age in the
1950s and 1960s learned that there were 9



planets in the solar system. On July 14 of 2015, the New Horizons spacecraft visited the last of the nine, even though in the meantime it had been removed from

the list of major planets. Most astronomers were expecting to see pictures of a frozen version of the Moon's surface, or something similar to moons of the outer planets. Instead, Pluto showed us amazing and unexpected variety. Scientists will be trying to figure out these observations, and the nature of the "geological" activity responsible for them for a long time to come. I will also discuss the reasons why Pluto was moved from the category of major planet to something different.

Fun at the CVRMS Christmas Party

2015

50 people attended the Christmas Party!



Merry Christmas Rockhounds



*Christmas Party attendees donated
\$190 to HACAP
\$190 to Linn County Food Bank*

Sarah Horgen Leaving U of Iowa Museum



Holmes Semken with Sarah Horgen and David Brenzel deliver a mammoth tusk to the U of IA Museum of Natural History.

We were sad to hear that Sarah Horgen was leaving her position as *Education and Outreach Coordinator* with the *University of Iowa Museum of Natural History* at the end of December. Her duties included education programming, outreach events; educator resources, and coordinating the Museum's traveling education trunks. We especially remember her from the Museum's booth at our annual Rocks and Minerals Shows. She will be taking some time off to spend with her children "**while they are young**" and reevaluate her professional opportunities moving forward. She says that leaving the Museum, "**a place I love so much**" after 10 years is "**bittersweet**," but she says that she knows that it is time to move on and try something new. It is not clear when the Museum will be refilling her position, but in the interim we should contact Trina Roberts (trina-roberts@uiowa.edu) for questions regarding Museum outreach events and other matters.

Sarah wishes to thank the folks in MAPS and the CVRMS for their assistance through the years and to express her enjoyment working with them. If you wish to contact her after January 1st you are welcome to use her personal email sehorgen@gmail.com.

Thanks for all your help and good work, Sarah; good luck !!

Rock Calendar

CVRMS Events of Interest

2016

April 1-3 - MAPS Expo XXXVIII

Sharpless Auctions

Exit 249 I-80, Iowa City, Iowa

Theme: Mesozoic Era

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

see Poster on Page 8

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

Cheers for Bill Desmarais

Mr. Houg-

On November 18th and November 19th, Bill Desmarais came to Linn Grove and did a fabulous presentation related to rocks and minerals for the 4th graders. It was a great culmination of all the learning the 4th grade students had in science. They were highly engaged during his visit and were able to apply much of their learning. We really appreciate this opportunity for the 4th graders and look forward to Bill coming again next year. Thank you!

Tiffany Kinzenbaw

Instructional Coach

Linn Grove Elementary School

Ancient fossil forest unearthed in Arctic Norway

Ancient fossil forests that have been unearthed in Devonian rocks in Arctic Norway may be partly responsible for one of the most dramatic shifts in the Earth's climate in the past 400 million years.

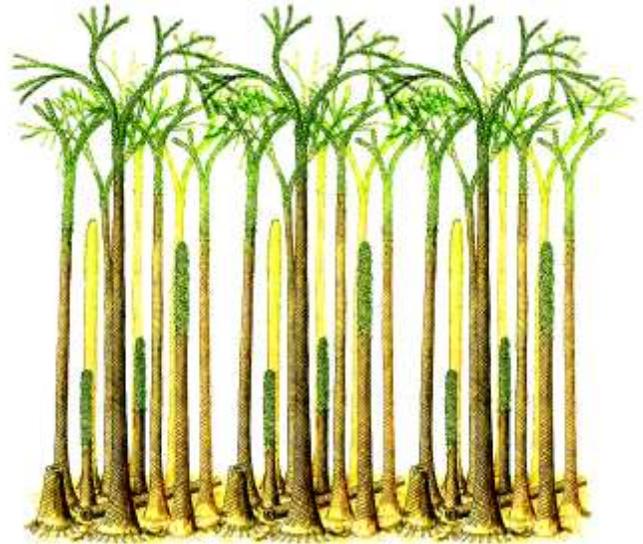
British researchers have excavated a 380 million year-old fossil forests, including tree stumps preserved in place on Svalbard, a Norwegian archipelago situated in the Arctic Ocean. This discovery could provide an insight into the cause of a 15-fold reduction in levels of carbon dioxide (CO₂) in the atmosphere around the time they were alive. Current theories suggest that during the Devonian period (420-360 million years ago) there was a huge drop in the level of CO₂ in the atmosphere, thought to be largely caused by a change in terrestrial vegetation from diminutive early land plants to the first large tree forests. The new forests pulled CO₂ out of the air through photosynthesis, the process by which plants create food and tissues. Svalbard was located on the equator at that time, before its tectonic plate drifted north about 80° to its current position in the Arctic Ocean.

Because of the high temperatures and large amount of rainfall on the equator, it is likely that these equatorial forests contributed most to the drawdown of CO₂. The discovery

team, led by Dr. Chris Berry of Cardiff University's School of Earth and Ocean Science, found that the forests in the Plantekløfta Formation on Svalbard were formed mainly of lycopod trees, better known for growing millions of years later in Pennsylvanian swamps that produced coal deposits, such as those in Iowa. They also found that the forests were extremely dense, with very small gaps, with only about 8 inches between each of the 15 foot. The lycopsids grew in wet soils in a localized, rapidly subsiding, short-lived basin. This high-tree-density tropical vegetation promoted rapid weathering of soils, drawing down more carbon dioxide than contemporary high-latitude forests. Although initially the appearance of large forests absorbed more of the sun's radiation heating the Earth, but the eventual reduction in atmospheric CO₂ levels caused temperatures to drop dramatically to levels very similar to those experienced today. Dr. Berry had previously worked with American colleagues to investigate the huge drop in the level of carbon dioxide in the atmosphere during the Devonian Period, from 15 times the present amount to near modern levels. *"These fossil forests shows us what the vegetation and landscape were like on the equator 380 million years ago, as the first trees were beginning to appear on Earth,"* said Dr. Berry. A slightly older forest discovered at Gilboa in upstate New York was formed when the region was located at least 30° south of the equator. The Gilboa forest contained in place tree stumps belonging to different types of plants that those discovered in Svalbard, *"demonstrating that there was already geographical diversity of forest plant types and ecology just as soon as they had evolved,"* said Dr. Berry.

Svalbard is currently one of the northernmost inhabited areas in the world, with a population of around 2,500. The island now plays host to the **'Global Seed Vault'**, a secure, underground frozen seed bank in which a large variety of plant seeds are preserved. The vault functions to provide a safety net against a loss of diversity in a global crisis. *"It's amazing that we've uncovered one of the very first forests in the very place that is now being used to preserve the Earth's plant diversity,"* Dr. Berry commented.

More details were recently published in *Geology*. <http://geology.gsapubs.org/content/43/12/1043.full>



Drawing of a fossil forest in Svalbard, Norway.
Image credit: C. M. Berry / J.E.A. Marshall / Sci.News.

CVRMS Board Meeting

Members Present: Marv Houg, Dell James, Sharon Sonnleitner, Ray Anderson, Jay Vavra, Bill Desmarais

Show

We are still waiting on five of fourteen vendor contracts.

Publicity ideas are welcome. Rock and Gem done. Dell will do Collector's Journal and the free radio/tv spots. Ray will see about getting something into the Daily Iowan. Dell does TidBits and Dale does the other Iowa ads. Still need to get the word out since so many people do not know about our show. Flyers are available to anyone interested.

Discussion regarding the featured article/person for the Gazette. Brian Witzke may have something about the petrified leaves and where they were found etc. Ray will talk to him. Pollen from the Bar L ranch was mentioned as a possibility.

Dale has not yet heard from Mary Campbell about the sidewalk art. T. J. has sluice. Someone needs to clarify whether he will have at show.

Saturday night program-Ray will come up with something.

Raffles-Marv still working on them. Still too early to apply for the raffle permit from the state.

Pebble pit-Lots of stuff still needed for pebble pit, silent auction and door prizes.

Saturday night dinner-Remain with Hy Vee. Roast beef, chicken, party potatoes, green bean casserole, salad, rolls. Club members will donate the dessert. Marv will get price. Drinks furnished by the club.

MSHA training. Because of the change in show schedule, Marv will find out about providing the training before the MAPS program which is just prior to our show. More information to follow regarding MSHA training.

Egg cartons are always a successful sell at the show. All of the cartons were sold last year. Work day is needed to fill cartons again. A date will be announced soon.

Programs/field trips

March 26, Mark Ginsberg will show us his 3D printer etc at his shop in Iowa City. There are stairs to climb.

Marv will contact Ithiel about a field trip to Catiris Art Oasis in Amana to see the triceratops restoration.

Misc.

The traveling museum bus from University of Iowa should be available at show time. Ray will inquire what is in it and whether it is appropriate for the show.

Jay suggested that it is time to arrange for the summer picnics. The usual schedule in Noelridge (June) for lapidary, Squaw Creek in July for geode cracking and Morgan Creek in August for Bingo. Marv and Dale will make the contacts.

Ray has arranged for Steve Spangler to speak at next meeting about Pluto.

Motion made by Bill, seconded by Dell to adjourn.
Meeting adjourned at 9:05 p.m.

Respectfully Submitted
Dell James, Sec

"Instant" Mass Extinction

Well, maybe not instantaneous, but scientists now think that the Permian mass extinction occurred over a much shorter interval of time than previously believed. The largest mass extinction in the history of animal life occurred at the end of the Permian, some 252 million years ago, wiping out more than 90 percent of the Earth's species. Scientists knew that whatever triggered extinction must have acted quickly, fast enough to destabilize the biosphere before the majority of plant and animal life had time to adapt to survive. Previous analysis of end-Permian rocks indicated that the extinction event likely lasted less than 200,000 years. However, recent work by MIT geologist Sam Bowring and colleagues indicates that the end-Permian extinction occurred over only 60,000 years (give or take 48,000 years) -- practically instantaneous, from a geologic perspective. *But, what could cause such a dramatic, nearly complete extinction of life?*

The MIT group also found that, 10,000 years before the die-off, ocean sediment chemistry indicates a massive addition of carbon dioxide to the atmosphere. This would have led to widespread ocean acidification and increased sea temperatures by 18° F or more, killing the majority of sea life. The CO₂ could have come from a massive volcanic eruptions that released volatile chemicals, including carbon dioxide, into the atmosphere and oceans. Such a huge sequence of flood basalts, called the Siberian Traps and erupting more than 1.5 million cubic miles of basalt (the most massive on Earth in the last 500 million years), were erupted at about that time. The shorter extinction timeline adds weight to the theory that the extinction was triggered by gasses released by this huge eruption. With such a short extinction timeline, Bowring says it is possible that a single, catastrophic pulse of magmatic activity triggered an almost instantaneous collapse of all global ecosystems. His team will now begin pursuing more accurate age dates for the Siberian basalts.



Spotlight Gemstone: Garnet

January's Birth Stone



Garnets are nesosilicates that form a group of gemstones that incorporate a variety of elements with the general formula $X_3Y_2(SiO_4)_3$. The *X* site is usually occupied by Ca, Mg, Fe, or Mn and the *Y* site by Al, Fe, or Cr in an octahedral/tetrahedral framework. The dodecahedron (12 sided) is the most common crystal form. Most garnets are formed in metamorphic rocks, with others in igneous rocks. Since their chemistry and growth respond to the rocks around them, garnets are used by geologists to gauge the temperatures and pressures under which their surrounding rocks formed. Garnets display a hardness of 6.5-7.5. There are well over a dozen types of garnets, but the most common groups are;

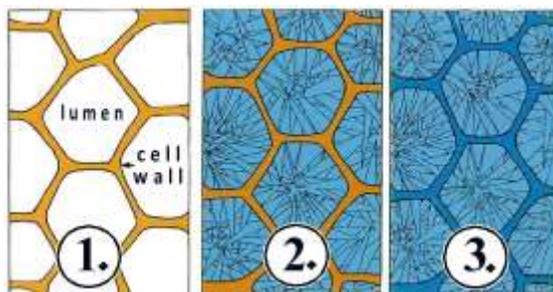
ALMANDINE	$Fe_3Al_2(SiO_4)_3$	reddish brown to brown
ANDRADITE	$Ca_3Fe_2(SiO_4)_3$	brown, black or green
GROSSULAR	$Ca_3Al_2(SiO_4)_3$	colorless, orange or green
PYROPE	$Mg_3Al_2(SiO_4)_3$	dark red to ruby red
SPESSARTINE	$Mn_3Al_2(SiO_4)_3$	orange, pink or brown
UVAROVITE	$Ca_3Cr_2(SiO_4)_3$	green

Gem quality garnets can be found in almost every color. In addition, pyrope–spessartine garnets change color from blue-green to purple depending on the color temperature of viewing light (much like alexandrite). Other varieties change from shades of green, beige, brown, gray, and blue in daylight, but appear reddish or purplish/pink color in incandescent light.

How Does Wood Petrify?



Petrified wood is a fossil. It forms when plant material is buried by sediment and protected from oxygen and organic decay. When groundwater rich in dissolved minerals flows through the sediment it replaces the original plant material with silica, calcite, pyrite or other inorganic materials. The lumen, the void in the center of the cell, (illustration 1.) is the perfect environment for crystallization of the inorganic materials (2.). Finally, the cell material is also replaced with inorganic minerals (3.). The result is a fossil of the original woody material that often exhibits preserved details of the bark, wood and cellular structures. Some specimens of petrified wood



are such accurate preservations that people do not realize they are fossils until they pick them up and are shocked by their weight. These specimens with near perfect preservation are unusual; however, specimens that exhibit clearly recognizable bark and woody structures are very common.

The most famous locality for observing petrified wood is Petrified Forest National Park in northeastern Arizona. About 225 million years ago this area was a lowland with a tropical climate and covered by a dense forest. Rivers flooded by tropical rain storms washed mud and other sediments into the lowlands. Enormous conifer trees up to 9 feet in diameter and 200 feet tall lived and died in these lowlands. Fallen trees and broken branches were often buried by the river sediments. Nearby volcanoes blanketed the area in volcanic ash with a high silica content. The silica was mobilized in groundwater with iron and other coloring agents replacing and petrifying the buried wood.

What in the World?



December Photo



What in the world is this hole in the ground and where is it??



December's photo shows a pyroclastic flow that occurred during the 1991 eruption of Mount Pinatubo on the Island of Luzon in the Philippines. The eruption killed 847 people and buried America's Clark Airforce Base.

A pyroclastic flow is a fast-moving current of hot gas and rock (tephra). It is blown into the sky by a volcanic eruption, then falls back to earth and, with temperatures up to 1,830 °F, races down the volcanic slope at speeds up to 450 mph. Pyroclastic flows normally hug the ground and travel downhill, or spread laterally under gravity. They are a common and devastating result of many explosive volcanic eruptions .

CVRMS Officers Elected

CVRMS officers for 2016 were elected at the 2015 Christmas party on December 8. All previous office incumbents were reelected, and Bill Desmarais was elected to a three-year term as Director, replacing Jeff Kahl who completed his term as Director. Congratulations to the winners and thanks Jeff for his work over the past three years.

CVRMS Election Winners

President:	Marv Houg
Vice President:	Ray Anderson
Secretary:	Dell James
Treasurer:	Dale Stout
Editor:	Ray Anderson
Webmaster:	Sharon Sonnleitner
Liaison:	Joy Cummings
Director 2018:	Bill Desmarais



Ask a Geologist

by Ray Anderson aka "Rock Doc", CVR&MS 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, regardless of if it is chosen.

Bill Desmarais was sitting across the table from me at last month's Christmas party, and we were discussing his recent trip to Hawaii. Bill wondered "what were some unique features of Hawaiian geology?"

Unique Geology of Hawaii

Two of the biggest unique features in Hawaii are the volcanos **Mauna Kea** and **Mauna Loa** on the Big Island of Hawaii. **Mauna Kea** is the **tallest mountain on the Earth**, with its height from its sea floor base to its summit of more than 33,000 feet (5.6 miles), slightly taller than **Mt Everest**. Plus, if you include the lowest portions of the volcano that have subsided (sunk) into the ocean floor, then the mountain is **56,000 feet tall** ! With less than half its height above the sea, the volcano is now considered dormant, having last erupted about 5,000 years ago. Its high altitude, dry environment, and stable airflow makes **Mauna Kea's** summit one of the best sites in the world for astronomical observation. Since the first road to the summit was completed in 1964, thirteen telescopes have been constructed, including the world's largest observatory for optical, infrared, and submillimeter astronomy. Although **Mauna Loa** shares the island with **Mauna Kea** and three other volcanos, it is the **world's largest volcano** in terms of volume of erupted magma. Even though its peak is 120 feet lower than its neighbor **Mauna Kea**, it includes about 18,000 cubic miles of erupted rocks and comprises more than half the volume of the island. **Mauna Loa** last erupted in 1984 and is still considered an active volcano.

Kauai is the oldest surviving island, with a rain forest, swamp lands, lush valleys, waterfall lined craters, dramatic coastlines as well as the longest white sand beaches in all of Hawaii. Much of the geography of **Kauai** was created by the catastrophic collapse of the volcano that created the Island. Kawaikini Peak is **Kauai's** highest point, at 5,148 feet above sea level, and is the wettest spot on Earth, with over 400 inches of rain per year. The Hawaiian chain also sits in the center of the strongest trade wind belt in the northern hemisphere, producing fairly consistent wind direction and speed throughout the year. As warm, moist trade winds reach land they produce rainfall, which has carved **Kauai** into a masterpiece of physical geography, with more abundant fresh water streams than all other Hawaiian islands combined. **Waimea Canyon**, known as the **Grand Canyon of the Pacific**, is a large canyon, approximately ten miles long and up to 3,000 feet deep, located on the western side of **Kauai**.

The Hawaiian Islands are part of a chain of volcanic islands that stretch for 1,500 miles across the Pacific Ocean. They were created as the Pacific Plate drifted across a stationary hot spot (a mantle plume that moves heat and magma from the Earth's core to the crust where it erupted). The chain includes the Hawaiian Ridge with the 8 major islands and numerous seamounts (volcanos that have been eroded below the level of the sea) as well as the Emperor Seamount chain, totaling 124 mapped seamounts. The dog-leg near the center of the chain was created when the direction of Pacific Plate movement changed after its subduction beneath North America was halted about 44 million years ago. The oldest rocks in the chain, on the **Meiji** seamount at its northern end, were erupted over 80 million years ago, and the youngest are erupting today, adding to a growing seamount called **Loihi**. In another 50,000 years or so **Loihi** will breach the ocean surface to become the southeast-most Hawaiian island.



Cedar Valley Rocks & Minerals Society
Presents its
2016

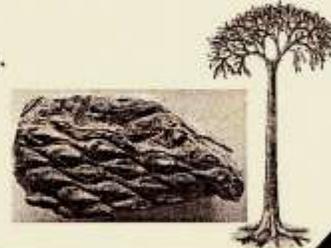
GEM, MINERAL & FOSSIL SHOW

Iowa's Largest & Among Midwest's Largest

New Month,
Same Venue

Saturday April 16 - 8:30 a.m. to 6:00 p.m.
Sunday, April 17 - 9:30 a.m. to 5:00 p.m.

Hawkeye Downs Expo Center
4400 6th Street SW
Cedar Rapids, Iowa



**OUR 52ND SHOW:
PETRIFIED WOOD AND FOSSIL PLANTS**

PROGRAMS

Programs on
Theme-Related Topics
Call ahead or check our
web site for Speakers & Times.

DEMONSTRATIONS

- Tumbling
- Glass Bead Making
- Cabbing, Beading
- Silversmithing
- Flint Knapping
- Geode Cracking

PEBBLE PIT FOR KIDS

1¢, 5¢, 10¢, 25¢, & 50¢ Items
\$1 Rock & Mineral Kits

SILENT AUCTION

Geodes, Minerals, Crystals, etc.

HOT FOOD

**PROFITS GO TO
SCHOLARSHIPS**



DISPLAYS

- Agates
- Minerals
- Crystals
- Fossils
- Amethyst
- Petrified Wood
- Polished Stones
- Artifacts
- Spheres, Geodes

**NOT RESPONSIBLE
FOR ACCIDENTS**

**DONATIONS
REQUESTED**

Adults.....\$3.00
Students\$1.00
(12-18)
Children Free
(Under 12)
Youth Groups Free
(w/adult)

SLUICE FOR GEMS

MANY ITEMS FOR SALE, INCLUDING:

- | | | | | |
|-------|---------|----------|------------|------------------|
| Books | Fossils | Jewelry | Minerals | Book Ends |
| Opal | Agates | Carvings | Seashells | Petrified Wood |
| Slabs | Geodes | Crystals | Tumblers | Lapidary Equip. |
| Gems | Beads | Spheres | Meteorites | Jewelry Findings |

**CHILDREN MUST BE
ACCOMPANIED BY AN ADULT**

For Additional Information. Contact:

Marvin Houg (319-364-2868, m_houg@yahoo.com);
Sharon Sonnleitner (319-396-4016, sonnbn@aol.com); Tom Whitlatch (319-362-0684, whitlatcht@gmail.com)

For program, dealer, and show updates, check: www.cedarvalleyrockclub.org

Rocks and Fossils needed for the
2016 CVRMS Rock Show

Your club needs you to donate rocks and
fossils for use in the

- • Pebble Pit
- • Silent Auction
- • Door Prizes

If you can help please contact
Marv Houg at 364-2868

I DIG ROCKS!



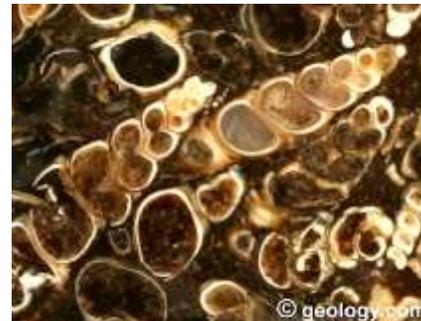
2016 Fossil, Mineral and Agate Collecting Tours: to Morocco & Australia

ZRS Fossils and Gifts in Minneapolis is offering three fossil, mineral, and agate collecting tours next year -- two to Morocco (April & May) and a new tour to Australia in June. You can learn more about participating in these tours, "Rockin' in Morocco" and "Rockin' in Australia" by visiting [https://www.facebook.com/ZRS-Fossils-and-Gifts-127956357265401/events?](https://www.facebook.com/ZRS-Fossils-and-Gifts-127956357265401/events?ref=page_internal) [ref=page_internal](#) or calling ZRS Fossils at (612) 210-9711.



What is *Turritella* Agate?

Turritella Agate is the popular name used for a brown, translucent, fossiliferous agate found in the Green River Formation of Wyoming. It is very easy to recognize because it contains large fossil snails that stand out in a white-to-tan color that contrasts with the brownish agate.



Turritella Agate Slab

This organic gem material was incorrectly named decades ago when an early worker thought that the spectacular spiral-shaped gastropod (snail) fossils entombed within the stone were members of the marine *Turritella* genus. That was a mistake. Instead, the fossils are of the freshwater snail, *Elimia tenera*, a member of the Pleuroteridae family.

Before the correct name was discovered and published, the gem material became extremely popular and the name "*Turritella*" was widely used in lapidary magazines, gem, mineral, and fossil books, catalogs, and exhibits. Today it is typically seen without corrective note in all of those sources, along with websites, online auctions, and computer software. Only a fraction of the people who have collected the material, cut it into cabochons, sold it, bought it, or worn it in jewelry have any knowledge that *Elimia* is the scientifically correct name.

The snail lived about 50 million years ago, during the Eocene epoch, when the young Rocky Mountains consisted of rugged peaks separated by broad intermountain basins with large lakes. Abundant plants and algae grew on the margins of these lakes, providing a perfect habitat and food source for *Elimia tenera*, the freshwater snail. When the snails died, their shells sank to the bottom of the lake. The snails were so prolific that entire layers of sediment were composed almost entirely of their shells. Rains falling on the slopes of the mountains carried sand, silt, mud, and dissolved materials down into the lakes, filling them and burying many types of fossils. Minerals in the water replaced and petrified these fossils, much like wood is petrified.

Officers, Directors, and Committee Chairs

President.....	Marv Houg (m_houg@yahoo.com).....	364-2868
Vice President. ...	Ray Anderson (rockdoc.anderson@gmail.com)	337-2798
Treasurer	Dale Stout (dhstout55@aol.com)	365-7798
Secretary	Dell James (cycladelics@netins.net)	446-7591
Editor	Ray Anderson (rockdoc.anderson@gmail.com)	337-2798
Liaison	Joy Cummings	981-2482
Imm. Past Pres. ...	Sharon Sonnleitner (sonnb@aol.com)	396-4016
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Sunshine	Dolores Slade (doloresdslade@aol.com)	351-5559
Hospitality	Jeff Kahl	455-2201
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 7:00 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

January Meeting:
Rockwell Collins 35th St. Cafeteria
JANUARY 19
"An Up-Close Look at Pluto: Last of the
(one-time) Nine Planets"
Dr. Steven Spangler



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