

THE ROCKFINDER

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



THE ROCKFINDER

SEPTEMBER, 2003

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 December 1)
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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, (ph. 574-289-2028). Co-editor, Herb Luckert, 221 Marquette Ave., South Bend, IN 46617 (ph. 574-282-1354). Reporters, Bob Heinek, Herb Luckert, club members.

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THE ROCKFINDER

Newsletter of the Michiana Gem & Mineral Society

Volume 43, Number 7

September, 2003

Meeting: Sunday, September 28, 2003
Doors open at 1:30 p.m.
Meeting starts at 2:00 p.m.

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

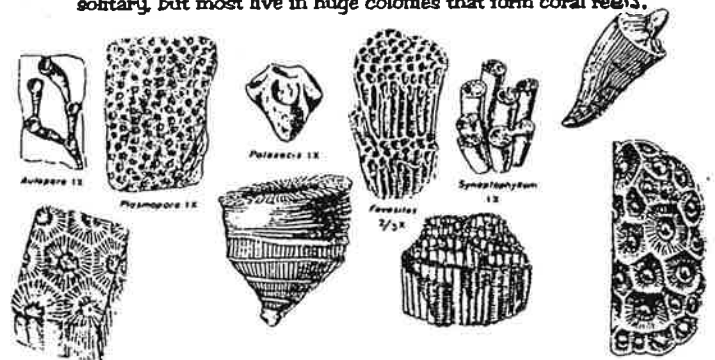
Program: To be announced

Refreshments: Annitta Hostetler, Audrey
Lewandowski and Celia Webber

Fossils of Indiana

Corals

The walls and partitions in corals are built up by tiny soft-bodied animals living one inside each compartment. Some corals are solitary, but most live in huge colonies that form coral reefs.



UP AND COMING

Sept. 12-14: Tulip City Gem & Mineral Club show, Civic Center, Holland, MI.

Sept. 20-21: 2003 Geology Arts Fair, 10730 Bush Road, Chelsea, MI.

Sept. 20-21: Ninth Falls of the Ohio Fossil Festival, State Park, Clarksville, IN. Lots of activities related to Indiana fossils.

Sept. 27-28: Licking County Rock and Mineral County show, Indian Mound Mall, Heath, OH.

Sept. 26-28: Greater Berea Area Gem Show, Cuyahoga County Fairgrounds, Berea, OH.

Oct. 4-5: Miami Valley Mineral and Gem Club show, 1043 Rona Parkway Dr., Fairborn, OH.

Oct. 10-12: Greater Detroit Gem Show, South Macomb Community College, 12 Mile & Hayes, Warren, MI.

Oct. 17-19: Three Rivers Gem and Mineral Society annual show, Fairgrounds, Ft. Wayne, IN.

Oct. 17-19: Eastern Federation convention and show, Poughkeepsie, NY. Oct. 25-26:

Evansville lapidary Society show, Washington Square Mall, Evansville, IN.

Oct. 24-26: Central Michigan Gem & Mineral Show, Ingham County Fairgrounds, Mason, MI.

Oct. 25-26: Evansville Lapidary Society show, Washington Square Mall, Evansville, IN.

Nov. 7-9: Midwest Factors Guild show, Taylor Sportsplex, Taylor, MI.

DIANE'S COLUMN



Last month I attended my first Midwest Federation Convention, held in Cottage Grove, near Minneapolis. Pam Rubenstein and Phyllis Smallwood accompanied me, both more experienced than I was as a delegate. I figured Minneapolis is north of Indiana, so the temperature would be cooler. To my surprise it was hot! I am very glad that I packed some shorts. A record high of 97 degrees was definitely shorts weather.

We did go to the show several times, but no air-conditioning made for short visits. Because of the heat we decided not to take any of the field trips. (Our field trip was a visit to the Mall of America! Phyllis and I even went on a log ride at Camp Snoopy.)

Saturday morning was the Midwest Federation meeting, held at Cottage Grove Inn Suites. It was air-conditioned, and a good thing, since many people filled the meeting room. Later at the banquet there was a raffle for the table centerpieces. Pam, Phyllis and I were all lucky enough to win. The attractive centerpiece was an outline of the State of Minnesota in pipestone, made by a club member. You will find a report of the meeting in this issue of the *Rockfinder*.

I am now looking forward to our field trip to Brown County. Geodes, gold and good friends--who could ask for more? See you soon, either on the field trip or at the meeting September 28. Margaret Heinek will be able to give us highlights of the show. A big pat on the back goes to all those who put forth such mighty efforts to make it a great show!



Lepidodendron Bark

MIDWEST FEDERATION OF MINERALOGICAL AND GEOLOGICAL SOCIETIES MEETING, AUGUST 16, 2003

By Diane Gram

As your delegate to the Midwest Federation Convention, I learned much about the federation. I will share some highlights of the meeting and then over the next few months print information from the permanent committees. I think some of the new members will benefit, as I did, to know more about the realm of the Midwest Federation.

Many introductions were made: past presidents, honorary members, distinguished guests and state directors. Reports of permanent and special committees were given. The Bulletins Committee announced that 19 awards would be presented at the banquet.

A proposal to add a Publications Committee to the permanent committees was passed. Endowment funds will be used to coordinate all publications to provide continuity.

A proposal to add a Web Site Committee to the permanent committees was also passed.

New state flags will be purchased because of the disappearance of the former flags. The total cost will be about \$300, paid by the Midwest Federation. The flags will be used for state exhibits and for the show. The keeper of the flags will be the next show chairperson.

The next Midwest Federation meeting and show will be in Cedar Rapids, Iowa, April 23 through 25, 2004, at Howard Johnson's and the fairgrounds. A large show is promised, with T-rex. The American Federation meeting and show is planned for August 19 through 21, 2005, in St. Louis.

Some general suggestions for promoting membership were: have club members display at museums, use a display at a garage sale to generate interest. Other suggestions: some show profits should go to the endowment fund. Make donations at the end of each meeting for the scholarship fund.

I found the meeting interesting and found there is always much to learn and share with others.

MINUTES OF THE AUGUST 10 MEETING

This year's club picnic was exceptional! Our hostess, cooks, planners and decorators all did a tremendous job. We had a great turnout, and everyone had fun!

Bob Heinek had knee replacement surgery recently, and Margaret had cataract surgery. We wish them complete and speedy recoveries.

We need lots of help for this year's annual club show over the Labor Day weekend. The following people volunteered--thank you all!

6:00 p.m. Thursday: The McLaughlins and Luckerts will measure for tables; Phyllis Smallwood will get stuff from our storage shed.

8:00 a.m. Friday: Bob Miller and Phyllis Smallwood will meet at Century Center to set up and cover the tables when they're delivered.

We need material for door prizes! Bill Nelson generously donated some very nice materials to use, but we can always use more.

Tom Noe reported that he could use more material for the silent auction as well as bags and newspapers for packaging. Most importantly, he needs help working.

Phyllis Smallwood, Pam Rubenstein and Diane Gram have been working on plans for the Kids' Korner. This year, with admission, each child will receive five free tickets for use in the Kids' Korner. More tickets can be purchased for \$.25 each at the door. No cash will be kept in the Kids' Korner. We still need lots of material to give away. Once again, we also need workers. The Kids' Korner will not be open if it is not staffed by club members.

Flyers promoting the show were distributed to anyone who wanted them to post or give out.

Bob Miller reported that we only have two demonstrators this year; typically, we have 13! Once again, this is your chance to get more involved!

Diane reported that Century Center has raised its parking rates from \$3 to \$5 per day. For our show, however, the rates still will be \$3 per day. The club pays the parking fee for all dealers and demonstrators, but Diane asks that club members

either park elsewhere or pay for themselves. We cannot have a successful show if all our profits go to parking!

The club has had to guarantee a minimum of \$300 in sales to the food concession at Century Center. If people don't buy at least that amount from them, the club will have to make up the difference. So, when you're ready for a cold drink or snack while working at the show, please consider buying it from the Century Center food concession.

If you'd like to suggest other places to hold our annual show, please bring detailed suggestions to our October or November meeting, including how much the facility would charge, square footage available, etc.

There are a lot of other shows coming up. There's always a book with flyers about other shows at our monthly meetings.

Jane Kile, widow of long-time club member Stan Kile, will be selling Stan's rocks and equipment on Saturday, August 16, at 10:00. Her address is 3313 Whitcomb Ave. in South Bend.

Kathy Miller reminded us that checks for the Saturday dinner during our fall trip must be sent to her BEFORE the trip! Cost is \$13 per adult. If you must pay her on the bus, YOU MUST PAY IN CASH! Kathy works hard on these field trips, and we all need to help her out as much as possible. So send her a check!

Pam Rubenstein
Temporary Secretary



LETTERS FROM STUDENTS

Bob and Kathy Miller helped a niece who is an elementary-school teacher to introduce rocks and fossils to her students. Here are some of the thank-you notes they received from the class.

Dear Mr. & Mrs. Miller, thank you for the sand art. It is really cool. I really like it. Thank you for the little crystals and the rocks you let us use. I know this is a short letter but I really do mean it.

Your friend,
Kelsei

Thank you, Mr. and Mrs. Miller, for the rocks you gave us and for sand. I really like it. I can't wait to take the rock home and put it by my alarm clock so when I wake up in the morning I'll be able to look at it. My class found a lot of info on the computers and in the books. I found out that my rock can change colors. Thanks a lot.

Amber Reese

Dear Mr. and Mrs. Miller,
I just want to say thank you so much for the crystals. The crystals are very cool! Thank you for the posters and sand art. The sand art is very cool, so are the poster. You are very nice.

Andrea Taylor

Thanks!

Dear Mr. and Mrs. Miller,
Thank you for the cool posters, the shiny crystals, and the awesome sand paint!!!!

Science is awesome!!!!!!!!!!!!

your friend,
Collin H.

SILVER AND HISTORY:

THE BATTLE OF SALAMIS

By Sam Shapiro

Silver, atomic number 47, has the symbol "Ag" from Latin "argentum." It is used in coinage, jewelry, dentistry and photography.

A few years after the battle of Marathon (490 BC), when the city of Athens defeated an invading Persian army, a rich new vein was discovered in the silver mine of Laurium. Athens consulted the Oracle of Delphi about what to do with their windfall, and how to prepare for the next Persian attack. They were advised to "Trust to wooden walls." At the assembly of the nascent Athenian democracy, some took the oracle literally, and urged the building of a wooden wall around the Acropolis. Others, in the spirit of George W. Bush, suggested that the money be paid out to the citizens, 10 drachmas each: "It's your money."

Themistocles, however, persuaded the assembly to build a new fleet of triremes--seagoing "wooden walls." One hundred were built, and were ready to join the fleet when the Persians arrived off the coast of Attica in late summer of 480 BC. In the meantime, the Persian army had occupied the deserted city and burned it.

Themistocles, commanding the fleet which his political skill had brought into being, shrewdly posted it in the narrow bay east of Salamis, where the superior numbers of the Persians could not be effective. When the Persians tried to enter the narrow strait into the bay, their ships fell into confusion, rammed one another, and were easy prey for the new Athenian triremes.

King Xerxes, watching from a nearby cliff, saw a disaster. Two hundred of his 350 vessels were sunk or captured; the Greeks lost only 40 triremes, and captured 120 Persian vessels. The victory, so immensely important in world history, had been won thanks to the silver mines of Laurium.

FAMOUS PETRIFIED FORESTS

By Dick Young

Our petrified forests are generally of three types. The first type has been showered and completely covered by volcanic ash, leaving the trees standing in an upright position. The Petrified Forest of Yellowstone National Park is an example of this type. The trees are standing in their original state where they grew many millions of years ago. The forest of Yellowstone covers more than 40 square miles, which is the largest area known. Another unusual feature of the Yellowstone Petrified Forests is that many thousands of fossilized leaves, needles, cones, and seeds of over one hundred different kinds of trees and shrubs have been found there. It is the only place in the world where 27 successive layers of petrified forest can be seen.

The story behind the Yellowstone Petrified Forest is that an old volcano began to erupt and continued for some 20 years. Mineral-bearing waters had begun to petrify the once living forest. In the span of a couple of hundred years, a new forest began to appear and grew for the next 500 years. Then, the old volcano erupted again. This process reoccurred 27 times, and 27 distinct layers of buried forest have been exposed in the Fossil Forest on the south side of Laramie River Valley. An example of a well preserved stump can be seen a few feet from the highway along "The Petrified Road." Along the northern slopes of Specimen Ridge there are many layers of petrified tree trunks. About two-thirds of the way up on the eastern edge is a group of upright standing trunks of unusual beauty and size just as they grew many millions of years ago. The largest of these petrified stumps is a redwood over five feet in diameter and believed to be approximately 1,000 years old when burned by volcanic debris.

A second type of petrified forest is believed to be the result of logs jamming at the mouth of a river, sinking into the mud and becoming petrified. The Petrified Forest of Arizona is an example of this type. Driftwood may be deposited on the shore by the winds. Generally fossil wood which at one time was driftwood does not have bark. This fact may account for the lack of bark on the wood in Arizona. The Arizona forests are between one hundred and two hundred million years old. One stone log, 20 feet

wide and 40 feet thick flung across a ravine, forms a natural bridge—the famed Agate Bridge. The Arizona Petrified forests are composed of different forests varying in coloring. The Rainbow forest is a multiplicity of colors; the Blue forest is mostly carbonized sections; and the Black Forest is brilliantly black. Many logs of white, some almost transparent, make up the Second Forest, while the Third Forest displays large specimens as long as 160 feet. The fossil wood is of three general types: 1. Jasperized wood predominantly bright red, some translucent and variegated with a riot of colors; 2. Small amounts of bright red wood are found often with areas of nearly colorless quartz; 3. Sections of dark or nearly black wood.

The opalized wood forests of central Washington run a close second to the famed forests of Arizona. An outstanding feature in Washington is that the only fossilized ginkgo trees known in the world are found there. The well known Ginkgo Petrified Forest is of the driftwood type. Of the ten thousand fossilized trees in this forest, only six have been identified as Ginkgo trees. The Ginkgo is one of our oldest and most primitive types of trees, a direct ancestor of our modern tree, and is remarkable in that it has survived through millions of years while other species have died out.

Nevada boasts of the largest petrified tree known in the world. It is fourteen feet in diameter and nearly three hundred feet long. Another distinction in Nevada is that the woods of Virgin Valley are fully opalized with the "fire" of the fire opal.

A third type is that of scattered woods that may be covered in some manner, to become solidified later. For instance, rising waters in a lake may completely cover a forest and protect it from decay. Later on, petrification may preserve the trees permanently. Some of the woods in California, Nevada, Oregon and central Washington have this origin.

Strata Gem (Sept., 2001)

ROCKHARD CRIMINALS

By George Loud

Last May two rockhound buddies were collecting agatized coral in the Aucilla Wildlife Management Area (WMA) known as the "Coral Lands" or "Western Slough" area in Jefferson County, Florida. They were arrested by an officer of the Fresh Water and Game Commission, locally referred to as a "game warden." The rockhounds spent 10 hours in a cold jail cell before being released on bond. This particular WMA is described as having Indian burial mounds within its boundaries and a number of "preserved sites" where the presence of artifacts has been noted. The site of the rockhound dig was neither in an Indian burial mound nor in a "preserved site." The only posted prohibition against collecting covered only Indian artifacts. The rockhounds were charged with violation of the Florida State Criminal Code, specifically "Criminal Mischief," a misdemeanor. The Public Defender's Office in Jefferson County advised me in telephone conversation that they knew of no Florida statute or agency rule governing the removal of rocks and minerals from state lands for recreational purposes. Further, I was told that the rockhounds would have a good defense if the case were to be tried, because of lack of notice and doubts as to whether or not the digging of a hole and the removing of rocks amounted to what would be regarded as "criminal mischief." However, the charges were eventually dropped and the matter never went to trial. At present, I know of no statute, agency rule, legal precedent or even stated policy covering collecting of agatized coral or other rocks and minerals on Florida state land. However, we do know that the aforementioned arresting officer is still plying his trade in the Aucilla WMA and can be expected to treat other collectors he might encounter in the manner described above. Accordingly, unless we can obtain a favorable policy decision from the Florida state agency having jurisdiction over the land, rockhounds should avoid the area.

AFMS Newsletter (Dec., 2002)

YOU MAY GROW WITH PHOSPHATE KNOWLEDGE

by Lloyd Brown

One atom of five-valent phosphorus combines with four atoms of oxygen to form a tetrahedral ionic group. This fundamental phosphate ionic group (PO₄) combines with many different elements individually or jointly to produce over 300 valid phosphate mineral species. Five-valent arsenic and vanadium form similar ionic groups. Most phosphate minerals are soft and brittle. They most often occur in small, inconspicuous masses or as tiny crystals. Many are brightly colored and provide colorful mineral specimens. A relatively high specific gravity is common among these minerals. They are a favorite among micromounters. Although the number of phosphate species is large only monazite, amblygonite, wavellite, turquoise, pyromorphite and apatite are commercially important. Of these only apatite can be considered common. Although pegmatite rocks are a good source of phosphate specimens, phosphates are found in most types of rocks.

The name "phosphorus" comes from the ancient name for Venus, which means light-bearing. Phosphorus exists in four or more allotropic forms: white (or yellow), red and black (or violet). Phosphorus is never found free in nature. Phosphorus is an essential element for plant and animal nutrition. Plant life requires soluble phosphates. Nitrogen-phosphorus-potassium fertilizers are the main users of phosphorus.

Since the manufacture of phosphorus is from colophane, a variety of apatite, the manufacture and uses of phosphorus should be considered here. Phosphate rock minerals are the only significant source of phosphorus. An impure massive calcium carbonate-phosphate variety of apatite called colophane furnishes the material for this need. Commonly known as phosphate rock, the raw rock is treated with sulphuric acid, forming a superphosphate. This super-phosphate is readily assimilated by plants. Approximately 85 percent of the phosphate rock produced is used to make superphosphate. Several methods of producing white phosphorus are used. Adding pulverized coal to phosphate rock and smelting this with coke and silica gravel will

produce elemental phosphorus, anhydrous phosphorus pentoxide, ferrophosphorus, and liquid phosphoric acid.

The phosphorus is collected from the vapors under water. If, instead, the carbon monoxide also produced combines with the phosphorus and moisture or water, the result is phosphoric acid, the prime constituent in making phosphate fertilizer. If the phosphorus is collected under water, the element must be handled and stored with great care. Ordinary phosphorus is a waxy white solid. If pure it is colorless and transparent. It breaks into flame spontaneously in air, resulting in pentoxide, which is very poisonous.

Upon heating in its own vapor or upon exposure to air, the white phosphorus changes to red phosphorus. Red phosphorus does not spontaneously combust in air and is not as dangerous as white phosphorus. Some of the uses of red phosphorus are in the manufacture of safety matches, pesticides, smoke bombs, tracer bullets, pyrotechnics and incendiary shells.

Phosphate chemicals are used in beverages, sugar refining, and in the silk industry. The calcium phosphate bone ash is used in the manufacture of ceramics, including fine chinaware. It is also used to produce mono-calcium phosphate, which is used in the manufacture of baking powder. Phosphates are used in the manufacture of special glass such as is used in the manufacture of sodium lamps. Another use of phosphorus and phosphates is trisodium phosphate—a cleaning agent and water softener. It is used in making certain steels and phosphor bronze. Organic phosphorus compounds have important uses. Some phosphates are used fairly extensively in jewelry. Turquoise is a favorite of many. Apatite provides many ornamental stones and semiprecious gemstones.

The prime source of phosphate, collophane was deposited in sedimentary rocks by marine organisms which took compounds of phosphorus from the seawater and accumulated the compounds in the hard parts of their bodies. After they died, they settled to the sea floor where the phosphate was slowly released in colloidal form to build up thick deposits. Seventy-five percent of the U.S. phosphate production comes from Florida. North Carolina and Idaho are other large producers, with close to 10 percent of U.S. production. Combined, these three

states produce about one-half the world's production. There are huge deposits of phosphate rock in the Western states, but only about 14 percent comes from there, mostly from Idaho, Montana and Utah. Large producers elsewhere in the world are Algeria, Tunisia, Morocco and Egypt in north Africa, the Kola Peninsula in Russia, Kazakhstan and Ukraine. Three Pacific Islands also have significant production. Most of the phosphate rock mined is used in the U.S. Exports have been reduced by more than one-half. When the supply of phosphates from the U.S. starts to dwindle, it will be replaced by production from north Africa, where increased production has already cut into the U.S. market for exports.

Sources of information include the U.S. Geological Service and *Handbook of Chemistry and Physics* by CR Press.

The Trilobite (Mar., 2003)

TRIPLE THREAT DID IN THE DINOS?

The most common theory behind the mass extinction at the K-T boundary is that a large extraterrestrial object slammed into the Yucatan peninsula, causing global climactic turmoil. New evidence presented by Simon Kelley of the Open University and Eugene Gurov of the Ukrainian Institute of Geological Science, presented in the August issue of *Meteorites and Planetary Science*, suggests that a well-known crater in the Ukraine had been dated incorrectly—the new date places the crater's age at 65 million years, the same age as the Yucatan Chicxulub crater. This new information suggests that multiple impacts may have occurred over a relatively short period of time, leading to the mass extinction. This idea is supported by data from paleontologists that suggests that the extinction was not a sudden event, but was instead spread out over time. Another crater found in the North Sea has also been dated to 60-65 million years; with three confirmed impacts in such a short period of time, life didn't stand a chance.

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AMETRINE

By Karen Rice

The quartz family has presented mankind with a vast array of different gemstones throughout history. Amethyst in combination with the yellow gem variety of quartz, namely, citrine forms ametrine. Ametrine was introduced to the gemstone market in commercial quantities in the 1970s, although specimens of this bicolored quartz were known long before. By some accounts it was known in Europe as early as the 1600s. However, except for odd pieces of material, most of which was collected for its novelty value, little was seen until recently. Even today, its exposure is limited, with few of the buying public aware of its existence—a sorry state for an attractive and relatively inexpensive gem!

Like all quartz varieties, ametrine is composed of silicon dioxide (silica) and crystallizes in the hexagonal system. Crystal clusters with well-developed faces, particularly the multifaced rhombohedral terminations, are not unusual. Indeed, crystals can be relatively large in size. Some over a foot in length have been recovered—a factor that has made this material a favorite medium for those specializing in the art of carving hard stone.

As regards color, ametrine displays both the purple coloration associated with amethyst and the orange-yellow color of citrine. However, the colors are not haphazardly scattered within the crystal, nor are they “mixed.” Instead, there is a distinct boundary between the different color zones. In addition, the zones themselves are distributed in a complex manner, obeying crystallographic laws. In short, the major rhombohedral sectors are purple in color and display Brazil twinning as amethyst does, while the minor rhombohedral sectors are yellow in color and do not display Brazil twinning.

Both amethyst and citrine are found worldwide, as are most of the other varieties of quartz. Ametrine, on the other hand is found, at least in commercial quantities, at only one location, namely the Anahi Mine in Bolivia. Situated in a relatively inaccessible region of western Bolivia near the Brazilian border, the Anahi Mine was first mined on a commercial basis in the 1970s, although its gem wealth had been exploited sporadically before this time. However, due to restrictive mining laws, the mine was not developed until the late 1990s, when the laws were changed. In 1989 the concession was

purchased. The mine was named the Anahi Mine and organized mining began. Although supplies have to be transported either by river and dirt road (a journey that can take upwards of 10 hours) or by air, the mine is worked solely for its gemstones, which include amethyst, citrine and ametrine. It is important to note that the mine is one of the few locations to produce natural citrine. Most citrine on the market today is amethyst that has undergone heat-treatment! Some smoky quartz is also found, as is milky white quartz which is not often found at the base of the ametrine crystals themselves. At first the recovery of these stones was made from surface workings, but later mining went underground, with over 2,000 feet of tunnels being dug in order to locate the clay-filled vugs that “house” the gem crystals.

Like many gemstones today, ametrine has had to endure its fair share of controversy. When the bicolored material began to appear on the market it was thought at first that its unique coloration had been produced by treatment processes or, worse still, that the material itself was synthetic, having been reproduced completely in the laboratory. The latter of these suspicions was put to some sort of rest when rough ametrine crystals, which were clearly not synthetic, began to show up on the market. However, the question of heat treatment was more of a problem, since it had been demonstrated that through carefully controlled heat treatment amethyst could be turned into ametrine. Eventually the exact location, which had been shrouded in considerable mystery for many years, was divulged to the gemstone industry—its natural origins finally being recognized. This is not to say, however, that artificially induced and synthetic material cannot be encountered.

Bulletin of the New York Mineralogical Club (Jan., 2000)