THE ROCKFINDER

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

PAY YOUR CLUB DUES BEFORE JANUARY 1!

MICHIANA GEM & MINERAL SOCIETY, INC.

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THE ROCKFINDER

DECEMBER, 2001

MICHIANA GEM & MINERAL SOCIETY

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

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

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Yearly Membership Dues (Payable by January 1)
_____Individual $10.00 per year
_____Family $15.00 per year
_____Junior $1.00 per year
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Please indicate areas of special interest.
General Geology____ Beads ____
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Please send your dues and this form to
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7091 E. East Park Lane, New Carlisle, IN 46552

HEADS OF COMMITTEES

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Membership	All Members

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

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

Additional names:
Name_____
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Birthday_____

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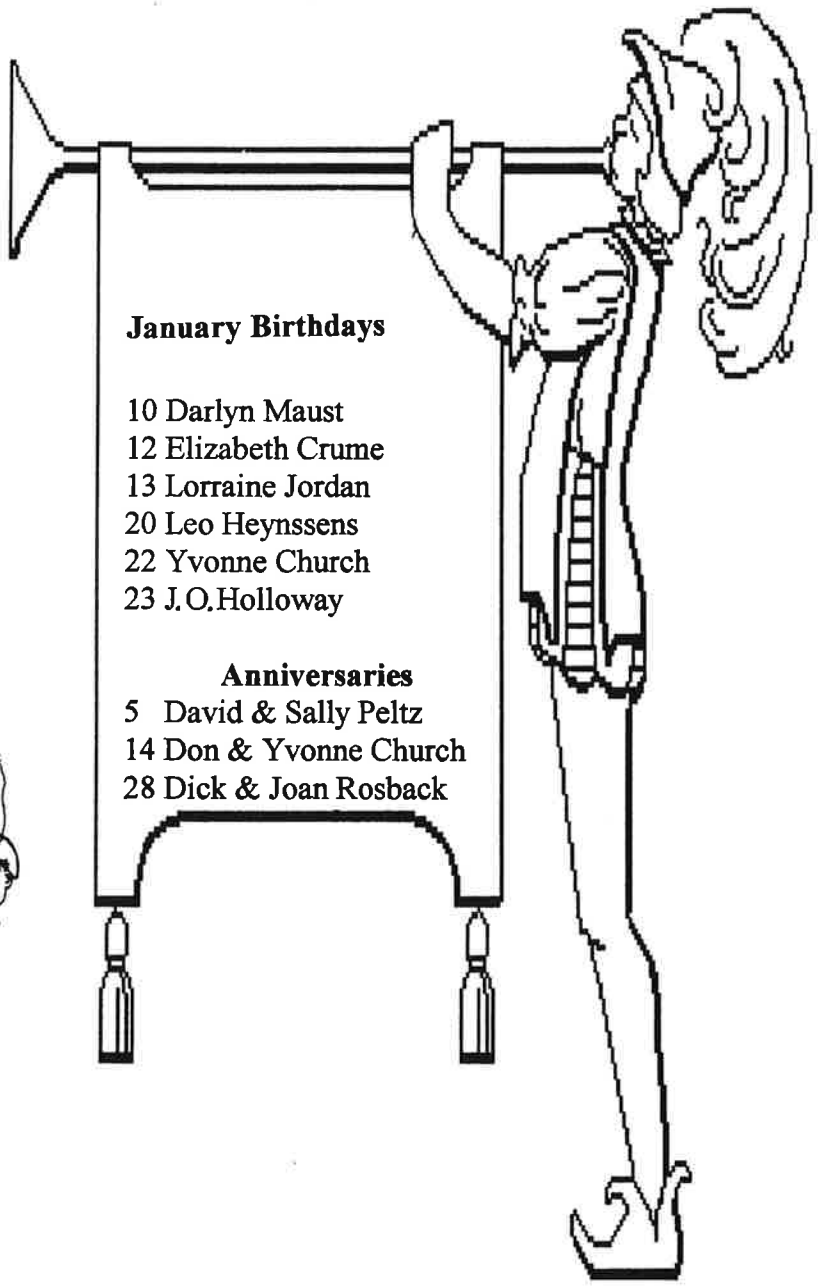
With my signature I hereby release the Michiana Gem and Mineral Society, Inc., and its individual members and the owners of any premises upon which I enter under permit granted to the society, absolutely free of any liability whatsoever, to my person or my property, and further I will respect the equipment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

Signed_____Date _____

THE ROCKFINDER

Newsletter of the Michiana Gem & Mineral Society

Volume 41, Number 10 December, 2001



January Birthdays

10 Darlyn Maust
12 Elizabeth Crume
13 Lorraine Jordan
20 Leo Heynssens
22 Yvonne Church
23 J.O.Holloway

Anniversaries

5 David & Sally Peltz
14 Don & Yvonne Church
28 Dick & Joan Rosback

DUES ARE DUE

Please renew immediately, using the instructions on the inside cover of the *Rockfinder*.

MINUTES OF THE DECEMBER 2 MEETING

The meeting was called to order by Don Church, president, at 2:00 p.m. The meeting room in Our Redeemer Lutheran Church was decorated with Christmas greenery by Kathy and Bob Miller, Emily Johnson, Margaret and Bob Heinek, and Pat and Tom McLaughlin. Members present included 32 adults and 3 juniors. It was good to welcome Molly Elwell back after a year's absence.

The minutes were approved as printed in *The Rockfinder*.

The slate of officers for 2002 was unanimously elected:

President:	Don Church
Vice-Pres.	Margaret Heinek
Secretary:	Sr. Jeanne Finske
Treasurer:	Bob Heinek
Liaison:	David Peltz

Kathy Miller suggested that we honor our recently deceased former member, Gordon Dobecki, who as a teacher got so many young students interested in rocks and minerals, by a grant of $150 to be given to Bill Nelson, Jr., when he begins his college studies. Put in the form of a motion, it carried unanimously.

Emily Johnson asked the members to look through their photographs of past field trips for pictures including Gordon Dobecki. These could be put in an album to be given to his brother. Members were asked to bring them to the next meeting.

The meeting adjourned at 2:30, when the members moved to the banquet table, which included roast beef and noodles cooked by Margaret Heinek, and many dishes lovingly prepared by each of the members. Guests present for the Christmas party were: Bess Wise's son Keith, Martha Perry's husband Joe, and Tom and Pat McLaughlin's son Brian.

M. Jeanne Finske, CSC, Secretary

ROMANCING THE MOONSTONE

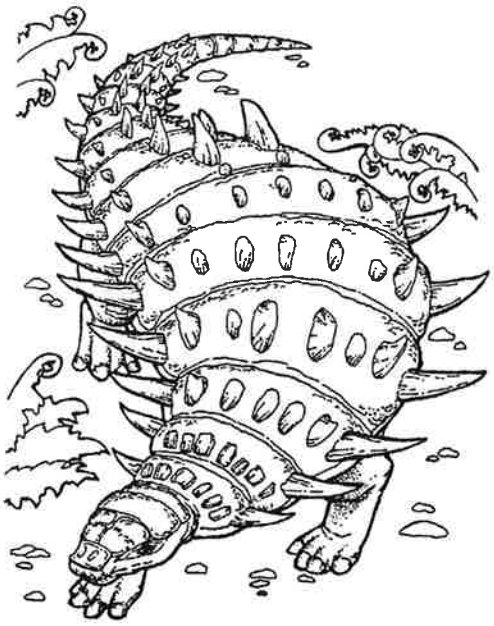
By Sam Shapiro

The Moonstone (1866), a novel by Wilkie Collins, was one of the first and is still considered one of the greatest detective novels. Its subject, of special interest to members of our club, is a very large diamond stolen from the forehead of an Indian idol by a colonel in the British Army, who takes it home to England, where he is pursued by several of the idol's devotees. Collins cleverly tells the story by having half a dozen of his characters describe the scenes they had witnessed, advancing the plot, using different narrative styles, and entrancing the reader. I can still recall, 60 years afterward, being unable to put the book down until I had finished it.

Other 19th-century writers made the crime short story and novel astonishingly popular. Two other Englishmen, Charles Dickens (*The Mystery of Edwin Drood*) and Arthur Conan Doyle, the American Edgar Allen Poe, the Frenchmen Vidocq and Gaboriau, and the Russian Fyodor Dostoyevsky (*Crime and Punishment)* brought literary distinction to the new genre. Fairly often, the crime committe was the theft of some precious jewels.

One of the earliest of the Sherlock Holmes stories, for example, published in the *Strand Magazine* in 1892, concerns the theft of a blue carbuncle, a variety of garnet of the silicate (Si04) family with a hardness of 8. It turns up in the crop of a Christmas goose. The great detective immediately recognizes it as a famous stolen jewel with a value (then) of many tens of thousands of pounds.

"Holmes took up the stone and held it against the light. 'It's a bonny thing,' said he. 'Just see how it glints and sparkles. Of course it is a nucleus and focus of crime. Every good stone is. They are the devil's pet bait. In the larger and older jewels every facet may stand for a bloody deed. This stone is not yet twenty years old. It was found in the banks of the Amoy River in Southern China.... In spite of its youth, it has already had a sinister history. There have been two murders, a vitriol-throwing, a suicide, and several robberies, brought about for the sake of this forty-grain weight of crystal." To tell any more of the story, and explain how the gem gc into the goose, and how Sherlock Holmes tracked down the thief, would be to spoil the pleasure of those who have never read this particular adventure, one of Conan Doyle's own favorites. Get a copy from the library or bookstore, and enjoy!



DINOSAURS—WHAT IS LEARNED FROM THEIR TRACKS?
By Dee Grover

The tracks of dinosaurs, when associated directly with bones, can exhibit a very large bank of information about the animal that made the tracks. This is especially true if there is a series of tracks that displays a walk, a jog or running activity.

One example that tells us a fascinating tale is located 23 miles north of Moab, Utah. Following the directions provided by BLM to the parking area, we walked up a small hill and looked down into what appeared to be a dry streambed that was topped by a slate-looking rock. Imprinted in the rock were 14 or 15 very deep tracks that were probably made by a huge four-footed dinosaur said by paleontologists to be an *Apatosaurus*. After about four steps the *Apatosaurus* suddenly made a 90-degree turn, and his prints disappeared under the banks of the streambed. A turn of this magnitude is highly irregular for an animal of this size. Closer examination of the site reveals a very large theropod track which was made by an *Allosaurus*. The track was aimed at the left shoulder of the *Apatosaurus* at the point where the 90-degree turn was made. I surmised that was the last step taken by the *Allosaurus*, as he jumped upon the back of the *Apatosuarus* and had "Baby (giant) Rib Rack" for lunch.

Areas that are completely trampled with hundreds of dinosaur tracks are described as having "dinturbation." This proves that some dinosaurs lived in packs. Evidence based mainly on tracks, also backed by bones, shows horned dinosaurs such as *Triceratops*, *Ankylosaurus* and *Protoceratops* were gregarious, as were herbivorous dinosaurs such as *Brontosaurus*, *Iguanotids* and types of duckbills.

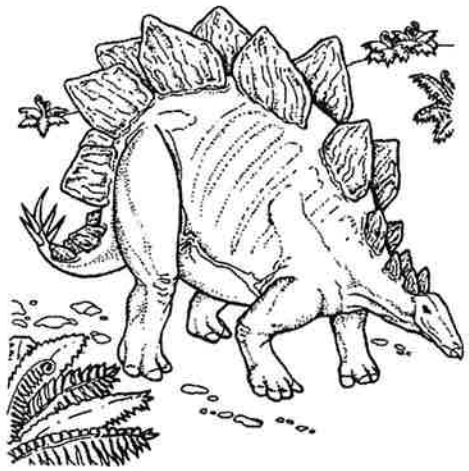
Some track measurements can give ballpark figures of length, height, size and speed of the maker of the tracks. The length of the foot times four equals the hip height for smaller dinosaurs, and times five and one-half for larger ones. Length of stride can indicate speed of the animal, provided the bone structure of the leg is known. If a step is shorter than four feet while walking and more than four feet while running, the speed will be 5-10 kilometers per hour. The distance of the midpoints of the manus (front) and pes (back) foot strides equals the hip-to-shoulder measurement and gives a good estimate of the size of the animal.

Some slender. long-legged dinosaurs such as *Coelophysis* could probably attain speeds of 40-45 kilometers per hour. Huge dinosaurs such as *Titanasaurus* could probably only move 5 kilometers per hour as he shook the earth in his walk. Speed can be judged by the angulation (angular deflection of the foot from the center line of both feet as they move) of the tracks and the length of the steps and strides. Studying modern animals has helped in this study.

Lithosphere (June, 2000)

NEW DINOSAUR TRACKWAY
By Terry Cirrincione

Paleontologists are calling the new discovery in St. George, Utah, one of the best trackways of dinosaurs ever found. About 200 million years ago an area around the present St. George, Utah, was part of a shallow lake, with shoreline where dinosaurs walked, ate and drank in their daily life routine. The shoreline was also part of a walkway trail leading



across Utah. Many trackways have been found in Utah, but this recent discovery is one of the finest.

The dinosaur trackway discovery was made by a retired ophthalmologist as he was using a backhoe to lift blocks of stone to fill in holes on his property. When the rocks fell in place, they split open to reveal the footprints of several dinosaur species. Scientists and paleontologists have seen about 150 prints, most of which are exceptionally detailed; you can see what appears to be scales between the dinosaurs' claws. Dinosaur prints so far identified are those of Eubrontes and Dilophosaurus. Dilophosaurus was known as one of the first large carnivores during the Jurassic Period. It is the dinosaur with the massive crest on its head.

The discoverer of these prints, Dr. Sheldon Johnson, owns 130 acres of land. He and the paleontologists who were called in believe there is a probability that there are dinosaur footprints all over Dr. Johnson's property. Since the discovery, sometime in February, 2000, and the announcement of the discovery throughout the world, the Johnsons have not had much sleep, staying up nightly to guard their precious find. Dinosaur enthusiasts have made visits to the property to see the astounding trackway. Mrs. Lavema Johnson welcomes each visitor and gives out loose-leaf notebooks with descriptions and names of the dinosaurs that roamed the land long ago. Mrs. Johnson greets as many as 1,200 visitors per day. They have not been charging a fee for visitors to see the prints. They are very excited, and happy for everyone to see and learn.

Jim Kirkland, Utah's State Paleontologist, and Martin Lockley of Dinosaur Trackers Research Group of Colorado, who is also world-famous for his many, many dinosaur trackway discoveries, are working together to continue the excavation of the prints, an to decide if some of the prints belong to any unknown species of dinosaur.

The Johnsons plan to build a dinosaur museum there in St. George, and have promised to donate 20 acres for this purpose. The museum is to be a heritage for their grandchildren, great-grandchildren, and all the Johnsons in the future, as well as a learning institution for all people.

Fossil Finder (July, 2000) based on an article in *The Dail Journal* (April, 2000)

FIRE STILL SMOLDERS BENEATH TOWN
By Dale Gnidovec

Imagine having a fire burning in an abandoned coal mine under your house. Imagine having cracks opening in the ground and spewing lethal concentrations of poisonous gases. These weren't idle thoughts for the people of Centralia, a small town in northeastern Pennsylvania.

In May, 1962, the town council decided to use a nearby abandoned strip-mined pit for a landfill. Some trash was already there, and it was burned. Unfortunately, the trash concealed a hole that lead to a 6-foot-thick seam of anthracite coal. The coal caught fire.

In 1969, dangerous levels of carbon monoxide drove three Centralia families from their homes. By 1978, state and federal agencies had spent more than $3 million in unsuccessful attempts to control the fire

In 1981, a 12-year-old boy was nearly swallowed by a huge hole that opened beneath his feet. By 1982, borehole temperatures reached 260

degrees Celsius (500 degrees Fahrenheit) under the town, and 455 degrees C. (850 F.) under the town's main highway.

One old-timer quipped that if you were buried in the Centralia cemetery, you could be cremated for free.

Debate over whether to abandon the town grew acrimonious, even violent, with tire-slashing and death threats. A referendum showed that only about two-thirds of the residents wanted to move.

In 1983, Congress appropriated $42 million to relocate the town's homes and businesses. By 1991, about 1,000 residents had moved. Centralia once had five churches, a school, a bank, a post office and a hotel.

Now all but 30 of the town's 500 buildings have been razed. On one street, a lone narrow row home remains.

The main road, now detoured, snakes past dead trees that are charred at their bases.

At the south edge of town is a field of pipes venting noxious fumes. The air is heavy with the smell of sulfur, and your shoes get hot just standing in the street.

Roughly 40 residents still refuse to move, despite eviction notices. Some claim the government just wants their land so it can mine the coal. Others say the town is nicer now than it's ever been, because it is almost like having a park all to themselves.

The fire spreads erratically, from barely moving to as much as 700 feet a month. It has burned an underground area of 450 acres. As many as 3,000 acres could be consumed, and it may bum for 100 years.

Centralia is one hot town.

Columbus (OH) *Dispatch* (no date)

Dues are due now—Check the back of the cover for mailing information.

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 this 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 after-shocks in a five-month period. The fault zone in our back yard—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 backward for a time. It was indeed fortunate that at that time the area was sparsely populated, 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 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 know now. 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 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 nea 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 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 earthquakes. Sand boils occur when liquefied 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 liquefied 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, liquefied and sank but fortunately all the 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 left 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 Dr. David Stewart and Dr. Ray Knox)

Pick and Dopstick (Nov., 2000)

The following information was taken from *The Earthquake History of the United States*, U.S. Department of Conunerce, revised 1970. A * indicates that the quake was felt in the state but the epicenter was in another.

INDIANA

Forty-five earthquakes are listed, three of which were felt over 60,000 to 100,000 square miles. Most of the shocks have occurred in southern Indiana.

1804 Aug. 24	1909 Sept. 27 (2)
1811 Dec. 16	1909 Oct. 23 (2)
1812 Jan. 23	1912 Jan. 2
1812 Feb. 7	1916 Oct. 18
*1827 Aug. 6	1917 Apr. 9
*1827 Aug. 7	*1919 May 25
1843 Jan. 4	1922 Mar. 22
1867 Apr. 24	1925 Feb. 28
1875 June 18	*1925 Apr. 26
*1876 Sept. 25	1925 Sep. 2
1882 Oct. 15	*1931 Jan. 5
1883 Feb. 4	1931 Sept. 20
1884 Sept.19	1935 Nov. 1
*1887 Feb. 6	1937 Mar. 2
*1891 July 26	1937 Mar. 8
1895 Oct. 31	1939 Nov. 23
1897 Apr. 30	1947 Aug. 9
1897 May 31	1956 Jan. 27
*1899 Apr. 29	*1958 Nov. 7
1905 Aug. 21	1963 Mar. 30
*1906 May 11	1968 Nov. 9
1909 May 26	1968 Dec. 11
1909 Sept. 22	

AGATE TO DYE FOR

By Robert L. Braun

One of the nicest colors in the world of agates is a rich reddish brown. This color is often called carnelian, sard or even carbuncle, if you recognize it as one of the stones on Aaron's breastplate. This color is found naturally in many different places in the world.

In many cases, however, the original color may have been something else. Agate dyeing has been commonplace in Idar-Oberstein for hundreds of years. For this quick discussion, I'll present some of the basics for making your own carnelian, and you are free to experiment. Some agates can be colored to carnelian simply by heating to convert the iron already in the agate to iron oxide. Many Brazilian stream agates and some Montana and Wyoming agates will respond to this treatment. It's best to rough-grind the agate close to its final shape, because color penetration may be limited, and you want your stone to be uniform in color.

It's important to understand that there may be wide variations in the porosity and water content of quartz from different locales, so don't expect an exact recipe for the piece you have in your hand. In fact, you are likely to find wide variations within a single piece that affect how the color is absorbed. This selective absorption may enhance the patterns in various layered or fortification agates.

Once you understand the basics, you are free to experiment. The basics are:

*Cut the material as close to the desired size and shape as you can. Use the coarsest grinding wheel you have, such as 100 or 120 grit.

*Get as much water out of the agate as you can.

*Get some iron oxide into the agate, or just heat it to convert what is already there.

*Heat it carefully.

*Cool it slowly and evenly.

1. Start with a piece that is moderately clear or translucent. Don't attempt to color the darker Indian agate or the Brazilian muddy browns. It won't work. Grind to rough shape on a coarse 100 or 120 grit wheel. Boil it in water with a slight amount of detergent, and then boil it in clean water. Three or four minutes for each step is plenty.

2. Next, you want to get the stone as dry as possible. This will make room for the dye to penetrate, and remove water that might turn to steam when the stone is heated. A quick way is to heat the stone in a sand bath at 100 degrees F. for at least an hour, and then increase the temperature to about 200 degrees F. for a couple more hours. Don't let it reach the boiling point of water, which is 212 degrees F. What is a sand bath, you say? A sand bath is simply a metal container with a couple of cups of fine sand in it. Preheat the bath for at least an hour to get it to a uniform temperature. Place the stone somewhere near the middle of the sand. Use a spoon. Be careful: the sand is hot. Turn off the oven and let it cool until the bath is at room temperature.

3. You may skip this step if you suspect there is enough iron in your agate. Otherwise, soak the stone in a hot solution of iron oxide in water for 3 or 4 hours, just below a boil. Add a pinch of detergent to lower the surface tension of the solution. Iron oxide is simply rust. You can make your own or buy it fron a chemical supply house.

4. Preheat the sand bath to about 100 degrees and place the stone in it for at least an hour. Then increase the temperature to about 200 degrees for a couple more hours. Raise the temperature to around 350 degrees for at least an hour. Raise the temperature to 450-500 degrees and leave everything closed for at least 3 hours.

5. Turn the oven off and let it cool down to room temperature. The more iron you get in, the richer the color will be.

Breccia (June, 2000)