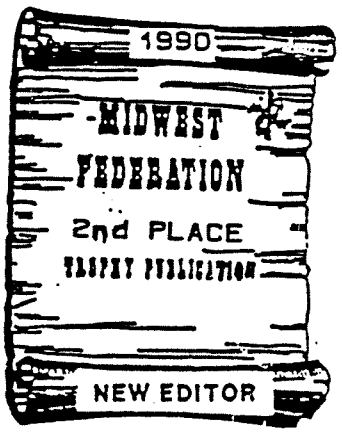
PICK & SHOVEL



INSIDE---- SCYTHIAN AND SARMATIAN JEWELRY
BOOK REVIEW
POLISHING STEPS

Volume 31 Number 6
February, 1991

Lincoln Gem and Mineral Club, Inc.
P. O. Box 5342 Lincoln, Nebraska 68505

1991 ELECTED OFFICERS

President:	**Fred B. Holbert,** 2822 S. 13th St., Lincoln, NE 68502	423-5639
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2nd Vice President:	**Charles Wooldridge,** 836 S. 31st St., Lincoln, NE 68510	475-9034
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Board Member:	**Billie Heffelbower,** 1819 Washington, Lincoln, NE 68502	475-4713
Board Member:	**Shirley Rockel,** 1134 West Avon Lane, Lincoln, NE 68505	464-3059

NOMINATIONS COMMITTEE

3 Years: Kevin Schwartman, Chair.
Gerald Moore
Don Phillips
2 Years: James Null, Michael Smith
1 Year: Ed Ridge, Roger Pabian

LONG RANGE PLANNING AND BY-LAWS COMMITTEE

3 Years: Kevin Schwartman
Jim Marburger
2 Years: Bob Wright
Linda Parks-Lundgren
1 Year: Phyllis Parks
Charles Wooldridge

STANDING COMMITTEES

Membership: Shirley Rockel
Education: Roger Pabian
Field Trips: Francis Belohlavy
Historian: John & Lillie Lewis
Hospitality: Eddie "Lightning" Ridge
Study Group Coordinator:
Housing/Property: Jim Parks
Junior Activities: Janet Wright
Librarian: Jim Parks/Charles Wooldridge
"Gem Pallette" Corresdpondent: Sandra McNiff
"Geology Day" Coordinator: Charles Wooldridge

Programs: Charles Wooldridge
MWF Liaison: Vera Lyman

Scholarship: Dwight Miller
Christmas Party: Billie Heffelbower
1990 Rockhound/Year: Charles Wooldridge
1991 Show: John Harrison
1992 Show: Phyllis Parks
1991 Swap: David Heffelbower
1992 Swap: Roger Pabian

AUDITING COMMITTEE, 1987-1988

David Heffelbower
Francis Belohlavy
Shirley Rockel

YOUR PICK & SHOVEL STAFF

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

CALENDAR OF EVENTS

FEBRUARY MEETING: Saturday, February 23, 7:30 PM
Nebraska Center for Continuing Education, 33rd & Holdrege.
Norfolk Room.

PROGRAM: **Pleistocene Microfauna of Nebraska**
by R. George Corner, University of Nebraska State Musuem. Learn about the little fossils with this program.

JUNIOR MEETING: 7:00 PM. Program: Fossil Collecting.

COMING EVENTS: GEOLOGY DAY: Prairie Interpretive Center
Pioneer's Park, Sunday, February 17, 1991.
1:00 PM- 4:00 PM. Charles Wooldridge in Charge.

SHOW: Kansas City, Missouri
March 8-10, Trade Center

SHOW: Lincoln, Nebraska
March 16, 17, 1991
Pershing Auditorium
Nebraska State Show

MEETING: Nebraska Academy Sciences
April 26, 27, Olin Hall
Nebraska Wesleyan University, Lincoln

SWAP: 100th Meridian Rock Club
May 4, 5, LaFayetter Park, Gothenburg

SWAP: Northeast Nebr Rock & Mineral
July 27, 28, Stanton Co. Fairgrounds
Stanton, NE

SWAP: Fort Kearney Rock Club
Sept. 7, 8, Cotton Mill Lake, Kearney

SHOW: Fort Kearney Rock Club
Nov. 2, 3, Hilltop Mall, Kearney

REGIONAL SHOWS:

1991 AFMS					
SAN JOSE, CA JUNE 14-16	TAMPA, FL SEPT 19-22	SOUTH BEND, IN AUG 30 - SEPT 1	SALT LAKE, UT JUNE 14-16	LUBBOCK, TX JUNE 7-9	SEATTLE, WA JULY 26-28

FUTURE MEETING DATES, PLACES: March 23, 1991, Beatrice Room, NCCE

DISPLAY MATERIALS Bring items that relate to February (Amethyst) or specimens of mineral crystals. Cases will be furnished for exhibitors.

PRESIDENT'S MESSAGE

THE SWAP: Well, we had one and it was a doozy. Even Mother Nature couldn't stop us by dumping 8" of snow on Lincoln the preceding day. The storm did stop Bill and Betty White from attempting the drive from Independence, Missouri, however. While their snow accumulation was about the same as ours, 12" had fallen in a belt from St. Joseph to Nebraska City. The day of the swap, however, shone bright with plenty of sun and participation.

We were certainly pleased with the turnout. There were more than 100 in attendance and at least 11 different swap tables were set up at one time or another. In addition to our own members, tables were set up by individuals from the Grand Island and Omaha gem clubs. One swap table was maintained by the executors of the estate of a local collector. The material on this table was extensive. I know that Betty White would have salivated over the thumbnail mineral specimens and probably would have had to fight off our own Ed Pedersen for bragging rights to all the material available.

I personally helped in supporting the environment by decreasing gasoline consumption. I performed this act by purchasing the most from those who travelled the furthest and remember - paper money weighs far less than rocks.

Another benefit of the swap is that it brings out those whom we don't get to see regularly. The camaraderie was warm and genuine. It was also fun to see the amused eyes of those people waiting for dinner seating at Valentino's when it was announced that a table was ready for our group of 22.

We applaud swap chairmen, David Heffelbower, and all of his helpers for a great event. The publicity items placed in the local newspaper were a big help in turning out the people. It was a fun day and a swell way to chase the winter blahs.

Not only was good fellowship missed because of the absence of the Whites, but Bill was also to present the program for the evening meeting. The correct slides for the program were dutifully shown, however the narration was provided by the sonorous and dulcet tones of Bill's partner in crime, Roger Pabian. That is an indication of the depth of our program chairman's bench; when a first team player is knocked out of action, he substitutes another first stringer. What a guy - what a team!

And speaking of the team, please be mindful of and give your support to two upcoming events: Geology Day at Pioneers Park and our annual gem show at Pershing Auditorium.

FRED B. HOLBERT

DIAMOND HUNTER

By Emily Rieur

We went hunting for diamonds in Arkansas because its lots of fun and I usually find the things we're looking for. I didn't want to wear a jacket but it was windy and I had to even wear mud boots. I lost one of my boots in the "quick sand."

The grayish green kimberlite had jasper that looked like carmel.

The only man there showed us his 120 diamonds. They looked like yellow teardrops. He used a suraca. It was like a gold pan with a screen. Diamonds are heavy and go to the bottom when you wash. You turn the suraca upside-down and look on the top of your pile for diamonds. I didn't find any. I had better luck at the Spanish Quartz Mine. The rain helped wash the red dint away. It rained so much that we quit and swam in Hot Springs. +++

Emily, age 7, is a junior member. This is her first contribution to the "Pick & Shovel". Thanks, Emily, for sharing you stories with us. Ed.

JUNIOR NEWS

By Janet Wright

JUNIORS! HOPE YOU'RE GETTING READY FOR THE SHOW!

The Mid-winter Swap was a big success for our Juniors who attended. Each one came away with new treasures for their hobby. Emily, Russ, Adam and Nick brought specimens to swap. I myself bought a few items that I couldn't resist. We also had materials offered to the Juniors for the show. We thank the adults' generous offers including magazines that we will again sell at the show. The Juniors will have a booth where we will display our cases and provide information for young people interested in joining LGMC.

Our program for the FEBRUARY MEETING will be on fossil collecting. If you have some fossils to show or share with the group please bring them. We will talk a little about paleontology (the study of fossils) as a career. You may want to bring along a book on fossils possibily. I will bring along some books on the subject too. Hope to see you at 7PM SHARP!!!!!!!!

MWF NEWSLETTER

Because of early press date this month, the "MWF newsletter" will not appear in this edition of "Pick & Shovel." Excerpts will be added to next month's bulletin. A newsletter will be available at the meeting and any timely or dated information will be distributed at there. Ed.

BOOK REVIEW

By Don Phillips

Texas Pennsylvanian Brachiopods published by the Paleontological Section, Houston Gem and Mineral Society, Houston Texas. Paper bound, 242 pages. Available from the publisher, 10805 Brooklet, Houston, TX 77099. $15.00 plus postage and handling.

How many times have you been faced with the dilemma of having a desire to fully understand a topic, but not have the means to obtain that understanding. As an amateur, I have faced this problem often in the field of paleontology. I have been fortunate to do an extensive amount of field work and collecting in the past few years and one of the marine fossil groups that I have always seemed to find in abundance and come home with is the brachiopod. I literally have hundred of specimens of many different species.

I know how to identify a brachiopod and a few of the species. Most of my knowledge comes from a few geology courses and information from people who aready have the knowledge, but I still have many unidentified brachiopods. However, that has just recently changed. I was asked to review and give a report on a book written by individuals who belong to the Houston Gem and Mineral Society. I would now like to take the time to explain and report to you what I read and the impression the above book made on me.

First, I think that this book could be used by both amateurs and professionals although the former would probably benefit most. The book starts with a very good explanation of the Phylum Brachiopoda. As the title suggests, the book is only concerned with brachiopods that lived during the Pennsylvanian Period in Texas. Several stratigraphiuc columns break the Pennsylvanian down into its smaller units. This is helpful because in the systematics, where the phylum treated on a species to species basis, the brachiopod occurrences are given by stratigraphic as well as geographic range. The authors managed to keep both geological and paleontological terms simple and this shows they made great effort to keep the book easy to read without diluting its scientific value.

The book is primarily designed to help you identify brachiopods. It gives an explanation of the two classes, Articulata and Inarticulatra, that make up the phytlum, and from here it breaks each class all the way down to the many species each contain. Many drawings and illustrations will help you quickly determine the specific name of an unknown brachiopod. Though the drawings are all freehand, I feel that they are quite good and no one should have problems cross-referencing.

I am sure that most people who take the time to read this book will come away feeling as I did and be amazed at how much understandable data can be placed in 242 pages. I would and do recommend that anyone with an interest in paleontology take a moment to check this book out of the club library. +++

LINCOLN GEM & MINERAL CLUB, INC - BOARD OF DIRECTORS - Jan. 8, 1991
Nebraska Hall Rm 115 7:30 P.M.

President Holbert called the meeting to order. Minutes and treasurer's report were approved as read.

BILLS:
Memorial for Frances Tracy - $ 15.00 (a Life member)
All bills presented for approval, and for payment & approval with a motion by Dave Heffelbower, 2nd by Francis Belohlavy. Motion carried.

OLD BUSINESS:
Film, "Gem Of America" donated by LGMC to City Library. Decision still in limbo. To be returned to Club if no City Office or Group takers. President will monitor progress.

NEW BUSINESS:
1991 Preliminary Operating Budget presented. After audit, some changes may be necessary.

SHOW COMMITTEE:
State Show will be held in conjunction with our annual Show.
Committee Meeting Thurs. Feb. 7 @ Reunion.
Question of need of Witchita cases - Last of Feb/first of March, State is going to auction 20.

Motion by Dave Heffelbower that we start formation of 2 portable Showcases to take to State Shows and other feasable area Shows, as well as other educational area displays.
Materials on loan by Club Members (each member assuming own responsibility) Show Committee responsible for cases. Cost of materials assumed by Show Committee.
Motion seconded by Roger Pabian. Carried.

ANNUAL SWAP:
Dave Heffelbower, Chairman. All phases taken care of. Admission to Swap is a donation to Silent Auction.

MEETINGS:
Board of Directors: Feb. 4, 1991 7:30 P.M. Rm 115
Feb. General Meeting: Scottsbluff Rm Ne. Center Feb. 23, 7:30 P.M.
March General Meeting: Beatrice Rm. Ne. Center March 23, 7:30 P.M.

Respectfully submitted,
Vera Lyman
Vera Lyman, Secretary

LINCOLN GEM & MINERAL CLUB, INC - GENERAL MEETING - Sat. Jan. 26, 1991 7:30 P.M.
NE Center Norfolk Rm.
In conjunction with Annual Swap - 1-6P.M. (75+ attendance)
Proceeds form Silent Auction - $ 23.60

President Holbert called the meeting to order.
Minutes and treasurer's report were unanimously approved as printed.

Attendance: 29 Adults 4 Juniors Ron Buskirk - Guest of Don Phillips.

Proposed Mineral Study Group needs co-ordinator.

FILM: "Gems Of America" - Donated to City Library by Club - City Film Library discontinued. Pres. Holbert acquired film. Sartar Hamann offered to purchase. Will discuss disposal at Board Meeting. Possibility of purchasing videos with proceeds.

SHOW COMMITTEE: John Harrison -Chairman
Show is "GO". Get your displays ready. There will be a case for competition.
"piece" competition, anything from NEBRASKA.

STANDING COMMITTEES:
Field Trips: Francis Belohlavy requested ideas for field trips.

Scholarship: Marie Taylor , after many ong years, has opted to pass the chair on. Dwight Miller has accepted. Owe Marie a great deal of THANKS for her many years of service.

Geology Day: Sun. Feb. 17, 1991 1:00 P.M. Charles Wooldridge Chairman
at Pioneer Park - new building Exhibits, Demonstrations, education.

THANKS to Dave Heffelbower for chairing a very successful Swap.

Roger Pabian presented the program for the evening in the absence of Bill White of Independence, MO (due to 'snow')
"Advanced Lapidary Techniques" (with unadvanced equipment)
THANKS to Roger for an outstanding narration of an exceptional & interesting program.

The evening closed with everyone enjoying cake and coffee in celebration of the Club's 36th Anniversary.

Respectfully submitted,
Vera Lyman
Vera Lyman, Secretary

LGMC Treasurer's Report January 1991

	NBC Checking Bal.1/1/91		$916.18
Receipts:			
Membership Dues & Registration	343.00		
Suspense Gem Palette Subs.	6.00		
LGMC Education/Scholarship Donation	16.00		
Pick & Shovel ads 1990 5 issues	25.00		
Prepay '91 P & S Ads 5 issues	25.00		
Dealer Space Deposits Show	250.00		
Swap Silent Auctions for Scholshp.	23.60		
Surcharge on Swapper Bucks	87.59	776.19	
Payments:			
Midwest Federation Dues	86.00		
Nebr.Assn.Earth Science Dues	29.40		
Friends Museum Dues/Donation	50.00		
Storage Unit 1991	360.00		
Postmaster 1991 Bulk Rate/PO Box	99.00		
Postmaster-Precancelled Stamps	83.50		
Postmaster-RKP ½ Swap, ½ Shop	25.00		
Nebr.Dept.Rev.'90 Sales Tax Pay.	204.07		
Electric Boxes to use w/cases	68.32		
Impressions Ink-Swap Flyers	27.76		
Uni.Nebr.Prtg.Dupl.-Jan P & S	129.93		
Anniv.Cake,forks,plates	25.00		
Copies & Postage Treas.	14.70	1202.68	
NBC Checking Balance January 31, 1991			489.69

SCYTHIAN AND SARMATIAN JEWELRY

By Roger K. Pabian

In the Millenium preceding the Christian Era several groups of savage nomadic horsemen of generally Iranian stock ruled the western Steppes of Siberia and the Ukraine of eastern Europe. These people were generally called Scythians but there were actually three distinct groups: (1) the Scythians who ruled the Ukraine, (2) the Sarmatians who ruled the area between about the Caspian Sea and Aral Seas, and (3) the Sakians, who ruled regions to the east of the Aral Sea (Fig. 1).

Their warriors dressed in scale armor (Fig. 2) and both men and women participated in battle, women having attained equal rights and status in both military and civil affairs. In most tribes, young women were forbidden to marry until they had killed an enemy warrior in battle. Scale armor was made of stiffened leather and the scales of the armor of the nobility were often laden with gold. The "Golden Man," a young Sakian Prince whose tomb was unearthed in 1980 in Kazahkstan, USSR. was buried in such splendid regalia.

The Scythians eventually gave up their nomadic ways and settled in the Ukraine, taking up farming in addition to the pastoral way of life. The nomads of this entire region were periodically displaced by other nomads coming from the east. The Scythians were forced west by the Sarmatians, the Sarmatians forced west by the Huns, the Huns forced west by Turkic tribes, ad nauseum. This displacement took place so often that the Sarmatians were eventually forced onto the Iberian Peninsula from which they crossed over into Africa via the Strait of Gibraltar.

Herodotus referred to the early Sarmatians as the Sauromatians and these people persisted until about 400 BC. The early Sarmatian Period lasted from about 400 BC to 200 BC. The middle Sarmatian Period lasted from about 200 BC until 30 AD, and the late Sarmatian Period ranged from about 30 AD until 450 AD, when these peoples were displaced westward by the Huns. Sarmatian jewelry and art seemed to reach a peak during the middle and late periods.

These nomads developed similar jewelry motifs that reflected their pastoral and military ways of life. They made use of both silver and gold as well as numerous kinds of stones including agate, garnet, amethyst, and carnelian, and used a great deal of colored glass too. We should keep in mand that in these times, glass was a fairly expensive commoddity. The presence of trade routes to the Baltic Sea countries and to western Europe are documented by the Sarmatian's use of amber and by the integration of Celtic motifs into their jewelry. Some Iranian influence is also seen in their gold jewelry set with glass and stones including opal. They utilized realgar, chalk, and sulfur as pigments in various other artworks.

One female Sarmatian grave unearthed at Kut, west of the Dnieper River, yielded bronze earrings set with glass, stone, and amber and bronze and gold neck rings, bracelets, and beads imported from central Asia. Some tombs have yielded glass beads that were imported from Egypt and Phoenicia through Bosporans who served as middlemen in these trade negotiations.

A royal Scythian tomb from the Ukraine contained a gold bow case with scenes from the life of the Greek mythological hero, Achilees, showing cultural contact between these peoples. An associated female tomb contained Greek vases, gold, glass, paste beads, bracelets, and earrings and most of the above were products of Bosporan craftspeople.

In spite of the fact that nomads usually had a great distaste for urban areas, they established craft centers within the territories they conquered and artisans and craftspeople often enjoyed periods of great creativity and productivity while under the nomad yoke. One such craft center was located at Panticapaea on the Bosporus. Products from this craft center included lapidary work that was used in diadems, bracelets, belt buckles, clasps, and other items. Many designs included animals and their bodies were often filled in with gems, including glass, garnet, agate, and amethyst. The many colors used in the jewelry suggests Persian influence.

The craftspeople imported beads from India and China, stones such as peridot and turquoise from Egypt and materials such as turquoise and agate from Iran and India suggesting extensive trade routes existed between the Sarmatians and the major world trade centers. Sarmatian craftspeople also imported numerous ideas and Baltic, Celtic, Indian, Chinese, Greek, and Egyptian themes show up in all of their arts and crafts.

For all of the adventurous lapidaries, I have created a set of much stylized templates based on Scythian and Sarmatian motifs (Fig. 3). To discover how to make these cuts, you are referred back to Bill White's article on the diamond saw in the November/December, 1990 Pick & Shovel, and to the Bill's slides that you saw at the January, 1991 meeting. To transfer the template to stone, copy it on transparent Mylar (TM) with a permanent marking pen. Move template over surface of stone until appropriate pattern is found, mark, trim, saw some more, and finish. +++

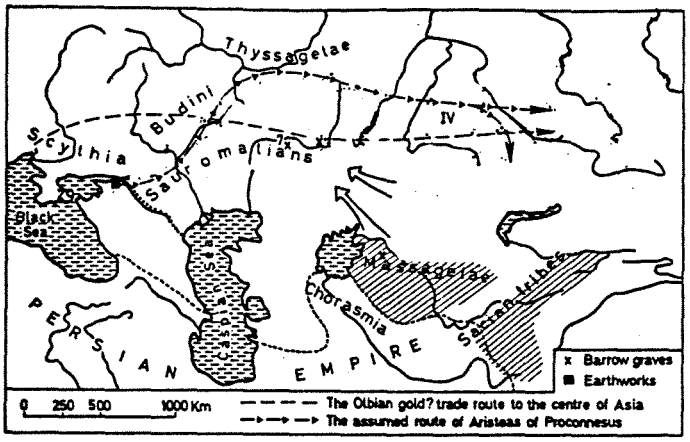
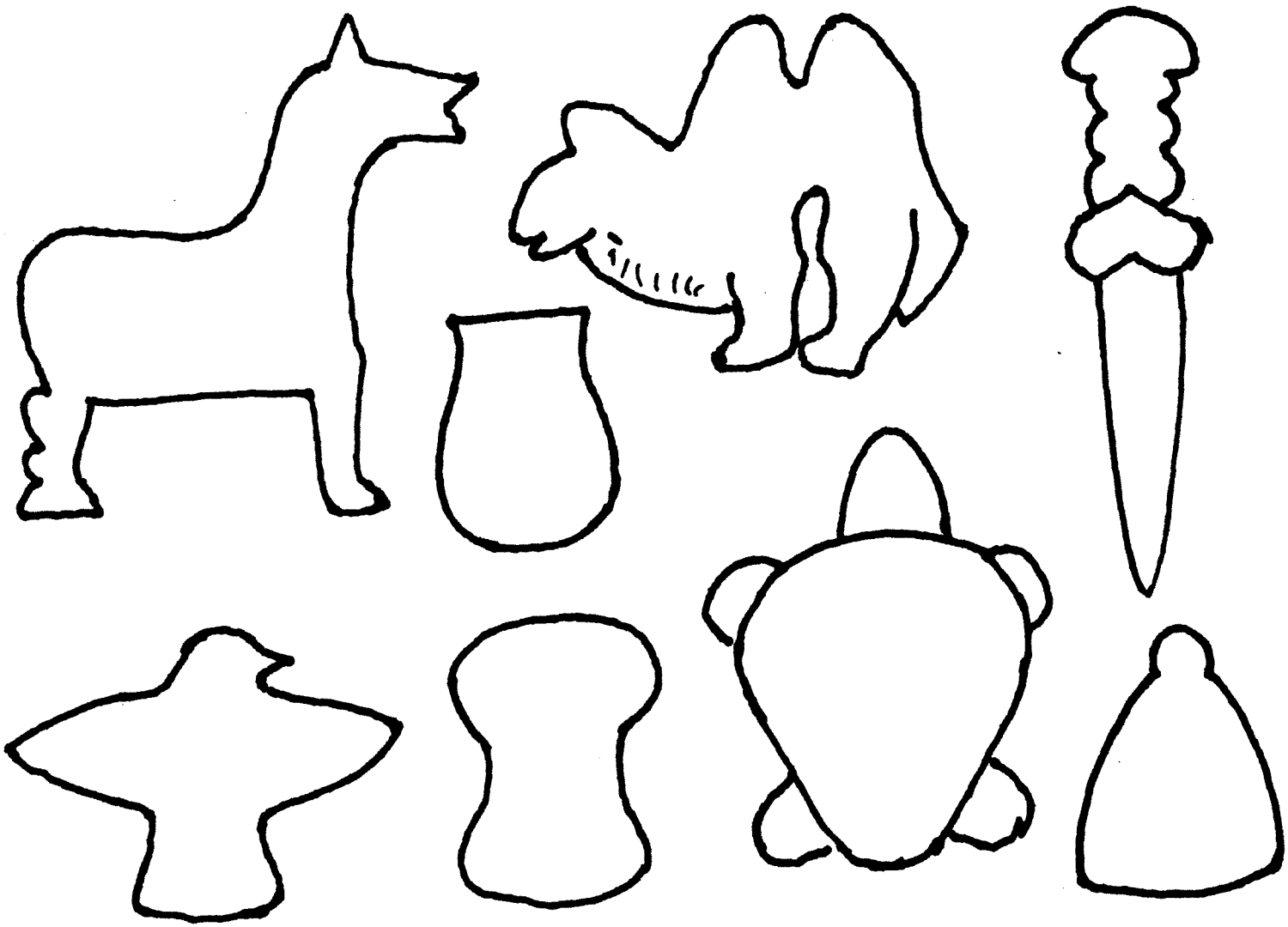


Figure 1. Index map sbowing the kapproximate distribution of Scythian and Sarmatian Tribes. From Sulimirski, 1970.

Figure 2. Scythian warrior, ca. 400 B.C., wearing scale armor. From Gorelik in Nomads of Eurasia, 1989.

SCYTHIAN AND SARMATIAN TEMPLATES

Modified from Basilov (ed.), 1989; Sulimirski, 1970; and Vickers, 1979.



REFERENCES

Basilov, V.N., editor, 1989. Nomads of Eurasia. Published in conjunction with the exhibit Nomads: Masters of the Eurasian Steppe. Natural History Museum of Los Angeles County and Academy of Sciences of the U.S.S.R. Special edition published for Denver Museum of Natural History. Dai Nippon Printing Co., Tokyo. 192 pp.

Sulimirski, T., 1970. The Sarmatians. Praeger Publishers, New York, Washington.

Vickers, M., 1979. Scythian Treasures in Oxford. Ashmolean Museum, Oxford, 56 pp.

STEP BY STEP

By Bill White

Volumes have been written on techniques, polishing speeds, etc. Most are very good and successfully proven procedures, but, please, keep in mind that most lapidary tips are given in general terms and are not meant to be all inclusive. With your permission, I will tell you a short story, about myself. My first disappointment in grinding cabochons came with the first two stones I tried. I read everything, talked to many experienced lapidaries, and fully understood what steps I should follow. I used great care on each step, trimming, dopping grinding, and sanding. I ground with 100 grit and 200 grit silicon carbide grinding wheels, moved on to flex drawn sanding belts, 220, 400, and 600 grits. I completed each step and was now ready to polish the stones. For this I used tin oxide on leather and spent a lot of time trying to obtain a polish, but no way did I do it. Thinking that I had failed to sand the stones properly, I installed a new 600 grit silicon carbide sanding belt and very carefully re-sanded the two stones. To my bewilderment the stones still would not take a polish and they showed many scratches. Back to the 600 sanding belt for a lengthy time, things began to happen as the 600 grit began to wear down finer and finer to much finer grit level. My stones began to show a shiny surface. My experience taught me that a 1,200 mesh is the absolute minimum to use on a stone before you go to polish, and an 8,000 or 14,000 mesh is even much better.

Each and every step is important to get a good stone, from selection of the rough, slab, trimming, preforming, and up the ladder of progression to the final polish. I dislike rating one step as being more important than others, but on ocassion I will pick one crucial point that applies to all types of lapidary work: faceting, cabochons, speheres, carvings, etc. It is the initial pre-forming and/or rough-grinding stage of the operation. Take great care at this point. Most of your decisions should be and will be made during this procedure such as: high or low dome, bezel, curvature, table, girdle, etc. In other words, you commit yourself on the general outline and symmetry. From this point on, each step follows a predictable course.

Where polishing agents are concerned, techniques and polishing speeds are quite important but the differences are more of a technical matter than a practical one for the everyday home craftsperson. An example of this is that one person uses tin oxide on a leather disk turning at 800 rpm and another uses cerium oxide on a hard felt wheel thruning at 1,200 rpm, and both are polishing agate cabochons. The results are two well-polished stones that will not let you detect which method was used. Settle on on or two basic procedures such as leather, canvas, or felt, Linde A, tin oxide, or cerium oxide and go from there. I do most of my polishing with tin oxide on leather.

Be careful with heat build-up while polishing. In some cases heat may be helpful and even desireable but strive to obtain an even distribution of heat through the stone. Some stones have the ability to transfer heat evenly throughout their mass; however, the best policy is to avoid any sudden thermal shock. Keep the stone moving and bring the heat up slowly.

This polish that we all strive to obtain can only be reached successfully carrying out the basic fundamentals of stone work. By proceeding step by step on these fundamenbtals, the problems of the final polish on most stones will become just a routine step. Bringing a stone to its ultimate polish is the desire of all stone grinders and it is a very personal, rewarding experience. +++

FIRST FIELD TRIP

In spite of the snow cover, Saturday, February 2, saw Don Phillips, son George, Ron Buskirk, and yours truly take a short trip to the Table Rock and Humboldt areas to gather bulk shale samples to be used in the fossil dig at the Spring Show. Successful sampling was attained at the cut southeast of Table Rock where the abundantly fossiliferous Soldier Creek Shale was scooped up and put in buckets. The next sampling site was the sponge bed in the Neva Limestone south of Humboldt and a couple of buckets of this was gathered. The Hughes Creek Shale outcrop south of Huumboldt was much too soggy to sample and too wet to surface collect, hence, it was put on hold. Don and Ron did the work as I watched on.

The quick sampling procedure allowed some time for agate collecting which yielded some nice honey agates but only two very tiny Lake Superiors. All of the agates came from gravel windrows along the roads as the gravel bars in the rivers were all snow covered. RKP

WELCOME, NEW MEMBER

Ron Buskirk, 2960 So. 11th Street, Lincoln, NE 68502. Ron joined us after attending the January meeting. Welcome to the club, Ron. +++

MINERAL STUDY GROUP

There will be an organizational meeting for a mineral study group immediately following the February meeting. Those members wishing to participate should attend in order to establish a leader, time, place, and goals for the group. +++

QUARTZ STUDY GROUP

The quartz study group is being resurrected for a club project that is to outfit a temporary, traveling display of quartz minerals to go to various other shows in the state and region. We will want to borrow some specimens for a period of 2 years beginning with the March show. More to follow at the meeting. +++

OTHERS WRITE

From: **OSAGE HILLS GEMS** **JANUARY - 1991**

Rhodochrosite and Rhodonite

C. A. Stratton

Most cabbers are avid agate fanciers, for reasons which are well-known and quite commendable. Although he is also an agate lover, this writer certainly deplores any preoccupation with this one material, since it seemingly bars cabbers from branching out to become cutters and collectors of the broad spectrum of available gems. In fact, nearly every known facetable gem material also has its cabbing quality rough which is capable of being fashioned to remarkable beauty. Rhodochrosite and rhodonite are two manganese minerals which are noted for their excellent *cabbing* rough but have a negligible amount of *faceting* material available.

Rhodochrosite is manganese carbonate, $MnCO_3$. Its name (from the Greek) means "rose colored mineral". It is quite analogous to calcite, $CaCO_3$. Both crystallize in the trigonal system. Both are soft; calcite is the standard for hardness=3. Rhodochrosite has a hardness of 3.5 to 4. Rhodochrosite has refractive indices of 1.600 and 1.820, giving it a double refraction (birefringence) of 0..220. Without giving figures. we can all remember the high birefringence of calcite, whereby one dot becomes two well-spaced dots when viewed through a calcite slab.

Rhodonite is a silicate of manganese, $Mn\ SiO_3$. It is a harder material than the carbonates, with H=5.5 to 6.5. It crystallizes in the triclinic system. Its refractive indices are 1.733 an 1.744, giving a birefringence of only 0.011. Thus, its RI's are stuck right in the middle of those of rhodochrosite, making a rough spot test for RI a difficult method for distinguishing between the two. However, rhodonite is surprisingly *dichroic*, while rhodochrosite is not. The usual dichroic colors are a shade of pink and a shade of yellow. Another test for distinguishing between the two minerals is the acid test. Rhodochrosite, being a carbonate, will fizz more wildly with HCl. <u>However</u>, rhodonite might well contain some carbonate impurity and do a little fizzing of its own.

Rhodonite means simply "rose-colored mineral". Both it and rhodochrosite have a lovely shade of rose red or pink. Rhodochrosite is generally a lighter shade, and in general, identification of the materials by sight is accurate. An excellent preparation for this practice is to first study page 169 of <u>Gemstones of the World</u> by Walter Schumann (Sterling Publishing Co, NY). There it is seen that rhodochrosite is generally streaked with light pink (almost white), while rhodonite is apt to be mottled or streaked with black manganese oxide. Rhodochrosite can have a similar pattern to lace agate or to malachite, and is supposed to have formed in stalagmites.

Rhodochrosite is more plentiful than rhodonite, but both are found in many widespread locations. One of the newest is in the Broken Hill ore bodies in New South Wales, Australia. An old classical location for rhodochrosite is in old Inca silver mines near San Luis, Argentina. The Incas mined there for silver and copper during the thirteenth century. Stalagmatic rhodochrosite was found there just before World War II. (Had it formed in the intervening time?) The name "Rosinca" or "Inca Rose" was given to the stone. Apparently, the same material is available now.

ROCK RACES

GRAN PREMIO PETROGRAFICA (ROCK RACES)

The official rock racing rules for 1991 are listed below: There are a few changes since the 1989 running of this competition so read carefully if you wish to enter a contestant.

OFFICIAL RULES

1. Rocks must pass a U.S. Standard 1.50 inch square screen opening and be retained on a U.S. Standard 0.50 inch square screen opening.

2. Two rocks will race at one time in a match race. The first rock to complete the course will be declared winner and will advance to the next heat. Losing rock will go to losers bracket where it will race against other rocks in the loser's bracket. Upon losing two races, a rock will be disqualified from further competition. Finalists will race in double eliminations. Winners in all classes will be awarded prizes.

3. To be declared a winner, a rock must complete the distance of and stay on the prescribed course, which is a 3' 9" drop over a distance of 16' 4". Rocks which do not complete the course or which go off the course will be considered mechanically deficient or safety hazards and will be excluded from further competition.

4. All rocks must be in their natural state, having no lapidary treatment or other modifications.

5. Only one rock per entrant per race. Individuals may enter as many rocks as desired; however, and individual must go to the end of the racing order after each race, and a separate individual entry must be made for each rock entered. Individual contestants must be present at the show site to be elegible to enter rocks in races. +++

NEW NEBRASKA TRILOBITE?

According to papers presented by Marvin P. Carlson of Conservation and Survey Division (a.k.a. "The Rock Doctor") and researchers from the U.S. Geological Survey and other midwest universities, some fossils of the Cambrian brachiopod Linarsonella have been recovered from cores in the subsurface of Richardson County. The presence of the above brachiopod confirms the existence of the late Cambrian (Franconian) Elvinia trilobite zone. No peices of Elvinia have yet been recovered and Linarsonella remains the oldest fossil recovered from Nebraska. To try to collect samples of Elvinia one needs a coring drill capable of drilling to depths of about 3,000 feet and a very lucky shot. +++

IRON HORSE LAKE SECTION

To answer several inquiries by members, the geologic section at Iron Horse Lake in Pawnee County is given below. Section is taken from Pabian and Diffendal (compilers), 1989, Late Pennsylvanian and Early Permian Cyclic Sedimentation, Paleogeography, and Biostratigraphy in Nebraska and Kansas. Conservation and Survey Division, IANR, UN-L.

STOP 15A. OUTCROP IN EMERGENCY SPILLWAY FOR DAM AT IRON HORSE LAKE, ABOUT 0.5 MI NORTH AND 2.5 MI WEST OF DUBOIS, E 1/2 NW 1/4 SE 1/4, SEC. 17, T. 1 N. R. 12 E., PAWNEE COUNTY (fig. 34) (90 minutes).

Leaders: Theodore Huscher, Roger K. Pabian

Things to see: Minor cycles in Emporia and Willard formations with immature molluscan faunas; coquinoid limestone and root-mottled shale in Elmont Limestone; new transgressive sequence in upper Elmont Limestone.

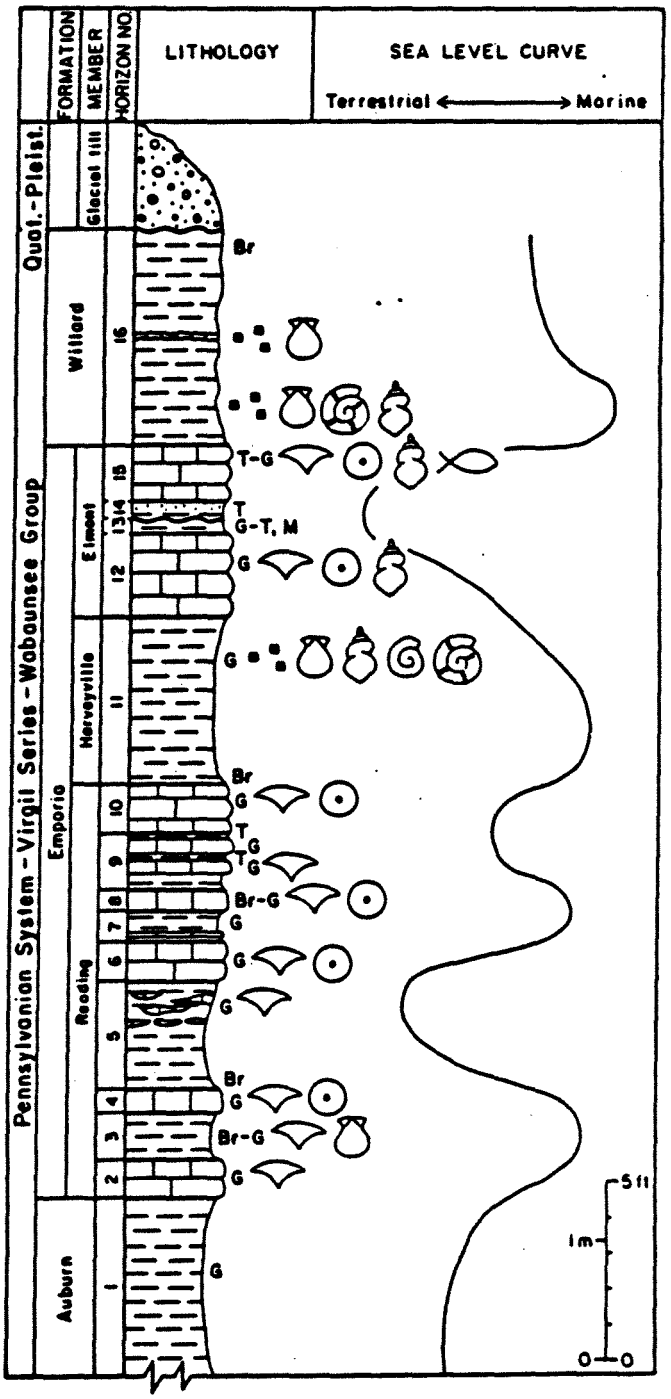
The rocks were exposed during construction of an emergency spillway for the dam at Iron Horse Lake. The geologic marker at the east end of the dam was built by the Nemaha Natural Resources District.

The Auburn Shale is considered a nearshore shale (*sensu* Heckel, 1977). Outcrops just south of the county road that leads to the lake's entrance reflect the terrestrial nature of the lower and middle Auburn Shale. The upper Auburn Shale at the spillway outcrop marks the beginning of a new cyclothem (Heckel, 1977; Moore, 1936).

The relatively thick, fossiliferous limestones and shales of the Reading Limestone Member appear to demonstrate several minor cycles, the first of which is shown by a dense limestone and dark shale (horizons 2, 3, fig. 34) near its base. Several minor marine pulsations are represented by alternating, thin limestones and shales (horizons 6-9, fig. 34), and a minor cycle begins with deposition of horizon 10 (fig. 34), which is a transgressive limestone. The Harveyville Shale is an offshore unit. The presence of deep-water mature and immature molluscan communities found within its very dark gray shales suggests this was the greatest that water depths reached, or a point of maximum transgression (Boardman, *et al.*, 1985). The sea was likely not deep enough to establish conditions to form a fissile, phosphatic black shale.

Regression is recorded in the cross-bedded coquinoid limestone of the lower Elmont. This is possibly a beach deposit. That the basal Elmont Limestone (horizon 12, fig. 34) is a regressive unit is further supported by the fact that the immediately overlying shale bed (horizon 13) is root mottled (D. Loope, personal communication, 1986). A shale with possibly some sand at its top overlies this bed. A hard, dense fossiliferous limestone, the top bed of the Elmont, marks the beginning of a new transgression.

A few feet up into the Willard Shale, a relatively deep-water, immature molluscan community is found, reflecting another period of maximum transgression. The overlying limonite concretion zone with its mature, deep water mollusk shells reflects a somewhat shallower, although still relatively deep, water column. The red shales in the middle and upper Willard Shale found south of the county road south of the park's entrance suggest that regression continued and non-marine conditions were again established.



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