

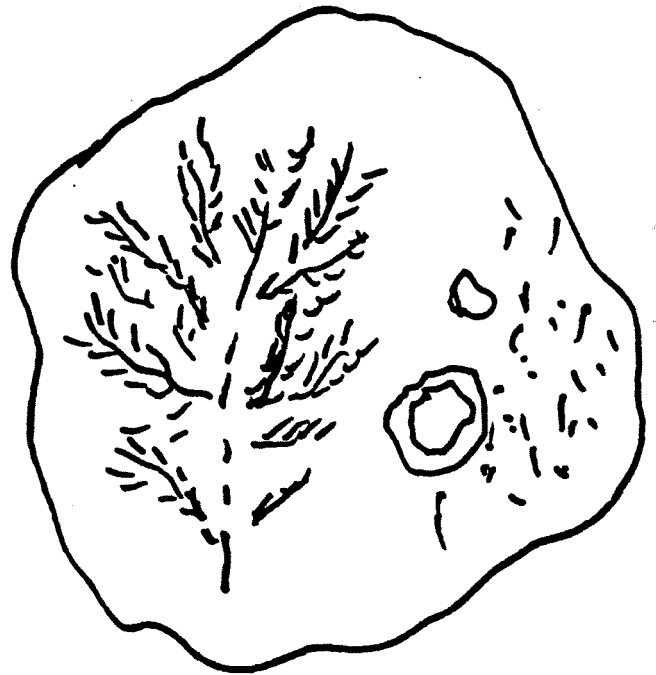


# PICK & SHOVEL

**INSIDE THIS  
ISSUE...**

**Plume Agates**

**New Dues Structure**



**Volume 30,  
January,**

**No. 5  
1990**

**Lincoln Gem and Mineral Club, Inc.**

P. O. Box 5342

Lincoln, Nebraska 68505

## 1990 ELECTED OFFICERS

President: Fred B. Holbert, 2822 S. 13th St., Lincoln, NE 68502	423-5639
1st Vice President: Gerald Moore, 2305 S. 35th St., Lincoln, NE 68506	489-4184
2nd Vice President: C. David Heffelbower, 1819 Washington St., Lincoln, NE 68502	475-4713
Secretary: Vera Lyman, 420 N. 56th St., Lincoln, NE 68504	464-6089
Treasurer: Phyllis Parks, 2435 So. 19th St., Lincoln, NE 68502	476-6798
Board Member: Francis Belohlavy, 1919 "K" St., No. 4, Lincoln, NE 68510	477-4337
Board Member: Roger Pabian, 315 "D" St., Lincoln, NE 68502	474-2034
Board Member: Sandra McNiff, 2542 Colonial Dr., Lincoln, NE 68502	483-1165
Board Member: Shirley Rockel, 1134 West Avon Lane, Lincoln, NE 68505	464-3059

### NOMINATIONS COMMITTEE

3 Years: Kevin Schwartman, Chair.  
James Null  
Michael Smith  
2 Years: Phyllis Parks, Janet Wright  
1 Year: C. David Heffelbower,  
Bill Rockel

### LONG RANGE PLANNING AND BY-LAWS COMMITTEE

3 Years: To be announced.  
To be announced.  
2 Years: Kevin Schwartman  
Jim Marburger  
1 Year: Bob Wright  
Linda Parks

### STANDING COMMITTEES

Calling: Shirley Rockel  
Education: Roger Pabian  
Field Trips:  
Historian: John & Lillie Lewis  
Hospitality: Wilma (Billie) Heffelbower  
Membership: Gerald Moore  
Housing/Property: Jim Parks  
Junior Activities: Janet Wright  
Librarian: Jim Parks  
Membership: Gerald Moore

MWF Liaison: Vera Lyman  
Programs: Francis Belohlavy  
Scholarship: Marie Taylor  
Christmas Party: Billie  
Heffelbower  
1989 Rockhound/Year:  
Roger Pabian  
1989 Show: John Harrison  
1990 Show: Roger Pabian

### AUDITING COMMITTEE, 1987-1988

Shirley Rockel  
Don Phillips  
Francis Belohlavy

### YOUR PICK & SHOVEL STAFF

Publisher: Lincoln Gem & Mineral Club, Inc., P. O. Box 5342, Lincoln, Nebraska 68505  
Editor: Roger Pabian  
Business Reporter: Vera Lyman  
Financial Reporter: Phyllis Parks  
Circulation: C. David and Wilma Heffelbower

The Pick & Shovel is the official publication of the Lincoln Gem and Mineral Club, Lincoln, NE. Articles and items appearing within may be reproduced in other club bulletins provided that proper credit is given to the Pick and Shovel and the author, and that a reprint of the bulletin is sent to the editor of the Pick & Shovel.

**CALENDAR OF EVENTS**

**JANUARY MEETING:** Saturday, January 27, 7:30 PM  
Nebraska Center for Continuing Education, 33rd & Holdrege.

**SPECIAL EVENT:** Annual mid-winter swap. Nebraska Center for Continuing Education, 33rd & Holdrege. 1:00 PM to 6:00 PM. Bring your trading materials and donations for silent auctions.

**BUSINESS:** 1989 Rockhound of the Year Presentation.

**PROGRAM:** Origins of agates and silica diagenesis in the Cathedral Mountain Quadrangle, Brewster County, Texas. By Andrejs Zarins. A very fine slide presentation dealing with the world famous plume agates of west Texas.

**JUNIOR MEETING:** 1:30 PM. Indoor field trip to Sartor-Hamann Jewelry Store. Leave from swap site at 1:30 PM, return to swap site by 3:30 PM.

**COMING EVENTS:** February 19, Chet Ager Nature Center, Pioneers Park, Geology Day, 1-4 PM. Demonstrators and exhibitors are needed.  
February 26, Encounters Center, Morrill Hall. Afternoon with a Scientist. Quartz Family Minerals.

January 1990						
S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

**REGIONAL SHOWS**

1990

CALIFORNIA	EASTERN	MIDWEST	NORTHWEST	ROCKY MOUNTAIN	SOUTH CENTRAL
Ventura, CA June 28-July 1	Landham, MD Aug. 10-12	Evansville, IN July 19-22	Boise, ID June 22-24	Roswell, NM Sept. 28-30	Pasadena, TX Feb. 16-18

**FUTURE MEETING DATES, PLACES:** **ANNUAL SWAP**, Saturday, January 27, 1990, Nebraska Center, 33rd & Holdrege, 1 - 7 PM, to be followed by regular meeting at 7:30 PM. David Heffelbower is Chairman of this event.

**DISPLAY MATERIALS** Bring items that relate to January (Garnet) or Texas (agates, topaz, agatized wood, etc.). Agates in any shape, form, or color are always welcome, as is any display item. To see is to learn. Cases will be furnished.

**ON THE COVER.**--Plume agate from west Texas is the favorite gemstone of many hobbyists. Although many lapidarists believe that it was not discovered until 1946, the first specimens were shown in the Texas Pavilion at the Trans-Mississippi Exposition in St. Louis in 1901. American Mineralogist, June, 1901.

**PRESIDENT'S MESSAGE**

Representing LGMC, we recently attended a meeting of the Policy - Executive - Program committee of the Nebraska Academy of Sciences. One item of importance concerned monetary contributions to the organization. Apparently some traditional contributors have greatly scaled back their donations to the academy. Allegedly the reason for the diminished participation is because the contributor had already given money for the construction of the Lied Center. This circumstance would seem to indicate that the "pot" of charitable giving has not grown, but only that the "pie" was just sliced differently. Some people are more likely to give to the more glamorous and visible causes. In fact much charitable giving is not at all altruistic or philanthropic but the motives involve public image and tax write-offs.

A segment of the population which is scientifically unaware may be willing to fund applied science only and extract a cost-benefit ratio. In other words, for every dollar spent in a scientific endeavor, there must be an immediate and identifiable return on that dollar. For example, a person with this mind set may not help fund a basic research project which investigates mosquitoes, but would contribute to an effort to stop malaria. In fact much of the success of applied science has been based upon the results of pure science. In the hypothetical example of the malaria project, investigators may know of the organisms which cause malaria but be unable to stop the spread of the disease until they discover some basic research which had found that the Anopheles mosquito is a carrier of those organisms.

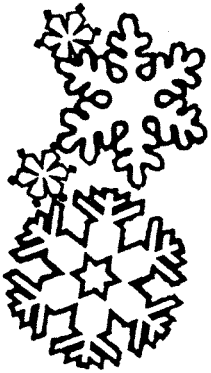
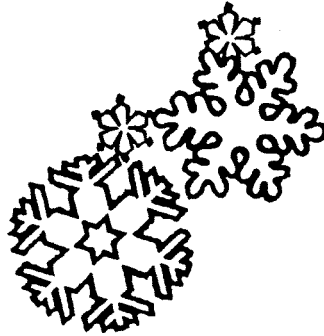
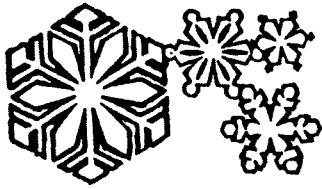
Now is the time to be planning for the upcoming the annual spring show. As usual at this time of year, the show chairman, Roger Pabian, will be asking for help particularly in the areas of demonstrations and exhibits. We hope that each club member will support the show and participate.

We thank Wilma Heffelbower and company for a lovely Christmas dinner and welcome Sandy McNiff to the board of directors.

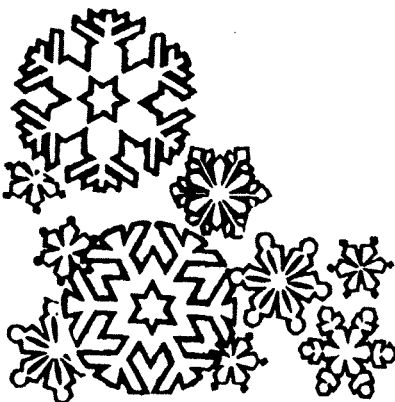
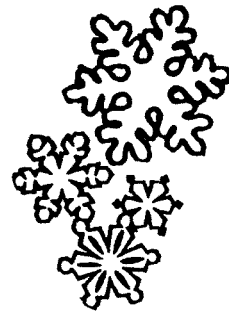
Speed  
Winter's  
Arduous  
Passage

(January 27, 1990. Be there!)

FRED B. HOLBERT



May the New Year,  
and the new decade,  
bring you joy



Happy  
1990



Lillian Sunbeam

## Monthly Study Group

by Kevin J. Schwartzman

The Lincoln Gem & Mineral Club held its second monthly "Quartz Family Minerals" study group on November 14, at 7:30 in the Geological Survey Conference Room, 115 Nebraska Hall. The lecture and several excellent specimens were provided by Roger Pabian.

Quartz has two types of electrical properties: pyroelectricity and piezoelectricity. Pyroelectricity refers to the simultaneous development of temperature and electrical charge in different parts of the same crystal as the temperature of the crystal is changed. When the quartz crystal is heated, some parts of the crystal will form a positive charge whereas other parts will form a negative charge. If the crystal is cooled, the charges will reverse. Piezoelectricity is a change in the volume of the quartz crystal as the mineral is heated or cooled.

Quartz occurs either in massive form (as globs of tiny crystals grown together). Or it occurs in crystalline form as large, individual crystals. Massive forms of quartz include: milky quartz (containing millions of fluid-filled inclusions), rose quartz (which contains inclusions of Mn (+2) or Ti (+2) and rarely occurs in crystalline form but often shows good stars, especially with a black background).

Quartz sand is also considered a massive form of quartz and is made up of individual angular to rounded grains of quartz and other minerals. The Nebraska sandhills consists of about 95% quartz sand. Quartz sand often make good aquifers for groundwater or other fluids.

Sandstones form as the quartz sand is compacted, cemented, and lithified into a solid rock. Sandstones which have been subjected to heat, pressure, and fluid such as water may form into quartzite. Quartzite is much tougher than sandstone and breaks through the grains instead of around them.

Jasperoid occurs when limestone (calcium carbonate) is replaced by quartz (silican dioxide). This is not a true jasper but often features such as fossils or algal mats remain.

Adventurine has oriented plates of mica or "adventuresence" which gives it a sparkled appearance. This form also does not have cleavage, but it does have "shistocity" and is very attractive when cut parallel to the "sparkled" side.

We were also given a chance to view quartz crystals under a polariscope provided by Roger. We observed some interference figures such as those discussed last month. I encourage all members who have any interest in these minerals to attend as these meetings are both informative and interesting. Our next meeting will be December 12, 1989.

**FROM YOUR LIBRARIAN**

Please return any books that you have checked out from the Lincoln Gem and Mineral Club Library at the January 27 meeting. We wish to update the club library's listings. Your cooperation will be appreciated. Thank you.

Jim Parks, Librarian

LINCOLN GEM & MINERAL CLUB, INC. - BOARD OF DIRECTORS - (Nov) Oct. 30, 1989

Nebraska Hall - Rm 115 7:30 P.M. All Board Members and 3 guests present.

Meeting was called to order by Pres. Holbert. Minutes of the Sept. Meeting were read with motion for approval by Dave Heffelbower, 2nd by Francis Belohlavy. Carried. Treasurer's report was read with motion for approval by Roger Pabian, 2nd by Gerald Moore. Carried.

**BILLS:**

All Club and Show bills presented for payment & approval and also those already paid were approved with a motion by Shirley Rockel, 2nd by Don Phillips. Carried.

**OLD BUSINESS:**

(RE: increase in dues for Club members) Motion by Phyllis Parks that original motion by Vera Lyman be amended to \$ 10.00/as per motion by Irl Everett at General Meeting in Oct. 2nd by Roger Pabian. Motion carried.

November election ballots prepared by nominating committee. Tellers appointed by President at election meeting.

**NEW BUSINESS:**

1990 Show Budget presented by Show Chairman, Roger Pabian. Written copies available for Board at next Board Meeting.

Question of hosting 1990 State Show. A western location would be preferable this next year. A motion was made by Roger P. and 2nd by Phyllis P. that if there are no other takers by our Nov. Meeting, that we put in a bid to host 1990 State Show. Carried.

**CHRISTMAS PARTY:**

To be held on December 2, 1989 at 6:30 P.M. - NE Center. Price is \$ 8.50 per person.

Program: by Erma Pharoah - Silversmithing

TICKETS for Christmas Party must be purchased at Nov. Meeting or mail by Nov. 28th.

**SWAP:**

At Nebraska Center - January 27, 1990 - Scottsbluff/Minden Rm.

**MISC.**

Nov. 18th meeting - Kevin Schwartzman will give short presentation on his thesis.

Coffee will be furnished

Feb. 18, 1990 1-4 P.M. "Geology Day" at Pioneers Park - hosted by LGMC.

Feb. 25, 1990 State Museum - "Fact & Fancy" - Roger Pabian hosting at Encounter Center, 2-4 P.M.

Next Board Meeting - Dec. 4, 7:30 P.M. - NE Hall.

Respectfully submitted,

*Vera Lyman*

Vera Lyman, Secretary

LGMC Treasurer's Report November 1989

NBC Checking Nov.1,1989 \$ 1148.47

**Receipts:**

1990 Dues paid in advance	112.00	
1990 Gem Palette Subs	12.00	
Suspense Members '89 Xmas Din.	<u>153.00</u>	277.00

**Payments:**

Prep.copy for P & S	6.28	
Printing Oct. P & S	111.83	
Printing Nov. P & S	100.23	
'89 Pres.Award	33.02	
'90 Show Flyers	55.46	
'90 Swap Flyers	<u>21.63</u>	328.45

Natl. Bank Commerce Checking 11-30-89

\$ 1097.02

LINCOLN GEM & MINERAL CLUB, INC. - GENERAL MEETING - Nov. 18, 1989 7:30 P.M.  
Nebraska Center Norfolk Room

The President called the meeting to order.

There were no additions or corrections to the minutes and the Treasurer's report so they stand approved as printed.

Hospitality reported 27 members and 9 guests in attendance.

OLD BUSINESS:

Report of Study Group Meeting in Pick & Shovel. Anyone can always participate.

BY-LAWS CHANGE: By-laws change for new dues structure printed in Pick & Shovel. Voice vote - unanimous acceptance.

ELECTION OF OFFICERS FOR 1990:

Nominations called for from floor for each position; and for 4 Board members.

Motion by Billie Heffelbower & 2nd by James Null that nominations be declared closed.

Voice vote for election of officers. Carried.

Slate of officers approved by voice vote.

Nominations for nominating committee - 3 year term:

Bill Rockel Mike Smith James Null Dave Heffelbower

(Tellers: Kevin Schwartzman & Shirley Rockel)

Nominating Committee election results:

James Null & Mike Smith

QUESTION OF BY-LAWS CHANGE:

Article 1 - Section 3

(b) Children between ages of 12 & 16

(Change: ages of 6 & 16

Question of change in subscription rate also.

SHOW:

Have 8 dealers signed; waiting to hear from 4.

CHRISTMAS PARTY:

At Ne Center on Dec. 2 at 6:30 P.M. \$ 8.50 per person. Pay treasurer by Nov. 30th.

"Lapidary" gift exchange, for those who wish to participate. JR Party at Jan's home.

LIBRARY:

Donations: Masterpieces from the House of "Faberge" donated by Mike Smith

Bound copy of his thesis by Kevin Schwartzman.

ANNOUNCEMENTS:

NAS - Dec 1, 1989 Fred plans to attend and will represent IGMC at Executive Committee Meeting.

Friday Dec. 1 - Wood Gallery - Morrill Hall "Nomads Of The Plains".

Thank You received from Ed Johnson family for memorial gift.

Respectfully submitted,

*Vera Lyman*  
Vera Lyman, Secretary

LINCOLN GEM & MINERAL CLUB, INC. - BOARD OF DIRECTORS - Dec. 4, 1989

NE Hall Rm. 115      7 Board members present. Don Phillips & Shirley Rockel absent.

The minutes of the previous meeting and also the treasurer's report stand as read with no additions or corrections.

**BILLS:**

Motion for approval and payment of Club and Show bills was made by Dave Heffelbower and a 2nd by Gerald Moore. Motion carried.

STATE SHOW: Roger Pabian (1990 Show Chairman) is to make bid for State Show if Barry Rose (State Officer) has no other takers.

**MISC.:**

The annual Christmas Party was attended by 34 members, guests.

The "Rockhound Of The Year" award was presented to Charles Wooldridge.

Motion was made by Vera Lyman to continue membership in Friends Of Museum with \$ 50.00 contribution. 2nd by Gerald Moore. Motion carried.

**NEW BUSINESS:**

Memorial: Roger Pabian made resolution to accept memorial from Todd Ashmun family of \$ 100. To be decided at a later date how to use this donation.

National Prairie near Red Cloud (Webster Co. - 5 S. and 4 W of Guide Rock, NE) acquired by NAS.

Membership: Gerald Moore to make written response to membership request.

Audit Committee: Gerald Moore, Shirley Rockel, Francis Belohlavy.

Show News: Some dealer contracts still out. 11 of 14 are confirmed.

30 second spot on radio for advertising for upcoming events. (Dept. of Economic Dev.)

Programs: For Jan. Meeting, will check with Andy Zarins.

**BY-LAWS CHANGE:**

The following By-Laws change to be presented to rank and file. Motion was made by Gerald Moore, 2nd by Francis Belohlavy. Motion carried.

Proposed change:

Article I Section 3

(b) Children between the ages of 12 and 16

Change to:

(b) Children under 16

Next Board Meeting Jan. 2, 1990. NE Hall Rm. 115.

Respectfully submitted

*Vera Lyman*  
Vera Lyman, Secretary

Lincoln Gem and Mineral Club, Inc.

P. O. Box 5342

Lincoln, Nebraska 68505



*Invites you to attend its*

Big 12th ANNUAL

# SWAP

Saturday, January 27th 1:00-6:00 P.M.  
Nebraska Center for Continuing Education  
33rd & Holdege St., Lincoln

BUY, SELL, TRADE

Rough, Finished Stones, Minerals, Fossils  
and Miscellaneous

Tables, chairs and coffee furnished

Swapper Bucks (10% surcharge)

Silent Auction; Proceeds to scholarship fund

GENERAL PUBLIC WELCOME

## NEW HOMES FOR ROGER'S ROCKS

In October the Junior Members were invited to select specimens from rocks, minerals, and fossils donated to the youth group by Roger Pabian. The first Saturday in October several of our young collectors went home with many boxes and buckets filled with new treasures to add to their own collections and to trade with others. Mike McNiff, another of our adult club members, had kindly consented to store these specimens. After the juniors had picked what they wanted, I realized that there was still a lot of material left that could be used by teachers ( three moving pallets). I mentioned to Mike that I would like to get some of the remaining materials to the Lincoln School Teachers. Mike said that he would be willing to move the rock material out again as long as it didn't interfere with movement of the trucks during business hours. The following Monday I called Bob Reeder, the science consultant for Lincoln Public Schools. I asked him if he thought we could organize a gathering of interested teachers for dispersment of Roger's donated specimens. Bob was happy to set up a time which turned out to be a Wednesday ( October 25th at 4:00 PM ). Wednesday it turned out was a bad time at Mike's work so he volunteered to move the rocks to Irving School. Selecting a school site worked well because the boxes could be put on tables and the teachers would have a place to write the names of the specimens that they collected.

The cooperation to set up this activity had been wonderful but there's more to come. When I went to work at the UNL Geology Department, I noticed that there were fossils inside boxes in the hall to be discarded. The information as to where they had been collected had been lost or never recorded so they were of no use in the teaching collections. The person in charge of curation of the teaching collections is Mary Anne Holmes. I asked her if we could include the fossils in our give away and told her about the project. She was happy to hear that there might be a place for the fossils and suggested that she might be able to get a few graduate students to volunteer to help me identify specimens for the teachers.

We had invited teachers who teach Earth Science either in the upper elementary classes or in junior high. It was the day before teacher's convention so not everybody came however we had at least twelve teachers come. Each of those teachers will now be able to share those specimens with hundreds of students over the years.

I also invited Ron Bonnstetter, Assistant Professor of Science Curriculum and Instruction from UNL. Ron stopped by and looked over the material we still had left. He suggested that he could find homes for some more of it. Ron took as much of it as he had room for in his van. Ron was heading for Halsey, Nebraska for the weekend to be at the State Science Teachers Convention. A later report from him informed me that every last specimen he had taken out was snapped up by the teachers at that meeting.

I do want to thank Dr. Jorg Mutterlose, Chris Crow, and Hannan LaGarry for volunteering their time to help the teachers with identifications. Everyone involved felt that it had been a "GREAT" cooperative effort and we hope to do it again soon since

there is still plenty of material available. The end of March has been suggested as a good time to schedule another such event.

Reported by Jan Wright  
Leader for LGMC Juniors

#### JUNIOR REPORT

We meet in December at the Wright's for a Holiday Rock Party. Ten Juniors and four adults were in attendance. We watched a "Rock" video and had a meeting. We talked about the upcoming activities for the Juniors. It was suggested that it would be fun to go see some examples of gems and find out about how they are cut. We will take a trip during the Midwinter Swap on January 27 to Sartor Hamann to find out about gems. Our fieldtrip time will be 1:30 (DON'T MISS IT). We will plan to have a table at the swap so bring some of your swapping material along. We will have some kind of activity planned for each month right through to the summer so be looking for our announcements.

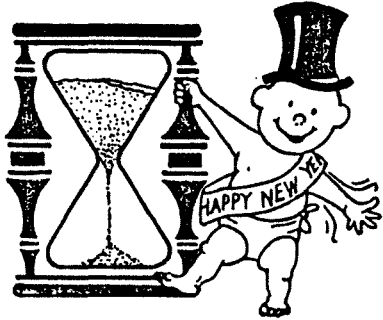
#### EXPANDABLE SANDING DRUMS

A common problem that many lapidarists may have with expandable sanding drums is that the sanding belts may tend to slide across the drum when pressure is applied to the stone being sanded. This problem can be alleviated considerably by tightening the drum very securely to the shaft on which it rotates. The sliding of the sanding belt occurs when the drum momentarily stops when pressure is applied to it.

As a safety measure, do not let the drum rotate faster than the manufacturer's recommended safe speed. Drums made for commercial cutters can turn much faster than ones made for hobbyists. These drums can tear away from the shaft and administer a stiff beating to the careless user. RKP+++

**IN THE CLUB**

Congratulations to Anne Rene'e Crawford who was selected the principal nominee for the U. S. Air Force Academy by U. S. Representative Doug Bereuter, 1st District Nebraska. Anne is also alternate nominee for the U. S. Military Academy, West Point, New York, and the U. S. Naval Academy, Annapolis, Maryland. The club is very proud of Anne.

**DUES ARE DUE****Time Is  
Running Out!**

Dues were due January 1, 1990, and become delinquent January 31. If you have not sent them, please mail to the treasurer at P. O. Box 5342,, Lincoln, NE 68505 or to 2435 So. 19th, Lincoln, NE 68502. Dues were set at \$10.00 per year for renewal with a By-Laws change at the November, 1989, General Meeting. Family membership is \$22.00 per household; this includes 2 adults and all juniors under 16 years. Junior membership is \$2.00 each with an adult club member as sponsor. Reinstatement will be assessed at \$5.00 per family after January 31 and a registration of \$5.00 must be included with all new memberships.

Any members wishing to receive out State Association publication "The Gem Palette" should include \$2.00 for 1990. This is a bi-monthly newsletter. If any questions, please contact Phyllis Parks at 476-6798 or 466-5440 days.

**IN PASSING****Morris Skinner**

Morris Skinner of Ainsworth, Nebraska, passed away on December 15, 1989 at the age of 83. Morris Skinner received his BS degree at the University of Nebraska in 1926, and went on to distinguish himself as a vertebrate paleontologist and stratigrapher. Much of his work was done in the Miocene and Pliocene deposits in north central Nebraska and adjoining areas in South Dakota. Most of his career was spent at the American Museum of Natural History, New York, from which he retired in 1973.

**Walter Bartels**

Walter Bartels of Clarinda, Iowa, passed away on November 2, 1989 at his home. Mr. Bartels gained regional recognition for his extensive agate and mineral collection. Mr. Bartels began collecting rock and mineral specimens in 1959, after his retirement from a long and successful farming career. He exhibited his collection at many shows in the midcontinent region and at local and national shows held in Lincoln. Most of his collection has been donated to Concordia College at Seward, Nebraska, where it is now on display.

## EURASIAN NOMADS

By Roger Pabian

Throughout the history of the Old World, the nomadic peoples of the Eurasian steppes have played an important role not only as military conquerors but also as propagators of political, social, and economic systems that established free trade and trade routes between east and west. A study of gems and jewelry utilized by these peoples can give us a greater understanding of the sociological and ethnological backgrounds of nomads and extend our understanding of gems and jewelry beyond geologic and economic considerations.

This will be the first of several articles by me and various others that deal with the gems and jewelry of the people who brought us the mobile home and the cookout. Indeed, a woodcut that is on display in the museum at Taipei, Taiwan, shows Kublai Khan, his favorite wife Chabi, and several of their children enjoying outdoor cooking over a charcoal grill.

The Greek Historian Herodotus and the Holy Bible both make references to the Scythians, militant horsemen who were well-established in parts of Hungary and Romania as well as much of the Ukraine. Sakians were a nomadic group who appeared in the area east of the Caspian Sea and around the Aral Sea. Modern historians tend to distinguish between these peoples although they were once considered synonymous. The peak of their histories was a period from about 800 B.C. to 300 B.C. These peoples utilized a great deal of gold in their jewelry as well as in some of their more utilitarian objects.

Animals tend to be the theme of most of the Scythian and Sakian jewelry and horses, panthers, goats, birds, and gazelles dominating. Much of this gold jewelry is hand wrought although some appears to have been cast. The Greeks had established several colonies along the north coast of the Black Sea and they had considerable contact with the Scythians; thus, many pieces of Scythian jewelry and many of their utilities are crafted in a Grecian style with Scythian motifs. Scythian nobility often sent their children to study under Greek scholars, and this is probably the source of Greek styling.

The Greek myth of Jason and the Argonauts seeking the golden fleece may owe its origin to the Scythians. Much of the gold that was used by the Scythians was from placer deposits. A sheep's fleece was utilized by passing gold bearing sand over it. The dense gold settled to the bottom of the water column and the tiny flakes became entrapped in the fleece; hence, golden fleece.

Silver was also prized by the Scythians and a beautiful silver vase that is 70 centimeters high and 30 in diameter is displayed in the Hermitage Museum in Leningrad, USSR. It, too, is crafted in the Grecian style with Scythian motifs including mythological creatures and men breaking horses on the upper part and birds and water plants on the lower part.

In 1969 and 1970, archeologists recovered the burial costume of a Sakian prince from a tomb located near Alma-Ata in Kazakhstan, USSR. This costume includes a gold headdress that is about 30 inches high and has feathers and arrows as finials and the crown has horses and mythological creatures. The waist-length burial jacket is made up of numerous gold plates. Knee length leggings of gold plates complete the costume.

The reign of the Scythians and Sakians was eventually brought to an end by another nomadic group called the Sarmatians who never reached the historic or artistic importance of their vanquished foes.

The next group of nomads to reach high military, political, and economic standing was the Huns, their most famous leader being Atilla, the Scourge of God. Their zenith was from about 300 B.C. to 600 A.D. The Huns originated in an area of Asia that includes all of Mongolia as well as parts of Manchuria, Siberia, and the Turkestan province of China. Why these peoples made their great, westward migration and conquest may have been due to changes in climatic conditions in their homeland. The climate may have become colder and drier, forcing a migration. The climate may have become warmer and more moist, allowing a prosperity that made migration and conquest possible.

The Huns utilized a great deal of gold in their jewelry and they were among the first of the nomadic peoples to utilize polished cabochons. A pair of Hunnic pendants in the Kazakh Institute of History, Archeology, and Ethnography, Alma-Ata, features a border of numerous radiating arrows. Each pendant has 5 cabochons ranging in shapes from square, oval, round, triangular, and heart. Although the stones appear to be very fine garnets or rubies, they are carnelians of outstanding color and quality. Numerous round beads adorn the fields of the pendants. It is of note that each bead was individually soldered to the pendant. Modern Mongolian jewelry has many tiny, individually soldered beads and this is all done by the blow-pipe method, probably the same method that was utilized by the Hunnic jewelry manufacturers.

About 550 A.D., the Turkic peoples, a very militant group, won several decisive victories over neighboring nomadic tribes to become masters of the Eurasian steppes. These people utilized a great deal of silver, mostly for utilitarian objects such as cooking pots. Museum collections in the USSR have few examples of Turkic jewelry from this period, but large monoliths that mark the burial sites of their nobility have been found on the steppes of Turkestan. To be continued.

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## SHOW NEWS

Fred Holbert reports that 13 dealers have now been contracted for the show, with but one spot remaining to be filled. We will have several returning dealers as well as several new ones. Most of them have been seen at shows by either Fred or I and it appears that all have very fine merchandise. Fred will have a listing of dealers at the January meeting, and it will be published in the February Bulletin.

Lincoln Gem and Mineral Club has been awarded the Nebraska State Show (NAOESCI) for 1989. This will require a meeting room for the state delegates from the many clubs throughout Nebraska. We will have a lot of guests from all over the state and many will bring fine exhibits.

Please note that new Federal Smoking Regulations are now in effect in Pershing Auditorium and that smoking will be permitted only in designated areas at the show.

Jan Wright has notified me that many exciting junior projects are planned for the show. Inasmuch as junior activities are an important part of club functions, the show committee will attempt to move the junior area to a more conspicuous area of the show floor rather than having their displays in some remote corner. We want the public to know what our juniors are all about and what they can do.

## PLUME AGATES CABOCHONS

By Roger Pabian

Since the January program will deal with the origin of plume agates from west Texas, now is a good time to cover the cutting and polishing of these fine little gems. Although one author claims to have discovered the original plume agates on Woodward Ranch, about 18 miles south of Alpine, Texas, in 1946, a short article in the long defunct publication "American Mineralogist" states that plume agates from 18 miles south of Alpine, Texas, were the featured display at the Texas Pavilion at the World Fair in St. Louis, Missouri, in 1901.

Plume agates occur in the Cottonwood Springs Basalt at several ranches in the area south of Alpine, Texas. Plumes in agates are feather-like inclusions that are made up of primary sulfide minerals such as pyrite or marcasite, although the plumes may weather to the various iron oxides such as goethite or hematite. Some more exotic minerals such as orpiment, realgar, and cinnabar can form brilliantly colored plumes but these are quite rare. Plumes differ from dendrites inasmuch as the latter form as oxides of metals such as iron and manganese. The two terms should not be used interchangeably.

When a magma crystallizes to form a solid rock, there is a particular order in which these chemical reactions take place and this is called the Bowen's Reaction Series. The order of crystallization of minerals from the melt is: Olivine---Pyroxene---Amphibole---Biotite on one branch and Calcium Feldspars---Potassium Feldspars---Sodium Feldspars on the other branch. Quartz and other minerals then crystallize and the final reactants are the metallic sulfides. These will crystallize wherever there is space and much can be found in fractures and gas vesicles in the host rock. This suggests that the plumes came first, and Dake (1950) illustrated examples of gas vesicles occupied only by plumes in volcanic rocks in central Oregon. The silica that forms the banded part of the agate is often a product of decomposition of the host rock due to weathering or of devitrification of glassy volcanic ashes that were deposited after the basalt flows.

In the west Texas area south of Alpine, the agate bearing basalt was probably quite fluid as the vesicles in which the agates formed are often elongated and quite symmetric. For many years, lapidarists have referred to the agate nodules that formed in these vesicles as "biscuits" and this serves as an excellent mnemonic device as the proper way to cut the nodule is in the same direction in which you would open a biscuit---namely parallel to the long axis (Figure 1). The plumes usually lie in planes that are essentially parallel to the long axis of the nodule.

Slicing the nodule of plume agate requires a diamond saw that is in good alignment with a very sharp, wiggle-free blade. The cutting oil should be clean to prevent heat buildup. The slices should be 1/16 of an inch or less in thickness. You will usually find the agate matrix that contains the plumes to be very dense and black. To accomplish this kind of slabbing, it is imperative that the nodule be glued onto a board with a white shop glue such as Elmer's TM. Allow the glue to dry for at least one week so that it has a very solid bond. The nodule should be fed into the saw with the blunt end first to prevent the blade from overriding the gentle contour you will see from the sharp end.

These instructions are by not any means original and they have been passed down from lapidary to lapidary via word of mouth, via bulletin articles, magazine articles, etc. Nonetheless, there are still many people who have yet to cut a plume agate and wish for some guidance.

After the agate is slabbed, you must pick the surface with the most desirable plume. Sometimes, one surface will be much better than the other and sometimes, both will be nearly the same quality. The side with the better plume will be the top of the stone, and this surface must be lapped smooth (Figure 2). This can be done with a rotating lap or by using silicon carbide grit on a thick pane of plate glass. Best results are obtained if the surface is lapped to about 1200 grit. It is not necessary to polish this surface. A clear stone is used to cap the desired area on the piece of plume. The cap is attached with Epoxy (Figure 3). If you make your own caps, it is necessary to lap the back of the capping stone smooth, but commercial caps are ready to cement.

The desired area on the lapped slab is then cemented to the cap with Epoxy. The epoxy should be allowed to dry thoroughly. The excess stone around the border of the cap can be trimmed or ground away. The product will be a clear cap covering a nearly opaque stone. The excess thickness of the slab under the cap is then lapped away until the back of the doublet becomes nearly transparent. The result will be a doublet cabochon featuring a plume pattern. I will bring examples of this kind of work in its various stages to the meeting.

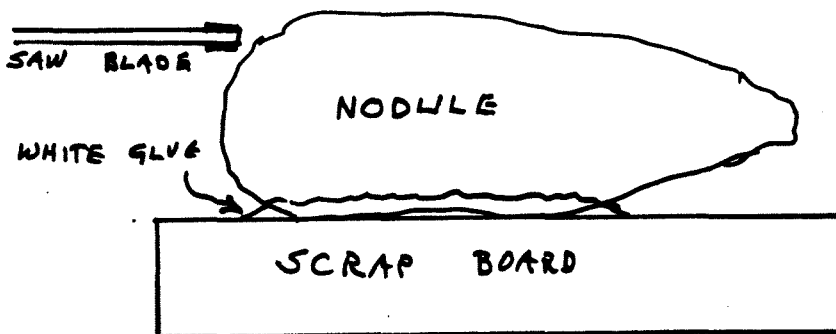


Figure 1. Properly oriented nodule of plume agate glued to board for slicing. Blunt end is leading edge.

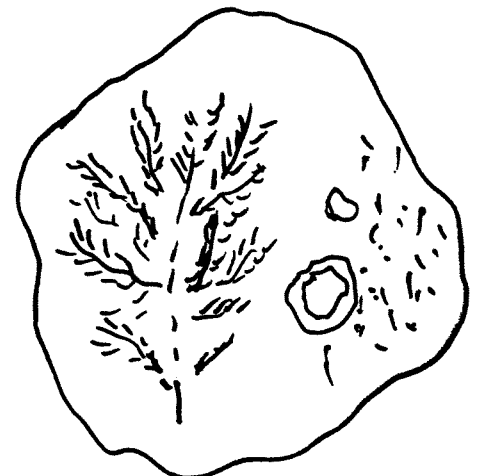


Figure 2. Select the best surface as top of slab and lap it thru 1,200 grit.

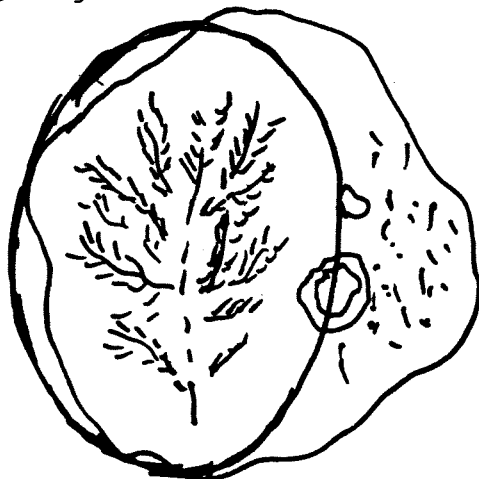


Figure 3. Cement a clear quartz cap to desired area and let cement thoroughly harden.

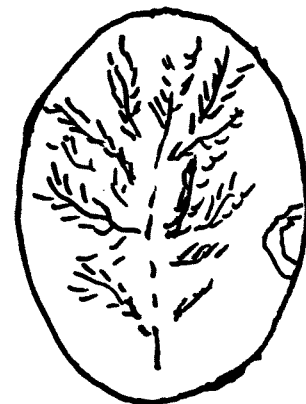


Figure 4. Remove excess matrix from edge of doublet and lap slab on back to transparency.

# OTHERS WRITE

From OSAGE HILLS GEMS, Bartlesville, OK, May, 1989

OSAGE HILLS GEMS

MAY - 1989

LAPIS LAZULI, ANCIENT STONE

by Charles A. Stratton

Cabbers, please take note; this article is for you. Lapis lazuli is an ancient stone, and capping is one of the most ancient of lapidary arts. Capping is easier than faceting because it is easier to get a good polish on a round surface than on a flat. Since opaque materials are harder to polish, they usually require the extra advantage of polishing on the round to give them a good shine.

Lapis lazuli, although it is a gem, is really an opaque rock. Translated into English, it is "rock, blue". Generally, there are three components: the blue mineral "lazulite", white veins of calcite, and golden flecks of pyrite. It comes in three main grades: Persian lapis (from Afganistan) is intense dark violetish blue with no calcite and little or no pyrite; Siberian lapis has various tones and intensities of blue and contains pyrite; Chilean lapis contains considerable white calcite.

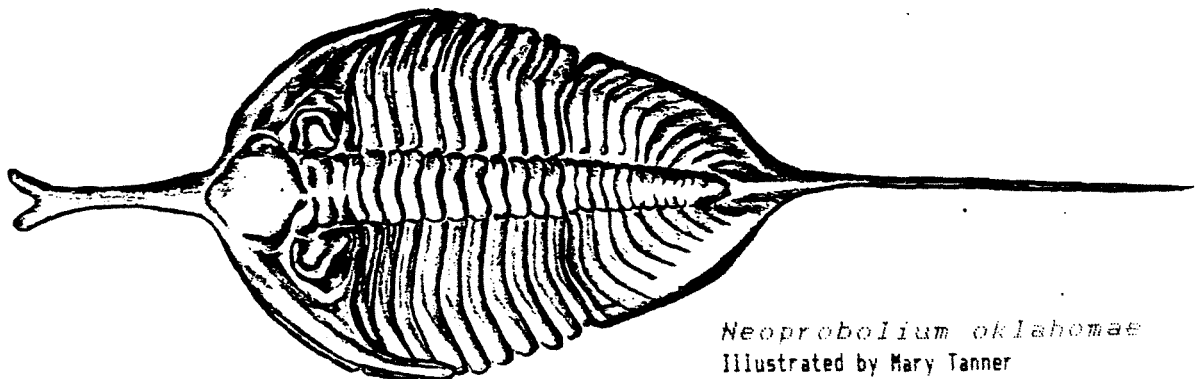
Lapis has a record of use in the earliest of civilizations: those of Babylonia, Egypt, and China. From the descriptions of Pliny, it is certain that the stone usually called "sapphire" by the ancients was really lapis lazuli. In Egypt, it was used in making amulets, scarabs, cylinder seals, images of gods, and other articles. From Greek and Roman times through the Renaissance, it was ground to make a blue pigment for oil paint. In the middle ages, the same pigment was used in "illuminating" manuscripts (i.e., the painting of large colored letters at the opening of a chapter).

From the earliest times until now, the source of the best lapis has been the Badakshan district of Afganistan. This location is north of Kabul, high in the mountains, in the northernmost tip of the country. Of all gem locations known, that of lapis is probably the most inaccessible. One would think it would only be mined in the summer, but - No! It must be mined when there is snow which can be melted to give water. The gem is extricated by building a fire on the rock to heat it, followed by quenching with water to crack it loose. Because of the difficult route, only the finest specimens are brought down for sale.

There are many different offerings of lapis rough in the Lapidary Journal. I would avoid the reconstituted material, certainly. I would reject all imitations, dyed chalcedony, glass, etc. There is a simple test which would illuminate many imitations: acid will release hydrogen sulfide from lazulite.

Get some lapis, and enjoy cutting something more valuable than agate. I recommend high-domed cabs for lapis - at least in your first efforts.

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*Neoprobolium oklahomae*  
Illustrated by Mary Tanner

# MIDWEST FEDERATION OF MINERALOGICAL AND GEOLOGICAL SOCIETIES

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## NEWSLETTER

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Judith Washburn, Ed.  
107 Deer Creek Road  
Rochester, IL 62563

# On the Track

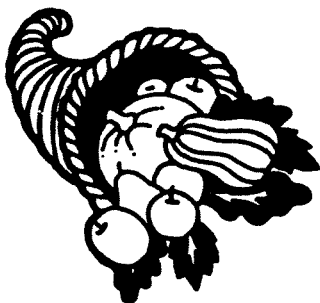
### ILLINOIS PICKS UP THE CHALLENGE

This summer, at the annual convention in Kalamazoo, one of the ideas brought before the Council was that of multiple club activities. The consensus of the group was that jointly planned field trips and other activities would help extend resources and expand opportunities. Everyone was challenged to try to promote these types of events.

Illinois is proud to report three such joint ventures that have already taken place since the convention. The first was a five-club picnic and rock swap that occurred this August. The Bloomington club planned and hosted this event with Springfield, Peoria, Decatur, and Urbana participating. Then in October, the Springfield club hosted a multi-state field trip. Besides Illinois rockhounds, the group included folks from Iowa, Missouri, and Ohio. Finally, a few weeks after that, the Earth Science Club of Northern Illinois, in conjunction with the Elgin club, the DesPlaines Valley club, and the Fox Valley group, held a flea market and auction.

Because all of these activities were so successful, we have plans for some future joint projects. Illinois has put the challenge "to the test" and is pleased with the results. We encourage other states to follow suit.

-Mary Hanning, Illinois State Director  
From report given at the Fall Board Meeting



### FOSSIL COLLECTING RULES ON PUBLIC LANDS TO BE SET

On December 3, 4, and 5, representatives of the amateur fossil collectors and the commercial fossil collecting community; members of the professional scientific community; and members of local, State and Federal public lands agencies, have been invited to meet in Boulder CO to negotiate regulations for collecting fossils on public lands. The ten recommendations resulting from the committee meetings of professionals, amateurs, and commercial collectors, published in the National Academy of Science Report in mid-1987, will be used as a guide to the rulemaking.

The recommendations, in brief, state that all public lands should be open to fossil collecting for scientific purposes. Surface collecting with hand tools for one day or less, would not require a permit. Extended stay collecting requires written notice to the land manager but no permit is needed. Paleontological quarrying (a hole larger than 2 cu yds) would require a permit. Fossils of scientific significance should be deposited in institutions where there are established research and educational programs in paleontology but not necessarily in the same state where found. Amateur and professional interchange is encouraged. Commercial collecting would require a permit subject to review by qualified paleontologists.

Collecting of vertebrate, invertebrate, and plant fossils will be discussed and the collecting experiences of each group will be shared. Your comments would be appreciated. Send them to John Boland 2211 Valley Rd. LaCrosse, WI 54601

JOHN BOLAND CHM, ENVIRONMENT/LEGISLATION

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## AWARDS

# All American Club

I have just received the rules for the All American Club Awards entries. The rules are basically the same with one new rule, Number 9. The following must be included in the preparation of your report for entry:

1. Service to Members & Visitors at Meetings
2. Service to Members Away from Meetings
3. Club Publicity
4. Service to Other Clubs
5. Service to the Federation
6. Service to Community & Near-by Areas
7. Service to Distant Communities or Projects
8. Service or Involvement in Public Agencies
- \*9. Participation and Involvement  
(This is the new category and percentages are used to show participation of the entire club.)

Please start now to compile your information for your 1989 entries. The entries have to be to me by February 15, 1990.

We had seven entries last year and would like to see more sent in this year. If you would like to have a complete copy of the rules, call or write to me and I will send you the information.

Looking forward to hearing from you.

-Florence Anderson, Chairperson  
All American Club Awards  
6 Deer Ridge  
Quincy, IL 62301  
217-222-2420

## PALEO BITS...

There is an excellent, very comprehensive article on the soft-bodied marine fauna of the Lower and Middle Cambrian, exemplified by the Burgess Shale of British Columbia in the October, 1989 Science magazine. All persons interested in learning more about the Early Paleozoic fauna will find this article fascinating.

A new ARACHNIDA (a spider) has been found in Indiana. He is a fossil spider from the McLeansboro Group, of Pennsylvanian Age, and now resides at the Field Museum in Chicago. Fossil spiders are rare.

His name is Triangulotarbid terrehautensis. This specimen was preserved in a concretion. It was found in the Peabody Coal Company Chieftan No. 20 mine, about 10 miles south of Terre Haute, IN. Found here are the similar type concretions found at Mazon Creek - and contain both flora and fauna. An article about this can be found in the Journal of Paleontology, Vol. 63, No. 3, 1989. Thanks to Ben Moulton for submitting this information.

-Mary Boland, Chairperson  
Paleontology Committee

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1/2 page, \$7.50; 1/3 Page, \$5.00; 1/4 page, \$3.75 (Min). These ads will be placed throughout the bulletin as space permits.

Subscriptions to the PICK & SHOVEL ARE \$10.00 per year mailed.

Dues to LINCOLN GEM & MINERAL CLUB are as follows:

Adult membership fee \$10.00 (age 16 and over)

Junior membership fee \$2.00 (age 12-16)

Family membership fee \$22.00 (husband, wife, and all children under 16---permanent residents of household).

New memberships must be approved by the Board, after applicant attends at least one (1) regular meeting of the club, and pays the above dues plus \$5.00 registration fee.



**h.e.l.p.**

**HELP ELIMINATE LITTER PLEASE!**

**MAIL ALL EXCHANGE BULLETINS TO:**

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Lincoln, Nebraska 68505-0342**



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