THE ROCKFINDER

Michiana Gem & Mineral Society
Tom Noe, Editor
305 Napoleon Blvd.
South Bend, IN 46617

SOUTH BEND IN PM APR 18 2002 460

MICHIANA GEM & MINERAL SOCIETY, INC.

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THE ROCKFINDER

APRIL, 2002

MICHIANA GEM & MINERAL SOCIETY

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The purpose of the Michiana Gem & Mineral Society is to promote the study and enjoyment of the earth sciences and the lapidary arts, and to share lapidary knowledge and techniques.

General meetings are held the fourth Sunday of each month, 2:00 PM, EST, at Our Redeemer Lutheran Church, 805 S. 29th St., South Bend, IN. Regular exceptions include May (third Sunday), July (no meeting), August (club picnic) and the November/December meeting and Christmas party. Board meetings are held before the general meetings. The annual club show is Labor Day weekend.

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Yearly Membership Dues (Payable by January 1)
_____Individual $10.00 per year
_____Family $15.00 per year
_____Junior $1.00 per year
_____Subscriber $7.50 per year

Please indicate areas of special interest.
General Geology____ Beads ____
Gems & Minerals____ Fossils _____
Cabochons_____ Field Trips ____
Faceting_____Crystals _____
Carving_____Micromounts _____
Other_____Jewelry Making_____

Name_____

Street _____

City, ST., Zip _____

Please send your dues and this form to
Michiana Gem & Mineral Society
c/o Bob Heinek
7091 E. East Park Lane, New Carlisle, IN 46552

HEADS OF COMMITTEES

Programs	Margaret Heinek 654-3673
Hospitality	Pat McLaughlin 259-1501
Educational	Emily Johnson
Librarian	Diane Gram 272-6885
Historian	Ed Miller 498-6513
Sunshine	Sally Peltz 616 683-4088
Publicity	Phyllis Luckert 282-1354
Field Trips	Kathy Miller 291-0332
Membership	All Members

The Michiana Gem & Mineral Society, a not-for-profit organization, is affiliated with the Midwest Federation of Mineralogical Societies and with the American Federation of Mineralogical Societies.

The Rockfinder is published monthly except July and August. Editor, Tom Noe, 305 Napoleon Blvd., South Bend, IN 46617 (ph. 289-2028). Co-editor, Herb Luckert, 221 Marquette Ave., South Bend, IN 46617 (ph. 282-1354). Reporters, Bob Heinek, Herb Luckert, club members.

Additional names:
Name_____
Birthday_____

Name_____
Birthday_____

Name_____
Birthday_____

Name_____
Birthday_____

Date of Wedding Anniversary _____

Phone_____

PLEASE READ AND SIGN THIS SECTION:
With my signature I hereby release the Michiana Gem and Mineral Society, Inc., and its individual members and the owners of any premises upon which I enter under permit granted to the society, absolutely free of any liability whatsoever, to my person or my property, and further I will respect the equipment and property of the aforesaid owners.

Signed_____Date _____

THE ROCKFINDER

Newsletter of the Michiana Gem & Mineral Society

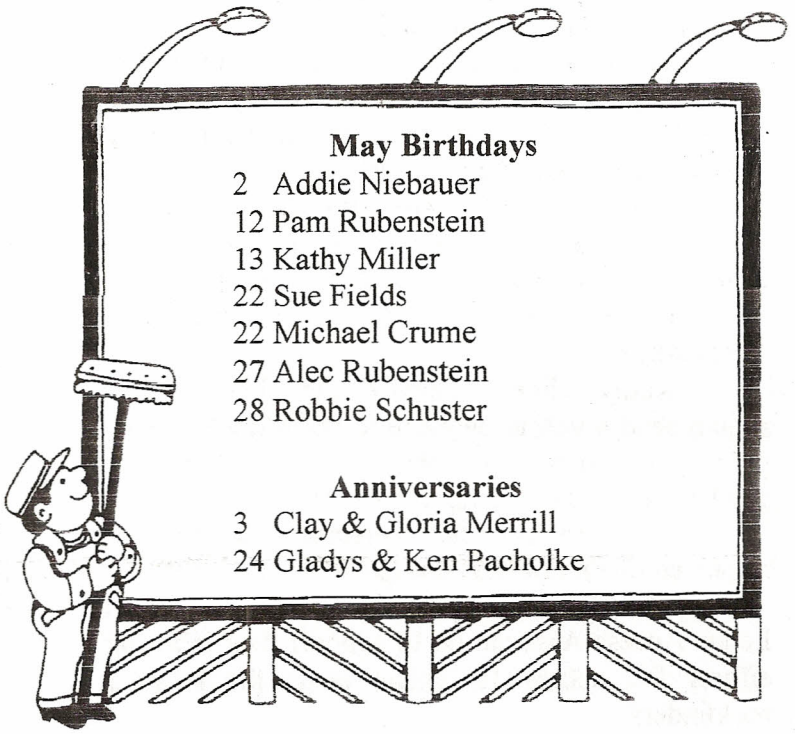
Volume 42, Number 4 April, 2002

Meeting: Sunday, April 28, 2002
Doors open at 1:30 p.m.
Meeting starts at 2:00 p.m.
Guests are always welcome.

Place: Our Redeemer Lutheran Church
805 So. 29th St. (19th & Wall)
South Bend, IN

Program: Sam Shapiro will introduce a video on the Galapagos Islands and give a presentation on their geologic history.

Refreshments: Anita Hostetler and Celia Webber.



May Birthdays
2 Addie Niebauer
12 Pam Rubenstein
13 Kathy Miller
22 Sue Fields
22 Michael Crume
27 Alec Rubenstein
28 Robbie Schuster

Anniversaries
3 Clay & Gloria Merrill
24 Gladys & Ken Pacholke

UP AND COMING

Apr. 20-21: Greater Cincinnati Gem, Mineral & Fossil Show, Cincinnati Convention Ctr.
Apr. 20-21: Blossomland Gem, Mineral and Fossil Show, new location, Berrien County Sportsman's Club, 2985 Linco Rd., Berrien Springs, MI.
Apr. 27: Gem, Mineral, Fossil and Jewelry Show, Miami County Fairgrounds, Troy. OH.
Apr. 27-28: Summit Lapidary Club and Akron Mineral Society show, Emidio Expo Center, Cuyahoga Falls, OH.
Apr. 27-28: Eastern Federation show, Franklin, NJ.
May 3-5: Kalamazoo Geological & Mineral Society show, Kalamazoo County Fair-grounds. (See 8,000-pound copper boulder on display.)
May 4-5: Canadian Federation show (25th anniversary), Calgary, Alberta.
May 24-26: Flint Ridge Runners Meet and Swap, Muskingum County Fairgrounds, Zanesville, OH.
June 21-23: Gem, Mineral & Fossil Show and Swap plus MAPS meeting, Monroe County Fairgrounds, Bloomington, IN.
June 29-30: MGAGS Rockhound Seminar, Roscommon Middle School, Roscommon, MI.
July 12-14: California Federation show, Placerville, CA.
July 16-21: Combined Northwest Federation and American Federation show, Port Townsend, WA.
Aug. 16-18: Midwest Faceters Seminar, Mott Community College, Flint, MI.
Labor Day Weekend: Michiana Gem & Mineral Society Show, Century Center, South Bend.
Oct. 5-6: Midwest Federation show, Springfield, IL.

MINUTES OF THE MARCH 24 MEETING

President Don Church called the meeting to order at 2:08 p.m. Members in attendance included 21 adults plus five juniors.

The minutes of the previous meeting were accepted as printed in the *Rockfinder*.

The treasurer's report, given by Bob Heinek, was approved and filed for audit.

Margaret Heinek read a letter from one of the third-grade students at Meadows Edge Elementary School, thanking Margaret and Bob for talking to them about rocks and minerals.

Announcements were made about upcoming shows and displays in nearby areas. Flyers for these were passed around to the members.

Rosters for 2002 and membership cards were distributed.

Kathy Miller reminded the club that we should send a voting delegate to the Midwest Federation convention on October 5, 2002. Nominations will be accepted at the April meeting.

Photographs of the September field trip were displayed on one of the tables.

The club voted to send $100 to American Lands Access Association to support their lobbying efforts for access to public lands for amateur rockfinders.

Ed and Patty Enos volunteered to take charge of the Kiddie Korner at the September MGM show. Bob Miller announced that he has contacted demonstrators for the show, though he and Kathy will be out of town that weekend. He said that he could do the organizing ahead of time if someone else could take over duties during the show itself.

Bob Heinek reported that 19 invitations to dealers at the MGM show had been sent; thus far nine have committed themselves to participate.

Five club members presented information at the February 9 Science Alive at the Saint Joseph County Public Library. There were 5,500 young people and their parents in attendance.

Kathy Miller circulated a sign-up sheet for the October 18-20 field trip to Keokuk, IA, to hunt geodes. The cost per double room for two nights at the motel is $129.

All the junior members qualified for door prizes; senior prize-winners were Joe Horvath, Bob Miller, Cami Cress, Pam Rubenstein and Annitta Hostetler.

The Horralls informed the club about their vacation house in the Upper Peninsula of Michigan. They would be happy to welcome any club members who are in the area during the rockhound days at Houghton, MI.

The program consisted of a videotape demonstration of soapstone carving.

Refreshments were served by Sally Peltz and Yvonne Church.

--Submitted by M. Jeanne Finske, CSC, Secretary

APRIL SHOWERS

CHEESE MIX RECIPE

People who enjoyed this at the last meeting might want the recipe.

2 jars Old English 8 oz. cream cheese
1 jar roka blue
1 jar pimiento
1 jar garlic (may be omitted)

Mix together at room temperature and refrigerate. Good with crackers.

THE TALE OF A ROOSTER'S TAIL IN LIMESTONE

By Bob Floyd

Have you ever seen the imprint of a rooster's tail in limestone or dolostone? Many people have. Maybe you have, and didn't know it. Maybe you didn't know it as a rooster's tail, but as "Cauda-Galli." Many people do. Here's the tale about that tail.

The name "Cauda-Galli" refers to certain interesting, mysterious and unusual concentric swirl structures, or patterns, which are found on fracture surfaces in certain siliceous limestones from the Silurian to Permian geologic periods, and are reputed to be most common in the rocks of the Carboniferous Age and in some sandstones. The dolomitic limestone containing the Cauda-Galli swirls which inspired this report is sufficiently siliceous that it will scratch window glass!

The concentric, plumose Cauda-Galli swirls apparently were first named and described in New York state by L. Vanuxem in 1842. They were first described in England in 1861. The name was given because Mr. Vanuxem thought they resembled the plumed feathers of a certain type of rooster's tail, so he chose the word "cauda," which is Latin for "tail," and "galli," which is Latin meaning "rooster" of the family *Phasianidae*. Although some see a rooster's tail, others think the structures resemble imprints of some prehistoric leaves. Whatever you think you see, the name is still the same: Cauda-Galli.

For many years these mysterious structures were believed to have been formed by plant matter, and in England they were even given the name "*Spirophyton cauda-galli*." This theory has since been thoroughly discredited. A. J. Wells also rejects such theories as current bedding, slump structures, and injection of mud into cracks as possible causes of Cauda-Galli structures.

Mr. Wells rejects the "fucoid" theory also. In geology, "fucoid" refers to a structure in sedimentary rocks which belongs to, or resembles, traces of fossil seaweed (some say, alga), especially of the *Fucaceae* seaweed family (not to be confused with the fucus lichen). The term "fucus" is from the Greek, "phykos" and the Latin, "fucus," each meaning "seaweed." At one time "fucoid" was used "for a trace fossil formed from a burrow" (Kearey), or for any indefinite marking found on a sedimentary rock.

Mr. Wells does propose the following theory for the origin of Cauda-Galli structures: "It is just possible that there may have been a species of alga living at that time which could live and spread laterally in colonies beneath the surface [of the ocean floor], thus pushing the unconsolidated [limestone-forming] mud aside to form these [Cauda-Galli) structures. But no modern analogy to such a mode of occurrence is known." Whether his theory is widely held, or even currently held by anyone, is not known to this writer. Whether the Cauda-Galli structures are due to sedimentary effects, or to the activity of some organism in the sediment, is apparently not yet known to geologists and petrologists.

Specimens of Cauda-Galli structures are easily found in the Cheney Quarry near Bellevue, Eaton County, Michigan. This writer's largest and most recently collected (03/31/01) specimen from this quarry has a Cauda-Galli structure covering the surface of a very light brown dolomite slab 8xl2x3/4 inches. Smaller slabs were also collected, one of which has a large concave imprint of a brachiopod. A smaller slab has four brachiopod imprints on the face of the Cauda-Galli, one of which is almost complete. Another has an imprint of what Dr. Larry Wiedman identified as a strophid brachiopod. All but one of these are generously tinted with the rich green tones of glauconite. Collected specimens seem to indicate there are multiple levels of these structures in many, if not all specimens. It was also at this quarry that this writer discovered the first-known-to-this-quarry pink mineral, believed to be the mineral dolomite. Indeed, in all these are some attractive specimens for show-and-tell!

The Strata Data (Dec., 2001)
(references omitted)

CHARLES DARWIN, GEOLOGY, AND THE GALAPAGOS ISLANDS Sam Shapiro
574-234-9658

"Geology carries the day! I am quite charmed with geology, but like the wise animal between two bundles of hay, I do not know which I like best, the old crystalline group of rocks, or the softer and more fossiliferous beds."

-- Charles Darwin (age 24), letter home from the Beagle.

1. DARWIN THE GEOLOGIST Since 1859, of course, we think of Darwin as a great biologist, the discover of evolution and natural selection. But, as the quotation above suggests, the young Darwin considered himself a geologist. He had taken a geology course at Cambridge, and gone on a geological expedition with his teacher, Adam Sedgewick. When he arrived at Montevideo on his voyage around the world he was overjoyed to find volume two of Lyell's Principles of Geology in his mail; it had a profound effect on his thinking, If Darwin had never written The Origin of Species (and he delayed putting it down on paper for twenty-three years after his return to England), he would be remembered as a first rate geologist, notable for his accurate explanation of marine fossils two miles up in the Andes, his first book (1842) correctly describing the sequence of coral reefs (fringing reefs, barrier reefs, and atolls), and other contributions to the heroic age of Geology.

2. THE GALAPAGOS MYTH. We like stories; and one popular story about Charles Darwin is that he came to the Galapagos a believer in the Genesis story of creation, stayed six weeks, studied the local finches and giant tortoises, and instantly conceived his theory of Natural Selection. That's not how it happened. Darwin returned to England in 1836 (age 27) still a believing Anglican and a creationist, and planning to become a clergyman in some rural parish. It was in London over the following decades that his reading of Lyell, Adam Smith, Malthus, Lamarck, Buffon, and his grandfather Erasmus Darwin, among others, helped him work out his great theory. He didn't know that the finches he shipped back were related until a London expert explained what he had missed. And he ignored the crucial fact that the giant tortoises of the Galapagos differed friom one island to another. The Beagle took on some of them for fresh meat; Darwin joined in eating them, and then saw the significantly different shells thrown overboard! Neither finches or tortoises are mentioned at all in **The Origin of Species.**

3. THE GEOLOGY OF THE GALAPAGOS. Nowadays, after the acceptance of Plate Tectonics, we know that the Galapagos, like Hawaii, Azores, Reunion, Iceland, and other oceanic islands is located above a **mantle plume** of hot rock rising from deep within the earth. The resulting **magma chamber** forces its way to the surface, and the resulting volcano creates an island. As the **Nazca Plate** drifts to the east-Southeast, the older volcanoes go dormant, and new ones are created. Over the course of about eight million years, an archipelago of fourteen main islands was created. Originally lifeless, the islands were gradually populated by plants and animals from South America, which gave rise to new and unique species.

4. FLORA AND FAUNA OF THE GALAPAGOS. Giant tortoises (**geochelone elephantopus)** 14 subspecies (Lonesome George). Bluefooted booby (**sula nebouxii)** Galapagos penguins (**spheniscus mendiculus)** The most northern race of penguins.

Flightless cormorant (**nannopterum harrisi)** Thirteen finches, for example Cactus ground finch (**Geospiza scandens)** which uses a stick to pry out insects. Warbler finch (**certhide a olivacea).** Land Iguana (**conolophus sp)** Two species. Marine iguana (**amblyrhynchus sp)** Seven species. Gecko (**Phillodactylus sp)** Seven species. Fur seals (**Arctocephalus galapagoensis)** Magnificent frigatebird (**fregata magnificens)...** and quite a few others, as well as unique plants. One or two breeding pairs reached the lifeless and desolate archipelago, and in the absenceof competition slowly filled different ecological niches, and formed new species.

Editor's note: Sam sent this article in as background for the April program.

ANCIENT USES OF MINERALS

It has always been interesting to learn about the strange ways in which minerals have been used. Tin, for instance, has been known for thousands of years. The Phoenicians and other ancient people mined it in the famous mines in Cornwall, England, ... and, from that time to this, tin has been an important metal in the progress of civilization. But perhaps the most unusual use of tin was as an additive to put rustle in silk cloth. The luxurious swish of a lady's skirts in the era of elaborate clothes at the turn of the century was produced by a silk that was up to 25% tin, by weight.

One of the strangest use of lead ever recorded is found in the story of the Hanging Gardens of Babylon. This wonder of the ancient world was contained in a square 400 feet on each side and built up as several large terraces which attained the height of the city walls. The whole structure was supported by arches, one above the other, strengthened by a wall 22 feet thick surrounding it on all sides. On the top were first laid large flat stones, 16 feet long and 4 feet wide. Over these was laid a layer of reeds mixed with a great quantity of bitumen, upon which were set 2 rows of bricks cemented closely together. The whole was covered with thick sheets of lead, upon which was laid the mold of the garden and soil deep enough to take the roots of the biggest trees. Amyitis, wife of Nebuchadnezzar, longed for the hills; her husband, to please her, built this magnificent structure. This ancient garden with its lead shielding suggests a plan for a modern bomb shelter.

We are all familiar with the crystal ball of the fortune teller, cut from flawless quartz. Another more practical use for these smooth spheres was discovered by oriental needle workers. These women, skilled in the art of fine embroidery, used the balls to cool their hands and prevent moisture from soiling the fine silks on which they worked.

The long slender crystal selenites from the Cave of the Swords at Naica in Chihuahua, Mexico are beautiful to look at, but they, too, have been put to a practical use. Some of these crystals retain the water of crystallization in the form of a bubble in which the water moves as it is tipped to and fro. These crystals have been used as hand levels by the native miners.

Obsidian is today one of the favorite cutting materials of amateur lapidaries, and many interesting things can be done with it. One of the projects of the early Aztec stone worker was a mirror for his lady. Pieces of obsidian were so perfectly polished and fitted together that there was no distortion in the reflected image, which of course, was very dark or black. Mirrors of the ancient Greeks and Incas were made of copper, silver or bits of pyrite or marcasite neatly fitted into wooden frames and then smoothed and polished. The ancient Peruvians were so skilled they made concave mirrors with which they concentrated the rays of the sun to be used to kindle fires.

The Post Rock (Sept., 1993)

SALT...HALITE...SODIUM CHLORIDE

By Sam Shapiro

SODIUM: Atomic number 11, an unstable metal with two electrons in its inner ring, eight in the second ring, and only one in the third ring. The outer, "free" electron is readily lost, forming a positively charged sodium ion (Na^+).
CHLORINE: Atomic number 17, a poisonous gas with seven electrons at the outer energy level. It tends to pick up one, forming a negatively charged chlorine atom (Cl^-).

When placed together, Na^+ and Cl^- react explosively to form halite, rock salt (cubic crystals, hardness 2.5, specific gravity 2.2). Salt readily dissolves in water, and makes up 80% of the dissolved solids in the oceans that take up three-quarters of the surface of our water planet. (When I sailed on a troop ship from Seattle to Tokyo in 1945, it took 30 days to cross the vast Pacific Ocean.) Life originated in the primeval oceans, and our bodies still record that ancestry; approximately .06% of our atoms, about 40 grams, the weight of our fingernails, are sodium and chlorine. Our skin enables us to maintain that tiny but essential saltiness of our blood. Aldosterone, secreted by the adrenal cortex, regulates the amount of salt in our bloodstream. Too much salt, and we get high blood pressure; too little, and we get low blood pressure. The United States uses about 30 million tons of salt a year. Most of it is spread on the roads or utilized in various manufacturing processes. I put 40-pound bags of it in my water softener, to remove the lime, and a very small amount of it in salt cellars for the dining room table. Before the invention of the tin can during the Napoleonic wars, and the freezing process in the 1930s, salt was the only way to preserve foods. We still buy such salted items as pickles, salt codfish and corned beef.

In my travels I have visited three salt mines. In 1960, when Gloria and I were teaching at the brand new Michigan State University at Oakland (now simply Oakland University), we went to the underground salt mine on the outskirts of Detroit. It was formed, like most such mines, by the evaporation of seawater from an ancient branch of the ocean, leaving behind a layer of hydrogen chloride (halite) over 100 feet thick.

The huge caverns left behind by the extracted NaCl reminded us of Mammoth Cave in Kentucky. The roar of the bulldozers and trucks and conveyor belts, and the salt in the air that made your eyes water, made the place unpleasant, and we didn't stay long. Some 35 years later I read that "heavy water" placed in the mine had been used to detect a massive flow of neutrinos from a nova.

In the summer of 1968, when I directed an educational program in Innsbruck, Austria, we took a trip to the Salzkammergut (salt-exchequer property) and spent a day underground in the prehistoric Hallstatt mine. Access to the mine is by sliding down 100 feet on rail cars, and our children (then four and six years old) were so delighted that we climbed up the stairs and went down again two or three more times. The mine has been in operation for thousands of years. There is an underground museum with ancient mining tools, and even a miner, preserved by the salt. We went from there to visit Salzburg (Salt City), where a friendly guard let our daughter play "Twinkle, Twinkle, Little Star" on a piano that once belonged to Wolfgang Amadeus Mozart! She grew up to be a musician and a composer, and her music was played for a ballet performed at Century Center in February.

In 1995, after Gloria and I retired from university teaching, we took three or four cruises. One of them was to the eastern Caribbean, where our ship stopped at the Dutch islands of Curacao and Bonaire. Bonaire, captured by the Dutch from Spain in 1634, supplied the salt that was essential for Holland's important herring fishery. The native Indians had long before been carried off to work as slaves in the copper mines of Santo Domingo, so the Dutch brought in black slaves from Africa, and by the mid-19th century some 800 of them, controlled by a handful of white masters, were still producing salt by the process of evaporating water in inland ponds.

INTERNET SITES

Note: Internet sites are constantly changing. Those listed here were active in May 2001 but may not remain so. The MWF cannot vouch for the content of any site except its own. *Caveat emptor:* Let the buyer [or the user] beware.

Where to Begin: Rockhound Primers and General References

Bob's Rock Shop (primer, resources, images, and more)	http://www.rockhounds.com
Bob's Rock Shop Link List	http://www.rockhounds.com/rockshop/linklist.html
DinoData (news, primer, database, resources)	http://www.dinodata.net
Earth Online: Internet Guide for Earth Science	http://www.brookscole.com/geo/ritter
Geologylink (news, virtual field trips, education)	http://www.geologylink.com
Illustrated Glossary of Geologic Terms	http://www.geology.iastate.edu/new_100/gloss.html
Mineralogy Database (4205+ species)	http://webmineral.com
Rockhounding Arkansas (or anywhere – primer)	http://rockhoundingar.com
Roger Pabian's Agate & Fossil Resources, Birthstones	http://csd.unl.edu/csd/programs/agates-fossils.html
State & Provincial Symbols (rock, mineral, fossil, etc.)	http://www.geobop.com/symbols

Federations and Organizations

American Federation of Mineralogical Societies [AFMS] – links to all Regional Federations	http://www.amfed.org
American Geological Institute	http://www.agiweb.org
American Lands Access Association, Inc. [ALAA]	http://www.amerlands.org
Association of American State Geologists [AASG] – links to all State Geological Surveys	http://www.kgs.ukans.edu/AASG/index.html
Gemological Institute of America	http://www.gia.org
Geological Society of America	http://www.geosociety.org
Midwest Federation of Mineralogical and Geological Societies [MWF]	http://www.commean.com/rocks/mwf
Mineralogical Society of America	http://www.minsocam.org
National Mining Association	http://www.nma.org
National Speleological Society	http://www.caves.org

Geology and Geophysics

Earthquake Locator	http://www.geo.ed.ac.uk/quakes/quakes.html
Hubble Space Telescope	http://www.stsci.edu
Jet Propulsion Laboratory	http://www.jpl.nasa.gov
Midwest Meteorites (world-wide illustrated database)	http://www.meteorman.org
National Geophysical Data Center	http://www.ngdc.noaa.gov
Satellite Image Atlas of Glaciers of the World	http://pubs.usgs.gov/factsheet/fs133-99
United States Geological Survey [USGS]	http://www.usgs.gov
USGS Hawaiian Volcano Observatory	http://hvo.wr.usgs.gov
USGS Marine Geology (Woods Hole)	http://woodshole.er.usgs.gov
USGS National Marine & Coastal Geology	http://walrus.wr.usgs.gov
Volcano World	http://volcano.und.nodak.edu

Midwestern Geological Surveys

Illinois State Geological Survey	http://www.isgs.uiuc.edu
Indiana Geological Survey	http://adamite.igs.indiana.edu
Iowa Geological Survey	http://samuel.igsb.uiowa.edu
Kentucky Geological Survey	http://www.uky.edu/kgs
Michigan Geological Survey	http://www.deq.state.mi.us/gsd
Minnesota Geological Survey	http://www.geo.umn.edu/mgs
Missouri Dept. of Natural Resources	http://www.dnr.state.mo.us/dgls
Nebraska Dept. of Natural Resources	http://www.dnr.state.ne.us
Nebraska State Geological Survey	http://csd.unl.edu/csd.html
North Dakota Geological Survey	http://www.state.nd.us/ndgs
Ohio Geological Survey	http://www.dnr.state.oh.us/odnr/geo_survey
South Dakota Geological Survey	http://www.sdgs.usd.edu
Wisconsin Geological and Natural History Survey	http://www.uwex.edu/wgnhs

Magazine Archives

Fossil News	http://www.fossilnews.com
Lapidary Digest (free e-letter, lapidary shop advice)	http://www.lapidarydigest.com
Lapidary Journal	http://www.lapidaryjournal.com
The Metalsmith (quarterly)	http://www.metalsmith.org
Meteorite! (quarterly)	http://meteor.co.nz
The Mineralogical Record	http://www.minrec.org
Nature	http://www.nature.com
National Geographic	http://nationalgeographic.com
Rock & Gem	http://www.rockhounds.com/rockgem
Rocks & Minerals	http://www.mineralart.com/rocks_and_minerals
Smithsonian Magazine	http://www.smithsonianmag.si.edu

Museums

A. E. Seaman Mineral Museum (Houghton, MI)	http://www.geo.mtu.edu/museum
American Museum of Natural History (New York, NY)	http://www.amnh.org
Clement Mineral Museum (Marion, KY)	http://www.clementmineralmuseum.com
Cleveland Museum of Natural History	http://www.cmnh.org
The Field Museum (Chicago, IL)	http://www.fieldmuseum.org
Illinois State Museum: Mazon Creek Fossils	http://www.museum.state.il.us
Milwaukee Public Museum	http://www.mpm.edu
National Museum of Natural History	http://www.mnh.si.edu
Natural History Museum of Los Angeles County	http://nhm.org
North Carolina Museum of Natural Sciences	http://www.naturalsciences.org
Peabody Museum of Natural History	http://www.peabody.yale.edu
Sternberg Museum of Natural History (Hays, KS)	http://www.fhsu.edu/sternberg
Smithsonian Institution	http://www.si.edu
Swedish Amber Museum	http://www.brost.se
U. of California – Berkeley: Museum of Paleontology	http://www.ucmp.berkeley.edu
– Santa Barbara: Bancroft Mineral Collection	http://magic.geol.ucsb.edu/resources
University of Wisconsin: Geology Museum	http://www.geology.wisc.edu

Fossils and Paleontology

Black Hills Institute (Hill City, SD)	http://www.bhigr.com
Dinobase (database; University of Bristol, U.K.)	http://palaeo.gly.bris.ac.uk/dinobase/dinopage.html
Fossil Sites (link list)	http://home.att.net/~e.j.swearengin/fossils.htm
Nashville Fossils	http://www.nashvillefossils.com
Oceans of Kansas Paleontology	http://www.oceansofkansas.com
Palaeobotany	http://www.uni-wuerzburg.de/mineralogie/palbot1.html
Sharks and Rays of the Miocene	http://www.elasmo.com
Trilobites	http://www.ualberta.ca/~kbrett/Trilobites.html
World of Amber	http://www.emporia.edu/earthsci/amber

Minerals and Gemstones

Agates with Inclusions	http://www.agateswithinclusions.com
The Australian Mineral Collector	http://www.home.gil.com.au/~mineral
Colored Gemstones	http://www.gemstone.org
Crystal Growing Guide	http://laue.chem.ncsu.edu/web/GrowXtal.html
Crystallographic Information and Sources	http://www.iumsc.indiana.edu/information.html
Earth Flower (Australian Mineral Hobbyist)	http://www.ruralnet.net.au/%7Egman/minerals
Gemology	http://www.tradeshop.com/gems
The Image Gallery: Minerals & Gemstones	http://www.theimage.com
Mineral and Gemstone Kingdom	http://www.minerals.net
Minerals from India	http://www.nvo.com/indianminerals
Minerals of Scotland and the United Kingdom	http://www.curriehj.freeserve.co.uk
Norwegian Rockhound	http://www.uio.no/~hansjb/index.html
Rawhide Creek Trading Post (Fairburn agate gallery)	http://www.fairburns.com
The Rock Gallery	http://www.geocities.com/EnchantedForest/Cottage/3292