



ARROWHEAD NEWS

Wyoming, Michigan

WHO IS THIS?



SEE PAGE 3 TO FIND OUT WHO THIS LUCKY ONE IS WHO WAS ROCKHOUNDING ON THE YELLOWSTONE THIS PAST FALL.

January 2010

Volume 47 #1

www.IndianMoundsRockClub.com

Welcome to the *ARROWHEAD NEWS*, official publication of the Indian Mounds Rock & Mineral Club of Wyoming, Michigan.



Arrowhead News

Visitors are welcome at all Meetings!

When & Where

Club Meetings are held at 7:00 PM on the third Tuesday, September through May, and take place in the fellowship hall located in the basement of the Wesley Park United Methodist Church.

The church is on the corner of Michael and 32nd Street, south of 28th Street, in Wyoming.

At 6:30 PM, on the third Tuesday, June through August, our club has a **picnic** at Pinery Park in Wyoming, which is on DeHoop just north of 28th St. Our usual spot is behind the north parking lot on the west side of DeHoop. Bring a dish to share, your own drinks, and table service.

Board Meetings are held right after the club meeting, or by special announcement on the fourth Tuesday of the month.

Club Membership dues are \$15 per family, \$10 per individual and \$5 per junior. Payment is due by the third Tuesday of September and is for the following January – December. **New** members that join at or after the annual show, pay only one-half of the yearly dues for the current year. Membership includes 9 issues of the Arrowhead News.

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Send exchange newsletters here

The **subscription rate** for the **Arrowhead News** is just \$8.00 per year.

Article submission is due to the Editor **before** the 25st of the month.

Recent back issues of the Arrowhead News are available on our website.

<http://www.indianmoundsrockclub.com/Arrowhead%20News.htm>

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PRESIDENT'S MESSAGE JANUARY 2010

By Jim Elliot, President

Happy New Year to All!

A big welcome to 2010 and I am hoping that you are sticking to any New Year's resolutions you might have made. I am also hoping that if you did make any New Year's resolutions, that at least one of them includes some type of club participation by you.

Our Christmas Banquet turned out to be a wonderful time with an abundance of great food, friendship, exceptional decorations and time to catch up with each other. There was so much good food; I am inclined to believe that we mistook this holiday for Thanksgiving!

Also, at the beginning of the New Year, your recently elected Board Members begin their start of term for these positions. When you get a chance, please offer your congratulations to our newly elected Board Members, Bob Beauvais and Skip Schipper.

I know it seems that we often remind you to pay your dues if you have not done so yet. I would like to thank all of you that have already paid for this year. Part of your dues payment is sent on to the Midwest Federation. As a club, we have to pay dues for each member, and the current amount is \$2.00 for each adult member and \$0.50 for each youth member. We additionally pay for insurance to the Midwest Federation for each member at \$3.50 each. These fees are due to the Midwest Federation by 15 January. Also, if you don't pay your club dues you will be dropped from the club roster and will no longer receive this fine Newsletter. That should be motivation enough!



Speaking of the Newsletter, in case you didn't notice, it has changed slightly. Let us know what you think of the new format and provide some feedback to your Board Members ... especially the new ones! And while you're at it please let Brenda know what a wonderful job she is doing as our editor.

I look forward to seeing you all at the first meeting of this New Year.

Stay safe and have fun,

Jim

PROGRAM REVIEW AND PREVIEW

By Nancy Spalenka, Program Chair

Thirty-eight people were on hand December 15 to enjoy a bountiful banquet at tables beautifully decorated with greens and petrified wood, thanks to Skip and Gladys Shipper. Eleanor Brummel provided the lovely nut cups with M&Ms and nuts. Nick and Brenda made a delicious punch and Roger Horvarter prepared the tasty loin of pork. After a few Christmas carols and gift exchange some adventurous rock hounding experiences were shared.

"Beadwork, Wirework, and Gems" is the topic Doris Koehn, jewelry maker, will bring to our January 19, 2010 meeting. Up until two years ago, Koehn spent 28 years fulfilling a dream of traveling the country. During these travels she collected vintage jewelry, buttons, and minerals. She became a member of the Quartzite Rock Club in the '80s. Many adventures and great stories have come out of her travels. In 1996 Koehn shared some of these with our Indian Mounds Rock and Mineral Club. She will have more stories to tell along with showing what she has created with items she has collected. Plan to join us for an enjoyable evening.

NO TREASURER'S REPORT

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FEBRUARY BASEMENT FIELD TRIP ANNOUNCEMENT

By Kreigh Tomaszewski, Field Trip Chair

The Tulip City Gem and Mineral Club has invited the IMRMC to join them for a basement field trip on Saturday, February 27, 2010. They took the initiative on this trip, but involved us from the beginning since one of our members is featured. It is my pleasure to be able to share an invitation to see two outstanding collections.

The first basement will be our own Roger and Arlene King's collection at 10:00 am. The King's live at 2211 N Whistlevale Dr. S.W., Byron Center, MI 49315. You can get a map on the internet, or I will have some at the February club meeting.

After visiting the King's collection you will need to find lunch on your own before (or after) you take the short trip to Holland for the second basement.

Chet and Bette Smith will be opening their basement at 2:00 pm, also for a couple hours. The Smith's live at 236 Park St., Holland, MI 49424. You can get a map on the internet, or I will have some at the February club meeting.

This is an outstanding opportunity to see two wonderful collections and meet with other West Michigan collectors. I really hope you take advantage of this unique opportunity.

AGATES ARE WHERE YOU FIND THEM

By Orville Schipper

For several years my wife Gladys and I have collected agates in eastern Montana. We have found many of these gems, some very good ones but nothing that could ever make the cover photo of Gem Magazine. However, our unfulfilled dream has been to spend three or four days on the Yellowstone River, canoeing from gravel bar to gravel bar in search of some real good agates.

In 2009 we decided to make this dream come true. Since we always go west for the Idaho hunting season, why not leave early and spend time on the Yellowstone. When I shared this idea with our son David, he said "That's on my list too, dad. We'll meet you there."

It was on September 25th that we left Middleville and drove north to the Upper Peninsula. Autumn colors were just beginning at home, but they were beautiful in the U.P. We spent three days up there, enjoying the scenery looking for agates on the Lake Superior shoreline and touring the Porcupine Mountains area. The weather continually dampened our bodies and spirits so we did not spend a lot of time on the beaches.

Then it was onward to Sidney, Montana, where David and Kristin met us (from Moab, Utah.)

Several years back we met a new friend Tom, in Quartzite, Arizona, who resides in western Montana. He is an accomplished silversmith, lapidary, artist, and avid collector of Montana agates. He immediately took us to a gravel bar on the Yellowstone that most rockhounds know about and therefore is well picked over. But we found agates in the few hours of daylight we had left that day. It was a windy, cloudy, and cold day and we hoped tomorrow would be nicer.

The next day Tom was preparing for his winter stay in Quartzite so we went on our own, taking back roads into the country. In the past we have collected many agates along gravel roads. About thirty miles out we were walking along a roadside when a farmer and his son pulled up in a pickup. After exchanging pleasantries and our mutual appreciation of agates, he said, "You see all these summer-fallow fields out here? They're all mine and you may collect agates anywhere on my property you want to." Then he pointed out where the best rocky areas were for the best collecting. "Drive anywhere you want." He said.

AGATES ARE WHERE YOU FIND THEM continued on page 6

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BOARD MEETING MINUTES

President Jim Elliot welcomed board members and officers to meeting.

- Secretary** Minutes were published, but not read.

- Treasurer** Dave to pay dues to MWF after membership report from Rhonda. Non-profit papers to be filed.

- Program Editor** Nancy reviewed scheduled January program and possibilities for February. Learning new software.

- Field Trips** Discussion about possible field trip to Chicago – need to ask Kreigh how plans are going. Basement field trips are being planned in February.

- Show Committee** Contract has been signed for show. Nancy Wolf is signing up dealers for show. Gordon is coordinating displays.

- Sunshine** Eleanor had several cards for members to sign and reviewed sign up sheets for lunch schedule for winter/spring meetings.

- Librarian** Arlene to transition to Donna.

- Membership** Membership is up and most of our members are current with dues or paid ahead. If you have any changes to your membership information, Please call, email or write so I can keep our records up to date. **Thanks**

- Old Business** Don is pricing out membership name tags. Approval to purchase more periodic tables [10]. Larger room at church not available for silent auction.

- New Business** Discussion of establishing a local scholarship for geology/mineralogy-will need to determine interest at club meeting.
We need a new Publicity Chair person and Historian.

- Adjourned** Rhonda Leep – Secretary 2009

Board Members Present

President	X Jim Elliot	Sunshine	X Eleanor Brummel
Vice President	X Nancy Spalenka		X Nick Van Dyke
Secretary	X Rhonda Leep (membership)	Librarian	X Donna Griseto
Treasurer	X Dave Lehker	Field Trip	Kreigh Tomaszewski
Sales	Ed Krzeminski		X Nancy Wolff
Publisher	X Donna Griseto	Show Chair	X Harry Brummel
Sunshine	X Eleanor Brummel		John Kuipers
Dealer Chair	Kris Quint	Editor/Webmaster	X Brenda Van Dyke
	X Nancy Wolff	past President	X Gordon Spalenka
Liaison	X Don VanDyke (past President)		

MEMBERSHIP DUES ARE OVERDUE!

If you receive your *Arrowhead News* by US mail, please check your mailing label for these dollar signs - \$\$\$ - *before* your name. If the dollar signs are there, your membership dues are past due (they were due in September!) If your dues remain unpaid by the first of February, this will be your last issue of the *Arrowhead News*, and you will not be listed in our 2010 directory.

Please send your payment to membership chair Rhonda Leep (see page 1)

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FIELD TRIP ANNOUNCEMENT CHICAGO MUSEUMS

By Kreigh Tomaszewski, Field Trip Chair

I want to make this field trip happen, but it depends on at least 40 people signing up, with a \$30 deposit, before February 1st. The deposit will only be refunded if not enough rockhounds sign up before the deadline. You need to make your check payable to IMRMC, and send it to me (653 Burton St. S.E., Grand Rapids, MI 49507). 40 is the minimum, but I will accept the first 49. If we fill the bus you will receive a small refund.

The planned trip will visit the LIZZADRO MUSEUM OF LAPIDARY ART (<http://www.lizzadromuseum.org/info.html>) in the morning, and the Chicago Field Museum (<http://www.fieldmuseum.org>) in the afternoon. Lunch will be on the bus between museums. We expect to visit the Nature of Diamonds exhibit and the Grainger hall of Gems in the afternoon (and see the other featured exhibits, as time permits). We expect to be back by 9 pm. Transportation will be a luxury bus. We will leave about 6 am from the Wesley Park Church Parking Lot. It will be a long day, but I think you will find it worthwhile.

The trip will hopefully occur on March 6. If we get enough participants from the IMRMC and Kalamazoo clubs before the Feb 1 cutoff date we will be able to join our Holland club friends in Chicago (they have their own trip scheduled).

Your \$30 deposit will cover transportation. You will also be expected to cover \$4 admission to the Lizzadro Museum, and \$29 for admission to the Field Museum. Please make your transportation deposit \$30 check out to IMRMC and send it to me. You will need to bring your own lunch and dinner on the bus to keep costs down.

If you have questions, please email me, or call me at home, 616-243-5851. This trip will not occur if I do not receive 40 deposits before February 1st. My bus reservation is conditional on having 40 paid reservations before the Feb 1 cutoff date. You will also be expected to contribute to a driver gratuity.

I will void all checks (and notify the senders) if the minimum number of reservations is not received by the Feb 1 cutoff date. This is a really cool opportunity and I hope you will sign up. I really do want to make this trip happen.

TRIVIA, TIPS & TRICKS

From the Star-O-Lite 12/09

Working with Dark Colored Moss Agate—like the black Montana variety, small pits may sometimes appear on the finished, polished surface. The light colored polishing powders, such as tin oxide or cerium oxide, often pack into these small pits, making removal difficult and white spots surely distract from the stone's appearance. Try rubbing a small bit of black India ink into the spotted area, and then try to rub off the ink. The white spots will disappear. [Rockhound Rambling 9/08 via The RockCollector 12/09]

Keeping Ivory in Light—Don't put ivory in the dark! It is one substance that needs light. If it has started to yellow, take half a lemon and rub it in some salt. Then rub it over the ivory object. The lemon will work on the yellow discoloration. After it is dry, dampen a soft cloth with lukewarm water, and rub the ivory. [Pick & Pack 12/09 via The RockCollector 12/09]

More Comfortable Cab Cutting — Is the edge of your cab machine water trough sharp? When you're cutting a cab, does the edge dig into your wrist or arm? Here's an easy and inexpensive solution to end your discomfort. Get a piece of foam pipe insulation from the hardware store and place a piece of it over the edge of the trough. Voila, no more discomfort! And, you can easily remove the foam when you go to empty or clean the trough. [Gem Cutters News 6/08 via The RockCollector 12/09]

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AGATES ARE WHERE YOU FIND THEM

Continued from page 3

And we did! High-grading as we collected, we returned with about eighty pounds of nice agates. The temperature was 40 degrees and it was cloudy with a powerful west wind, but we enjoyed every minute of the hunt, even the dust in our eyes and in our clothing.

The next day was a bummer for collecting, temperature in the thirties, the same strong wind, and constant rain. So we stayed at Toms for the day, cutting some of the agates we found yesterday and admiring Tom's agate collection and artistic skills. He also introduced us to his friend Harold, who has been collecting for sixty years.

The following morning both Tom and Harold took us rock hunting on a gravel bar that has only private access. Collecting was good we have several four to six inch agates. That afternoon we went back to our farmer friend's land for more collecting in more "lousy" weather. It was here that I found my best agate of the trip – large floating dendrites in clear blue matrix.

I mentioned at the beginning of this article that our goal was to canoe down the Yellowstone from gravel bar to gravel bar. That did not happen because of the high winds we had every day. The private access gravel bars made up for that!

We stopped in to say goodbye to Tom the next morning, he handed me a three-gallon plastic bucket with a two to three inch hole in the bottom, he said, "Come into my garage and fill this bucket with agates that cannot fall through the hole." Now that was good collecting!!! As I said, agates are where you find them.

The remainder of our trip was also exciting. Deer hunting was good, Idaho agate collecting was also excellent near hunting camp, and I fell out of a canoe into a cold mountain lake on a cold winter day. (That made me realize that canoeing the Yellowstone may not have been such a good idea anyhow.) We concluded our trip visiting Dave and Kristin in Utah, and our daughter and family in Colorado. We were happy to be on November 10th, nicely on time for Michigan deer hunting season.

Editor's note: That's Gladly on the cover!

A BICENTENNIAL VIGNETTE

By Ted Marikos, McDonnell Douglas Gem & Mineral Society, (written for The Geode 04/76) via The Pegmatite 11/09

Back in the days when Paul Revere's silver shop was not heated, his apprentices and helpers, like most people of that period, donned their winter underwear at the first fall chill and neither removed or washed it until it was too hot to stand it.

Over time the daily dust of silver accumulated in the fibers of the material. In the spring, the now-heavy underwear was burned, for many reason, and the silver was reclaimed – this is how we got the term..."Long John Silver!"

WHY DO WE USE THAT WORD?

From the Agatype, 10/09 via the Stratada Data 12/09

Rock is from an old French word *roche* used to refer to any mass of solid material from the earth.

Fossil is from the Latin for "dug up"!

Ore is from the Anglo Saxon *or*, referring to unwrought metal.



Wikipedia

This portrait of Paul Revere was painted by John Singleton Copley circa 1768-70.

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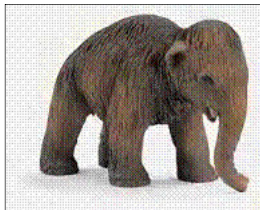


YOU MUST HAVE BEEN A BEAUTIFUL BABY...

By Judith Washburn, Geology Chair, via -MWF Newsletter, 9/5/09

If you missed the May issue of National Geographic or April 26th special, "Waking the Baby Mammoth," on the National Geographic Channel, let me introduce you to Lyuba, a one-month old, near-perfect, frozen baby mammoth that resurfaced after 40,000 years, bearing clues of a great, vanished species...

Discovered by reindeer herders in 2007 on the Yamal Peninsula in northwestern Siberia, Lyuba was recognized as an important discovery. The Nenets who found her, believing that people who found mammoth were marked for an early death, stopped to placate the infernal powers with the sacrifice of a baby reindeer and libations of vodka before moving the frozen carcass. Turned over to scientists, the ancient carcass began to thaw during examination inside Shemanovsk Museum in Salekhard, Siberia, and had to be moved outside to refreeze.



Researchers transported the mammoth in a refrigerated container from Siberia to Jikei University's medical school in Tokyo to be CT scanned. Hospital officials insisted that handlers wear special suits and a plastic passage be erected to insure that ancient bacteria from Lyuba would not contaminate their facility. The CT scan provided detailed new insights into a mammoth's anatomy as well as important clues to Lyuba's death.

So, how did Lyuba die? Evidence of sediment found blocking the trunk's nasal passages and in the mouth, esophagus, and windpipe suggests that she asphyxiated by inhaling mud after becoming trapped in a river. More than likely, she submerged in wet clay and silt that sealed out oxygen and thereby thwarted aerobic microbes that would have broken down her soft tissue. Other microbes that produce lactic acid colonized her tissues which acted as a preservative, essentially pickling her carcass. Thus the marvelous preservation!

Then the permafrost came. Lyuba's body dehydrated and shrank to half its weight. In 2006, a river undercut the block of permafrost that contained Lyuba's body. The block melted and exposed her after thousands of years. Floodwaters carried it to the sandbar where it was found. The strong smell of lactic acid kept away the scavengers.

Pick up the magazine, try to catch the special on reruns, or wait until 2010 when Lyuba comes to Chicago. The Field Museum will be mounting an exhibit then - the date is still pending. Time for a field trip?

Resources: Mueller, Tom. (2009). "Ice Baby," National Geographic, Vol. 215, No. 5, pp. 30-49

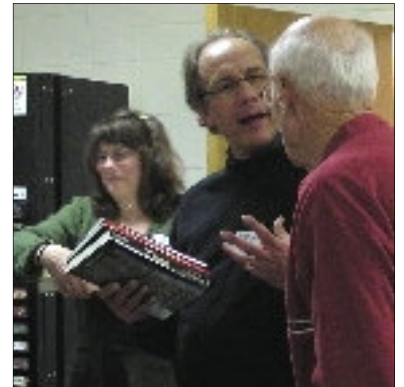
COULD COPPER STOP SWINE FLU???

excerpted from The Rockfinder 9/09 via the Strata Data 12/09

In a 10-week trial at Selly Oak hospital in Birmingham, Alabama, copper door handles, taps, light switches and toilet seats were found to have 95% fewer germs on their surfaces than standard fittings. In lab tests, copper killed deadly MRSA and C difficile superbugs as well as common flu virus and E coli.

The use of copper to fight disease has a long history. Over 4,000 years ago, ancient Egyptians used copper to sterilize drinking water and wounds. The Aztecs used it to treat skin conditions. The ancient Greeks used copper to treat leg ulcers. The Father of Modern Medicine, Hippocrates, believed in the healing powers of copper. Today the metal is an ingredient in certain medicines, including antiseptics and antifungal ointments. Many people believe that copper has an anti-inflammatory property and wear copper jewelry to ward off arthritis or rheumatism.

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Photos by Anne Rance



Courtesy Corner

Here are the kitchen sign-ups for:

January: Nancy Spalenka & Elsie Kuipers

February: Rhonda Leep

March: Nancy Wolff & Kris Quint

*April: is our banquet, everyone bring a dish
to pass and your table service*

May: Arlene King & Lois Van Dyke

HOW TO SELECT THAT CAB FROM THAT SLAB

By Alene Innes via the Breccia November, 2008

We now have several members that have learned how to cut that cab, and now want to know how to select it. I use a template. A template is made of plastic or metal with squares, rounds, ovals, or other shapes cut out, leaving the center of the hole open so that you can see through it. I find that by using a template as a frame and moving it all over the slab, slowly, I can usually find one picture that appeals to me more so than some other selections. Sometimes the cut I have selected ruins another good picture, so then it becomes choosing one of the two, whichever one appeals to me more than the other. And, at times, I can find only one picture in a whole slab that I think is worth going after.

At these times, I will waste the whole slab for just one outstanding picture. I use metal templates because they do not wear or warp as the plastic ones do. I use a brass or aluminum marking pencil to outline the "frame" I want to cab. These "pencils" can be made from heavy aluminum or brass wire, or purchased. With expertise, perhaps I wouldn't place so much pressure on the plastic templates while outlining the desired picture, but eventually the plastic will wear. I use all the shapes, squares, rounds ovals, and marquise shapes to search for the scene in the slab. This takes some time, but to get the best, you have to search for it. Usually one can get several cabs from one slab; however, sometimes one picture is worth the price of the whole slab. Normally though, there are several good selections in one single slab and it becomes a matter of taste in selecting the "best" one. Mark it with a #1, and the other scenes in order of preference.

The second thing to remember in choosing your slab is to wet it and watch how it dries. If it dries in "spotty spots", one spot drying faster than another or other spots, remember that these "spots" are too porous to take a polish. The "spotty" spot will either have minute holes or is soft and will continue to undercut and will never take a polish. Undercutting means that it will continue to look dull as you continue to grind it and will never take an even smooth surface.

The last thing to remember is to take it easy in the grinding stage. Experience will show you how light a touch it takes to grind the stone, whether it is grit or diamond, to remove the unwanted material to get a uniform surface on your cab before continuing on to the next step. This will prolong the life of your grinding stones.

Hope this helps, and happy cab hunting.

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January 12

- MWF Mineral Study Group**
- The home of Kreigh Tomaszewski
- 53 Burton St SE, Grand Rapids, MI
- Tuesday, 7 PM – 9 PM

January 19

- IMRMC MEETING**
- Wesley Park United Methodist Church
- Tuesday, 7 PM – 9 PM
- Program: "Beadwork, Wirework and Gems" presented by Doris Koehn

February
27 & 28

- 38TH ANNUAL SPECIAL AUCTION**
- Roamin Club of Livonia
- Schoolcraft College, Vistatech Bldg; 18600 Haggerty Rd, Livonia, MI
- Saturday 11AM - 6PM, Sunday noon - 6PM
- Hourly silent and oral auctions, FREE admission and parking. Special mini-auctions for children

March 27

- 38TH ANNUAL METRO ROCK SWAP**
- Midwest Mineralogical & Lapidary Society of Dearborn
- Democratic Club of Taylor - 23400 Wick Rd; Taylor, MI
- Saturday 10 - 5
- Free admission and parking

June 12 &
13

- M.G.A.G.S. 36TH ANNUAL ROCKHOUND SEMINAR**
- and **MIDWEST FACETERS GUILD SEMINAR**
- Webberville High/Middle School
- www.mgags.org - email webmaster@mgags.org
- Contact Don Brown 313-421-8159 or Neil Snapp 517-339-2863

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FIND OF THE DAY

By Cheisi Proos, Junior Tulip City Gem & Mineral Club Member from The Tulip City Conglomerate, 12/09

It's May 16, 2009. My mom is driving south in her van, with Steve, her boyfriend, sitting in the passenger seat. I am in the back along with a half a ton of calcite. We had just left the Pendleton Quarry in Indiana. My mom said that the trip wasn't over quite yet, but wouldn't tell me where we were going. The temperature was in the lower eighties, and I was wedged in the back with calcite up to my eyeballs. I didn't think the day could get any better. Boy was I wrong.

As we drove south, we seemed to be stopping every five minutes to ask for directions. There was something about a river. Three more stops later we finally see some water, but to my luck, it isn't the place Mom was planning to go to. We continue driving down the road. After several turns and crossing an old iron bridge, I look ahead and see a large stone bridge, but no water.

Mom and Steve begin to pile out of the van, so I assume this is the right destination. Steve begins unloading the water boots and empty buckets from the small utility trailer we brought along. He then leads the way into waist high weeds towards the side of the bridge. As we get closer, I begin to hear the sound of rushing water. We reach the bank of a flowing river with the stone bridge towering twenty feet above us to the right.

We emerge out of the weeds onto the bank of the river and immediately look at the sandy ground. It is littered with fossils, rocks and geodes. We can't even walk without stepping on a crinoid stem. The



items range from pencil thin to as thick as an adult thumb. Many were encased in a matrix. Steve quickly identifies a geode by smashing it to bits with his handy dandy hammer. These geodes were smooth on the outside and colored either dark pink or dark tan. Again, there were hundreds of these along the bank as well.

I spend about a half an hour looking just on the riverbed. Then I get on my water boots and head into the river. I discover that my right boot has a small hole in it, and the water fills it pretty fast. But I end up going into really deep water, so it doesn't matter what is on my feet, they are on more to keep me from stepping on anything sharp. I am soaked through and wet up to my waist, and my Mom begins to comment about how I am going to ruin her van seats when I ride home, but I am already wet and the water feels good on such a hot day. I am just starting to feel that I had looked everywhere, and I decide to retrace back to some of the spots I had already

explored. I take off my boots, which are now filled with water, and put my shoes back on. I walk along the bank by the water under the bridge. As I am walking, I come across a light colored slab of rock on the edge of the river.

Recently, I got a fish fossil imprint on sandstone for my birthday. I remember thinking that the slab in the river was almost the same color and texture. Although I doubted myself, and think "no way", my curiosity gets the better of me and without switching back to my boots I step in deeper and reach down to pick it up. I lift the rock out of the water, and I get my sleeve wet because it is deeper than it looked. I flip the stone over, and to my surprise, I find, not a fish fossil, but a full crinoid. My mom comes over to find out why I am standing in the river with my tennis shoes on, and I show her the imprint. She examines it, and then pretends to take it away for herself. "I don't think so," is all I can get out, and I have to pry it from her hands to get it back. After I win the wrestle, I take it back up to the car and carefully wrap it in three inches of toilet paper. I want to make sure nothing happens to it, and that it doesn't break.

I walk back down to the river, to find my Mom frantically searching the bank looking for something. I ask her what she's looking for, and she quickly replies that she wants to find something to trump my fossil. I laugh, and she smiles as she bends back down to keep looking. No one ever did find a better specimen. My crinoid really was the find of the day.

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Photos
by Anne
Rance



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COLUMNAR JOINTS

By Dr. Bill Cordua, University of Wisconsin- River Falls - The Breccia 12/09

The formation of regular shapes by natural processes make some of the world's most intriguing wonders. The presence of long, mostly six-sided columns (called columnar joints) in cooled lavas is one of those wonders. No one who has seen the awesome grooved structure in Devil's Tower in Wyoming or the Devil's Post Pile in California can forget this feature. What about a cooling mass of magma could cause such symmetrical columnar joints?

A similar phenomenon can be seen when a mud puddle dries. As it loses water, the mud cracks in symmetric shapes, forming mud polygons. This is because the loss of water causes the mud to shrink. That contraction is relieved by breaking as the dry mud becomes brittle. When things contract like this, they naturally seek the most stable position. For mud, that is a system of natural polygons, separated by vertical cracks.

Basalt and other lavas behave similarly. As lava cools, it doesn't dry out like mud, but it does shrink. As it becomes cold and brittle, the lava contracts and relieves the stress by cracking. The cracking produces a polygonal pattern that extends through the lava flow. As weathering cuts into lava, the rock breaks along the joints, exposing this geometric regularity. Although many of the polygons are six-sided; four, five, seven or eight sided columns are also relatively common. The degree and perfection to which this is developed depends on the thickness and composition of the lava and how fast it cools.

The long sides of the column form parallel to the direction of heat loss as the lava cools. In lava flows, the joints generally run vertically through the flow. This is because the lava was losing its heat upward to the air and down ward to the ground. Sometimes columnar joints are found in veins or dikes of magma cutting the rock. These joints may lay horizontally in the dike, like stacked firewood. This is because the magma in the dike was losing its heat to the cold rocks to its sides. At Devil's Tower, the joints through much of its length run vertically, indicating that heat loss was to the surface. Toward the base of the tower, however, the joints curve horizontally. Here heat loss

was easiest to the sides, probably because the tower base was far enough below the ground surface that most of the heat loss was to the sides.

Really thick lava flows have several layers of joints. Ideally, there is a well jointed lower zone, called the lower colonnade. The middle section in the flow can be a more chaotic set of thinner columns and is called the entablature. A thinner, less well developed upper colonnade is also possible. The upper and lower colonnades reflect normal heat loss to the surface and the ground. In the middle of the flow, the entablature's more chaotic pattern suggests that the heat loss direction was less well defined and varied locally.

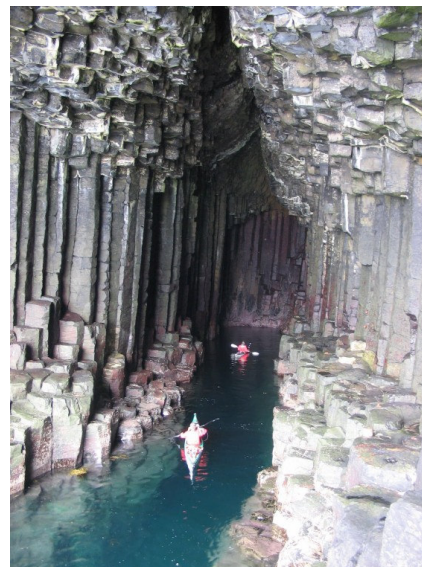
Any where that lava has been active is a potential place to find columnar joints. The Devil's Post Pile in California, Fingal's Cave along the sea coast of Scotland, and Giant's Causeway, along the coast of Northern Ireland are world famous for this feature. Yellowstone Park and the Columbia River plateau in Washington state are other good places to look. Locally, good columnar jointing can be seen in the lava flows on Isle Royale and on the Keweenaw Peninsula of Michigan.

The appearance of these features often has them related, in name and legend at least, with giants or the devil. Yet there is nothing infernal about them. They are just good examples of the workings of the laws of physics and geology.

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Fingal's Cave

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NOTES:

QUESTIONS:

IDEAS:

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