THE ROCKFINDER

Michiana Gem & Mineral Society
Tom Noe, Editor
05 Napoleon
South Bend, IN 46617

MICHIANA GEM & MINERAL SOCIETY, INC.

AFMS

SCRIBE

MID WEST FEDERATION

THE ROCKFINDER

JANUARY, 2003

MICHIANA GEM & MINERAL SOCIETY

2003 BOARD OF DIRECTORS

President.: Diane Gram 272-6885
Vice-Pres: Don Church 269-651-7616
Secretary: Sr. Jeanne Finske 284-5903
Treasurer: Bob Heinek 654-3673
Liaison: Dennis Horrall 291-1420
Past Pres.:Don Church 269-651-7616

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.

✂----------

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	Don Church 269-651-7616
Hospitality	Pat McLaughlin 259-1501
Educational	Emily Johnson
Librarian	Diane Gram 272-6885
Historian	Ed Miller 498-6513
Sunshine	Sally Peltz 269-683-4088
Publicity	Phyllis Luckert 282-1354
	Sally Peltz 269-683-4088
Field Trips	Kathy Miller 291-0332

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.

Permission is hereby granted to reprint any original *Rockfinder* articles, as long as recognition is given along with the reprint.

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

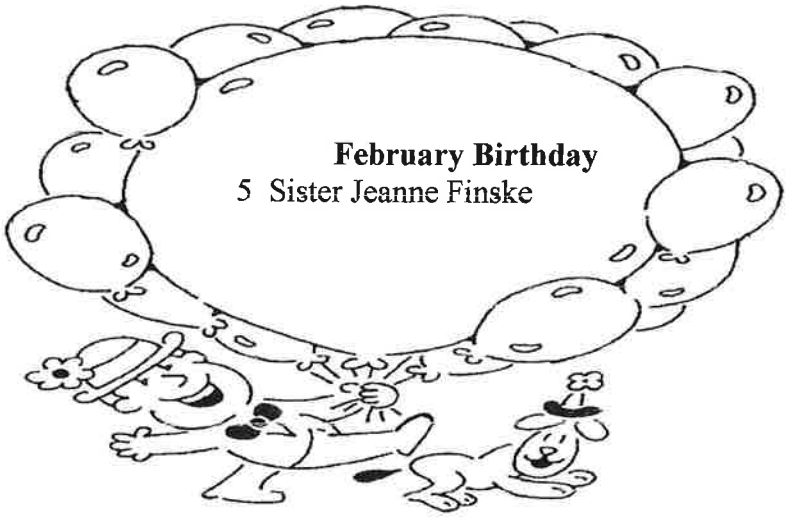
Volume 43, Number 1 **January, 2003**

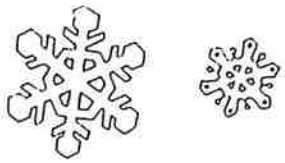
Meeting: Sunday, January 26, 2003
Doors open at 1:30 p.m.
Meeting starts at 2:00 p.m.

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

Program: Don Church will demonstrate several pieces of lapidary equipment he has made. We will brainstorm for the coming year, and there will be information available for people who want to make club vests.

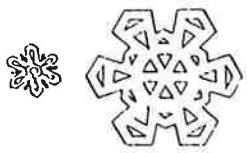
Refreshments: Bob & Kathy Miller,
Todd & Lynn Miller



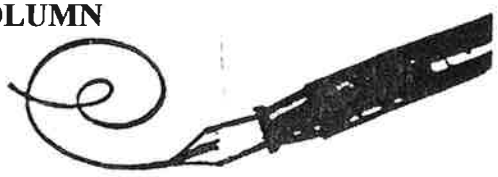


UP AND COMING

Mar. 7-9: Eastern Indiana Society show, Wayne County Fairgrounds, Richmond, IN.
Mar. 14-16: Michigan Gem & Mineral Society show, Masonic Lodge, Michigan Center, MI.
Mar. 15-16: Stark County club show, Canton Memorial Civic Center, Canton, OH.
Mar. 22: Metro Rock Swap (Dearborn), Democratic Club, Taylor, MI.
Mar. 22-33: Badger Lapidary Society show, Monroe High School, Monroe, MI.
Mar. 22-23: Geodon Show, Dupage County Fairgrounds, Wheaton, IL.
Mar. 28-30: Mid-America Paleontology Society (MAPS) National Fossil Exposition, Western Illinois University, Macomb, IL. (midamericapaleo.tripod.com).
Mar. 29-30: Blossomland Gem & Mineral Society show, Berrien County Sportsman's Club, 2985 Linco Rd., (north of) Berrien Springs, MI.
Apr. 5-6: Columbus Club and Licking County Club joint show, Veterans Memorial, Columbus, OH.
Apr. 11-13: Mt. Clemens Lapidary Society show, Community Center (Groesbeck Rd.), Mt. Clemens, MI.
May 30-June 1: Midwest Mineralogical & Lapidary Society show (Dearborn club), Allen Park Civic Arena, Allen Park, MI.
June 28-29: MGAGS Rockhound Seminar, Washtenaw Community College, Ann Arbor, MI.



DIANE'S COLUMN



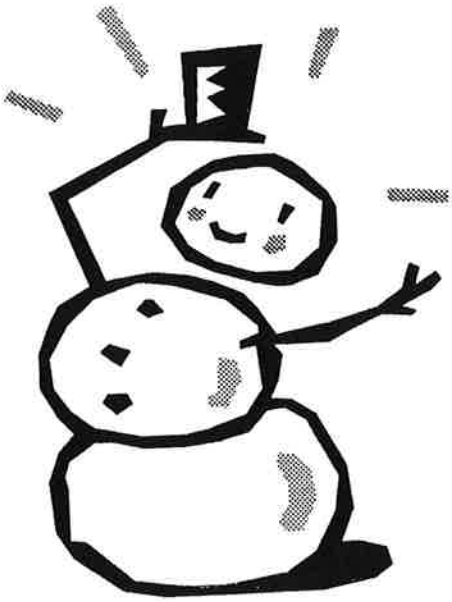
Happy New Year! Greetings from your new president. I am excited about the coming year. Our club has many members with various skills and talents to share. The January meeting will be a brainstorming, planning meeting, so bring your ideas for club activities.

Phyllis Luckert had to attend the fall field trip without Herb because he was nursing a pinched nerve. He is much improved with the help of physical therapy and traction. Herb and Phyllis will be making contact with club members Leo and Elma Heynssens at some point this winter.

Ray Ferris, one of the founding members of the Michiana Gem and Mineral Society (founded in 1962) attended the Christmas party. He has rejoined the society, and we are happy to welcome him back. Bess Wise and her husband were also among those who founded the club. Margaret and Bob Heinek joined the club in 1963. There is a great amount of experience and expertise among our club members.

Condolences go to Leo and Elma Heynssens; Leo's mother passed away on December 2. Former member Stanley Kile passed away early in January. If you have news of members or former members, let me know so we can share the information.

Diane Gram, phone 574-272-6885.



WEEKEND CLUB SUBSIDIZED BUS FIELD TRIP TO SOUTHERN INDIANA FOR FOSSILS, GOLD, GEODES

The Michiana Gem & Mineral Society has a Cardinal coach chartered for September 19, 2003, through September 21, 2003. This field trip is for collecting fossils of ***Brachiopods, Cephalopods, Pelecypods, Arthropods, Anthrozoa, Bryozoans, Gastropods, Crinoids, Blastoids, and Plants.*** Also we will go for ***gold panning*** and ***geodes.*** We have always been successful in collecting many fossils; let us hope we have the same luck in gold panning. Since we are restricted in limitations of geodes, the goal is to find the best.

The following is a brief itineary for those going on this weekend field trip.

FRIDAY, September 19, meet at the K-Mart parking lot on the corner of Ireland Road and 31 South. We will board the Cardinal bus at 4:15 p.m. and leave promptly at 4:30 p.m. Your cars may be left in the parking lot for the weekend. There will be one stop on the way to Brown County State Park where our cabins are located. Arrival time approximately 9:00 p.m.

SATURDAY you may have breakfast at the Abe Martin Lodge or bring something to eat in your cabin. We board the bus at 9:00 a.m. (pray for good weather), and depart for Morgan Monroe State Forest where we will do our collecting and gold panning. Morgan Monroe, like Brown County, is located in a beautiful portion of the state of Indiana; take time to enjoy the scenery. After a good day of collecting we will take time to stop in the nearby quaint town of Nashville to look at the local arts and crafts that Nashville is noted for.

Boarding the bus again we head back to Brown County State park to freshen up (or rest up). Arrangements have been made with the Abe Martin Lodge for our dinner, which will be buffet style. The lodge is within walking distance of your cabin. Enjoy the evening after dinner at the lodge or walking some of the nearby paths intersecting the cabins.

SUNDAY we will depart at 9:30 a.m. for Indianapolis to visit the Indiana State Museum. They are in a new facility and location. They now have an IMAX theater and many more features to offer everyone. Arrival time home approximately 6:00 p.m.

ADDITIONAL INFO:

1. Expenses: Cabin - (available 2 dbl., or 1 dbl./1 twin, or 1 dbl.) all same price **$104.34 for the two days** ($52.17 per night)
Entrance fee to park-bus rate-is **$1.00 per person over 8 years of age. Abe Martin Lodge Sat. night buffet is $13.00 per person (under 7 - $5.00) this includes (6% sales, 16% gratuity.** One person will pay cashier for all to avoid confusion (an Abe Martin request.) We will collect buffet money on the bus. **Indiana State Museum-** If only going to the Museum and not IMAX the cost is, 10 or more people-Adult $5.50, Senior $5.00, Child $3.50. If group wishes to include IMAX theater it is Adult $12.00, Senior $10.50, Child $7.00. This will be decided later.

2. What to bring: Collecting buckets or bags, old shoes or boots (we will be in creeks), and these shoes will **NOT** be allowed on the bus, gold pan if you have one, small vial (or big) for your gold, rock hammer, pry bar, chisel, pick, rake, loup, etc. Don't forget to check the weather you may need rain gear, bug spray and your camera.

3.Food: Bring a small cooler for pop and snacks that will fit under he seat of the bus, and another cooler (if desired), for the bottom of the bus containing extra drinks, your next day breakfast if you do not desire to eat in the lodge, a brown bag lunch for Saturday noon, and/or more snacks for the bus.

For those that have already signed up for this field trip, please remember you **MUST** call the Abe Martin Lodge by the end of May to actually reserve your cabin that we have reserved for our group. **You will then be asked to apply your cabin to your credit card or get a check to them within 7 days**. This is very important or you will lose the cabin and it will be given to someone on a waiting list NOT in our club. The number of the **Abe Martin Lodge is 1/877-265-6343, tell them our group code is 332 under Michiana. Mandy is the office manager.**

Only **three cabins are left**, if you wish to sign up for one please remember this has to be a for sure commitment, if you were to back out after June, others going on this trip would have to pay more and your cabin would **NOT** be available to another member of our club as there is a 2-year waiting list for them.

This will be a great trip for **ALL** ages, we are looking forward to another Michiana Gem & Mineral Society field trip weekend.
Kathy & Bob Miller, Trip Chairmen

THE CALIFORNIA GOLD RUSH: GEOLOGICAL BACKGROUND

By Sam Shapiro

The California Gold Rush was one of the great mineral stampedes in world history. In January, 1848, California had only 14,000 non-Indian inhabitants. By January, 1850, there were 100,000, and later that year the area was admitted as the 31st state. Behind this pivotal event there were millions of years of geological processes which put gold dust and gold nuggets where they could be got at with the simplest tools—a knife or a flat tin plate.

East-central California, the area of the mother lode in the Sierra Madre Mountains, once lay beneath an ancient sea. Thousands of feet down are thick layers of sedimentary rock, laid down on the sea floor. Then the North American plate, inexorably moving west, collided with the Pacific plate. In the subduction zone, the Pacific plate slid underneath, pushing up magma from deep within the earth and forming the coastal ranges, the Cascades, the Rocky Mountains and the Sierra Nevada.

The awesome heat of this orogeny (mountain-building) drove superheated water up through molten granite, propelling liquefied quartz and gold toward the surface. Then, as volcanic action died down and the water cooled, the minerals settled together in milky white quartz veins along the western slope of the Sierras. The Feather, the Yuba, the American and the Stanislaus—fast-rushing mountain streams—eroded the quartz and carried gold dust, flakes and nuggets downstream and dropped them in gentle eddies and gravel bars. Neither the local Indians nor the Spanish ever explored the mineral region. By a twist of fate, John Marshall, building a sawmill for John Sutter, discovered gold in the mill race on January 24, 1848, just when Mexico had been forced to cede California to the United States. The great Gold Rush began.

FIBER OPTIC GEMS: WHAT ARE THEY?

By Bill Grimes

Fiber optics developed as a result of someone studying a piece of the mineral ulexite. Also known as TV rock, it is a hard, brittle, fibrous stone which, when writing is placed underneath, will allow the image to appear on the surface of the stone.

This led to the theory that, if this type of fibrous material could be manufactured, it could be used in many different ways where image transmission was needed. Fiber optic cables were at first very slender and flexible, used in surgeries and in household decorations.

The manufacturing technology improved and soon manufacturers were spinning out miles of cable for a new application–data transmission lines. These lines can be up to two inches across. The cable consists of thousands of pairs of optic fibers. Each pair carries data for phone, computer, fax, etc. Since the sides of the cable are reflective, there is no need for insulation or shielding around each fiber, as in old phone lines. For us in the hobby, this created one of the newest gem treasures, fiber optic cabs.

In order to make a fiber optic cabochon, the cable scraps are first cut into small lengths. The cable is then either cut into spheres, or it is sectioned parallel to the length of the fiber. Once the slices are made, it is cut much like any other gem. However, care must be taken to protect the ends of the cable from splintering, catching cutting dirt, abrasives, etc.

There is an interesting thing about fiber optic gems. If you look at them from a 90-degree angle from the eye of the gem, the gem will be transparent to light, maintaining its properties for light transmission.

The Rockhound (no date available)

MICA - WHITE CHRISTMAS

Grindings, 12/94

Snow or shine, there will always be a white Christmas in the United States as long as mica holds out. The versatile mineral is a source of the artificial snow that brightens Christmas decorations.

Mica has helped actors' careers, too. Countless Hollywood heroes have mushed their way to stardom through raging blizzards of mica. Simulating snow is only one of mica's many uses. For example, this mineral adds sparkle to paint and wallpaper, coats the inside of automobile tires and backs asphalt roofing. Mica acts as a thermal and electrical insulator in sores of home appliances. The breakfast toast is browned by red-hot wires wrapped around plates of mica.

The term "mica" refers to a family of silicare minerals that have crystallized directly from molten rock. The micas take the form of a hexagonal crystal. The sheets can easily be stripped from one another. They suggest pages from a book.

Splitting a book of mica can be a tedious process. A sheet may measure only .0012 of an inch thick. Mica's color varies with chemical composition, and ranges from black to crystal transparency. Seen through a microscope, one of the commonest micas - muscovite - blazes with intense color.

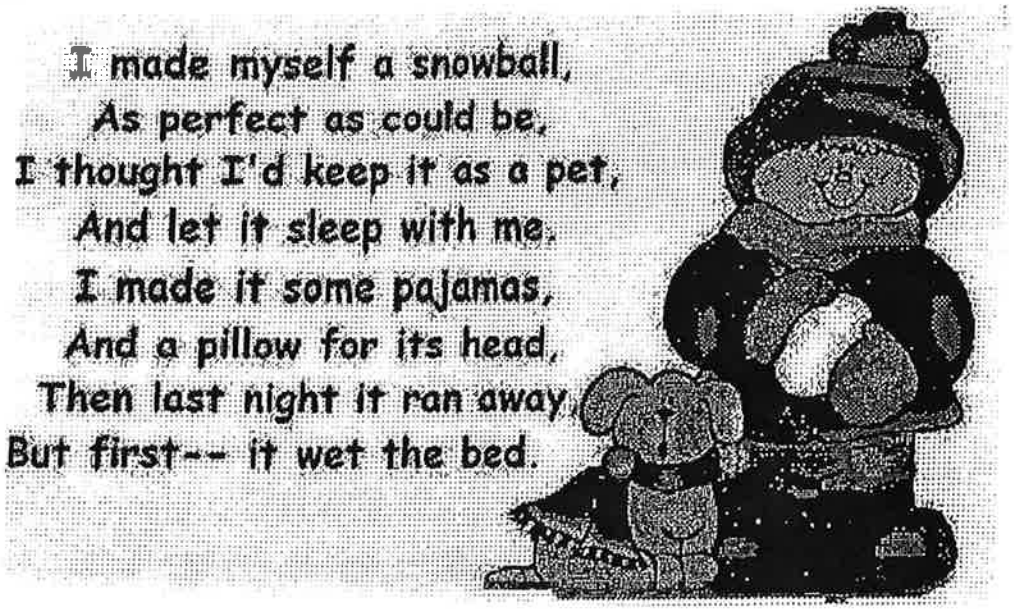
Russian explorers first discovered muscovite in Siberia some 275 years ago. They named it in honor of Moscow - even then the greatest commercial and industrial center in the country - which they had left to investigate the mineral-rich region.

For years Russian envoys dazzled foreign courts with mirrors and other objects made from the mineral. The crystal's fame spread to other lands. Bright micas especially appealed to India's princess. Glistening sheets decorated palace walls. Mica sequins glittered from the skirts of dancing girls.

At the turn of the century, mica from India came into increasingly heavy demand by manufacturers of electrical equipment. The mountains of Bihar and Madras in eastern India still produce some of the best mica in the world.

In World War II, America's need for mica was so urgent that hundreds of pounds were flown directly from open-pit mines in India by the Air Transport Command. The high-grade mica was indispensable for vacuum tube spacers, radio condensers, and other vital electrical components.

Today, India still stands first in high-grade sheet mica production, and supplies about 80% of the world demand.



THE PERIDOT ASTEROID

By Bill Cordua

One of the most exotic gemstones is from outer space–the rare meteorites called pallasites. These are flashy mixtures of translucent green to yellow olivine (peridot) found as large crystals in a matrix of iron-nickel alloy. When cut and polished the contrast between olivine and metal is startlingly beautiful. No wonder they are so pricey.

Pyotr Pallas described the first pallasites in 1772. It was a 1,600-pound mass that fell in Siberia. Pallasite is also known in quantity from Kiowa County, Kansas, from the Imilac pallasites that fell in the desert of Chile, and from the Salto pallasites of Argentina.

How do such meteorites form and where do they come from? Such a mixture of silicates as olivine and metal is presumed to be found in the Earth along with the core-mantle boundary. How could rocks from the core of a planet get into outer space?

Modern models of asteroids and planet formation suggest asteroids perhaps 50-200 km. in diameter may form a layer similar to that of the Earth. The accumulation of that much material, including heat-producing radioactive substances, would cause the body to melt and the denser iron and other metal to sink to the center of the body. The less dense silicates such as olivine would not sink so deeply, and, with other materials, form the outer layers of the asteroid. This is also what happens in a blast furnace, when the melted rock separates into the denser iron and lighter materials that will cool to slag. Thus, some larger asteroids have the equivalent of the crust, mantle and core of the Earth.

In the Earth, though, the outer core is still molten, because our planet is so much larger, and still has abundant heat-producing radioactive materials in its interior. The asteroids, on the other hand, would have completely cooled and crystallized. Along their core-mantle boundaries, the separation of the silicates and metal would not be perfect—what natural process ever goes perfectly? Perhaps some late pulse forced cooling iron up into the mush of olivine crystals. Thus the pallasite is born.

The next step is getting the materials out of an asteroid and to Earth. Here we use the fact that asteroids, over the length of geological time, have tended to collide violently. A big enough collision between two asteroids will fracture both. Pulled in by the Earth's gravity, after a journey for millennia in space, they will fall as meteorites. Since only a tiny part of an asteroid will be a core-mantle boundary, pallasites should be scarce, and they are. Some asteroid collisions may not be quite so destructive. It is possible that a less violent collision may strip away most of an asteroid's mantle, leaving an olivine-studded metallic mass–an asteroid whose surface is covered with peridot gemstones. That would be quite a find.

How could we find such an asteroid, out of the millions stretched through billions of cubic kilometers of space? It's not as impossible as it seems. The mixture of olivine and metal would give off a distinct spectrum that can be detected with sensitive instruments on Earth or in satellites. Some known asteroids do give off spectral data showing olivine at the surface. These are termed A-type asteroids, such as 246 Asporia. Some are 30 to 65 km. in diameter. It is astonishing to think that some may be peridot-encrusted. Of course, other large asteroids may have pallasite layers if they escaped a collision large enough to blast them into splinters. Then the pallasite "ore" would have to be recovered by interplanetary hard-rock mining.

So as prospectors were drawn west by visions of El Dorado or the Mother Lode, perhaps future space explorers will blast off in search of the Peridot Asteroid.

(Original source: *The Show Me Geode* (Nov., 2001), *Meteorites and their Parent Planets* by T.H. McSweeten, "Formation of olivine-metal textures in Pallasite meteorites" by E.R.D. Scott in *Geochemica et Cosmochemica Acta*)

OHIO GEOLOGY

GEOFACTS No. 5

OHIO DEPARTMENT OF NATURAL RESOURCES • DIVISION OF GEOLOGICAL SURVEY

OHIO TRILOBITES

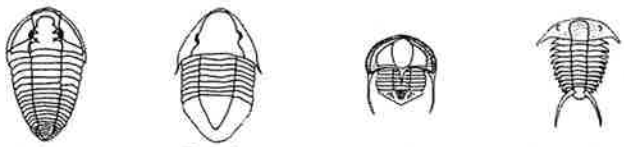
Many people have an aversion to "bugs" and other crawly critters, but when it comes to fossils an extinct "bug," known as a trilobite (TRY-lo-bite), is among the most highly prized specimens. There is such a fascination with trilobites that in 1985 an Ordovician one, *Isotelus*, was named the official State Invertebrate Fossil of Ohio (see photo on reverse side).

Trilobites have been found in exposures of Ordovician, Silurian, Devonian, Mississippian, and Pennsylvanian rocks in Ohio. Although a few trilobite species survived until the middle of the Permian, when they finally became extinct, no Permian species are known from Ohio because by Permian time the sea in which the trilobites lived had withdrawn from the area that is now Ohio.

Trilobites belong to a class of animals known as Trilobita, a subdivision of the great phylum Arthropoda, which includes insects, crabs, lobsters, scorpions, centipedes, and spiders. The name of this class of animals is derived from the three-lobed longitudinal division of the body (see diagram on reverse side). Trilobites lived exclusively in marine seas from their first appearance at the beginning of the Cambrian Period (570 million years ago) to the middle of the Permian Period (260 million years ago). The majority of trilobites crawled on or burrowed through soft, muddy sea-floor sediments and obtained nutrients by ingesting mud, somewhat like an earthworm. They are thought to have hatched from eggs, as this is the reproductive method employed by all living arthropods. Also like living arthropods, trilobites grew by shedding (molting) the hard outer body covering known as the exoskeleton. Fragments of shed exoskeletons of trilobites are common fossils. In fact, most specimens are fragmentary. Less commonly, trilobites are found as complete specimens, either outstretched (prone) or enrolled. It is thought that trilobites enrolled for protection, much like modern pill bugs do.

Some of the more common trilobites found in Ohio rocks are discussed below. The term "common," however, should not be confused with "easy to find." In this discussion "common" refers to the fact that if one finds a trilobite in Ohio it is likely to be one of the species discussed below.

ORDOVICIAN TRILOBITES



Flexicalymene *Isotelus* *Cryptolithus* *Ceraurus*

Trilobites are more diverse and abundant in Ordovician rocks in Ohio than in any other geologic system. At least 20 species are known. The tristate area of north-central Kentucky, southeastern Indiana, and southwestern Ohio is world renowned for abundant and well-preserved trilobites and other fossils. Although trilobites can be found in both limestone and shale in this region, the shale beds have produced the greatest number of specimens.

The most common Ordovician trilobite is *Flexicalymene*. Three species are recognized: *F. meeki, F. retrorsa*, and *F. granulosa*. Adult specimens are about 2 inches long and are commonly preserved enrolled.

Isotelus, the state fossil, is common in Ordovician rocks in the Cincinnati area; however, most specimens are fragmentary and complete specimens are rare. Enrolled specimens can be collected after they have weathered out of a shale bed, but prone specimens generally must be excavated from fresh, unweathered shale. Prone specimens are rare because the shale holding the trilobite together quickly weathers when exposed to the elements, causing the specimen to disintegrate. Fragments and complete specimens also are common in limestone beds. Three species of *Isotelus* are currently recognized in Ordovician rocks in Ohio: *I. maximus, I. brachycephalus*, and *I. gigas*. *Isotelus maximus* is the most common species. However, *I. brachycephalus* and *I. maximus* may prove to be the same species when they are more thoroughly studied. All species of *Isotelus* are characterized by a low, flat profile, smooth cephalon and pygidium, eight thoracic segments, and a broad axial lobe. *Isotelus* is one of the largest trilobites known—some specimens are more than 18 inches long.

Cryptolithus tessellatus, known as the "lace collar" trilobite because of a distinctive fringe on the cephalon, and *Ceraurus milleranus*, which has a winglike cephalon, are rare trilobites in the oldest Ordovician rocks in the Cincinnati area. *Cryptolithus* reached a length of about 3/4 inch; *Ceraurus* reached a length of about 2 inches.

SILURIAN TRILOBITES

Calymene *Trimerus* *Bumastus*

Silurian rocks of Ohio have produced several trilobite genera. However, unlike the well-preserved Ordovician trilobites, most Silurian specimens are preserved as casts or molds in limestones and dolomites of western Ohio.

Calymene, which attained a length up to 3 inches, is similar in appearance to *Flexicalymene*, of Ordovician age, but has a more semicircular cephalon and very rounded genal angles. *Calymene niagarensis* is the most common species of this genus found in Ohio.

Trimerus has a triangular cephalon, rectangular glabella, and triangular pygidium that has a small terminal spine. It reached lengths of 8 inches and is the largest Silurian trilobite in Ohio. One of the more common species, *T. delphinocephalus*, is particularly abundant in Silurian rocks in south-central Ohio.

Bumastus has a smooth cephalon and pygidium similar to that of *Isotelus*; however, it has a more inflated (thicker) profile than does *Isotelus*. *Bumastus* reached a length of 6 inches. An unusual aspect of this trilobite is that its length is almost equal to its width, giving it a nearly oval outline. *Bumastus niagarensis* is the most common species of this genus in Ohio.

DEVONIAN TRILOBITES

Phacops *Coronura* *Odontocephalus*

Devonian rocks of Ohio are world famous for their abundant and well-preserved trilobites. The best known Devonian trilobite, and probably the best known Ohio trilobite, is *Phacops rana*. From the 1920's to the 1970's, specimens of this species were collected by the thousands from a quarry near Sylvania, west of Toledo. *Phacops rana* has an inflated glabella and large, froglike eyes, hence the specific name of *rana*, Latin for frog. Most specimens are less than 2 inches long. Almost all Ohio specimens of *Phacops rana* have been collected from shales of the Silica Formation of Middle Devonian age in quarries in northwestern Ohio. These quarries are now closed to

continued

fossil collecting.

Coronura is the largest Devonian trilobite found in Ohio, reaching lengths in excess of 8 inches. The cephalon has large eyes and genal spines. The border of the pygidium has numerous pleural spines. *Coronura* is found primarily in the Columbus Limestone, of Middle Devonian age.

The distinctive cephalon of *Odontocephalus* has a series of oval perforations along the anterior margin and long genal spines. *Odontocephalus* is known from the Columbus Limestone and specimens commonly exceed 2 inches in length.

MISSISSIPPIAN TRILOBITES

Paladin

Mississippian rocks in Ohio are typically sandstones and shales that were deposited offshore from the Catskill Delta to the east. This environment was not particularly suitable for trilobites. Of the eight Mississippian genera known from Ohio, only *Paladin* can be considered common. *Paladin* has a semicircular cephalon, prominent medium-sized eyes, and stout genal spines. The surface of the entire exoskeleton has a fine, granular texture. *Paladin* reached a length of 1½ inches.

PENNSYLVANIAN TRILOBITES

Ditomopyge

By Pennsylvanian time the great coal-swamp deltas, formed from sediment eroded from the rising Appalachian Mountains, had nearly excluded the sea from Ohio. Thin beds of marine limestone and shale represent brief incursions of the sea over the coal-swamp deltas. Although Pennsylvanian trilobites are decidedly rare and diminutive, three genera—*Ditomopyge*, *Sevillia*, and *Ameura*—are known from Pennsylvanian rocks in Ohio. The most common genus is *Ditomopyge*.

Ditomopyge has a semicircular to parabolic cephalon and pygidium. The glabellar region is covered by fine to coarse granules. The cephalon has stout genal spines and large crescent-shaped eyes. The pygidium is distinct from the thorax and has a moderately wide border flange. Two species of *Ditomopyge*, *D. scitula* and *D. decurtata*, are known from Pennsylvanian rocks in Ohio. Each of these species can reach a length of 1¼ inches.

FURTHER READING

Brezinski, D. K., Sturgeon, M. T., and Hoare, R. D., 1989, Pennsylvanian trilobites of Ohio: Ohio Division of Geological Survey Report of Investigations 142, 18 p.

Davis, R. A., ed., 1985, Cincinnati fossils: an elementary guide to the Ordovician rocks and fossils of the Cincinnati, Ohio, region: Cincinnati Museum of Natural History Popular Publication Series No. 10, 61 p.

Feldmann, R. M., and Hackathorn, Merrianne, eds., 1996, Fossils of Ohio: Ohio Division of Geological Survey Bulletin 70, 577 p.

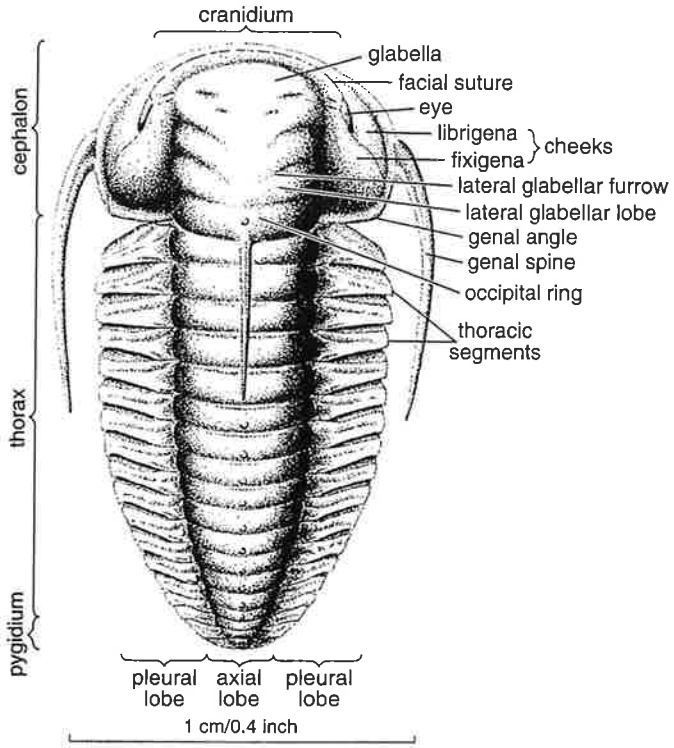
La Rocque, Aurèle, and Marple, M. F., 1955, Ohio fossils: Ohio Division of Geological Survey Bulletin 54, 152 p. (Out of print.)

Shrake, D. L., 1990, Common trilobites of Ohio: Ohio Division of Geological Survey, Ohio Geology, Summer, p. 1-5.

_____1992, Excursion to Caesar Creek State Park in Warren County, Ohio: a classic Upper Ordovician fossil-collecting locality: Ohio Division of Geological Survey Guidebook 12, 18 p.

Stewart, G. A., 1927, Fauna of the Silica Shale of Lucas County: Ohio Division of Geological Survey Bulletin 32, 76 p.

• This GeoFacts compiled by Douglas L. Shrake •
• Revised January 1997 •



Generalized morphological features of a trilobite (from Feldmann and Hackathorn, 1996).

Isotelus maximus *is among the largest known trilobites and was named the State Invertebrate Fossil of Ohio in 1985.*

GEORGE V. VOINOVICH, GOVERNOR
DONALD C. ANDERSON, DIRECTOR
THOMAS M. BERG, CHIEF

The Division of Geological Survey GeoFacts Series is available on the World Wide Web: http://www.dnr.oh.us/odnr/geo_survey/