

CLUB EVENTS

- Sept 26 General Meeting, Gere Library, 56th & Normal, 7-9PM (Adults and Juniors)
- Oct 2 Board Meeting Akins' Shop 218" A" St. 5-9 PM ...Details at Sept Meeting or call Pat Jr.
- 24 General Meeting...Halloween Party, Antelope Park Shelter
- Nov. 6 Board Meeting place to be announced
- 21 General Meeting, Kellogg Center, 33rd & Holdredge-Juniors 7-7:30, Adults 7:30-10:00
- Dec. 8 Christmas Party/ Meeting, Antelope Park Shelter, 5-9 PM

Recap of May 23 Meeting

If you weren't there, you missed a great time! For display, club members brought stones showing chatoyancy and other optical phenomena.

Activities included presentation of a lifetime membership award to Florence Leuninghoner who was unfortunately unable to attend. The other lifetime membership award had been previously presented to Jim & Phyllis Parks. Marie Taylor was awarded the Rockhound of the Year award.

A special guest was Ben Vrana, NAOESCI President who was presented a check to NAOESCI for the proceeds from the Silent Auction at the State Show.

Roger Pabian was honored with Lifetime Membership to the State Association. Many members of the Omaha Club were present to honor Roger as he accepted the award for his numerous achievements and contributions.

Our Scholarship Award was presented to Paul Hanson who gave a fine presentation of his studies.

And to top it all off, everyone enjoyed the sandwiches provided by the club and the scrumptious desserts brought by the club members. Thanks to everyone for a fun time!

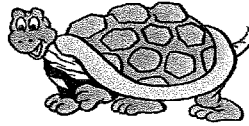
(PHOTOS OF MAY MEETING, PAGE 3)

SEPTEMBER 26 MEETING

Program: Workshop--Rock Drilling Basics, by Roger Pabian

Display Material: Bring drilled or bore specimens, beads, fossils, whether the hole was made by Homo sapiens or by some ancient predator or scavenger.

Learn a little bit more about holes in rocks.



PRESIDENT'S MESSAGE

Greetings to all you rockhounds-

Hope everyone had a safe and happy summer. It was a hot and dry one, that is for sure!

Speaking of hot-our Grinding Party at Pioneer Park Nature Center on July 21 was a searing success. It was 108 degrees (according to my car's outdoor thermometer) but 51 brave visitors came to enjoy the members demonstrating. Thanks Dave & Billie Heffelbower, Jim Atkins, Ed Ridge, Judy Reilly, Susy McMahan and our newest member John Worley for demonstrating, answering questions and helping kids get some hands-on experience with cabbng. Some of the visitors were club members and thanks to you also!

There was a snafu when it came to State Fair time. To make a long story short, brochures & deadlines with a very small window in between. I apologize to those of you that wanted information. They have assured us that the information will be available possibly by the show next March. The good news is, the winner in Lapidary is a new member of the club now. His name is Scott Furgason, and he won a year membership to the club, and a year of the Pick & Shovel. Welcome Scott!

Our first board meeting was encouraging in the fact we will be working really hard to bring new experiences to all members. The juniors at the September meeting will get to see some rocks from South Dakota, which will be a possible field trip area as we redevelop that part of the club, as well as try to strengthen the juniors, since we have graduated another set of juniors. John Harrison is the show chair this year, and he will be asking some of the newer members to be involved. Some of us with shops will open them up for hands on experience. Also there is an excellent class the club sponsors through SCC for lapidary that Roger Pabian teaches. Check it out, registration is now, with the class starting October 7 at Auld Recreation Center.

All members involved, that will be our mantra for the upcoming year!

Susy

"I am a lapidary and I do lapidary!"



A rolling stone gathers
momentum !

September 11, 2001

ALWAYS REMEMBER...NEVER FORGET!



YOUTH NOTES

By Carmen Claesson, Age 9

I like rock collecting because it is a fun hobby. My best friend and I like to hunt for rocks in my yard. We like to trade rocks with each other. I also buy some of my other rocks from the Gem and Mineral Show. You probably wonder where I put all my rocks. Well, I put them in my own little rock museum under the basement stairs. My mom bought me some craft boxes, and I put all my special rocks inside them. When I find rocks, I try to identify them with my rock book, or I ask my geologist friend to help me.

We joined the Gem and Mineral Club this year. I enjoyed watching the rock polishers at the grinding party. I have some rocks that I think are agates. I would like to cut them open someday.

**INTERVIEW WITH A
ROCKHOUND...**

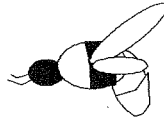
Get to know club members a LOT better!
COMING SOON!

**The microphone
might be pointed
at YOU!**



If of all words of tongue and pen,
The saddest are, 'It might have been,'
More sad are these we daily see:
'It is, but hadn't ought to be.'

-- Francis Brett Hart



**WHAT'S THE BUZZ?
by Judy Reilly**

Hi everyone! Apologies for the late newsletter but when I was putting it together last weekend, I came down with a nasty bug. It hit hard Sunday morning. I don't know whether it was the rocking pneumonia or the boogie woogie flu. Whatever the cause, I am finally feeling better. And I am looking forward to autumn and our first meeting. The summer has been eventful, in both good and bad ways.

Susy McMahan and I had a rockhound adventure which started the day after our May meeting. We joined some folks from the Omaha club at Kedoka, SD. We had the greatest time (after I got over my initial fear of rattle snakes!) We collected bucket loads of prairie agate, bubble gum agate, jasper, fossils, petrified wood and we even each found a Fairburn! Well, I admit I have to use a magnifying glass to see the patterns but Ed Pharoah assured me that it counted. Susy's was a bit nicer with reddish colors.

On the way back from Kedoka Sunday Susy and I experienced some menacing clouds and just missed tornado warnings but never saw one drop of rain. The weather may have been a portent of the bad news we received the next day. Our dear friend, **Jim Parks** lifetime member of the LGMC lost his battle with cancer May 27, Memorial Day. Jim died peacefully at Tabitha Hospice with Phyllis at his side. We miss him.

Another club member, **Orma Ruth Paulson** passed away this summer. Mrs. Paulson and her husband had been longtime members of the LGMC. Even when she could no longer come to meetings, she kept her club membership current. Orma has made substantial contributions to the LGMC Educational Programs for the past several years. She is fondly remembered by all who knew her.

One really fun thing I did this summer was attend the first ever Shannon Sister Reunion near the Four Corners area of Colorado. Talk about ROCKS! We did a lot of touristy things but mainly enjoyed each other's company. The kids dragged me to the Reptile Gardens where, believe it or not, I allowed the owner to drape a 10-foot Burmese Python around my neck. Rockhounding must be making me bolder! I was also able to visit San Juan Gems in Cortez. It will be nice to see the owner again at the Omaha show in October. We went to Mesa Verde before the fires came through, but the rangers told us that loss of trees from the fires in recent years past has caused the park to be generally hotter. And that week was already hot! When we drove through western, NE the temperature was 105 degrees! It's nice to see cooler weather coming.

Sadly, some of our friends have been very ill this summer. Evey was hospitalized with severe back pain. I'm pleased to say he is back to his feisty self. And I heard he spent two hours recently, sorting polished stones with two mysterious visitors!

Billie Hefflebower and **Grant Bennett** are both fighting serious illnesses and the summer has been rough for them. We wish them both well and hope they are feeling better soon. I know cards would be appreciated.

See you at the meeting.....Judy ...e-mail news and articles to jshannonreilly@aol.com

Lincoln Gem & Mineral Club, Inc.
PROPOSED SHOW BUDGET –45th Annual Show–March 29-30, 2003

Projected Income:

14 Dealers @ 425.00	5950.00	
4 Demonstrators @ 35.00	140.00	
Gate Admissions –Saturday	2750.00	
Sunday	<u>2600.00</u>	<u>5350.00</u>
Total Receipts		11,440.00

Expenses :

Floor Expenses-		
Rent per contract	2500.00	
Tables	935.00	
Chairs	225.00	
Skirts/Drapes	75.00	
Screen	30.00	
Elevator Operator	160.00	
Electric Power Hookups	500.00	
Table Cover/Tape	<u>140.00</u>	4565.00
Security		810.00
Insurance		100.00
Publicity		1500.00
Preprinted Flyers		120.00
Discount Cards & Postage		195.00
Printed Programs		130.00
Recognitions & Awards		250.00
Lecture Speakers		150.00
Exhibit Area Decorations		130.00
Special Features		750.00
Dealer Breakfast		200.00
Show Committee Expense		150.00
Dealer Chair Expense		30.00
Property Storage & Handling		800.00
State-City Sales Tax Payable		<u>340.00</u>
Total Expenses		10,220.00

Tentative Gain for 2003 (45th) Annual Show**\$ 1220.00**

Presented by John Harrison, 2003 Show Chairman, approved by the Board of Directors at its regular meeting Sept. 4, 2002 and is recommended to the membership for approval at its next general meeting.

Prepared by PNP from '02 Proposed Budget & '02 Show Report Combined.

LINCOLN GEM & MINERAL CLUB, INC. - GENERAL MEETING - May 23, 2002.
Antelope Park Shelter House 7:30 P.M.
Supper with desserts furnished by members

The Meeting was called to order and opened with the Pledge of Allegiance.
Present included 31 members and 10 guests.

The Minutes and Treasurer's report were approved as printed in the Pick & Shovel with motion by Irl Everett, 2nd by Charles Wooldridge.
Motion carried.

ANNOUNCEMENTS: The annual Grinding Party is scheduled for Sunday, July 21, 2002 at Pioneer Park, 1-4 P.M. All members are urged to participate.

Also, the Nebraska State Fair is having a Lapidary category. Anyone wishing to enter, please get in touch with Susan McMahan for information. Brochures were not out yet. Roger Pabian has been asked to do judging.

Limestone Days at Weeping Water, NE are held June 29, Saturday, when tours are given.

Also, Jim Parks is at Tabitha Hospice. Phyllis and Family are with him. Cards are much appreciated.

This is our last Meeting until September. so everyone enjoy their summer.

Break was taken for supper/desserts. Everyone enjoyed.

AWARDS PRESENTED:

Lifetime membership award to Florence Lueninghoener. (Unable to attend so mailed to her. (6-4-2002)

Rockhound of the Year - To Marie Taylor, retroactive for her many years of outstanding service to the Club.

Show Chair, Roger Pabian, presented check to NAOESCI President, Ben Vrana (proceeds from Silent Auction at State Show, March 23-24, 2002) (To be used for expenses of NAOESCI publication "Gem Palette") It would benefit all members of the State Association.

Then Roger Pabian was presented with a plaque of appreciation for his services to the State Association and also a Life Membership.

CONGRATULATIONS EVERYONE.

Dr. Norman Smith of the Geosciences Dept. was introduced and he in turn introduced our Scholarship recipient, Paul D. Hanson. He gave an excellent presentation of his studies and introduced his wife and child. They were a very gracious family and appreciated the financial aid.

The evening closed with presentation of door prizes and fellowship.

Our September Meeting will be at Gere Library on Thursday, the 26th, form 7-9 P.M.

Respectfully submitted,

Vera Lyman
Vera Lyman, Secretary

LGMC Treasurer's Report for May, 2002
 Pinnacle Checking Balance on April 30, 2002 \$ 5,165.03

May Receipts:
 Pat Atkins - Demo fee/10% over base sales 97.50
 Spec Lapidary Class donation-Parks 20.00
 Membership Dues/Registration-Worley 15.00 132.50

May Payments:
 Kinkos - May 1 Board Meeting 10.00
 Phyllis Parks - Labels P & S 23.41
 Bret & Deborah Henning/Overpd dues 2.00
 Judy Reilly - May P & S 119.20
 Security Storage - 2nd half annual fee 378.00
 Super Saver - 5-23 Supper items 47.58
 NE Assoc of Earth Science Clubs 538.55
 (Proceeds/Silent Auction/2002 Show)
 Paul R. Hansen - Scholarship Recipient 500.00
 Life Memb/Fee return - Florence L. 10.00
 Suzy McMahan -Cartridge, Book, Misc. 101.61
 (Fairburn Agate-Gem of SD) Book
 Memorial - Jim Parks 100.00 1,830.35

Pinnacle Checking Balance on May 31, 2002 \$ 3,467.18

LGMC Treasurer's Report for June, July, Aug. 2002
 Pinnacle Checking Balance on May 31, 2002 \$ 3,467.18

June, July, August Receipts:
 July 8 - 2003 Dealer fees/deposit 2,325.00
 July 13 - 2003 Dealer fee 425.00
 July 27 - 2003 Dealer deposits 600.00
 Aug. 10 - 2003 Dealer fee/deposit 625.00
 Aug. 17 - 2003 Dealer deposit 225.00 4,200.00

June, July, August Payments:
 Memorial - Mrs. Orma Paulson (6/12) 25.00
 Pinnacle Bank - Safety Deposit Box 13.40 38.40

Pinnacle Checking Balance on Aug. 31, 2002 \$ 7,628.78

LINCOLN GEM & MINERAL CLUB, INC. - BOARD OF DIRECTORS - May 1, 2002
 7:00 P.M. @ Kinkos, Conference Rm. 48th & Vine

Present: Grant Bennett, Dave Heffelbower, Vera Lyman, Suzy McMahan
 Guests: Roger Pabian, Ed Ridge

President called the Meeting to order. Minutes of the April Meeting were approved with motion by Grant Bennett, 2nd by Dave Heffelbower.

Treasurer's report, all Club and Show Bills presented were approved with a motion by Dave Heffelbower, 2nd by Grant Bennett. Carried.

OLD BUSINESS: March Treasurer's report was handed out at the General Meeting and was approved.

Our next General Meeting will be our last before summer break, but an exciting one. It will be held at Antelope Park Shelter House with members bringing "dessert" and Club furnishing other snacks and drinks. This will be THURSDAY, MAY 23.

NEW BUSINESS: Discussion of the Meeting at Gere Library. Everyone thought it went well. We had excellent cooperation setting up and putting back tables and chairs. There was actually no need for the microphone. Our Sept. Meeting will be at Gere, and we plan to have coffee and ice tea.

Nominating Committee (Chair, Jim Atkins, Past Pres) will need to convene this summer to direct nomination process for 2003 Officers and report at the Sep. Meeting.

September Meeting will be at Gere Library, Sep. 26, 7-9 P.M.

COMMITTEE REPORTS: SHOW: Roger Pabian reported that it was an excellent Show and was grateful for all the support. He hopes everyone will lend the same support to 2003 Chair, John Harrison.

HISTORIAN: History is a "mystery"!

SCHOLARSHIP: Paul D. Hanson will be our recipient at the May Meeting.

FIELD TRIP: Scheduled for weekend of May 3-5, to Lincoln, MO to hunt for Mozarkite.

MEMBERSHIP: New members, Bret & Deborah Henning were accepted with motion by Vera Lyman, 2nd by Dave Heffelbower. Carried.

Pick & Shovel deadline is May 6. Next Board Meeting is Wed. Sep. 4, 7:00 P.M. at Kinkos.

Start planning for Silent Auction at Nov. Meeting.

Respectfully submitted,

Vera Lyman
 Vera Lyman, Secretary

*I like to watch game shows
 and wave my fist at the people
 who buy vowels way too early.*



*Never kick a person
 when they're down.
 A computer, sure...*



A Tribute to My Friend, Jim Parks

The loss of Jim Parks, to me, was a great loss just as it was to Phyllis and her family. I had not seen Jim since the 2002 show and we had a few laughs and a couple of stories to tell each other. It seems that the first time we met itt was like I'd always known him. He was a friend you could count on. He had a knack for being there when he was needed.

I know Jim's death will be a great loss to the club and I know it will be hard for Phyllis to be without him. Jim had a lot of good times with my son, Gary, as they were both motorcycle riders. I think that the love for motorcycling gets into your bloodstream - just like being a rockhound.

Jim did many things in the hobby like cutting and polishing, making spheres, displaying at shows and being n all-round helper. Jim will be missed by us all . For sure, I will miss him but you know he had a good life and a good time.

From one buddy to another,
Rockspectfully,
"Evey"

THANK YOU LETTERS

The club received the following letters of thanks...

May 25, 2002 Ben Vrana, NAOESCI President wrote to express thanks to the LGMC for our contribution of the State Silent Auction funds to NOAESCI.

June 12, 2002 The club received a thank you card from Phyllis Parks and family for the memorial for Jim Parks. Phyllis says "thanks so much."

June 27,2002 A beautiful card was received from the National Childhood Cancer Foundation in appreciation of the donation sent in memory of Orma and Rachel Paulson. The letter said in part, "On behalf of all the infants, children, teens and young adults who will someday live because of gifts like your, please accept our sincere thanks, signed Rebecca Chapman Weaver, Director of Development.

July 8, 2002 LGMC received a thank you letter from the family of Orma Ruth Paulson for the memorial gift to the National Childhood Cancer Foundation.

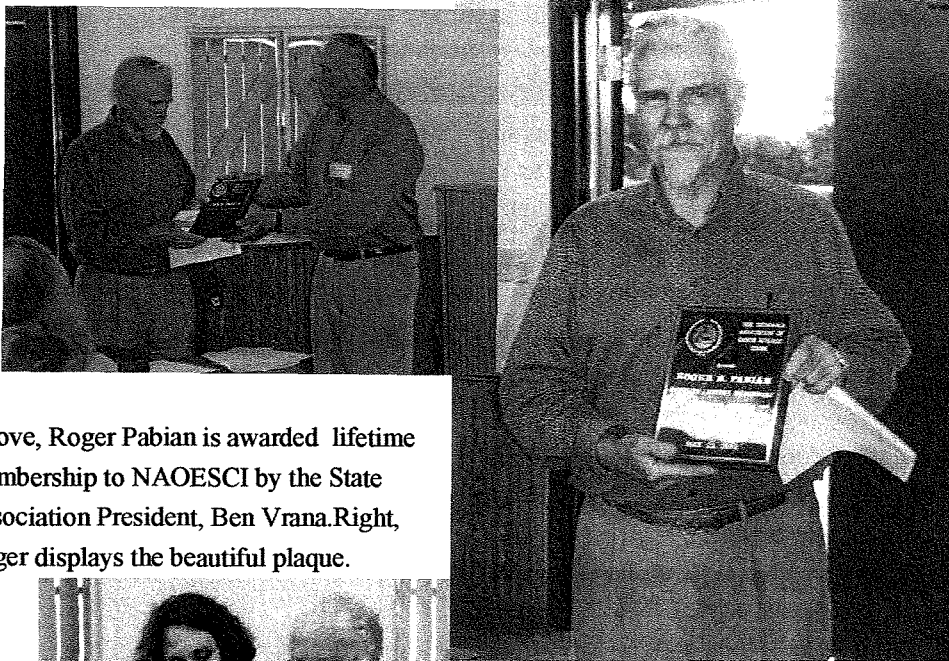
Well I Sold My Rock Shop and I Want to Thank the Folks

The passing of an era, yes it is. I have sold the Everett Lapidary Shop and I want to thank all of you, my value customers, that I have helped in the past years.

As I cleaned out my files, I found that I had had the shop for 48 years. This is a long time, but life goes on...I sold the shop to the man with two first names, Richard Henery. He is the owner of the Jayhawk Rock Shop, Box 296 Hill City, KS, phone 785-421-2333. If you have a rock shop or a large collection, please contact him. Richard is an honest and upright man. Everett Lapidary Shop has worked with him ad can give him a good recommendation.

Thanks again for all the kindness and support you gave to Lois & I through all these years...
Rockspectfully,
"Evey"

MAY 23, 2002, AWARDS DAY



Above, Roger Pabian is awarded lifetime membership to NAOESCI by the State Association President, Ben Vrana. Right, Roger displays the beautiful plaque.



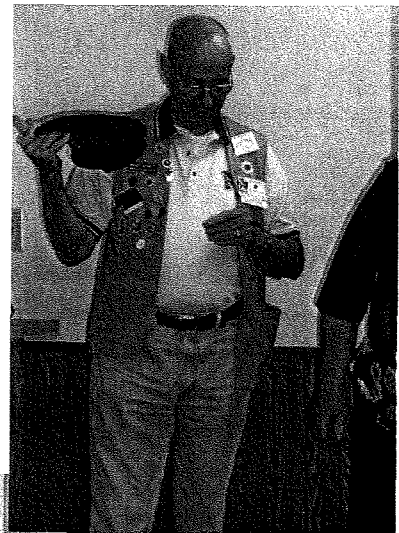
Bill Rushlau, president of the Omaha Club, visits with Lincoln Club founder, Irl "Evey" Everett.



Above, LGMC President, Susy McMahan presents Marie Taylor with a plaque for 2002 Rockhound of the Year. Right, Marie displays her award.



Rockhounds having fun!



Above, Grant Bennett reads the name of another lucky door prize winner. Left, Dr. Norman Smith, of UNL Geoscience Dept (right) introduces this year's scholarship recipient, Paul D. Hanson (left)



Everyone enjoyed the "dessert supper" and socializing with members and guests.



Adventures by Grant

Well, here I am assigned to a tour of duty in Beinhod Air Base in Viet Nam. Fairly quiet place, most of the time. My primary job was quality control inspector, inspecting all jobs completed on our aircraft prior to flight. I was also the debriefer, that is I wrote up any problems that occurred during flight. The hours were long and the tension was great.



Got a break one evening and decided to take in a movie. Well, to start with, we had a cloudburst. The tin roof did nothing for the sound of the movie. To make matters worse, I was called out to debrief a crew. I put on my parka and stepped out of the side exit door...right under a roof drain! I do believe that I could have swam to my job. Well, I debriefed the crew, took a shower and went to sleep after midnight...and I had to be up at six the next morning. Some break!

One of the worst things on the base was rats...LARGE ONES! And we were warned never to pick up a dead one. They had diseases I had never heard of. Even though we were vaccinated for everything under the sun, the word was out to STAY AWAY FROM RATS!

On the way to my job I had to cross a field the locals had used to play soccer in the past. One day, after a rain, I noticed pieces of stone shining up at me. Upon closer examination, I found it to be petrified palm wood. No one knew how long it had been there or if that was its natural location. I picked up some pieces the size of golf balls. Never did cut any of it though. I may still just have it tucked away in one of my boxes...something to get around to later.

My tour was up and my replacement had arrived. Time to get back to see my family and wind down.

See you down the road at a future show!

Grant Bennett, 1st Vice President

Tact is the ability to handle porcupines, without disturbing the quills...



ROCKY RAMBLINGS BY EVEY

I am pleased to introduce a new monthly column for the Pick & Shovel which will be written by LGMC's founder, Irl Everett. I know we will all enjoy "Evey's" unique perspective of our hobby! So here is entry # 1 of "Rocky Ramblings By Evey"! (EDITOR)

IT'S ALL THEIR FAULT, NOT MINE!

This title tells a story in itself. It's just not my fault. I never should have started this challenge. But knowing ol' Evey, he fell for their trap. Who might that be? Well, I'll tell you, I cannot blame this one on the Doctor, Roger Pabian. Nope! It's those two Irish gals. I must name them, too. They are the one and only Susy McMahan, and that Judy (the Reilly type).

I told them of a little story that happened at the 2002 show. We all laughed and I said, "Hey, I got more". I thought, why not go for it. Well, it hasn't stopped. The more I write, the more comes back to me. So if you read these stories and you like them, I am sure I can tell you some more good ones.

So don't blame me – they made me do it.

Rockspectfully,

Evey (Founder L.G.&M.C., Inc.)

FEDERATION NEWS

International Relations

-Jack Nelson, Chairman

(The following is a list of website that Jack Nelson has subscribed to and he states in his article "These groups are wonderful places to ask questions, answer questions, relate collecting stories or any other kind of rock, mineral fossil stories you might find interesting."...Editor)

Go to: <http://groups.yahoo.com> and follow the instructions for subscribing (or un-subscribing) to these or many other available lists:

micromounts- 188 members

Rockhound/Micromount- 48 members

RockhoundsNew- 68 members

rockhounds- 389 members

RockhoundsList- 483 members

rocksandfossils- 398 members

MineralCollecting- 115 members

microphoto- 74 members

<<http://www.topica.com/lists/rocks-and-fossils>

Follow the directions for subscribing.

rocks-and-fossils- 153 members

Contact Aaron Fox, the list manager at afox@drizzle.com and he will set you up as a member.

The combined total of over 2,260 members of these 10 internet groups includes many members from foreign countries and is a marvelous way to speak with these many enthusiasts about subjects of mutual interest. You might also exchange mineral specimens from some of the list members elsewhere, as I have been doing for over five years now. If you are going to be a worldwide mineral/ fossil collector, you can benefit greatly from membership in such groups. Remember, they are free and you can really increase your know-ledge immensely. Try them!

Questions? Ideas? You can contact Jack Nelson at <nelsonja@erols.com> or write to him at 17300 Hughes Road; Poolesville, MD,20837.

-AFMS Newsletter-Sept,2002

Selecting Material for Cabochns

by John Sinkankas

A beginner is often confused by the great variety of cabochon material offered for sale.

Selection should be based on quality. Carefully inspect the material of your choice. It must be solid, free of any cracks and holes, and be uniform in texture. Certain kinds of jasper contain soft spots because all the pores did not fill up with the silica-bearing solutions. Check slabs of this kind by wetting the surface and watching to see if water remains on top or is soaked up. The material with soft spots will not polish.

Many labs are displayed at dealers' tables in flat pans of water. Porous spots will soak up the water so it is best to allow the selected slab to dry thoroughly. To check it for uniformity in texture, hold it up to a strong light at an angle.

When the beginner chooses a material for his/her first attempt gem cutting, agate such as montana, Mexican, or Brazilian is a good choice. These agates are hard and tough enough to allow for mistakes that will be made and corrected. It is wise to make the first cabochon about one half inch in size and gradually work on larger cabs as one gains experience.

-from **The Rockhound Gazete, Aug, 2002 via T-Town Rockhound 11/75, Black Hills Prospector (no date given) and The Rockhound Gazette 2/77. This is old but good information.**

Trace FOSSILS, NO BONES, JUST PRINTS

- From San Jose Mercury News 7-17-01 summarized by The Breccia, from Show-Me Rockhounds, June, 2002

Ichnologists study trace fossils, that is, the marks made by the activity of animals or plants. They include footprints, slime trails, burrows, nests and droppings. Studying how the plants or animals behaved may help figure out what ancient environments were like, where the richest oil deposits lie and what lives at the bottom of the deepest and most inaccessible oceans.

FALL CLASSES AT SCCC 800-828-0072

DIAMONDS, GEMS, AND JEWELRY (noncredit)

If you have been thinking about buying, selling, collecting, or just simply learning about gems, this is your class. This hands-on informative class about diamonds, colored stones, and pearls, is led by a certified gemologist appraiser. The first three classes meet on Tuesday evenings, but the last class field trip will be held Saturday morning. (Field trip discussed in class the first night.)

Course Number: LLLX180453 Tuition: \$29

Sec	Start	Sess	Day	Time	Room	Inst
FA	Oct 8	4	T	7-9 pm	SCC,J-2	Fixter

LAPIDARY (noncredit)

Learn the art and techniques of cutting and polishing stones. Participants supply their own stones. Beginners will learn basic instruction during the first class with materials provided. You will receive information regarding sources for purchasing future stones.

Course Number: LLLX112653 Tuition: \$50

Sec	Start	Sess	Day	Time	Room	Inst
FA	Oct 7	8	M	7-9 pm	AULD	Pabian

A Boring Essay

By Roger K. Pabian

The ability to make holes in solid objects has had great impact on both the history of the earth and on the history of humankind. Holes have given prehistoric animals shelter from the elements and protection from predators. Holes have enabled small animals to feed on large plants or other larger animals. Holes have enabled technology of humans to move forward and to sustain itself.

An history of holes begins sometime back in the Archeozoic of the Paleozoic when some animals found by either choice or chance that burrowing through soft sediments on the sea floor gave them some protection from the things that ate them. A burrow also provided some protection from strong currents that may have been caused by tidal waves, storms or other natural phenomena.

Scolithus is the name given to a kind of burrow fillings that have been found in marine sedimentary rocks that date as far back as the early Cambrian Period. These burrows are usually perpendicular to the bedding planes of the rocks in which they are found. They are usually about 4-5 mm (1/8 inch) thick 100-150 mm (4-6 inches) long. Many paleontologists have attributed them to animals that belong to the phylum Phoronida. Phoronids are sessile (immobile) animals that feed on food particles that are suspended in the water column.

As organic evolution progressed, more animals in the sea took up the burrowing habit and set up residence in holes that they had made in the substrate or on other organisms. Many different kinds of clams made horizontal, vertical,

or even randomly oriented burrows in the soft substrate. This lifestyle offered some protection at least through most of the Mesozoic era. By Cretaceous time, some snails, especially the naticids, found that there was a feast awaiting them in the soft substrate below and they began doing their own boring through the substrate to find a sessile clam and food for the day. Not only did the naticid gastropods burrow a hole through the substrate, they also bored a hole into the shell of the prey to help get to the edible muscles and organs.

Paleontologists have found that the presence of holes in a fossil can have a great deal of subjective value. If there is but one hole in the fossil, it was probably attacked by a predator. If there are a lot of holes, the chances are that the fossil was attacked by parasites.

We also need to look at holes that were built up rather than bored out. Many fossil crinoids have numerous holes all over their plates and stems. It appears that parasitic or commensal organisms set up residence on the crinoid. The crinoid secreted calcium carbonate over the infestation but the parasite grew up and out as fast as the crinoid secreted calcium carbonate. The crinoids managed to survive these infestations but the holes on them were built up rather than drilled.

As animals progressed in their evolution, many more complex species also found that borings and holes of various kinds aided them in shelter and survival. For example, dipnoans, or lungfish, made burrows in soft sediments before the onsets of dry periods. They secreted a mucous membrane around them in order to prevent evaporation of body fluids. The lungfish waited out the long, hot summer in the protection of the mucous lined burrow. These burrows are

called **aestivation** burrows and some very fine examples of these have been located in the early Permian rocks in southeastern Nebraska.

Some other examples of holes in the fossil record are the *Daemonolix* or "Devil's Corkscrews" that have been found in the Miocene rocks of northwestern Nebraska.

Humankind has been a rather new arrival on the planet and our species has been in the hole-making business ever since. Primitive hunters and gatherers dig small holes to find edible roots. Primitive people also used bow drills to make holes in utilitarian and ornamental objects. Beads are among the most common forms of primitive jewelry---some beads have been drilled, but many beads were made from columnals of the crinoid stem. After all, the lumen or star-shaped hole in the center of the crinoid stem was a ready-made hole. All you had to do was add string.

Do-nut seals, seals of authority in the Sassanian Empires of ancient Persia, like a modern day notary's seal, are made of agate and have the logo of the public official engraved on them. They hung about the authority's neck on a cord.

As surface deposits of minerals became depleted by earlier peoples, we learned that many of these deposits continued underground. Hence, people started making bigger and deeper holes in the ground to seek strategic minerals and precious stones.

We also found that you could dig a hole into the ground and find water in many places. It was found that holes could be drilled into ground too and cable tool drilling technology came into existence quite early in human history. The Mongol Khan, Ogodei, listed among

the achievements of his reign the drilling of 40 test wells in the deserts of eastern Asia.

Modern rotary drilling is a much newer invention. This technology has made it possible to put in an abundance of water wells for irrigation and domestic use. Similar technology is also used in petroleum production and in cutting cores for mining exploration as well as for studying the substrate on which a skyscraper or bridge or housing development might be built.

Most modern drilling calls for an abundant water supply to keep the drills cool. It is interesting that you can drill metal with metal with little, if any, lubricant. Since metals are good heat conductors, the heat flows away from the drill point. When drilling through rock, the rock is a poor heat conductor and the heat stays right at the point of the drill. Hence, a burned up drill.

Drilling a stone to use in a piece of jewelry is an art that one can learn for several hundred dollars at Experience U. You will burn up a lot of drills in the process of learning the art---it is hard to keep the little drills cool even when the rock is immersed deep in water. The drill can burn up in about a half a second if it gets dry.

If you use either a carbide slurry or a diamond drill to make a hole, be sure to keep the stone drill wet and cool.

For Further Reading

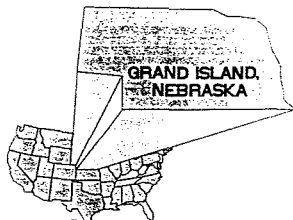
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Places To Go, Things To See...

- Sept 28-29 A Two-Day Rock and Mineral Auction**
Presented by the Cedar Valley Rock & Mineral Society. Community Center, Palo, IA, Sat 9-8?,Sun 9-3?, Viewing Hours Fri, Sept 27 from 5-730, Sat at 730 AM, Sun at 830AM. Approximately 1,400 lots.
- Sept 28-29 Sioux Empire Gem and Mineral Society Show**
Ramada Inn Airport, 1301 W. Russell St., Sioux Falls, SD, Sat. 10-7, Sun. 10-5
- Sept 28-29 37th Annual Rainbow of Gems Show**
Riverside Park, 1201 Council Oak Dr., Council Oak Community Center (.7 mi. on the left of Riverside Exit 151 off I-29, Sioux City , IA. Contact Robert Hopp for information 712-258-3645.
- Oct 4-6 Midwest Federation Show**
Illinois State Fairgrounds, Springfield, IL, Fri. 9-7, Sat 10-6, Sun 10-5. "Sue and You in 2002" sponsored by the Lincoln Orbit Earth Science Society. A full size cast of Sue's skull and a cast of Cryolophosaurus, the only dinosaur found in Antarctica. For information call John Washburn at 217-498-7713 or check website www.loess.org.
- Oct 5-6 Topeka Gem & Mineral Show,**
Agricultural Hall, Kansas Expocentre, 17th & Topeka, Topeka, Kansas, Sat. 10-6, Sun 10-5
- Oct 5-6 Southeast Federation Show**
Jacksonville, Florida
- June 2003 California/AFMS June 5-8**
Ventura, CA



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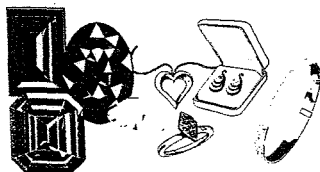
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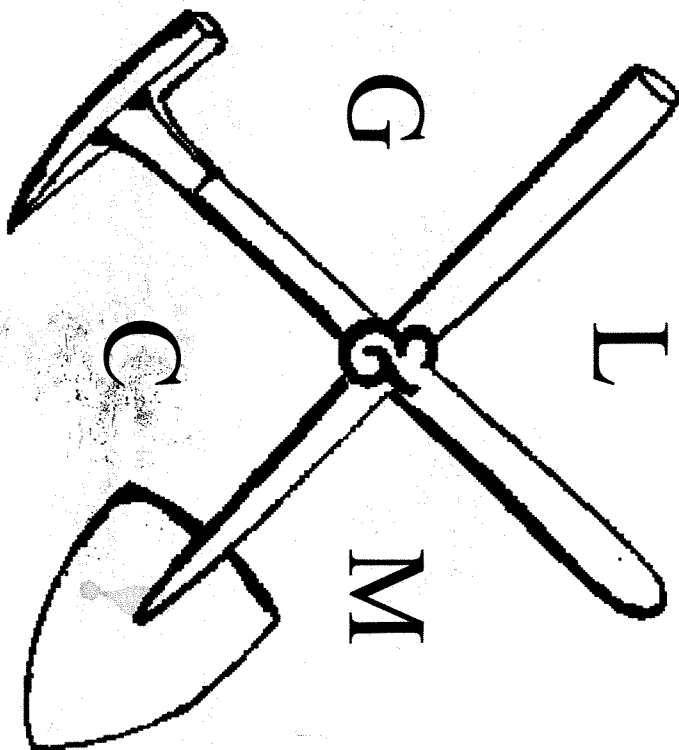
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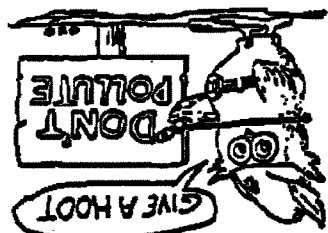
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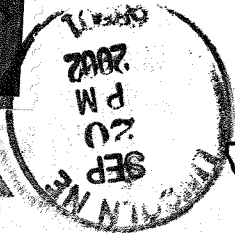
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