



Mid-Ohio Mineral and Fossil Club

The LITHNICS

Volume 64 Issue 1

January 2026

THE LITHNICS



A QUARTERLY PUBLICATION OF
THE MID-OHIO MINERAL AND FOSSIL CLUB
MANSFIELD, OHIO



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VIDEO/BOOK LIBRARY	Carolyn Kelly
LITHNICS EDITOR	Bryan Summer

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OUR CLUB

PURPOSE: The purpose of the Mid-Ohio Mineral and Fossil Club, is to create an interest in and study of the earth sciences and all lapidary arts and to afford an opportunity to share knowledge and working techniques with others.

MEETINGS:

General club meetings are at 7:00 pm on the first Monday of the month at:

Gorman Nature Center, 2295 Lexington Avenue, Mansfield, Ohio.

If the first Monday falls on a holiday we meet one week later.

Visitors are always welcome.

Special Interest Group (Classes) meetings are held September through May at 7:00 pm on the second Monday of the month. See Special Interest Chair, Mike McCullough.

CANCELATION OF A MEETING

If for any reason the club officers feel that a meeting should be canceled you will be notified by email as soon as possible. If Mansfield schools are closed so are we. If for any reason you don't feel safe to drive to a meeting, please, please stay home.

Annual dues are:



Adults	\$ 15.00
Children under 16	\$ 5.00
Family	\$ 20.00

Dues are due Jan. 1st of every year. Whether you join in January, December, or any month in between, the cost is the same. Everyone's dues are due again the next January 1st .

LITHNICS: Our quarterly newsletter.

Permission is hereby granted to use any original **LITHNICS** articles, whole or in part, as long as proper recognition is noted with the reprint.

Club members are encouraged to make contributions to the LITHNICS.

Contact: Bryan Summer (bryansummer1@gmail.com)

The Mid-Ohio Mineral and Fossil Club



Presidents Message

As I take the big job of president, I first have to thank the members who have faith in me to lead a great group of “ rock hounds”. As I see the issues other clubs have I am thankful that we get together for the right reasons. We are a social club with an interest in our very diverse hobby. I first, want members to reach out with any issues they see. Also if you want as members, to see , programs to add to your knowledge please see me and I will try to get a program for you. The one big issue we always have is field trips. I want to get together a committee to provide members with field trip opportunities whether it be on their own or with a group. If we have a committee no one will have all of the responsibilities of that job. Field trips are a very difficult job as many places/ quarries have eliminated this avenue. As I come to club each month I always look at the interactions between members and always look at this as a great learning activity. Stay warm this winter

Tom Kottyan

Mid-Ohio Mineral and Fossil Club President

Upcoming Meetings – all meetings are at the Gorman Nature Center at 7:00 pm

Continue to watch for information about future meetings in your email.

- Monday, January 5 7:00 Meeting Gorman Nature Center
- Monday, February 2 7:00 Meeting Gorman Nature Center
- Monday, March 2 7:00 Meeting Gorman Nature Center Club Silent Auction
- Monday, April 6 7:00 Meeting Gorman Nature Center
- Monday, May 4 7:00 Meeting Gorman Nature Center Club Pot Luck
- Monday, June 1 7:00 Meeting Gorman Nature Center
- June 5 - 7 Mineral Show Fri, Sat, Sun Richland Fairgrounds
- Monday July 6 7:00 Meeting Gorman Nature Center
- Monday, August 3 7:00 Meeting Gorman Nature Center
- Monday, September 14 7:00 Meeting Gorman Nature Center
- Monday, October 5 7:00 Meeting Gorman Nature Center
- Monday, November 2 7:00 Meeting Gorman Nature Center
- Tuesday, December 1 Annual Christmas Dinner Golden Corral 5:30 - 8:00

Area Events

No Area Events at this time

Mid-Ohio Mineral & Fossil Club

GEM, MINERAL, JEWELRY, BEAD, & FOSSIL SHOW 2026



Mineral Oddities and Pseudomorphs

JUNE 6 + 7, 2026

Saturday 10 - 6

Sunday 11 - 5

Richland Co. Fairgrounds
Fairhaven Hall
750 North Home Road
Mansfield, OHIO

Mineral Oddities or Pseudomorph Minerals

Geology In (geologyin.com)

Pseudomorph is a mineral formed by chemical or structural change of another substance, though retaining its original external shape. Although pseudomorphs give the appearance of being crystalline, they are commonly granular and waxy internally and have no regular cleavage; those that are crystalline have optical properties different from those required by their outward form.

They retain the external shape and form of a pre-existing mineral, called the protolith, but their internal composition has been transformed into a different mineral, called the neomorph. Imagine a mineral wearing a mask, its true chemical identity hidden beneath the familiar form.

A common example of this is petrified wood, in which all the cellulose fibers have been replaced by silica, even those in the bark. Pseudomorphs can be formed by deposition of one mineral on the surface of crystals of another (see also epitaxy).

Iron Ore Minerals: Types & Properties

By **Admin** August 15, 2025



Iron ore sample. uwimages/Adobe Stock

Iron ore minerals are the naturally occurring sources of iron, from magnetic magnetite to non-magnetic hematite and siderite. These minerals not only fueled the Iron Age but also shaped our modern world, from steelmaking to scientific discovery.

Iron Ore Minerals in History and Industry

Iron ore minerals have played a major role in human history. After the Bronze Age came the Iron Age, when the smelting of iron ore revolutionized tools, weapons, and building materials. Today, vast iron ore deposits fuel a global steel industry that builds our cities, ships, and infrastructure. Mining operations in regions like Australia's Pilbara and Minnesota's Mesabi Range still extract millions of tons of ore each year to meet demand.

Iron also plays an important role in our health. We are red-blooded thanks to the atoms of iron in every red blood cell. Iron grabs oxygen, carries it where needed, and releases it. Without it, we would be anemic and die.



Siderite Ekaterina/Adobe Stock

Some iron ore minerals, like magnetite or lodestone, are strongly attracted to a magnet. Others are not. Minerals such as siderite and hematite contain iron, but the iron is bound in a different mineral compound, making them non-magnetic despite their importance as iron ores.

Understanding Magnets and Magnetic Force

We know that for a magnet to work, things must line up internally. The “things” are electrons, which have to spin in the same direction, creating a north-south influence. This is why nails, or needles, become magnetized from electricity, which flows in one direction.

Stroking the needle in one direction with a magnet will magnetize it. But once formed, are magnets permanent? Over time, a magnet’s strength may slowly weaken. Hitting or dropping it, will disrupt the electron spin and disrupt the alignment of electrons and magnetism.

The same thing happens with magnetite. Its electrons all spin in the same direction. Aligning in the same direction dictates the strength of the magnetism. The electrons of an element, like iron, also influence the chemistry of minerals.

How Iron Ore Minerals Form



Active deep pit of red iron ore in the Pilbara region in Western Australia. mino21/Adobe Stock

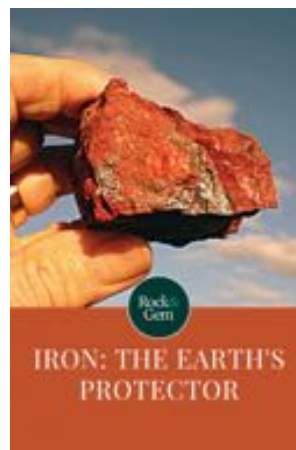
All elements are composed of protons and electrons. Forming a mineral requires an element acting as a metal, called a cation, which gives up its electrons to form a mineral. Iron does this and is positively charged as a result.

To form a mineral compound, a non-metal, like oxygen, takes in electrons and becomes negatively charged. This negatively charged non-metal oxygen joins the positively charged iron to form a mineral compound.

Iron and oxygen can join in a variety of ways to form compounds, so we get different iron minerals, magnetic magnetite and non-magnetic hematite, siderite ad infinitum and even rust.



Raw magnetite Annda/Adobe Stock



Magnetite: A Key Iron Ore Mineral

Most mineral collectors are familiar with magnetite, a natural magnet and one of the world's primary iron ores. Magnetite is mined extensively for steel production, with major deposits found in Australia, Brazil, and North America. It tends to be black in color and lustrous, and its crystals form in the isometric system, often as octahedrons. It more often develops in octahedrons and less often in 12-sided dodecahedrons. Magnetite occurs in many rock types, from igneous to metamorphic, and can appear as grains, small crystals, or large, well-formed specimens.

Fine examples of octahedral magnetite have been dug by rockhounds on Twin Peaks, Millard County, Utah. The octahedrons are usually under an inch but form sharp clusters. Historically, magnetite played an important role in navigation when naturally magnetized specimens, called lodestone, were used to indicate direction. named "lode," which means "journey."

Lodestone: Naturally Magnetized Iron Ore

During the second century B.C., early people were naturally curious about lodestone because of its magnetic property. In China, they found that if they floated a lodestone needle on water, it would indicate direction. A liquid "compass" wasn't used on a ship, but if the needle was suspended in air, it would indicate direction.

A compass works because the earth itself is surrounded by a life-saving magnetic field. What's very interesting, and maybe scary, is that we know the Earth's magnetic field reverses. We just don't know why or know the consequences.

Be that as it may, it's a good thing the Earth has a magnetic field because it protects us from most of the lethal radiation constantly discharging from the sun. Some of that radiation, like ultraviolet rays, does penetrate. But the Earth's magnetic field makes life as we know it possible.

While lodestone itself is relatively rare, its parent mineral, magnetite, is an abundant and valuable iron ore extracted on a massive scale today. This ore feeds the steel industry, which shapes modern infrastructure and technology.

Iron Ore Minerals in the Earth's Crust

Since we depend on the Earth's magnetic field, we need to know what produces this life shield. To understand, we have to look at the Earth's core. We can't peer that far into the earth, so we must use other means. Earthquakes are one way to "look" into the Earth.

An earthquake causes the entire Earth to vibrate. The rock structures of the earth can slow, speed up, or deflect those vibrations, which tell us something about the rock layers within the earth.

From this, we are convinced the Earth's innermost core is a solid nickel-iron suspended in an outer semi-liquid nickel-iron-rock core. As the Earth rotates, the inner core rotates more slowly, creating that all-important magnetic field.

If we are right about the Earth's core, where did the iron come from? The general theory is that the Earth was formed by accretion, the repeated crashing together of individual rocky masses, comets, and meteors as gravity pulled them in. That material was leftover from ancient exploding stars.

Note that iron, atomic number 26, is the heaviest element that a star like ours can create by atomic fusion. Gravity pulled all this space debris together to form the Earth 4.6 billion years ago, and we are still growing.

During the Earth's early history, abundant iron in the crust combined with oxygen produced by early photosynthetic life formed vast iron oxide layers. These ancient formations are still mined today, supplying the raw materials for steelmaking worldwide.

Formation of Major Iron Deposits

So why are the heavier elements like gold not deep in the earth? We find them in the crust. Luckily, crustal movement caused by great internal heat causes super-hydrothermal solutions to bring the heavier elements up into the crust, and we mine them!

During the Earth's early millennium, the crust was rich in meteorite iron, while the Earth's early atmosphere was methane, ammonia, and carbon dioxide. Then an organic life form called stromatolites developed photosynthesis, which takes in carbon dioxide and produces oxygen, changing the atmosphere. Oxygen, combined with the available iron in the crust, forms massive amounts of iron compounds like rust, hematite, siderite, magnetite and other iron minerals.

We now find these huge iron oxide deposits and mine them in Australia, Alabama, Minnesota and elsewhere. The huge Mesabi iron range, among others, are what made America a huge steel producer.

We have to be grateful to magnets and the Earth with its magnetic field. Its slowly rotating nickel-iron core has made life possible on earth and protected it so we can enjoy the benefits of our red blood cells as we collect iron minerals magnetite, hematite, and siderite, all the while dealing with annoying hydrous iron oxide: Rust!

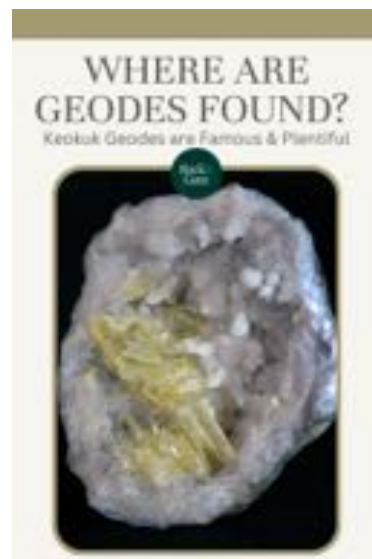
This story about iron ore minerals appeared in the August 2021 issue of Rock & Gem magazine. Story by Bob Jones.

Geodes 101: Plus Where They're Found

Learn What Is a Geode & Meet the Famous Geodes from Keokuk, Iowa

By **Admin**

February 12, 2025



Brown and white calcite formed in the center of this Keokuk geode. Note the two large pseudocubic calcite crystals near the bottom of the cavity.

Geodes are popular with rockhounds since there's always a surprise inside. Who can resist that? The most famous geodes come from Keokuk, Iowa. Find out more about how to find these geodes and what may be waiting inside them.

What is a Geode & Where are Geodes Found?

Simply put, a geode is a rounded rock with a hollow inside that's lined with crystals, minerals or both. They are found in greatest abundance in a region extending 70 miles in all directions from Keokuk, Iowa.

Keokuk geodes are mostly collected in the strata of the lower Warsaw Formation and in the creeks and rivers that erode material from this formation. The lower Warsaw Formation is roughly 340 million years old and contains shales, limestones and dolomites.

How Were Keokuk Geodes Formed?

The question of how Keokuk geodes were formed has haunted geologists and may still not be completely answered. Two ideas lead the way. One is that they formed because of the transformation of anhydrite nodules abundant on the ancient shallow sea floor. The second is that the remains of dead ancient ocean invertebrates provided the hollow sites necessary for geode formation.

Where are Geodes Found and How to Collect Them

No matter your collecting chops, a must-visit is the annual Geode Fest sponsored by the Keokuk Area Convention & Tourism Bureau.

At Geode Fest, you have the opportunity to go on six guided hunts over three days. Some of these sites are not available to collectors except during Geode Fest. At the Geode Fest home base, vendors have a wide array of geodes and related items for sale. You can also have your geodes opened there.

If Geode Fest isn't in the cards, a list of pay-to-collect sites can be found on the Bureau's website.

Minerals Found in Keokuk Geodes

While the abundance of the geodes and available collecting sites play a role in their popularity, the diversity and quality of the minerals they contain is the primary draw. Here is a listing and description of minerals found in Keokuk geodes.

Quartz – Found in all Keokuk geodes in the chalcedony rind, several varieties of quartz (SiO_2) may be present. The color will be clear, milky white or smoky. Some appear yellow or red because they are coated with the disintegration products of iron-containing minerals. In addition to the chalcedony rind, chalcedony may also coat the cavity interior. In the case of the dewdrop diamond geode, white chalcedony underlies the dipyrimal quartz crystals. Pseudocubic quartz is another form that can be found in Keokuk geodes.



This Keokuk “like” geode was formed in a brachiopod shell by producing a thin quartz layer followed by calcite crystal formation. This geode was found near Manhattan, Kansas.

Calcite – The second most common mineral found in Keokuk geodes is calcite (CaCO_3). Calcite occurs in dozens of modified crystal forms, including the pseudocubic, nailhead, barrel, dogtooth, tabular and pagoda. Colors include clear, white, brown, iridescent brown, pink and black.

Kaolinite – This common clay mineral is found as a snow-white powder. Kaolinite [$\text{Al}_2\text{Si}_2\text{O}_5(\text{OH})_4$] contributes to the formation and modification of other secondary minerals in these geodes.

Pyrite – Common as distinct cubes or as yellowish-brown smudges left by disintegrating crystals, pyrite (FeS_2) cubes vary in color from bright gold (“fools gold”) to brown and may exhibit iridescence.

Marcasite – Pyrite and marcasite (FeS_2) are polymorphs that have the same chemical formula but exhibit different properties. Marcasite’s color is more variable than pyrite. It can be golden, brassy green, brown or metallic iridescence. The crystal structure can be capillary, tabular, reticulate or cocks comb.

Chalcopyrite -Small chalcopyrite (CuFeS) crystals lack in size but make up in color. The brilliant colors of red, purple, blue and green may be because of an association with other minerals such as malachite.

Aragonite -A polymorph with calcite, aragonite (CaCO_3) forms star-like clusters of needles that are white to clear.

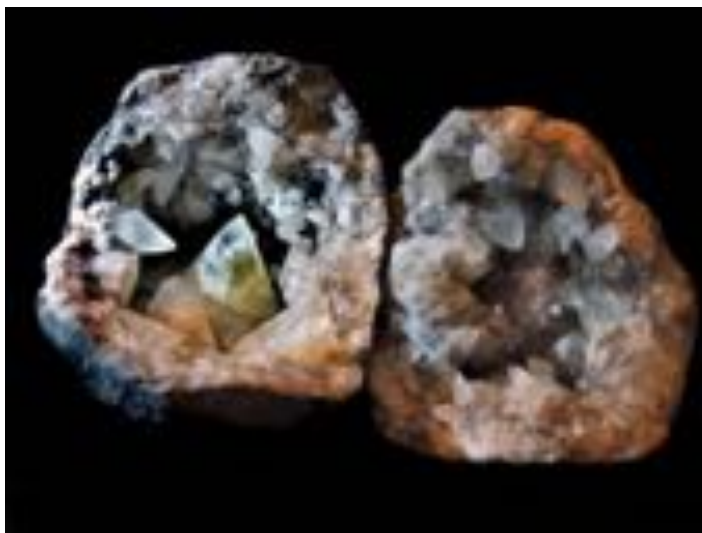


Three prominent forms of calcite are seen in this macro-photograph of a small portion of this Keokuk geode. Two large brown pseudocubic calcite crystals stand out.

Dolomite – Frequently perched on other crystals in Keokuk geodes, iron-rich dolomite $[\text{Ca}(\text{MgFe})(\text{CO}_3)_2]$ forms clusters of small rust-red saddle-shaped crystals.

Sphalerite -Large, beautiful crystals of sphalerite (ZnS) are black with a lustrous surface. The crystals may inhabit the entire central portion of the geode cavity, which sometimes obscures the crystal faces.

Barite -In Keokuk geodes, barite (BaSO_4) crystals can vary from yellow, blue or white with different levels of transparency. The forms can be tabular, long rods or rosettes.



Dogtooth calcite crystals stand out in this Keokuk geode collected near St. Louis, MO.

Selenite – The crystal form of gypsum, selenite ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$) occurs as long slender, transparent rods.

Goethite – Small, shiny black, and capillary in form with doubly terminated crystals, goethite (HFeO_2) crystals are common. Disintegrated goethite is responsible for some yellow staining on other minerals. Goethite forms pseudomorphs after pyrite, marcasite and dolomite. A pseudomorph is where one mineral replaces another without changing the original crystal form.

Pyrolusite – Appearing as black staining on other minerals, pyrolusite (MnO_2) may form dendritic growths on calcite and quartz.

Hematite – In Keokuk geodes, hematite (Fe_2O_3) mostly appears as a deep red powder or a red coating on quartz.

Smithsonite – Rare in Keokuk geodes, smithsonite (ZnCO_3) appears as botryoidal (grape-like cluster) crystals of a gray, green or light blue color.

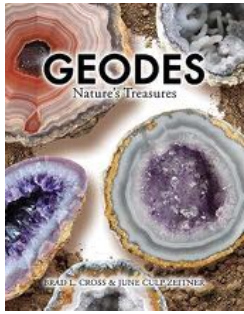
Malachite – Uncommon in Keokuk geodes, malachite $[\text{Cu}_2\text{CO}_3(\text{OH})_2]$ presents as small dark green needle clusters. Malachite tends to appear in geodes that also contain chalcopyrite.

Other Substances in Keokuk Geodes

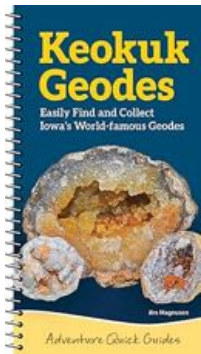
Water and bitumen can also be found in Keokuk geodes. A geode that contains water is called an enhydro. Bitumen is a dense, highly viscous, petroleum-based hydrocarbon that looks like thick oil.

Because of their abundance, diversity, quality of their minerals, and variation in size, Keokuk geodes are considered the royalty of this type of geode.

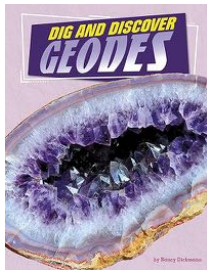
Geology Books



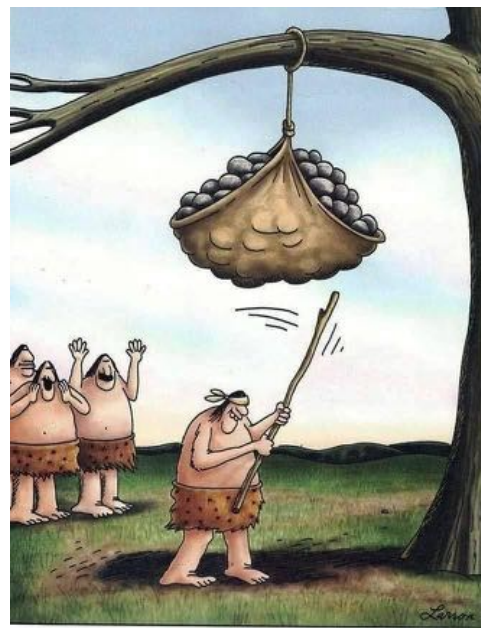
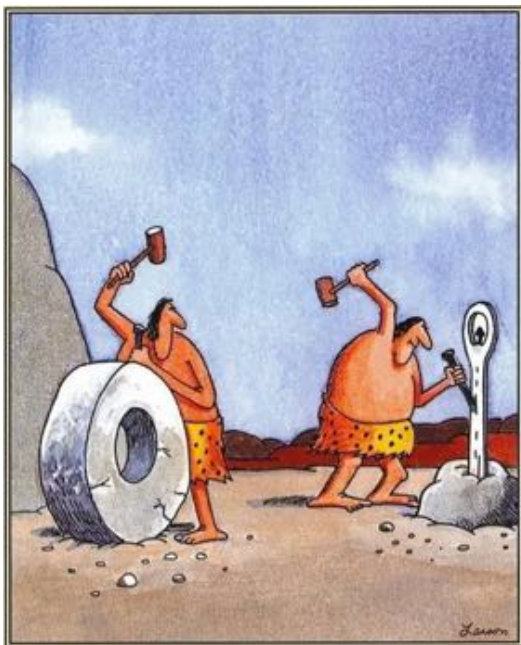
Explore the Mysterious World of Geodes! Take a crack at geode science! Learn from two world renowned gemologists as they share their lifelong passion and knowledge of everything geodes, from their formation and occurrence to the amazing variety and beauty of these popular, world-class gemstones. -Visit the geode mines of Northern Mexico and Southern Brazil with Brad Cross. -Learn the geode mining process and how the astonishing treasures hidden inside are uncovered.



Whether you're a seasoned rockhound, a curious beginner, or a geology enthusiast, keep this convenient guide close at hand. Written by expert collector Jim Magnuson, this beautiful booklet is packed with everything you need to know about the world-famous geodes found in southeastern Iowa, northeastern Missouri, and western Illinois, with the epicenter around Keokuk, Iowa.



"You step carefully along the shore of a river. A lumpy rock catches your eye. You pick it up and smile as you drop the lightweight rock into your bucket. When it's split open, you see beautiful blue crystals glittering in the light. It's a geode-just like you thought! Find out how geodes form, where they are found, and about some of the most amazing geode discoveries. Then learn how you can find and collect these marvelous mineral-filled rocks too!"--



Early piñatas



The World's Biggest Geode Is A Literal Cave

530K views · 1 year ago



If you were really into gift shops as a kid, you probably loved to look at all the

Matching chapter 2:52 Geodes



Types of Geodes & Where to Find Them

155K views · 3 years ago



Today, Rebecca is taking you inside Geodes all over the world to

8 moments 0:28 Keokuk Geodes



All About Geodes and How They Are Formed

647K views · 7 years ago



The formation of geodes is one of the world's oldest and coolest natural

2 moments 0:22 Are geodes real?



Interesting Web Sites

1. Mineralogy4kids
 - a. <https://min4kids.org>
2. Minerals by Name
 - a. [http://www.galleries.com/Minerals By Name](http://www.galleries.com/Minerals_By_Name)
3. Ology - the science website for kids from the American Museum of Natural History
 - a. <https://www.amnh.org/explore/ology?channel=earth>
4. Fascinating Geology for Kids
 - a. <https://littlebinsforlittlehands.com/geology-for-kids/>
5. Geology for Elementary Schools
 - a. <https://study.com/academy/topic/geology-for-elementary-school.html>
6. Elementary School Science
 - a. <https://www.elementaryschoolscience.com/lesson-plan-intro-rocks-minerals>

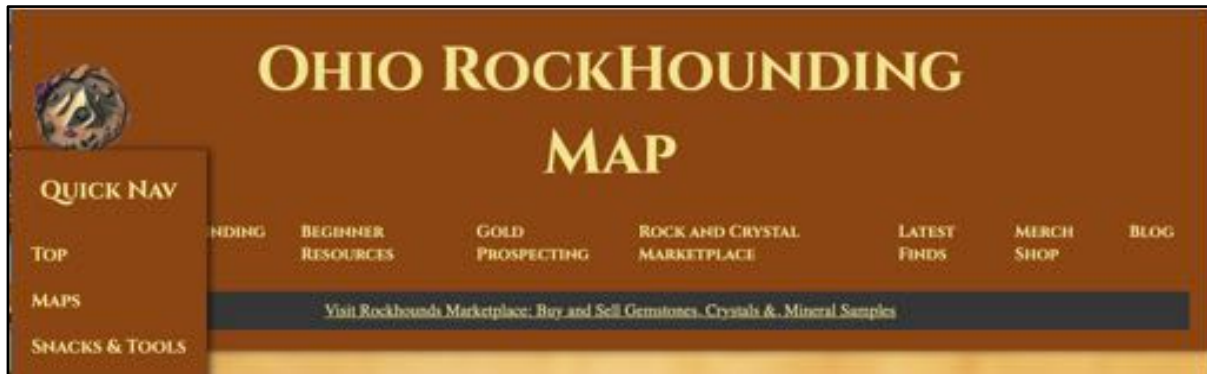


Geoscience News and Information

Geology.com

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2026 Rockhound Holidays (Rock + Gem Magazine)

People often say there's a holiday for everything, and they're right. The good news is there are some fun holidays for Rockhounds to enjoy and celebrate.

Old Rock Day – January 7

National Jewel Day – March 13

Geologists Day – April 5

Earth Day – April 22

Nickel Day – May 16

Dinosaur Days – June 1

National Caves & Karst Day – June 6

World Oceans Day – June 8

International Drop a Rock Day – July 3

International Rock Day – July 13

National Pet Rock Day – September 6

Collect Rocks Day – September 16

National Fossil Day – October 14

St Barbara's Day - December 4

Upcoming Events and Rock Shows – (Ohio and close to Ohio)

Check the Midwest Federation of Mineralogical + Geological Societies for Calendar Updates

January

January 28 - February 8—TUCSON, ARIZONA: Annual show; JOGS International Exhibits; Tucson Expo Center, 550 E. Irvington Road; daily 10-6; Must be 14+ to attend; The JOGS Tucson Gem & Jewelry Show is one of North America's largest gem, jewelry, and mineral events, hosting 400+ exhibitors and 50,000 buyers from around the world; contact Yelena, (213) 629-3030; Email: info@jogsshow.com; Website: www.jogsshow.com

February

Feb 27 - March 1—GOLDEN, COLORADO: Annual show; Denver Gem and Mineral Guild; Jefferson County Fairgrounds, 15200 W 6th Ave; Fri. 10-6, Sat. 10-6, Sun. 10-5; Free Admission; Featuring: Gems, Books, Displays, Fossils, Minerals, Sculptures, Geodes, Demonstrations, Jewelry, Crystals, Kids' Activities and much more! OVER 25 SELLERS; contact Sandra Lucero; Email: mineralguild@gmail.com; Website: https://denvergem.org/

March

13-15—MIDDLEBURG HEIGHTS, OHIO: Annual show; Gemstreetusa; Cuyahoga County Fairgrounds, 19201 East Bagley Rd; Fri. 10-6, Sat. 10-6, Sun. 11-4; \$6 at the door. Kids 12 and

under are free; Visit gemstreetusa.com for a \$1 off coupon; contact Melanie Hawkins, 330-861-3646; Email: foursistersproductions; Website: gemstreetusa.com

20-22—JACKSON, MICHIGAN: Annual show; Michigan Gem and Mineral Society; American One Event Center, 128 W. Ganson St, Keeley Park; Fri. 10-7, Sat. 10-6, Sun. 11-5; \$5 per adult, \$3 senior, \$2 for students (under 5 free). Veterans free on Friday; Fun for the whole family! Silent auction, Demonstrators, Handicrafters, Exhibits, Displays, Raffle, Hourly door prizes, Speakers. 15 Exceptional Dealers; contact Sally Hoskin, (517) 522-3396; Email: saltoosal2@yahoo.com; Website: www.mgmsrockclub.com

28-29—CANTON, OHIO: Annual show; Stark County Gem and Mineral Club; Stark County Fairgrounds, 305 Wertz Ave, Arts Building; Sat. 9-5, Sun. 10-5; Cash only. Adults \$5, Seniors \$4, Children 6-14 \$1, Scouts in uniform Free; Exhibits of fossils, minerals, and fluorescent rocks. Kids' activities (Games, Silent Auction, and Door Prizes). Geode cracker. Adult Silent Auction and Door Prizes. Vendors of rocks, fluorescent rocks, minerals and fossil specimens, beads, handmade jewelry, and novelties. Food truck with great food; contact Terrie Shockling, (609) 505-0060; Email: terrieA@snip.net; Website: Facebook: Stark County Ohio Gem and Mineral Club

Our Club's Craft Program

We will send out information about craft classes as we get them planned and scheduled.

MIDWEST FEDERATION OF MINERALOGICAL & GEOLOGICAL SOCIETIES

New Website: <https://www.mwfed.org>

New Juniors Website: <https://www.mwfed.org/juniors>

FUTURE ROCKHOUNDS OF AMERICA

(American Federation of Mineralogical Societies)

Lora Hall, AFMS Youth Director

youth@amfed.org

Future Rockhounds of America (FRA) is a whole lot more than just the badge program! The new FRA website is packed FULL of lots of resources for activities with kids and teens in YOUR club - Any Midwest Federation Club. Features like **Rock Pals, the Junior Volunteer Award, Contests and rock-related activities for Kindergarten-12th grade kids** can make your club attractive to families and increase your membership. Check out the links below for ideas, and visit www.juniors.amfed.org/rock-mineral-activities for more!

[The Midwest Federation of Mineralogical + Geological Societies](#)

You can check out all the Shows and Events in our Midwest Region (Ohio, Michigan, Indiana, Illinois, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska) at the Midwest Federation of Mineralogical + Geological Societies <https://www.mwfed.org>



The U.S. Geolog



science (YES) Team.



Revamped their web presence to better assist with online and home learning.

The new USGS learning from home portal for lesson plans and activities, grades K – 12.

www.usgs.gov

Students of all ages can always tap into the USGS Resources for Teachers for over 140 years of USGS research in the natural sciences in the form of lesson plans and activities, maps, podcasts, online lectures, videos and animations, and much more. Browse thousands of ideas for using these resources in elementary, secondary, university, and informal education settings

Don't Forget to Check Out our Website for Club Information:

<http://www.midohiomineralandfossilclub.com>



The Lithnics

If you have any club news, articles you would like share with members, mineral collecting trips, and updates on your committee, etc. please email info to:



Bryan Summer – bryansummer1@gmail.com

The Lithnics is Published Quarterly

January 1, April 1, July 1, October 1