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**Meeting**  
**Second Tuesday of each month**  
**Van Matre Senior Citizens Center**  
**1101 Spring Street**  
**Mountain Home, AR**

<b>President/Editor</b>	<b>Vice President</b>	<b>Secretary</b>	<b>Treasurer/Proof Reader</b>
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**Sharon Waddell: Liaisons Officer - 417-256-8948**

**MWF Assistant Micromounter: Brenda Johnson**

**OBJECTS:** To study and promote an interest in the earth sciences; Geology, paleontology, mineralogy, archaeology and the lapidary arts.

**Meeting:** Every second Tuesday of each month at 7:00 p.m. in the Van Matre Senior Citizens Center, 1101 Spring Street (Cooper Park), Mountain Home, Arkansas

**Dues:** Active adults \$12.00 per year or family membership of \$20.00 per year. Junior membership is \$4.00 per year. Nonresident membership is \$8.00.

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### **President's Message**

Are you as sick of the crystal "ice" as I am? I think we have had our fair share of winter and with the month of March come's the total hope of spring. I am sure you are excited about planning your gardens, but I want to caution you on safety when gardening, just as much as while rockhounding. Take it slow at first. Don't over tax your body after being cooped up indoors all winter.

I would like to plan some rock hunting trips at the upcoming meeting and want you to be thinking of the place you would like to go first. We can go for geodes, quartz, (both drusy or the crystals from Mt. Ida), take in museums, caves, or any other place you can think of. Just remember that the greatest majority of our members can only go on weekends, so our trips must be planned for weekends, and an over night stay as all our collecting areas are so far from home.

Again, I would like to invite each of you to come to our next micromount meeting. You haven't really appreciated a mineral until you observe it under microscopic view. There are no officers or minutes, or the like, just a good friendly get together. If you do not have a microscope, don't worry. We will share so as to allow you to study the minerals.

Harvey and I have had several interested person's call about the meetings. This is very encouraging as we need more members and especially juniors. Please pass the word anytime you are out and about on when and where we meet, what we are about, and try to get others to attend.

Be safe in all you do.

Brenda

**There are no minutes or treasurer's report as there was no meeting in February.**

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### **Safety First**

by *Bill Klose, EFMLS Safety Chairman*

from *EFMLS News, March, 2000*

<http://www.amfed.org/news/n200006.htm#safety>, via **Aradasa Johnson**, Safety Chair.

Hammers used by rock hounds come in every size, type and construction, and include rock hammers, bricklayer's or mason's hammers, blacksmith's or sledge hammers, machinist's peen hammers, jeweler's hammers, setting hammers, soft face hammers, lead or copper faced hammers, trimmer's and welder's hammer's, as well as a variety of mallets, such as rawhide, rubber, and tinner's. I have even seen napping hammers (a 3 pound high carbon steel hammer with tapering faces used for forming stones during road construction or similar stone work) and railroad track mauls (used for driving railroad spikes). As it is hard to anticipate what a rockhounds "favorite weapon" will be, I thought I would present a list of general hammer safety practices followed by the proper use of some of the more common hammer types.

1. Always select the proper type, size, and weight of hammer for the job.
2. Always wear eye protection.
3. Always strike a hammer blow squarely, avoiding glancing blows and over and under strikes. The hammers striking face should be parallel with the surface being struck.
4. When striking a chisel, punch, or wedge, the striking face of the hammer should be 3/8" larger than the struck face of the tool. Both the striking hammers face and the struck face of the tool should be free of oil.
5. Do not strike another hammer with a hammer.
6. Do not strike a harder surface with a hard surface hammer.
7. Never use a hammer with dents, cracks, chips, mushrooming, or excessive wear. Replace the hammer-redressing is not recommended.
8. Replace worn or damaged handles. A qualified individual should replace hammer handles. Most hardware stores will replace hammer handles for a nominal fee. They can also provide a rubber sleeve for sledge hammers, which will prevent handle damage just above the head.

Bricklayer's or mason's hammers are designed for setting or splitting bricks, masonry tile, and concrete

**Safety continued -**

blocks. Never use them to strike metal or drive tools such as chisels. The blade of a bricklayer's hammer should be kept sharp by redressing at a 40 degree angle with a bench grinder. Keep the metal cool while grinding by quenching often in water to protect the metals tempering.

Hand drilling hammers are used with chisels, star drills, punches, and hardened nails. Never use common nail (claw) hammers for striking metal, such as chisels, as they are designed for driving unhardened nails and their shape, depth of face, and balance make them unsuitable for this use.

Machinist's peen hammers (ball, cross, or straight) are designed for striking chisels and punches and riveting, straightening and shaping metal.

Blacksmith's or sledge hammers are designed for striking wood, metal, concrete, or stone, depending on size, weight, and shape.

When using a hammer, grip the handle near the end where it is designed for gripping and will give you the best control and impact with the least effort. Watch your hands, shins, and feet. It may be advisable to wear gloves, long sleeve shirts, and high lacing safety shoes to protect from flying debris and sharp shards if the situation warrants it.

When storing hammers for a period of time, lightly lubricate metal parts, but wipe any oil or grease from rubber mallets or rubber handle grips to prevent damage to the rubber.

So get out there and hammer up a storm, safely.

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**What are *those* fibers in my rose quartz?**

Most of us are curious about the variety of colors in quartz. Rose quartz is one of the loveliest types, and many of us have specimens or jewelry of rose quartz. What accounts for its delicate pink color? Recent work has shed some light on its origin - apparently it is due to the presence of a close relative of the mineral dumortierite.

The breakthrough discovery was work done in 1987 by 2 geologists at the University of Missouri at Columbia, Ken Appin and Brian Hicks. They were doing studies on the etching of various types of quartz. They discovered in one of their samples, a rose quartz from the Ruby Range of Montana, masses of pink fibers on the sample surfaces after etching in hydrofluoric acid. The color of the fibers was spectrally the same as the pink color of the quartz specimen. Testing by X-Ray diffraction convinced them that the fibers were a mineral called *dumortierite*, and that they were responsible for the pink color of that particular quartz.

*Dumortierite* is a complex boron-bearing silicate. It was named for a French paleontologist, and has been known as a mineral since 1881. It is generally found in fibrous to columnar aggregates

and is usually an attractive pink to blue to purple in color. The particular concentration of trace amounts of *iron* and *titanium* seems to control the color seen. Dumortierite is often found in granite pegmatites, high temperature hydrothermal veins, and in high-grade regional metamorphic rocks where boron was available during metamorphism. Sometimes interesting collector specimens occur from Maine, California, New Mexico and elsewhere. Lapidary quality *dumortierite* occurs in South Africa and other locations.

Appin and Hicks work was followed by Julie Goreva, Chi Ma and George Rossman at Cal Tech. In a paper published in 2001, they looked for pink fibrous material in rose quartz from 29 localities from around the world. All of the samples they tested had such fibers. The fibers were very small, best described as nano-fibers 0.1 to 0.5 micrometers wide (about 0.00002 inches). Their optical patterns again matched the pink color of rose quartz. X-Ray diffraction, Raman spectroscopy and other analytical tests showed that these fibers were from a mineral close to, but not exactly like, dumortierite. The scientists concluded the rose color of all massive rose quartz was due to this material.

Later work by this same team further characterized this material as a dumortierite relative. The only significant difference is the relatively large amount of iron replacing aluminum at a particular location in the mineral structure. Whether or not this will constitute a new mineral remains to be seen. At this point then it is hard to tell some one exactly what this material is. Yes, it is like dumortierite, but really isn't technically, and doesn't have an official name. I could suggest it be called *that pink fibrous dumortierite-like stuff in the rose quartz*. A bit unwieldy, but, (to paraphrase the Bard), to a mineral collector, wouldn't the coloring agent of rose quartz by any other name, still look so sweet?

- Bill Cordua, U. Wisconsin @ River Falls

*References:*

Applin, Kenneth and Brian Hicks, 1987, *Fibers of dumortierite in quartz*, American Mineralogist, v. 72, p. 170-172.

Goreva, Julia, Chi Ma and George Rossman, 2001, *Fibrous nano-inclusions in massive rose quartz: The origin of rose coloration*, American Mineralogist, v. 86, p. 466-472.

Ma, Chi, Julia Goreva and George Rossman, 2002, *Fibrous nano-inclusions in massive ro*

Ma, Chi, Julia Goreva and George Rossman, 2002, *Fibrous nano-inclusions in massive rose quartz:*

*HRTEM and AEM investigations*, American Mineralogist, v. 87, p 269-276.

From *Breccia* July 2009 from Cincinnati Lapidary Newsletter

**Scrimshaw  
by Paul Milo**

Scrimshaw is a traditional art form that has as its foundation the Yankee whaling fleet of 150-200 years ago. The folk art of these early scrimshanders provides the cornerstone of much of the scrimshaw created today. The traditional design and technique show nautical designs that follow the course of its sea faring origins. Marine mammals, wharf scenes, battles at sea, and whaling episodes are common motifs in this school of design.

Simply put, scrimshaw has come to mean the engraving or carving of ivory or bone. Another opinion says, "scrimshaw is the term used to describe the various implements, both decorative and functional crafted by these sailors of the American whaling fleet."

Since there is no longer an American whaling fleet in existence, does that mean there is no longer scrimshaw being made? No! Contemporary scrimshaw is most truly represented by the traditional artists following directly in the whalers footsteps in capturing the nautical scenes.

What about other artists that use the same art form to create big game animals, birds, or those specializing in fantasy themes . . . wizards, myths, sea serpents, etc. Are none of these talented artists creating scrimshaw? According to this narrow position, no, they are not. What they are creating might be called engravings as opposed to SCRIMSHAW, the traditional nautical art form.

There are so many scrimmers doing both types of the art that I call it all scrimshaw. If you enjoy it, or it's a fine piece of art, and it is well done, who cares what category you put it under.

I'm from the west. I do western scenes, animals, birds, or anything that appeals to me. I do scrimshaw. I am a scrimshander.

**How To Do Scrimshaw**

Most of the natural materials, i.e. elephant ivory, walrus tusks, whale ivory, mastodon ivories, are on the endangered species lists, so stay away from these. Why? Simply put, it's usually against the law to sell and buy. Although on occasion people selling may have permits. So you have to look for alternate materials: cow horn, antler, soup bone, ivory nuts, shell, plastic and stone. I use a lot of plastic cutting board - "Korion".

If you are not artistically inclined, you will need a picture. You can build up a collection by watching the newspapers, ads in newspapers, greeting cards, postcards, any picture that appeals to you.

The picture is transferred to the material being scrimmed by tracing with carbon paper or the dot method. It is then sprayed with a fixative like Myston to prevent the picture from being wiped off as you work. It also helps fill any scratches you have missed when polishing.

**Scrimshaw continued -**

You then use a sharp point to scratch the picture into the surface of the material. Shading is accomplished by a series of parallel lines, the closer the lines the darker the shading. Lines of varying depth also give you light to dark. To see how you are progressing, at varying times, black ink (India Ink) is placed in the engraved lines. More lines may be needed to darken areas for greater shading. Excess ink can be taken off with a damp cloth. Most of us "spit on a kleenex." The whole picture can then be cleaned with alcohol, although I find this lightens the picture too much. The whole picture is then polished with trewax.

Because every scratch in the surface of the material will take ink, it is important that the surface be scratch free. To smooth the surface files will be needed to take the rough outside ridges of the antler down. 400 grit abrasive papers are then used to take the file marks down. 600 grit is used to pre-polish, followed by Zam on a cotton buff. The final high polish is done with white rouge on a cotton buff.

For a scribe I use a pin vice with a commercial steel sewing machine needle. This is kept sharp by fine honing. If your needle isn't sharp your lines will fracture or chip leaving you with fuzzy lines.

The other tools used for engraving are old steel gramophone needles, carbon steel points, drill steel, Exacto knives, anything with a sharp point. India ink or colored ink is used to fill the engraved lines.

Shading is done by two methods:

*Stipple Method:*

The use of dots instead of lines.

Advantage:

- Easy to control
- Unlimited texture and shading can be accomplished

Disadvantage:

- Time consuming

*Line Method:*

A series of parallel lines are cut to produce shading.

Advantage:

- Lines easily follow the flow of the picture
- Large pictures can be done quicker
- Less tedious, thus less fatigue you don't tire as quick

Disadvantage:

- Lines may chip when they cross
- Shading is more difficult to accomplish

Reference: The Second Scrimshaw Connection by Bob Engrath [Via the Journal, February, 2010]

## **How Did This Get Here?**

**By Murray Nicholson**

Scattered on the plains in front of the Rocky Mountain Foothills are tens of thousands of large boulders, the extraordinary remains of the ice age in Alberta. These pinkish or purplish quartzite boulders are part of the Foothills Erratic Train, a narrow area extending 600 kilometers southeast from Jasper National Park to the international border.

According to the current theory, the Foothills Erratic Train originated towards the end of the last ice age when a landslide similar to the Frank Slide dropped millions of tons of rock onto the surface of a glacier, near the town of Jasper. The glacier carried the rock out of the mountains into the foothills where it was deflected toward the southeast by the edge of the continental glacier. The boulders were deposited in their present pattern as movement ceased and the glacier eventually melted.

One erratic, called Split Rock can be found on the northern edge of Calgary, where Centre Street crosses Beddington Creek. The largest of the foothills erratic, called Big Rock, is located in the middle of a field, a few kilometers west of Okotoks. Above the ground, this rock measures about 45 x 20 x 10 meters and is estimated to weigh over 18,000 tons. The ice sheet which carried it to this location would have been at least 60 meters thick and 180 meters wide.

Today, these boulders are one of the interesting landscape features of Alberta.

Via the Journal, February, 2010

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**Refreshments for this month are by Sid & AJ Johnson.**

**Our program will be on colored gemstones if Ed can get Mr. Cotter from the Jewel Chest to give the talk. Otherwise, it will be a DVD presentation of some kind.**

**The Show – and – Tell theme this month will be Sulfates; Celestite, anglesite, anhydrite, glauberite, gypsum, chalcantite, melanterite, brochantite, linarite, jarosite, cyanotrichite, and like minerals.**

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**A belated birthday wish to our own Gretchen Neal who had a birthday on February 13.**

## **A Brief History of Turquoise**

**By Elizabeth Hixon**

Through the ages turquoise has been an extremely popular mineral for use in jewelry as gemstones. Discovered thousands of years ago, turquoise is one of the few fashion items that have retained popularity even today. The stone has been a fascination to artisans and scientists alike.

Turquoise is formed when lava from beneath earth's crust is forced upwards. The lava releases phosphoric acid into the earth, melting aluminum out of feldspar and apatite. Copper contained in the lava mixes with aluminum in small cavities, usually no larger than an inch. When combined with water, pressure will cause the minerals to slowly transform, making turquoise. Copper gives turquoise blue coloring but when iron is present during formation, it will appear greener. The most famous turquoise mines are located in the United States especially in Nevada, New Mexico, and Arizona. Other rich veins have been found in Iran and Kazakhstan.

The earliest reports of turquoise are from Egypt and Persia. Ancient Egyptians inlaid turquoise in intricate gold settings. Elaborate gold and turquoise jewelry has been found in tombs of Egyptian pharaohs and Persian rulers. The stone was most likely introduced to Europeans during the Crusades. Turquoise was often used as currency and trade material in many countries. It was sometimes priced higher than even gold. Since turquoise deposits are usually found near or on top of the earth's surface, it was most likely discovered in America when Natives spotted it and began digging for more. Although turquoise inlaid in silver is often thought of as Indian jewelry, Native Americans used metals primarily for trade rather than jewelry. Wood, bone, shell, and other stones were used instead for jewelry making. To work the turquoise it is thought that Indians probably ground it against fine sandstone. Sand, clay, and finally leather were probably used for final polishing steps. Indians could have used sharp rocks or perhaps even a dried cactus spine to make holes for beads. The Spanish taught Native Americans more sophisticated methods of metalwork and silversmithing in the early 1800's. Silversmithing was put into use primarily by Navajos but was also used by Hopi and Pueblo tribes. Until the early 1900's silver jewelry was specifically for tribal usage. Early traders and fur trappers discovered the craft and encouraged the Navajos to circulate jewelry to excite tourism.

Many nations over the centuries have thought turquoise to have supernatural powers. Ancient Persians believed that it granted long life. Because its worth as a holy stone was so great, turquoise was often set behind other ornamental stones to hide it from potential thieves. Native Americans warriors and hunters carried the stone to ensure they would not come to harm. They also mounted turquoise on arrowheads to guarantee accuracy. Navajo tribes thought that turquoise was a piece of the sky and would cause rainfall. Zuni Indians wore the stone to protect themselves from evil spirits. Ancients around the world used turquoise in treatments for various diseases and ailments. Astrologists today believe that it helps communication abilities.

Although highest quality turquoise is considered to be hard with a sky blue color and no surrounding matrix, many people in the Southwestern United States prefer darker blues and greens with matrix included. Choosing turquoise is often based on personal preference.

**Turquoise continued -**

Older turquoise that has not been collected or mined will weather and dry out leaving the mineral chalky and soft with a whitish coloring. This turquoise should be avoided as it is almost impossible to work with and close to worthless. The most important factor of good turquoise is hardness. Turquoise ranges from 5 to 6 on the Mohs hardness scale. The highest quality turquoise will be close to 6 in hardness. Rarity is another pricing factor. For example, high quality turquoise from low quality producing mines will be more collective than high quality turquoise from other mines known for high quality turquoise. Highest quality turquoise has been known to sell for over \$2,000 per kilogram.

It is important to note that recently, a hard form of white turquoise has been discovered. This is extremely rare. The only known vein in the world is located in Nevada. Although originally called “Dry Creek” turquoise after the mine it was collected at, the Indians nicknamed it “White Buffalo” or “Sacred Buffalo” turquoise since it is considered as rare as the white buffalo. It has become popular in jewelry and is very expensive. Although classified as turquoise, there has been much speculation as to whether it should be considered turquoise or not. Most geologists and mineralogists will agree that it is not really a form of turquoise.

Medium grade turquoise is often stabilized to increase durability. An early form of stabilization uses plastic resin to fill pores. Unfortunately this often gives the stone a shiny plastic look. Although this method is still employed today, new techniques using quartz dust and other polymers have been developed. These new methods have hardly any effect on the stone’s appearance. Stabilizing turquoise decreases the tendency to fracture making it easier for lapidary artists to work. Although stabilized turquoise is not as valuable as that of high quality turquoise, it is more available to buyers not willing to pay high prices for quality turquoise. Skilled artisans will use only non-stabilized turquoise as anything else will depreciate the value of their work.

When purchasing turquoise, buyers should carefully watch for fakes. There are many types of fake turquoise. Plastic imitations are perhaps the easiest to spot. They are made simply of dyed plastic polymer often with interwoven black coloring to look like matrix. Other fakes are made by dyeing less valuable minerals such as howlite. Blue colored glass has also been seen. Sometimes extremely low grade turquoise is ground into powder, injected with color, and reconstructed using resin and polymer. Although these specimens are often marketed as real turquoise, this is mostly a ruse. Buying from a trustworthy dealer is the best way to avoid purchasing fake stones.

Proper care should always be taken when cleaning jewelry of any type. Since turquoise is a soft, brittle stone, extra special attention should be paid when cleaning turquoise jewelry. As it is a very porous material, care should be taken to avoid contact with liquids. Prolonged wear will allow skin oils to soak

**Turquoise continued -**

into the stone, eventually discoloring the mineral. Gem cleaner should never be used on turquoise. If the silver tarnishes, lightly rubbing the setting and stone with silver polish will not harm the turquoise.

Turquoise is said to be the most popular gemstone world wide today, due mainly to its attractive nature and distinctive coloring. For ages, jewelry makers have enjoyed the qualities and uniqueness of the stone.



Untreated turquoise, Nevada USA. Rough nuggets from the McGinness Mine, Austin; Blue and green cabochons showing spiderweb, Bunker



A nugget of dyed Howlite sawn open to reveal its true nature

Sources:

The Complete Encyclopedia of Minerals

by Petr Korbel and Milan Novák

<http://www.camerontradingpost.com/turquoisehx.html>

<http://www.native-languages.org/jewelry.htm>

[http://www.jewelinfo4u.com/Turquoise\\_in\\_history.aspx](http://www.jewelinfo4u.com/Turquoise_in_history.aspx)

<http://southwestaffinity.com/whiteturquoise.htm>

howlite photos taken by .Barbara Smigel at Artistic Colored Stones <http://www.acstones.com/> Remaining photos from <http://en.wikipedia.org/wiki/Turquoise>

Via The Quarry, January, 2010

### **Joke**

The band was nervous. So was the new music teacher. Before their first concert, he told the kids that if they weren't sure of their part, just pretend to play.

When the big moment arrived the parents waited expectantly. The teacher brought down the baton with a mighty flourish, and lo, the band gave forth a resounding silence. Via the Post Rock, February, 2010

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### **Tip**

**Keep Silver from Tarnishing** – Tarnish is caused by sulfur. So, place sticks of blackboard chalk in your cases, jewelry boxes, jewelry drawer, or just around your silver jewelry. From <http://www.rocks4u.com> and seen in Pick and Pack 9/09. Via the Post Rock, Feb. 10

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### **Federation News – “How the Earth Was Made” – Now Available on DVD!**

**By Judith Washburn, Geology Committee Chair - January 2010 – Issue No. 488**

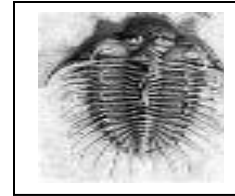
Do you know about the History Channel's series “How the Earth Was Made?” This amazing series is in its second season of broadcasts that air on Tuesday nights at 8:00 p.m. (CST). If you're familiar with the series, you know it is spectacular in scope with amazing images.

What you might not know is that Season One is now available for purchase on DVDs. The History Channel website, [www.shophistory.com](http://www.shophistory.com), is offering the set of thirteen programs for an amazing \$20.99. The series includes the following topics: The San Andreas Fault, The Deepest Place on Earth, Krakatoa, Loch Ness, New York, The Driest Place on Earth, The Great Lakes, Yellowstone, Tsunami, Asteroids, Iceland, Hawaii, and The Alps. I've seen them all, and they are spectacular. **Order them for yourself; order them for your club.** Think about the potential programs you can present at club meetings. Find out how physical processes have shaped some of the most well known locations and geological phenomena in the world. With rocks as their clues and volcanoes, ice sheets, and colliding continents as their suspects, scientists launch a forensic investigation that will help viewers visualize how the earth has evolved and formed over billions of years.

**Editor's note:** We may want to order these for our club library and use them in the future as programs. We can't go wrong at this price.



**For Our Junior's**  
**What Are Trilobites**  
**By Carlton Dohrman**



Trilobites were a group of hard-shelled, segmented animals that became extinct almost 300 million years ago. This was before the dinosaurs even came into existence. Trilobites are among the most important fossil creatures of the Paleozoic Era, the era during which the complex life-forms that were the foundation of life as it is today were forming. Though they are not as popular or well-known as the dinosaurs, trilobites are a favorite kind of fossils among paleontologists (scientists who study the development of life on Earth). They can be found in rocks on all seven continents.

Trilobites are early marine (sea-dwelling) arthropods. This phylum is characterized by having multiple body segments and jointed legs - modern arthropods include crabs and lobsters. This extinct class of arthropods, the Trilobita, made up over 20,000 described species, and new species are still being added to the class. This makes them the most diverse class of extinct organisms.

Within the general body plan of trilobites there was much diversity of size and form. The smallest known trilobite species, the Agnostids, were under a millimeter long, while the largest species identified to date were over two feet long. Such diversity in form has led to confusion and puzzlement about what ecological niche the trilobites filled: the best guess is that they included floating, swimming, and crawling forms. Paleontologists also believe they filled a variety of trophic (feeding) niches, although detritivores, predators, or scavengers are probably most likely. Most trilobite fossils are about two inches long, and part of their appeal is that you can hold an entire fossil animal in your hand and turn it about to examine it. Try that with a Tyrannosaurus Rex!

Whatever their size may have been, every trilobite fossil had a similar body. All trilobite fossils display three main body parts: a cephalon (head), a thorax made of one or more segments, and a pygidium (tail piece). Of course, they all had legs and other parts – arthropod means “jointed limb” – but these limbs were more fragile and have rarely been found still attached to the main body. In actuality, though, the name "trilobite" (which means "three lobed") is not a reference to the three-part bodies, but to the fact that all trilobites have a long central axial lobe, with right and left pleural lobes (pleura refers to “side” or “rib”). The three lobes run front to back, from cephalon to pygidium, and are where trilobites get their name. They are common to all trilobites regardless of size and form.

Via [www.helium.com/items/428226-trilobites](http://www.helium.com/items/428226-trilobites)

### **Dates to Remember**

#### **March**

- 9                      Ozark Earth Science Gem, Mineral & Fossil Club Meeting; 7:00 p.m.;  
Van Matre Senior Citizens Center, Mountain Home, Arkansas**
- 13 – 14              Macomb, IL, 29<sup>th</sup> Annual Show, WIU Student Union, Murray Street.**
- 26 – 28              Bridgetion (St. Louis County) Missouri: 50<sup>th</sup> annual show; Machinist Hall  
Auditorium, 12325 St. Charles Rock Road.**
- 26 – 28              Ada Gem & Mineral Show, Pontotoc County Agri-Plex, Ada, Oklahoma**
- 20-21                Cedar Valley Rocks & Mineral Society Gem, Mineral & Fossil Show in  
Cedar Rapids, Iowa. Contact [m\\_houg@yahoo.com](mailto:m_houg@yahoo.com)**

**Dorothy Hess, Publisher  
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