THE ROCKFINDER

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

THE ROCKFINDER

SEPTEMBER, 2010

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 usually held the fourth Sunday of each month, 2:00 p.m., 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 monthly meetings. The annual club show is in late August.

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Yearly Membership Dues (Payable by December 15)
_____Individual $15.00 per year
_____Family $20.00 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 _____
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Michiana Gem and Mineral Society (www.sauktown.com/Michiana), a not-for-profit organization, is affiliated with the Midwest Federation of Mineralogical Societies (www.amfed.org/midwest.htm) and with the American Federation of Mineralogical Societies (www.amfed.org).

The Rockfinder is published monthly except July and August. Editor, Tom Noe, Co-editor, Herb Luckert (574-282-1354). Reporters: club members.

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.

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Additional family names:
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Birthday_____

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Birthday_____

Please send your dues and this form to
Michiana Gem & Mineral Society
c/o, Marty Perry, 29154 Frailey Dr., Elkhart, IN 46514

THE ROCKFINDER

Newsletter of the Michiana Gem and Mineral Society

Volume 50, Number 7 September, 2010

Next meeting: September 26, 2010
Visitors are always welcome.
Doors open at 1:30. Meeting starts at 2.

Place: Our Redeemer Lutheran Church
805 S. 29th Street (29th & Wall)
in South Bend, River Park area.

Program: Show off all your recent field trip finds! Bring specimens, stories, yarns, tales, rocks, leaverites, fossils, dried & framed blister skin, etc. (Looking ahead, the October program is on silversmithing, with Doug Kile.)

Refreshments: Patty Enos, Carrie Brown, Mary Davis

Special Note: At the *October* meeting, a proposed slate of officers for the year 2011 will be presented AND nominations for 2011 officers will also be accepted from the floor. In addition, a new Juniors' Program Chair is needed to replace Cordelia Tomasino, who has built a very successful juniors' group. Without a chair the very popular juniors program will not continue. We appreciate all that Cordelia has done for the club and the juniors, and now is the time for others to continue her good work.

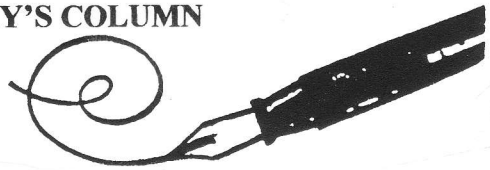
UP AND COMING

Michiana Gem & Mineral Society events:
September 17-19: MGMS bus field trip to southern Ohio for fossil collecting.

September:
17-19: Holland, MI. Tulip City Gem & Mineral Club's Show; Holland Civic Center.
24-26: Joplin, MO. Tri-State Gem and Mineral Society's Rockathon Gem and Mineral Show, Joplin Museum Complex.
25-26: Oshkosh, WI. Oshkosh Earth Science Club's Gem & Mineral Show; Sunnyview Expo Center.
25-26: Traverse City, MI. Grand Traverse Area Rock and Mineral Club's Show; Grand Traverse Heritage Center.

October:
2-3: Jefferson, WI. Show, Rock River Valley Geological Society; Jefferson County Fair Park.
2-3: Springfield, IL. Lincoln Orbit Earth Science Society's Show, Illinois State Fairgrounds.
8-10: Warren, MI. Michigan Mineralogical Society's Greater Detroit Show; South Macomb Community College, Expo Center.
9-10: Roseville, MN. Anoka County Gem & Mineral Club's Fall Show; Har Mar Mall.
15-17: Ft. Wayne, IN. Three Rivers Gem & Mineral Society's Show; Allen County Fairgrounds.

KATHY'S COLUMN



WE DID IT!

We put on another successful show! Now that a two-day recovery period is over, I'm able to regroup my thoughts on how great our show was.

It would be remiss of me if I didn't thank all of you for pulling together as a club to share with the public what a wonderful hobby we have.

A special thanks to show chair Marie and Bill Crull for a year's work well done, and also to the outstanding committee under them. To Joe Perry, who scheduled experienced and "people friendly" dealers, and to Marty Perry as show and club treasurer (and still able to keep her sanity)!

For all of you who provided food, every one of the dealers commented to me that this is the best show of the year for them. Not only are our members outgoing and friendly, but they can enjoy actual homemade, tasty food. Dare I mention they (and we) ate like "pigs at a trough."

Our demonstrators, I am sure, had sore throats by Sunday night. Every time I peeked out from the kitchen they were talking with interested spectators.

If you happened to come into the show kitchen on Friday, you might have noticed that Ed Miller was hard at work with his art supplies. Ed made up a totally neat table sign for the entrance door at our show. It's a real keeper.

So, GOOD JOB, guys, I'm proud of all of you. My grateful thanks. ☺

We still have a bus trip and meeting yet this month. For those going on the 3-day trip, please make a point to come to the September meeting and bring some of what you collected, and ALL members are welcome to bring in any summer collecting you wish to share by displaying. Our displays will be the program for September, we need a lot!

September always brings in visitors, guests, new members, many who attended our show and want to see what we're all about, not to mention many new families.

Did everyone get a chance to look at the wonderful recipe book, *Stone Soup*, that Diane Gram made up for us and had out at the club booth? **It's us, folks,** recipes we donated to the book. Be sure to purchase one at the September meeting.

Coming up are possible one-day field trips. Come to the September meeting and see what John Davis or other members are trying to schedule for yet this year. We all will have a good time and talks to share. I am looking forward to seeing all of you on September 26.

Rock on!

Kathy

THANKS, NICK!

Nick Pellus received this thank-you from the Elkhart Environmental Center after he represented the Michiana Gem and Mineral Society at their recent event:

This year's EnviroFest brought 700 people into the Wellfield Botanical Gardens. It was the best event that we have done in years. I give all the credit to our dedicated volunteers and partners. Everyone stuck through the heat and humidity to bring fun and culture to the community. Many persevered through a storm to help with teardown. We received a lot of compliments and it is all because of you. I'm so proud to say I was a part of this wonderful group.

Thank you,

Angela Banet

NEW JUNIORS' COORDINATOR NEEDED

After several years of wonderful leadership, Cordelia Tomasino is stepping down from the junior coordinator's position. This position requires a member with a heart for kids and a passion for sharing knowledge. You don't have to do all the teaching, since club members and guests are often brought in to present for the day. If interested, please see a board member.

"Bread and Butter Gemstones"

Is it Jasper? Or is it Agate?

Jasper and agate are the rocks most often dealt with by rockhounds and hobbyists in pursuit of their goals as lapidarists and collectors. Confusion often arises in trying to describe a specimen as jasper or agate. An attempt is made to clear up this confusion here and now!

To begin: Jasper and agate are composed of extremely interlocking quartz crystals called cryptocrystalline quartz. As such, they are both members of the fine grained quartz family commonly referred to as chalcedony. Chalcedony occurs throughout the world in beds, bands, nodules, geodes, botryoidal masses as a replacement of fossils, wood tissue or other minerals, and as a cementing material. It is deposited from silica-rich waters often carrying other mineral impurities. It is the presence of these impurities which stain the micro-quartz grains to produce the wide variety of color patterns, banding effect and inclusions that differentiate the basic gem forms of cryptocrystalline quartz....jasper and agate...from ordinary drab chalcedony.

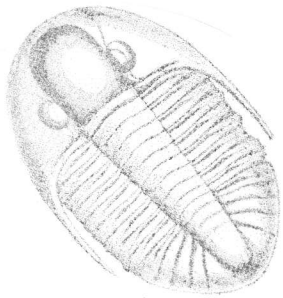
Now, for the difference between the two. In general agate is a transparent to translucent form of chalcedony in which the coloration takes the form of regular bands, rings, clouds and wispy inclusions or distinct groups. Agate, which contains concentric bands, is referred to as fortification agate. Moss agate contains delicate or wispy or lacy inclusions of colored minerals - sometimes the green mineral chlorite, other times the black mineral pyrolusite, a manganese oxide which penetrated cracks in the silica gel matrix prior to hardening. Now they remain as fine picture-like images. Agate is often named after the geographic area where it is found, and with a descriptive adjective attached i.e., Priday Ranch Plume Agate.

Jasper, on the other hand, can be somewhat translucent, but is most often opaque. The coloration of jasper is usually much darker than that of agate and is totally random with respect to distribution and pattern. Finely divided hematite gives the reddish color to jaspers, and another iron mineral, goethite, is responsible for the yellows and browns. Chlorite and nickel minerals contribute to the green colorations.

As does agate, jasper comes in many colors and displays an infinite variety of material for cabochons, scenic "pictures" to be framed and other functional or decorative purposes. **They are truly the "bread and butter" gemstones of our hobby.**

Gem Cutter News, Sept. 10, 1992-edited for space

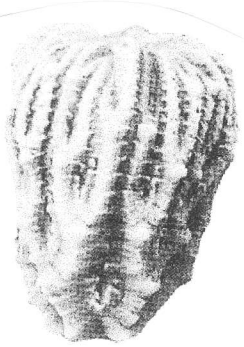
Collecting Excellent Fossils in Sylvania, Ohio



Information supplied by the Michiana Gem & Mineral Society
www.sauktown.com/Michiana (case sensitive)

Fossil Park, in Sylvania, Ohio, is now open to the public on weekends for the collection of fossils. Hanson Aggregates Midwest has donated part of an old quarry to the local park department, and regularly trucks in fossil-bearing shale. The shale, which is quite soft and easy to break apart, contains superb Devonian fossils, from 350 to 400 million years old. You can keep what you find.

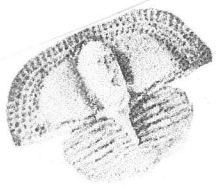
There is a parking lot, and the hunting areas are easy to walk to. Children are welcome, and the site is safe for all ages. The fossil-bearing shale is dumped on concrete pads, and you simply make your way through the piles looking for fossils. Hard hats, hammers and chisels are not required. There are temporary rest rooms on the site.



These are world-class fossils. The only comparable site for this variety and quality of fossils is Devon, England, for which the Devonian Period is named. You can find various species of trilobites, brachiopods, crinoids, fossilized worm trails, coral, etc.—most are beautifully preserved. Typical hours in summer are Saturdays from 9 to 6, Sundays from 11 to 6 (open until October 20). After Labor Day, the park closes at 5.

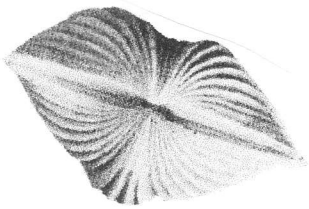
DIRECTIONS: Sylvania is just west of Toledo. From Michiana, take the toll road/turnpike into Ohio to exit 52, then take Hwy 2 east to Interstate 475, then go north. Leave 475 at Central Avenue, then go left (west) on Central through two major intersections. The third intersection is Centennial Road, where you turn right (north). On Centennial, go through three intersections (the third is Brint Road). After Brint, look for the road to Fossil Park on your left.

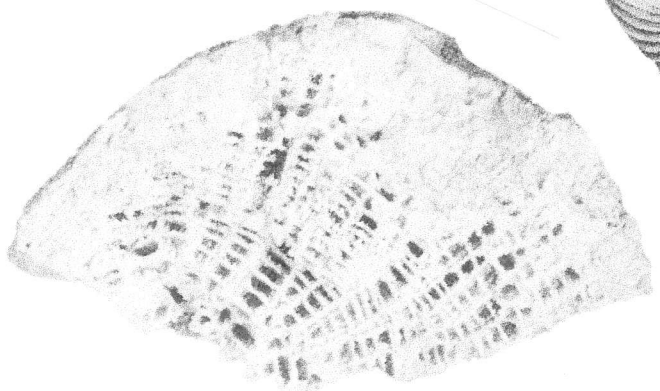
INFORMATION: For current information about times and open dates, contact the Olander Park System at olanderpk@aol.com or phone 419-885-8313. The Olander Park web site is not very helpful. Search for "Fossil Park" and Sylvania to get more information. There may be a small fee.



ERA	PERIOD	MYA
Paleozoic	Permian	251-299
	Carboniferous	299-318
	Devonian	359 -416
	Silurian	416 -444
	Ordovician	444-488
	Cambrian	488-542
*	*Ediacaran*	542 -635

* Neoproterozoic





SCIENCE A LONG WAY FROM SOLVING MAMMOTH MYSTERY

By Dale Gonidovec

No animal is more iconic of the Ice Age than the mammoth. Closely related to modern elephants, they thrived on all the northern continents for thousands of years before becoming extinct.

Why they died out is still a mystery, but a recent paper in *Current Biology* attacked the problem by looking at mitochondrial DNA extracted from 96 samples of bone, tooth and ivory from 41 mammoths.

The specimens analyzed came from an area called Beringia, which includes eastern Siberia, western Alaska and the now-submerged area between the two that is sometimes referred to as the "Bering land bridge." (That is a misnomer because when we hear the word "bridge" we think of a narrow walkway. Beringia was the size of Texas.)

The DNA showed there was a major expansion of mammoths from east to west Beringia around 63,000 years ago and then their population remained stable for thousands of years. That is in marked contrast to contemporaneous bison, bears and lions, which underwent major population crashes during that interval. More surprising, none of the crashes came at the time of the glacier's maximum extent 15,000 to 25,000 years ago.

The scientists identified two genetic lineages of mammoths, one of which died out 44,000 years ago. The authors say that shows "the conditions for extinction can be set up long before the actual extinction event."

I don't believe their data supports that conclusion. First, although one lineage died out, the overall population numbers were stable. Second, during any segment of a species' existence, its genetic diversity can be doing only one of three things: increasing, decreasing or staying the same.

That means that just by chance, its genetic diversity has a 1-in-3 probability of decreasing during the interval investigated, and that decrease might have nothing to do with what caused the eventual extinction.

We are still a long way from explaining the disappearance of the mammoths.

Dale Gnidovec is curator of the Orton Geological Museum at Ohio State University. gnidovec@geology.ohio-state.edu

Columbus Dispatch (Aug. 7, 2007)

MUSEUM UNVEILS NEW FOSSIL FINDS

MORRISION, Colo. (AP) - A small town has again yielded big scientific finds as historians this week announced a new collection of dinosaur fossils and footprints.

Matt Mossbrucker, dinosaur researcher and director of the Morrison Natural History Museum, said two years of work in an old fossil mine in an area dubbed Dinosaur Ridge uncovered important finds overlooked for decades.

Among the discoveries were a rare combination of fossils and footprints sharing the same sandstone formations, and fossilized footprints that could have been made by previously unidentified dinosaurs.

"We couldn't believe what we were seeing," Mossbrucker said.

The new evidence includes the first stegosaurus footprints found in Colorado, where the extinct beast is the state's official fossil.

"When I see these tracks, I half expect to look up and see a stegosaurus walking away from me," he said. "That's how good they are."

Morrison, about 15 miles west of Denver, is the site of the first dinosaur fossil and footprint discoveries in the West, prints and bones dating back 150 million years, before the Rocky Mountains formed.

The Dinosaur Ridge mines were opened by Arthur Lakes, a part-time professor at what became the Colorado School of Mines. They were busiest from 1877-1879 but then were largely untouched until volunteers revisited the sites in 1993.

A grant in 2003 funded a new wave of exploration, and Mossbrucker said a team of scientists and volunteers quietly assembled new discoveries over the past two years, sharing them with loyal regular museum visitors while members tried to determine what they had.

"We continue to find new things as recently as last week," Mossbrucker said.

Discoveries include evidence of up to seven species of dinosaurs, ranging from sparrow-sized to something as heavy as eight elephants, all pressed into wet sand around an ancient river.

Mossbrucker said researchers were looking for fossils, flipping over boulders when the tracks were uncovered. "You don't need to travel to find important fossils. We just need to look in our own backyard," Mossbrucker said.

From www.excite.com

EARTHQUAKE COUNTRY

By Robert Beadle

Earthquake Country, the name conjures up images of southern California, San Francisco and Los Angeles. Almost everyone has heard about the great San Francisco earthquake of 1906, and the San Andreas Fault, which troubles the region today. Few people have knowledge about one of the most seismically active fault zones in North America, the zone which had three earthquakes of over 7.5 on the Richter scale in one winter and over 2,000 aftershocks in a five-month period, the fault zone in our backyard—the New Madrid Seismic Zone.

The New Madrid Seismic Zone as it is defined today is a region of about 50 miles wide extending from south of Marked Tree, Arkansas, to Metropolis in southern Illinois. This area is subject to about 200 tremors every year. However, any quakes less than 3.0 on the Richter scale were undetected until instruments were installed in 1974.

The series of earthquakes that occurred in this region in the winter of 1811-1812 released more energy than all other earthquakes in the contiguous United States in recorded history. The power of these earthquakes would be difficult to imagine, as they were felt in three other countries, Canada, Mexico and Cuba. The Mississippi River actually ran backwards for a time. It was indeed fortunate that at that time the area was sparsely populate, although hundreds of people lost their lives.

It is disturbing to realize that we have incomplete data on the New Madrid Seismic Zone. For instance, does the zone have connections with the St. Genevieve Fault that runs from Metropolis, Illinois, to Bloomsdale, Minnesota? Is the Wabash Fault, which produced two earthquakes of over 5.0 on the Richter scale in 1968 and 1987, a northern extension of the zone? The Wabash Fault runs 100 miles northeast of Metropolis along the Illinois/Indiana border.

You may ask why there are faults and earthquakes in a region located in the middle of North America. After all, this area is located far from the crustal plate boundaries whose movements cause earthquakes and fuel volcanoes. The answer lies in the ancient past. About 600 million years ago, all the land was combined into one supercontinent called Pangaea. Rifts developed, splitting Pangaea apart, eventually developing the continents that we now know. Along a 40-mile strip running across eastern Arkansas, across the Missouri boot heel into western Kentucky, is one such rift. The Reelfoot Rift, as it is named, is a failed rift. The Reelfoot Rift didn't split the continent apart, but it remains an area of faults and earthquakes.

There is an old saying that every cloud has a silver lining and the case of the Reelfoot Rift is no exception. This failed rift brought to mineral collectors the quartz mines and the diamond crater in Arkansas, and the world famous fluorite mines in southern Illinois.

Unfortunately scientists need more data about the New Madrid Seismic Zone before they can predict when the next major series of earthquakes will occur. However, they have no doubt a major event will occur.

For a fictionalized account of a reawakening of the New Madrid Seismic Zone, read *8.4* by Peter Hemon.

Sources: *The Earth in Turmoil* by Kerry Sich & Simon LeVay; *The Earthquake That Never Went Away* by David Stewart and Ray Knox.

Pick and Dopstick (Jan., 2000)

EARTHQUAKE COUNTRY - PART II

By Robert Beadle

In my previous article I tried to describe the New Madrid Seismic Zone and a series of earthquakes in the winter of 1811-1812. This paper will look into the curious phenomena which characterized these events, phenomena such as waterfalls on the Mississippi River, sand volcanoes and five towns lost forever.

Two waterfalls occurred on the Mississippi River during the greatest of shocks on February 7, 1812. One was 10 miles south of New Madrid near Island #10; the other was one mile upstream from the town. These falls were described as having a vertical drop of about six feet. The falls near New Madrid capsized 28 boats with almost a total loss of life. The falls lasted days and were probably created by uplift along secondary fault features. The waterfalls eventually eroded away, leaving the river passable for traffic.

The term "sand volcano" has been used to describe soil features formed during the shocks. They

are more properly known as sand blows and sand boils. Sand blows occur when liquefied sand explodes from the ground, leaving a crater. These craters can be 20 feet deep with rims several feet high. During the great shocks, sand, along with other material, became airborne, reaching heights of over 25 feet. To the untrained eye, such formations would resemble erupting volcanoes, especially at the height of the earthquakes. Sand boils occur when liquified sand flows out from a vent or fissure, spreading a blanket on the ground. This blanket can be hundreds of feet across. Boils are not violent like sand blows, but consist of a gentle boiling of liquified sand. Sand boils can be active for a week after the quake. Both features remain connected with the water table and any shock will reactivate them.

Five towns were wiped off the map during that disaster, although the three great shocks were spread out over a period of months, allowing many people to evacuate their homes. Two towns were destroyed on the first day. The townsite of Big Prairie, Arkansas, liquified and sank but fortunately all residents escaped. Little Prairie, Missouri, experienced numerous sand blows with great fissures opening up in town. Around 11:00 A.M. the soil began to turn into quicksand and the village was flooded with groundwater. Like Big Prairie, Little Prairie sank too.

The residents of Little Prairie headed to New Madrid, only to find it in ruins. Burned by numerous fires, New Madrid disappeared during a later quake when the ground slumped 15-20 feet and the river washed the town away. The town of Point Pleasant, Missouri, was located on the Mississippi River. When the banks collapsed no trace was found of the town. Again, the residents had fled the town before it was destroyed. Fort Jefferson, Kentucky, was swept away by landslides from the last earthquake.

Well, I hope this article will give you a greater comprehension of the worst series of earthquakes in American history. I also hope you realize we have not seen the last earthquake from the New Madrid Seismic Zone.

Source: *The Earthquake That Never Went Away* by David Stewart and Ray Knox.

Pick and Dopstick (Nov., 2000)

OXYGEN ISOTOPES IN CORAL MIRROR HURRICANE ACTIVITY

by Dale Gnidovec

Hurricanes form over tropical oceans with surface temperatures higher than 79 degrees Fahrenheit. In the region of the Atlantic where hurricanes are born, measurements show an increase in sea surface temperatures during the 20th century. The terrible hurricane season of 2005 caused some people to wonder if human-induced global warming was to blame. Trouble is, the record of Atlantic hurricanes is not reliable before 1944, when routine aircraft reconnaissance began.

What is needed is a good proxy for older hurricane records. An article in the January *Bulletin of the Geological Society of America* showed that corals hold such data. Coral skeletons are made of calcium carbonate, in which oxygen atoms can be oxygen 16 (containing 16 neutrons) or oxygen 18 (with 18 neutrons). The relative amounts of the two isotopes in coral change with water temperature.

The ratio is also a good indicator of precipitation, another major aspect of hurricane activity. Precipitation results from water evaporating and forming clouds. Lighter oxygen 16 evaporates easier, leaving the ocean enriched in oxygen 18. The more oxygen 18 left behind, the greater the evaporation was and the more clouds (and thus precipitation) occurred. When coral skeletons are observed under a microscope, lines mark yearly, monthly, even daily, growth, so changes in temperature and precipitation can be tied to dates.

The researchers extracted a 5-foot core from a coral that lived 87 miles off the northern coast of Venezuela, in the southeastern Caribbean. The core was sampled for monthly oxygen-isotope ratios from 1918 to 2004. When the coral's temperature and precipitation indicators were compared to hurricane records, there was remarkable agreement, so it appears that corals can be a good proxy for past hurricane activity. The species of coral used in this study was a brain coral found throughout the Caribbean and western Atlantic. It can live several hundred years, and its fossils could be used to extend the record quite far.

The Columbus Dispatch (April, 2008)

WULFENITE (Lead Molybdate PbMoO4)
By David Hess

I have chosen wulfenite as the first mineral in my series of articles. One of the most beautiful and adored minerals by collectors is the species wulfenite. Its habitat is alteration mineral zones in lead ore or lead-zinc ore deposits, and it forms usually from reactions of molybdenum-bearing solutions with galena or other lead minerals. Common associates are cerussite (lead carbonate), pyromorphite (lead chlorophosphate), vanadinite (lead chlorovanadate), mimetite (lead chloroarsenate), galena, sphalerite, barite, aragonite, calcite, hemimorphite, smithsonite, molybdenite and quartz. Locally, along with the other lead minerals mentioned above, it is an ore of lead.

The most typical colors of wulfenite are red-orange, orange, yellow-orange and yellow, but it can also be brown, orange-brown, olive-green, yellow-gray or white in color, depending on substituting impurities such as tungsten, arsenic, vanadium, etc. The mineral is relatively soft, about a hardness of 3 on the Mohs scale, and it has a resinous to brilliant luster. Its powder or streak is white. Unfortunately for collectors who may work the crystals out, it cleaves readily in one direction. Wulfenite is actually in the triclinic crystal system, the least symmetrical crystal system, although it appears virtually tetragonal (square crystal axial cross-section) due to twinning. The most common crystal habit is modified or unmodified thin, square, tabular crystals, but crystals can be thicker or even cube-like, mimicking the isometric crystal system. Ha!—an isometric-like triclinic mineral! Less commonly, it occurs in pseudopyramidal crystals. Wulfenite can also be massive and crystalline.

Generally, wulfenite forms in semi-arid or arid climates where alteration zones through time have penetrated deeply into massive hydrothermal or vein lead-zinc-copper sulfide deposits surrounded by granitic rocks, volcanic rocks, or red shales and sandstones. Thus, wulfenite and associated alteration minerals are not common in more humid climates where these zones are quickly destroyed, except those areas with a history of a more arid climate.

Another fine location is the Defiance Mine and Glove Mine, Gleason, AZ, where spectacular networks of interlocking brown or olive-green plates of wulfenite were common. A recent location is the Silver Bill Mine, Cochise Co., Arizona. Specimens are marked by a beautiful coverage of small, brilliant yellow crystals, associated with white barite. The Organ Mts., New Mexico, mines near Hillsboro, Sierra Co., New Mexico, and a belt of mines in the Central District, Grant Co., New Mexico, have also produced nice wulfenites. Next to Red Cloud Mine and Glove Mine, the occurrence at Sierra de Los Lamentos, Chihuahua, Mexico, has produced the best crystals and large museum specimens. The crystals are found as zoned, square chunky orange or banded orange-brown tabular crystals and as unmodified brown, cube-like crystals, all on a beautiful matrix of white calcite-travertine. I have also seen orange-brown, pseudopyramidal crystals from there. The other fine location in Mexico is Mapimi, where very thin, platy yellow crystals similar to Rowley Mine occur, associated with mimetite....

Occurrences in the eastern and midwestem United States are rare. Eastern localities are largely restricted to lead-zinc veins of Triassic-Jurassic age near Loudville (Southampton area), MA.; Wheatley and Chester County Mines, Phoenixville, PA.; Perkiomen Mine, Audubon, PA.; and Davidson Co., N.C. They are closely associated with pyromorphite in these locations, and most are microcrystals, orange to yellow, rarely white, in color, but at the Phoenixville locations older pieces have crystals up to 1/4 inch or more. I have personally collected micro-crystals at the Chester Co. and Wheatley Mines. Wulfenite crystals in the Midwest (some would argue west) are known from a mine at Galena, SD, in the Black Hills. Several years ago I saw a specimen advertised from the lead-zinc district at Mineral Point in SW Wisconsin (in the late Jay Lininger's *Matrix Magazine*). Unfortunately, I did not act on this. It must be an exceedingly rare mineral there, if correctly labeled.

The best occurrences lie in the southwestern United States and Mexico. The collector standard is the magnificent orange-red, tabular crystals up to 3" or 4" found at Red Cloud and Hamburg Mines in Yuma Co., Arizona. The Red Cloud crystals were first worked out in 1937 by the famous collectors Ed Over and my close, deceased friend and mineralogist Art Montgomery. Fine, very thin, tabular orange to yellow crystals to at least ½" occur with great coverage on matrix at the Rowley Mine near Theba, Maricopa Co., Arizona. At Mammoth Mine, Tiger, Arizona, orange tabular crystals are associated with cerussite, leadhillite, willemite and linarite. Some wulfenite also occurred with vanadinite at the Old Yuma Mine.

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