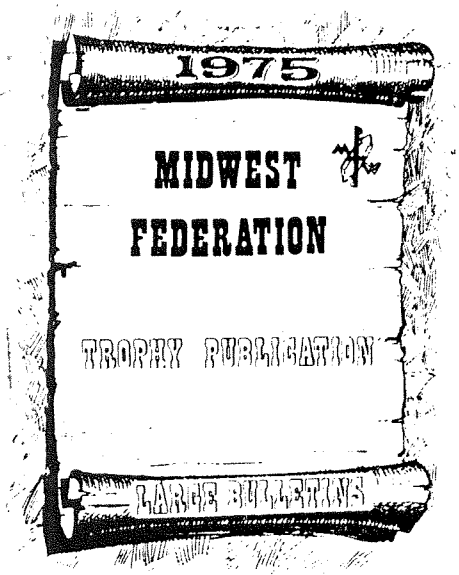
THE PICK & SHOVEL

highlights in this issue...

TURQUOISE

CLIMATIC CHANGE



Volume 20
Issue 7
March, 1980

OFFICIAL PUBLICATION OF

Lincoln Gem and Mineral Club, Inc.

P. O. Box 5342 Lincoln, Nebraska 68505

LINCOLN GEM AND MINERAL CLUB, INC.
P. O. Box 5342, Lincoln, NE. 68505

The purpose of thie corporation shall be to study, promote an interest in, and disseminate knowledge of lapidary and various earth sciences including but not necessarily limited to geology, paleontology, and mineralogy. It shall be a particular purpose of the corporation to provide education in these fields to its members and the general public, particularly youth and student groups.

MEMBER: Midwest Federation of Mineralogical and Geological Societies (MWF)
American Federation of Mineralogical Societies (AFMS)
Nebraska Association of Earth Science Clubs, Inc. (NAOESCI)
Nebraska Academy of Sciences
Community Arts Council of Lincoln

Regular Meetings: 4th Saturday of the month, September thru May, 7:30 P.M.
1980 - Trabert Hall, Lower Level, 2202 South 11th Street

1980 ELECTED OFFICERS

President.....	Roger Pabian	315 "D" St	Lincoln, 68502	474-2034
1st Vice Pres...	Larry Bigley	6126 Hartley	Lincoln, 68507	466-0211
2nd Vice Pres...	Edwin Johnson	1800 Pawnee	Lincoln, 68502	423-9075
Recording Secy..	Vera Lyman	420 N. 56th St.	Lincoln, 68504	464-6089
Treasurer.....	Phyllis Parks	2435 S. 19th	Lincoln, 68502	476-6798
Board Member....	Marita Bigley	6126 Hartley	Lincoln, 68507	466-0211
Board Member....	Virginia Green	6120 The Knolls	Lincoln, 68512	423-5032
Board Member....	Frank Rule	6333 Kearney	Lincoln, 68507	466-1697
Board Member....	Farel Hyland	6934 Francis	Lincoln, 68505	466-3387

Nominating Committee--3 years..Bob Walker, Irl Everett; 2 years..Wilfrid Wittman, Edwin Johnson; 1 year..Marita Bigley, Lynn Wells

STANDING COMMITTEE CHAIRPEOPLE:

Programs	Howard J. Taylor, Jr.	Liaison and Calling	Marie Taylor
Education	Marilyn Smits	Refreshments	Mary Walker
Hospitality	Goldie Quinn		
Historian	Lois Everett		
Librarian	Kay Graber	Scholarship	Howard Taylor
Membership	Mary Lambert	Outside Displays	Bruce Simon
Field Trips & Safety	Walt McCoy	Housing and Property	Dick Roberts
		Publications	Glen Litzenberg
Sunshine Corner	Susan Taylor	Auditing Comm. 1980	TBA
NAOESCI Reporter	Evelyn Ulrich		
1981 Show	TBA		

LONG RANGE PLANNING AND BY LAWS COMMITTEE

1 year remaining Nelda Oliver, John Harrison; 2 years remaining, Jim Parks, Phyllis Parks; 3 years remaining, Howard Taylor, Marie Taylor

1980 National Show Planning Committee - Selected, 1977 General Meeting - Howard Taylor, John Harrison, James Marburger, Tom Simmons, Roger Pabian and Frank Rule. Committee selected Howard Taylor as Chairman and added Ray Lambert as Secretary.

PICK & SHOVEL STAFF: Chairman...Glen Litzenberg

Editor	Evelyn Ulrich, 3521 S. 48th St., Lincoln NE 68506 (488-9051)		
Club News	Helena Baegl	Artwork	
Sunshine	Susan Taylor	Publisher	
Typists	Flossie Litzenberg, Marita Bigley, Linda Parks		

DEADLINE 1st of Month of Issue. Articles may be reprinted by credit and bulletin copy.

CALENDAR

General meeting...Saturday, March 22, 1980,7:30 P.M.
Trabert Hall,2202 S. 11th St. South door,east entrance

PROGRAM ..... GROTTO OF THE REDEMPTION

SPECIAL 1980 SHOW MEETING....Trabert Hall, March 25, Tuesday, 7:30P.M. All show committee, Division Directors, and interested club members.

Refreshments will be served.

Board of Directors' meeting... Home of Glen and Flossie Litzenberg, 1435 North 24th Street, April 3, 8:00 P.M.

Welcome New Member...Paul Brauch,4924 Washington, Lincoln, Ne. 68506
Telephone: 488-1847.

1980 DATES TO REMEMBER

Mar. 21-23	St. Louis, Mo.	Rock Hobby Club Show, Machinists Union Aud. 12365 St. Charles Rd.
Mar. 22-23	Waterloo, Ia.	Black Hawk Gem & Min. Soc. Show, Waterloo Recreation & Arts Bldg.
Apr. 12-13	Cedar Rapids, Ia.	Cedar Valley Rock & Min. Soc. Show Hawkeye Downs, 6th St. S.W.
Apr. 19-20	Hastings, Ne.	Central Ne. Rock & Min. Soc. Show
Apr. 19-20	Sioux Falls, S.D.	Sioux Empire Gem & Min. Soc. Show
May 17-18	Hot Springs, S.D.	Picture City Gem & Min. Soc. Show
May 30-June 1	Hebron, Ne.	Fort Butler Rock & Gem Club,Swap.
June 6-8	Topeka, Ks.	Rocky Mountain Fed. Convention Show, Hosted by Topeka Gem and Min. Soc. Exposition Center, Shawnee County Fairgrounds.
June 12-15	Lincoln, Ne.	AFMS,MWF Convention Show,Hosted by Lincoln.Gem and Min. Club, Bob Devaney Sports Center, State Fair Grounds.
June 21-22	Beatrice, Ne.	Homestead Gem & Min. Club Swap
Aug. 2-3	Nebraska City, Ne.	Arbor Valley Gem & Min. Club,Swap.
Aug. 16-17	Crawford, Ne.	Northwest Ne. Rock Club, Show.
Aug. 30-Sept. 1	Omaha,Ne.	Nebraska Mineral & Gem Club,Show.
Sept. 13-14	Kearney, Ne.	Fort Kearney Rock Club,Show
Sept. 27-28	Ogallala, Ne.	State Show, Hosted by Prairie Rockhounds
Oct. 18-19	Grand Island, Ne.	G.I.E.S.Club, Show

Your 1980 Regional Show Schedule

Here are the dates and locations of the six Regional Shows in 1980. Note that the National Show and Convention will be held in Lincoln, Nebraska in conjunction with the Midwest Federation, June 12-15, 1980.

CALIFORNIA	EASTERN	MIDWEST AFMS SHOW	NORTHWEST	ROCKY MOUNTAIN	SOUTH CENTRAL
August 1-3, 1980 Pasadena, California	June 20-22, 1980 Charleston, West Virginia	June 12-15, 1980 Lincoln, Nebraska	August 1-3, 1980 Boise, Idaho	June 6-8, 1980 Topeka, Kansas	August 15-17, 1980 Shreveport, Louisiana

Last month...Thirty-three adult and four Junior members, two 1979 members seeking reinstatement and two guests were present at the February meeting of LGMC. Guests were: Kathy Wolfram, Richard Becks.

Mr. Becks, president of the Homestead Gem and Mineral Club of Beatrice, extended an invitation to LGMC members to attend the rock auction which they will hold on March 17 in the basement of the Centenary Methodist Church, 6th and Elk Streets. They would appreciate it if each person attending would bring a rock for the auction which is being held to build up their club treasury.

The Club voted to present a life membership to Mr. and Mrs. C.Ray Waddle who have been members for 25 years.

A slide program followed the business meeting. The subject was "100 Miles of Agates in Oregon".

Cherry pie was served in honor of George Washington's birthday. This has become a traditional feature of the February meeting. A few extra pies remained and were auctioned for the benefit of the AFMS Scholarship Fund. Tom Simmons acted as auctioneer, $18.30 was received from the auction and a donation of $2.00 increased the amount to $20.30.

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Ten Years Ago...March 1970

The regular meeting was held at the WOW Bldg. Barbara Allen presented a slide program that was very interesting entitled "A New Look at the Holy Lands." New members were: Hazel Greenwade and Flossie and Glen Litzenberg.

Twenty Years Ago...March 1960

The regular meeting was held in Morrill Hall with 31 members present. Dick Hedges gave a program on micro-mounts and thumb-nail specimens-how to mount-how to display, etc.

From the history files of Lois and Irl Everett

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Membership cards...membership cards have been distributed. If you have not received your card, you may pick it up at the March meeting or you may send a self-addressed, stamped envelope to Mary Lambert and it will be mailed to you.

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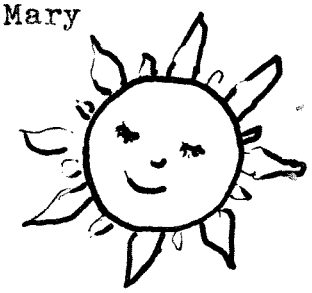

Greetings from the Sunshine Corner:

Aim at the sun, and you may not reach it:
but your arrow will fly far higher than if
you aimed at an object on a level with yourself.

J.Hawes

This past month a get well card was sent to Glenna McGinnis.

Suze Sunshine

THE PRESIDENTS PAGE

In order that the club may better serve its membership, the education and library committees have developed a short questionairre for the members to fill out at the next general meeting. This questionairre will deal with what particular subjects in the rock hobby are most appealing to each member, and what subjects should be covered in making additional purchases for the club's library. Members attending the March meeting will be given the opportunity to fill out these questionairres. This will be your chance to tell the directors and committees what you expect from the club. Hopefully, the data provided by the membership will provide the guidance needed to offer better educational services, better library service, and better programs.

Presently, I must ask the members indulgences for many short lapses of memory. The current state of affairs can be summed up by: "being snowed under." I have 100 students in my gemstone identification class at the university and grading exams can be quite a chore. In order that all exams can be graded with consistency and fairness, it is necessary to do them all at one shot, and this requires a great deal of concentration. Also, directing the publicity campaign of the 1980 show is peaking right now and a great deal of effort is being expended in this area. If I seem to have forgotten something, please bear with me. Although my mind may be someplace else, my spirit is still with the club.

By the time this article reaches you, the Kansas City Show will be history and the Vermillion, South Dakota, and Hastings, Nebraska Show will be yet to come. I hope that our club will be well represented at these three events. I hope that all of our membership can honor these shows with both their presence and displays.

Spring will mean a couple of field trips. I will be working with the field trip committee in the near future to get a Saturday trip and a Sunday trip planned. There are some especially good outcrops of Pennsylvanian-Permian rocks in Richardson County and some good crops of Cretaceous rocks in Jefferson and Thayer Counties. The trips will need some logistics, and, as an energy conservation measure, we should try to take 3 or 4 full cars rather than a dozen half-filled cars. Picnic lunches will be the order of the day for the field trips.

It is really nice to see the 1980 show shaping up. The fact that we are hosting the show is a great honor in itself. The fact that so many great displays and speakers will be coming to Lincoln is a great treat. Our membership will have a chance to be a part of this great event. We will have some excellent materials from The Lizzadro Museum of Lapidary Art, in the form of jade Kuan Yin carvings. A very fine display of petrified wood from the Cleveland Museum of Natural History will be at the show. Numerous fine displays of the works of American Lapidaries will be available. The symposia will have some exceptional speakers in their fields.

Some of the lapidary tips appearing in the Pick and Shovel are very worthwhile. In one of the recent issues, a lapidary tip indicated that "Spic and Span" cleanser was an exceptionally good polishing compound for tumbled stones. I tried it out and finished over 50 pounds of stones this winter using this very inexpensive polishing material. It also saved a great deal of time, since I have a vibrating tumbler. The vibrating tumblers have a small grit trap at the bottom of the barrel and it was only necessary to rinse off the stones before polishing them rather than meticulously scribbing each one of them. I suppose that all of this proves that even one short item in the bulletin can be worth many hours and many dollars.

Turquoise will be the rock for the month of March. We will have some display cases available for the members and, again, everyone is urged to bring some turquoise to the meeting. If you don't have turquoise, please bring some other material that will be of interest to the members and guests.

Will see you at the March meeting.

Roger K. Pabian
President

From the editor's desk...There is an old saying that in the spring a young man's fancy turns to thoughts of love. That might be paraphrased to say,"In the spring a Rockhound's fancy turns to thoughts of field trips." There are some fine trips being planned that should be quite productive. Let's hope that the weather cooperates and that we can get out before long. A lot of our trips have been to gravel pits or rock quarries which are no longer open to collectors because of the Federal Mine, Safety and Health Act of 1977. We should all write to our Congressmen and ask them to support House Bill 1603. This bill would exclude gravel pits and rock quarries from the Federal Mine,Safety and Health Act. There is a good chance that Bill 1603 will pass if sufficiently sponsored.

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Pastor and Mrs. Raymond Pfeiffer contributed the following:

> "A boy picked up a handful of mud. In it was some clay and sand and soot and water. Now,God can take that clay,and after pressing it hard for a long time green emeralds appear that sparkle in the sun. He does the same with the sand. That's how we get blue sapphires. And He does the same with the soot. That's how we get diamonds. And God can take the water and sprinkle it on the grass in the early morning. That's how we get shining dewdrops---nature's loveliest jewels. In the same way Jesus Christ takes people if they are willing and presses the evil out of them bringing from them new beauty.
>
> The Home Altar

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Thank you...We all enjoyed the cherry pie or cake fest at the February meeting of L.G.M.C. Thanks to members who brought home-made pies or cakes. There were some pies left after we had eaten our fill, so Tom Simmons auctioned them off for $2.00 each. Then there were some donations so that there was a total of $20.30 turned into the AFMS Scholarship Fund. I thought that was pretty nice.

Mary Walker is your new Refreshment Chairman, and I'm sure she will enjoy it as much as I have.

Flossie Litzenberg

****

Everett's Lapidary Shop...Call us and see if we're home yet.

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After a snowstorm that closed all the schools, the teacher asked an eight-year-old boy if he had used his time constructively.

"Yes,ma'am," he replied. "I prayed for more snow."
-F.G. Kernan in Wall Street Journal

AUCTION AT NATIONAL SHOW

CLUB _____

_____

STATE _____

FEDERATION _____

MATERIAL Coldwater Agate

COLLECTED AT Urbana, Iowa

MINIMUM BID 75¢. BIDS MUST BE RAISED AT LEAST .25¢.

John Doe	75¢
A. Brown	1.00
A. Cray	1.50
John Doe	1.75

SAMPLE

MATERIAL Coldwater Agate
LOCATION Urbana, Iowa
PERIOD

When the MWF hosts the American Federation Convention and Show in Lincoln, Nebraska, June 12 - 15, 1980, YOU will have a 3-fold opportunity.

1. to help a geology student secure an advanced degree via the National Scholarship Fund.
2. help your club build its Scholarship Fund.
3. Obtain a nice specimen at a reasonable price and have fun doing it.

All Federation Clubs are encouraged to bring material and participate in the auction. REMEMBER, it is YOUR Club's responsibility to get the material there - not your Federation.

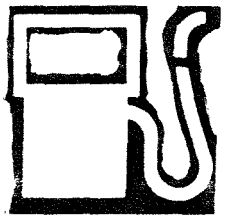
Polished specimens, minerals, fossils, gemstone jewelry, and books or back issues of the rock magazines will bring good returns. Be sure to include the name of the material and where it was collected, also the Period, in the case of fossils, as well as any other pertinent data which you may have available. All material should be clearly labeled with the Club's name, address, and the Federation to which you belong.

If you, or your club, wish to suggest a minimum bid on an expensive item, please do so. The auction committee may not be familiar with that material, and therefore have no knowledge of its value.

The committee chairman will need help manning the auction tables. If you have a couple hours to spare, it will lighten the load.

The sample at the left shows a reasonable facsimile of the bid sheet to be used. As you will note, on the sample bid sheet, we asked a minimum of 75¢ for the Coldwater Agate. When the auction opens you will be free to bid on any article offered as often as you wish until the alarm sounds ending the bidding. High bidder will take the specimen and the bid sheet to the cashier, and pay the amount - in this instance, $1.75. The buyer will be given the bottom portion of the bid form giving the name and location of the material.

If you have a question, or would like to volunteer a couple hours, (we would like to set up a schedule of help ahead of time, if possible) please address your correspondence to NORMAN L. BROWN, 360 Tonga Dr., Hiawatha, Iowa, 52233.

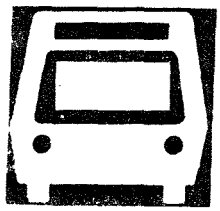


PRACTICE CONSERVATION WITH FUN

The price of gasoline has doubled this past year and it will keep rising and become more scarce by summer. For those mobile Americans, like rockhounds, how will we be able to go on field trips and show trips as in the past. The answer is CONSERVATION. This means getting to our destination by using less gasoline. We can do that by doubling the number of passengers in the car or hiring a bus.

Travelling with friends often means the trip seems to go quicker and for groups travelling in a bus, it means a lot of fun. Future success of field trips and attendance at regional shows will require an organized effort on the part of field trip chairmen, with frequent promotion by bulletin editors and club presidents.

Lets use the Lincoln Show in June as an example. Bus drivers are usually permitted to drive ten hours or about 550 miles without relief. A check with a local charter service indicated that by travelling 550 miles on Thursday, attending the Show on Friday and Saturday, and returning on Sunday, would cost 46 passengers $29 round trip/person. For clubs beyond the 550 mile range of Lincoln, a relief driver is needed or a stop overnight. A straight through drive of about 14 hours (750 miles) would cost about $49 round trip/person with 46 passengers.



A round trip of 1500 miles for a passenger car comfortable for four people, would require about $100 in gasoline or $25 each. Practice conservation, a bus uses only the fuel equivalent to four passenger cars, and provides reclining seats, toilets, aisles to move around in, and a fun trip. For a small fee, your bus will shuttle you while at the Show.

Club members, contact your president or field trip chairman. If necessary to fill a bus, contact your area club presidents or assistant state directors. Make it a group effort. Start Now! Dont miss the Show, dont miss the fun, pack your bags and your tent too, if necessary.

BUSSES HO! SEE YOU AT THE SHOW

BY John Boland, 2211 Valley Rd., LaCrosse, Wisconsin 54601

Contributed by Howard Taylor

ROCK OF THE MONTH: TURQUOISE
-by Marilyn Smits

Turquoise is an opaque gemstone that may appear semi-transparent on thin edges. The finely grained turquoise particles are partly rounded and partly fibrous and arranged completely without orientation.[1] Crystals are rare; in 1912 tiny but actual crystals were discovered in Virginia which fell in the Triclinic system. Turquoise is the hydrated phosphate of aluminum and copper with iron partly replacing either or both of these metals. The chemical composition is depicted as $CuAl_6(PO_4)_4(OH)_8 \cdot 5H_2O$. Copper produces the color of this gemstone which ranges from blue to green and all possible blends of these two. Intense pale blue or robin's egg blue is the choicest hue. As shades of green appear, the value decreases. Mohs Scale Hardness is from 4 to 6. Refractive Index ranges from 1.61-1.65. Specific Gravity ranges from 2.60 (U.S.) to 2.90 (Nevada 2.66). Turquoise's waxy luster serves to conceal scratches as turquoise shows low abrasion resistance and has poor mechanical strength. Inclusions include thin wisps and small patches of substances such as kaolin (clay mineral) and limonite (iron hydroxide) whose traverse across most specimens provides a sign of genuineness as well as an attractive pattern. When these veinlets are conspicuous, the material is sold as turquoise-matrix.

Turquoise was known as early as 4000 B.C. near the southwest coast of the Sinai Peninsula in the area of Djebel Serbal. Ancient relics from that area suggest that at one time this early turquoise mine was worked with flint instruments and occurred as nodules in red sandstone. The turquoise deposits of Nishapur, Iran (Persia) have been mined since 2100 B.C. "Shadadi" was the name for the deposits in the Persian Language.[1] The Aztecs and Incas of ancient Mexico used turquoise as inlay for mosaic work combined with shell, malachite, obsidian, and iron pyrites. The oldest piece of jewelry by American Indians originated from Death Canyon, Arizona; it is a pendant made of a mosaic of 81 pieces of turquoise laid on a hardwood ring 3 $\frac{1}{4}$ inches in diameter and attached with gum as an adhesive.

Other areas where turquoise is found include Israel (near Eilat dating from 1000 B.C.), several states of Australia, and Turkestan. The Turkestan location may be responsible for the name of the stone, a French word that refers to either the source of Turkestan or the market of Turkey. In the southwest United States, the largest and most famous mine was near Los Cerillos, New Mexico, and is now exhausted. In 1891 the Azure Mining Company of New York City opened the Azure Mine 10 miles southwest of Silver City, New Mexico. They produced nearly four million dollars worth of turquoise up to 1914. The best material from this mine was reported to be of equivalent quality to the Iranian/Persian turquoise. Unusual colors such as reddish-brown, chocolate brown, and violet were found plus bluish-green, light and dark green, and paler blue shades.[2] Arizona, California, Colorado, and Nevada also yield turquoise.

Turquoise is the national gem of Persia/Iran and the highest grade material comes from the Nishapur deposit. Nishapur is part of the Khorosan province and today's turquoise comes from the southern and southeastern slopes of Kuh-e-Raies Mountain. This source yields the best quality rock which is least porous, has a higher Specific

ROCK OF THE MONTH: TURQUOISE continued

Gravity, and takes a better polish than any other source material. Manutchehr-Danai (1977) reports that for a long time these mines were worked in a primitive fashion; today,however,there are three tunnels and the mine is run under state supervision. Every week 210 workers extract 11,000 kg. of native rock and then the turquoise is removed manually to yield about 36-40 kg. turquoise. The stone is found in intermediate volcanic rock darkened by iron oxide of either the Tertiary or Eocene Age. "The actual brecciated brown rock containing turquoise is in an extensively oxidized (limonitized) kaolinized siliceous trachyte with gradations to quartztrachyte and keratophyre. Sulphide minerals such as chalcopyrite, pyrite and probably sphalerite also appear in the rock as accessory constituents....The turquoise yielding rocks are dark to black-brown on the surface,and yellow-brown on the fractured surface, and grade in places into gray with streaks of iron glance (specularite). The fissures and cracks in the brecciated rock are filled and veined with secondary iron oxide. It looks as though the iron oxide cemented the rock formation. However, there are nodular, nut-or pea-sized lumps of turquoise of different color shades in the cracks of the rock (p.317-18)."

Turquoise formation is discussed by Manutchehr-Danai (1977). This geology professor from Iranian University of Meshed believes that the"presence of secondary minerals, such as opal or chalcedony, could represent the evidence of the formation of turquoise as a weathering product....The weathered samples have a light blue, and at times,apple-green color. Most of them are nodular, with cauliflower-like aggregates and are partially veined on the surface." (p.318-19.)[1] Other secondary minerals found are chryscolla, dioptase, malachite,calcareous spar, and in lesser quantities chalcanthite and secondary radioactive uranium minerals (autunite).[1]

The Arabs called turquoise the "lucky stone". Numerous powers have been attributed to this gem. In general it is predicted to bring happiness and good fortune to its wearer. In the Middle East it has been worn for centuries as an amulet to protect horses from falling. The Orientals wear it to intimidate the Evil Eye. Turquoise aided Buddha in destroying a loathsome monster according to legend. The Arabs believe the stone can change color and thereby warn the wearer of approaching death. It is said to provide protection from diseases of the eye, and the bites and poison of reptiles, and to bring abundant spoils to the Warrior.

Sinkankas (1962) describes important points for the lapidarist. He rates the Apparent Lapidary Hardness of turquoise at 5-5.5. Although the stone is inclined to be brittle for carving or engraving, it is not labeled brittle for typical grinding work. Care must be taken as the gemstone is somewhat heat sensitive,particularly the Persian material. Due to its porosity, it is recommended that sawing with oily coolants be avoided; plain water is preferred. The stone handles without difficulty. Linde A on leather is suggested for polish; chrome oxide also polishes but may stain.[3]

ROCK OF THE MONTH: TURQUOISE continued

Backing turquoise with another material is suggested for three purposes: to protect against breakage from shock after the stone is set, to allow the use of fine turquoise that occurs in veins or seams, and to create a flat surface so the stone can be properly seated in a bezel setting.

"Stabilization" may be necessary for some quality turquoise because of the stone's softness and porosity. Originally paraffin or wax was impregnated into the stone to stop oil absorption. However, this frequently caused discoloration and sometimes mild heat would cause the wax to migrate to the surface of the gem. and show a white effect. Now sodium silicate solutions, various plastics, and epoxies are used. If done properly this is difficult to detect, increases the strength of the stone, and presents an attractive appearance. Some turquoise is so chalky and porous that it may need to be treated and/or dyed to allow the material to be used at all.[4]

Although certain localities are noted for the constant coloration of their turquoise, most blue stones tend to turn green with age as they absorb grease and oil or lose water. Sunlight may affect the stones.

Turquoise jewelry must be protected from hard knocks and the backing referred to above is one means of insuring longer wear. Because of its porosity the gem should have minimal contact with detergents,soap,ammonia, cosmetic oils,kitchen greases, perfume,normal body oils, and other chemicals found in everyday life. Over time discoloration can result with a pretty blue color transformed into a brownish-green or dingy gray.

Several methods have been suggested to test for true turquoise over its many imitations. Apply a spot of ammonia to the back of a piece of jewelry; true turquoise will turn white. Or place a touch of hydrochloric acid to the underside of your cut specimen; if a dull spot is produced which will turn bright blue when a drop of ammonia is added your stone is genuine. Some true material can be differentiated by color alone as some artificial turquoise is too blue to be natural.

An Arizona company states the price of turquoise is very variable, ranging from a few cents to many dollars per carat. They believe that very cheap stones are a poor buy. Stabilized stones sell for less than their equivalent in non-stabilized stones.[4]

Primary References:

[1] Manutchehr-Danai,M. On the turquoise deposits of Nishabur (N.E. Iran). Gems & Gemology,1977 (Summer), pp.315-319.

[2] The Geode,1979 (Dec.) P.7, via Cedar Valley Rocks & Mineral Club Newsletter

[3] Sinkankas,J. Gem Cutting: A Lapidary's Manual. New York: Van Nostrand, 1962.

[4] Nature Arts Co. in The Geode,1979 (Dec.) pp.15-16

HOW TO CUT A DIAMOND

By David A. Fryxell

PART III (Final)

Lazare Kaplan is a living legend at the age of 96, still in the business after 81 years! His sons, George and Leo, learned diamond-cutting at a very young age in the traditional way, from father to son. "The first essential in training to be a diamond-cutter," George Kaplan says, "is to choose your father very carefully. One of my very early memories is of my dad molding typical diamond shapes at mealtime out of pieces of bread and the like. You might say it was part of our daily diet."

Almost every apprentice diamond-cutter breaks a few stones during his training; diamond, though it's the world's hardest material, is very brittle---strike it wrong and it shatters like a broken windshield. "Fortunately," says the younger Kaplan, a comparative novice in the game after only 41 years, "I can count on the fingers of one hand the number of materially bad cleaves I've done."

Obviously, diamond-cutting is not an art that your average Joe in Smalltown, U.S.A., is going to get much of a crack at. In fact, the diamond-cutting business in America outside of New York City is miniscule. The diamonds you buy at your friendly neighborhood jeweler will have almost certainly been bought already cut---though those in the trade discourage phrases like "off the rack."

As in everything, science has encroached on the diamond-cutter's art. Difficult stones can now be divided by laser. Lasers can also be used to leech the color out of black spots ("inclusions"), though diamonds so treated should be labeled as such.

But the remarkable thing about diamond-cutting is how little it has really changed since the era of Joseph Asscher. George Kaplan, who should know, says it's no less romantic than it was in the old days: "In fact, the wonder is that the diamond industry hasn't become IBM'd. You still have individualists, still have traditional methods of distribution, still have large and marvelous diamonds being found."

You might say that diamond-cutting is forevee. ##

From TWA'S AMBASSADOR MAGAZINE
Submitted by Helena Baegl

8 **********

The Hindus classed diamonds according to four Castes:
The Brahmin diamond gave power, friends, riches, good luck.
The Kshatriya diamond prevented approach of old age.
The Vaisya stone brought success.
The Sudra, all manner of good fortune.
The diamond must be given as a gift - never sold, or the spirit within it would be offended and leave, Making it worthless.

WEATHER and CLIMATE

by J.D. Young

That old saw "If you don't like Nebraska weather, just wait a minute" does not apply to our great state alone,because "the shoe fits" almost every place on earth. As this is written in the last week of February, our own area is still relatively favored,excepting for a few days of icy walks several days ago.

Weather is always a universal subject; so much of life depends upon it. The weather report,like Florida orange juice," isn't just for breakfast any more." Its vagaries may prove fair or foul. No one can accurately predict its whims very far ahead, nor determine when they indicate a change in climate,which is composed of prevalent weather patterns extant for many years or centuries.

Man has struggled with meteorological problems since the "beginning", whenever and wherever that was. Early mankind was less able to cope with them, and they were sometimes merciless,and still are. As intelligence and accumulated knowledge increased,these troubles have diminished,but old Jupiter Pluvius and his henchmen (or hench persons) often dominate,even today. This has been the case in sunny(?) California,Arizona and Utah recently. It is not unique, but may not be repeated soon.

The causes of weather conditions are being learned. If the earth were a smooth featureless ball of solid substance,there would be orderly changes in tempertures at points on its sufface each day as the angle of sun rays changed each hour. This is not true,however,and furthermore the earth's axis is inclined 23.5 degrees to the plane of its orbit which causes our seasons,and the globe is composed of three main forms of material: solid (lithosphere), liquid (hydrosphere), and gas (atmosphere).

This trio of different forms of earth-substance plus the tilt of the axis causes daily and seasonal changes. The solid portion varies in surface features of shape, composition and altitude from 1296 ft. below sea level (the Dead Sea) to nearly 30,000 ft. above (Mt.Everest); and from blank desert to heavily forested,or ice-capped. The liquid portion conforms to the solid continental and island patterns from sea level to 37,000 ft. deep (the Marianas Trench). The gas varies in density, because of its compressibility, from the solid surface maximum to practically zero a few miles above sea level.

The hydrosphere and the atmosphere are both in constant movement or convectional currents, powered by solar radiations as well as some geothermal energy from earth's interior, and influenced by physical features of the lithosphere. Even the latter is not completely at rest in some areas frequented by earthquakes,volcanoes, lava flows, avalanches and glaciers. Also extremely slow but sure movement of the solid portion, the continents and the islands is now being measured,studied and understood;plate tectonics,fascinating! This may lead to greater understanding of the whole history of the earth.

WEATHER and CLIMATE continued

Combine all of the above earthbound activity with variations in solar radiation,the prime mover of earth material, and we can begin to understand why weather and climate are fickle. Right now the sun is going through a severe part of its eleven year sun-spot cycle which is affecting earth's radios, T.V.s, compasses,computers and other electronic devices.

Man has tried through thousands of years of observation and study to forecast and to control weather and climate, with some success, but much is yet to be done about it. The old-time weather signs and theories are being re-evaluated and tested. Some are being discarded as "old wives tales". (Sorry,Ladies!) Meteorology now involves devices and knowledge not available a generation ago. Control and prediction are yet to be improved. Cloud seeding has not proved fully successful. Firing cannons,beating drums, throwing maidens over cliffs are out!

During the great drouth years of the 1930's vast stretches of Nebraska and other states were planted to "shelter belt" trees and shrubs, with doubtful results, although with some good effects. Man does have some power to change weather,some good and some bad, such as changing courses of streams or ocean currents,draining or enriching large bodies of water, and by planting or by denuding large areas of vegetation. Factors and changes are interdependent, making alteration of the environment hard to measure.

Weather and climate are often affected by volcanic action when enormous quantities of dust may be poured into the atmosphere,spreading world-wide and requiring years to clear. This is believed to have caused the 1816 "year without a summer". If such an event coincides with solar variations the effect is greater. Prehistoric volcanic dust probably caused the death and preservation of great numbers of animals (rhinoceros) in a recently discovered site in northern Nebraska. Many skeletons are articulated and complete.

There was a "year without a summer" in 1915 which I remember vividly. Frost formed every month of that year in Nebraska; the summer was so wet and cold hay did not cure and practically no corn matured before heavy frost killed it. Lincoln's Cushman factory marketed a small engine for grain binders to power the sickle and binding mechanism. The horses were needed to drag the machine through the mud. (See Pick and Shovel Feb. 1977 pp 9-10). I don't recall any reports of volcanic action to cause the freak weather. Some folks feared the coming of a new ice age!

The causes of ice ages are still unsolved. Whatever they are, the duration must extend through thousands of years to form such widespread ice sheets. Very early settlers in America probably came from Siberia over a natural land bridge near Alaska when the ocean was lowered by loss of water to the glaciers. Scientists believe that in very remote times near-tropical climate prevailed in the Polar regions,hence the petroleum deposits there;but why?

Some future human races may learn to spend time and energy to control natural handicaps instead of creating human-engendered problems and woes. Probably not very soon!

J.D.Y.

PENDANT WITH SET CAB AND DANGLES

By Harry E. Peterson

Materials Required:
- Ga. 22 silver sheet
- Bezel wire
- 30 x 40 oval cab
- 5 small jump rings

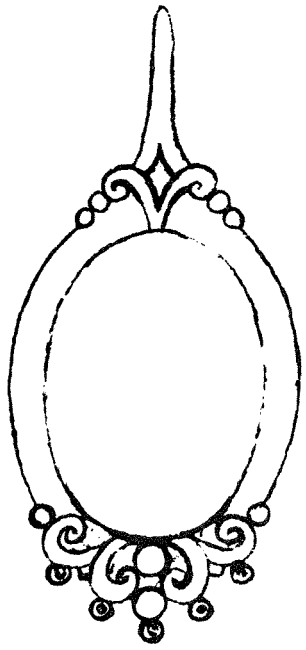
Step 1. Make bezel for cab.

Step 2. Make 5 dangles. First drill small hole in sheet silver where top of dangle is to be, then saw outline. File and sand. Dome slightly on lead block. Make one, then use it for a pattern.

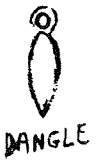
Step 3. Paste design to silver sheet. Center punch and drill small holes in the five places for dangles. Also drill holes and saw out the six shaded areas. Then saw out the outline, file, and sand edges. Remove paper by soaking in warm water.

Step 4. Chase lines, then raise the circles and the ends of the curlicues with ball-pointed chasing tools on lead block. Straighten blank and buff top side.

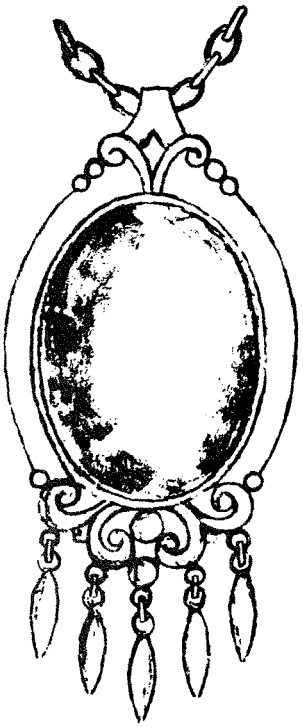
Step 5. Solder bezel to blank. After pickling, buff entire piece. Bend tab back to form bail for chain. Set cab. Attach dangles with jump rings.



PATTERN



DANGLE



FINISHED PENDANT

via The Opal 1978

POTPOURRI

According to Jeweler's Circular Keystone the new spring fashions will determine the type of jewelry which will be worn during 1980. Light weight chain style bracelets and flexible stone-set styles will be popular. Necklaces and chokers with especially big beads or pearls will be worn close to the throat. Light weight suit jackets will call for delicate bar pins and small brooches in motifs which echo the colors and shapes of the clothes.

****

According to the same source sapphires from Bangkok are likely to be heat-treated. 60% of the sapphires tested by gemologist,Cap Beesley,were estimated to be heat-treated.

How to Test for Treated Sapphires:

1. Fluorescence: Fluorescence is absent in almost all natural sapphires.

2. Glassy fractures: Glassy fractures radiating from inclusions. Certain types of inclusions expand during heating and cause fractures.

3. Blotchy textures: Heated stones often have pronounced color zoning.

****

Fire in a Mountain: A fire has been eating away an Australian mountain for thousands of years and this fire never goes out.

In the region of Hunter Valley, New South Wales, north of Scone, in the early days it was thought that the column of smoke came from a volcano,but it has since been discovered that the cause is a burning coal seam,150 miles below the surface. It is now thought that about 2,000 years ago a tree may have been set alight by lightning and when this tree fell it fell onto an exposed coal seam. The burning tree lit the coal and since then the fire has smouldered along the line of the seam. Another view is:the seam caught fire by spontaneous combustion through the heat generated by the oxidation of sulphur pyrites.

via THE FOSSICKER,Adelaide Gem & Min. Club Australia

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From AFMS Newsletter,Feb.'80...The University of Iowa at Iowa City has a new campus attraction. It is a 15 foot lepidodendron trunk weighing 16 tons, found in a strip coal mine near Pella, Iowa,and rescued from its ancient grave to contemporary prominence by the Iowa National Guard. (We once dug for lepidodendron near Knoxville, Iowa.) Many Iowa collectors have excellent specimens of this "scale-tree" fossil, which can also be used as a lapidary material.

JUNIOR PAGE

Hi Juniors:

Here is another fine puzzle that we are borrowing from THE LOUP SCOOP. They really come up with some good ones! Hope you can find all the lapidary terms in the puzzle.

Mrs. Ulrich

WORD HUNT via "Loup Scoop"

Our own word hunt expert, Jean Beran, has come up with another puzzler to help you pass the time away.

LAPIDARY TERMS

G A S R Q M O F F U B N I L S U M
R P X E U U V X J P R D E E P P J
I L A S R B E L O E N O D H J T H
N F D B S C M U P A L R H T A I A
D S E J A P A A W A E G B H B J F
I D U L E I A R X L W A D E D X N
N E R D T D P D B H P R Q R V A P
G V X L F B A M G I R W A B L W L
W K H C I D U G W E D F E U E P M
H Y C G Y T S F N O B E U F P O N
E B J L I S B F F I L N P F M D R
E L S D T U J R K C X I D Z K U L
L S U K J M T F L A D B T Y P G X
G D I A M O N D D U S T C K W E F
R Y A L U M I N U M O X I D E F R

LAP
FELT BUFF
TUMBLER
DIAMOND DUST
DOP WAX
LEATHER BUFF
GRINDING WHEEL
CARBIDE PAPER
MUSLIN BUFF
ALUMINUM OXIDE

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Metamorphic Rocks...Some igneous and sedimentary rocks have been changed by compressive forces and heat to such an extent that their original characteristics cannot be easily determined. The texture may be changed and new minerals may be formed. Metamorphic as applied to rocks means "changed by heat and pressure". Some important metamorphic rocks are: gneiss, quartzites, schist, slate, and marble. Gneiss is a banded, coarse-grained rock composed of the same minerals as granite. Schists are thinly banded metamorphic rocks which split readily. Quartzite is a very firm compact rock made of sandstone in which the quartz grains are interlocked with siliceous cement. Slate is a fine-grained rock which breaks into thin broad sheets. When shale is metamorphosed, it becomes slate. Marble has been formed from limestone or dolomite.

****

Doctor: Have your eyes been checked?

Pebble Pup: No, they've always been brown.

FORMATION OF EDEN VALLEY, WYOMING FOSSILIZED WOOD

By Don E. Neese Reprinted from Chips & Tips

EDEN VALLEY fossilized wood was discovered in 1934 by Dr. Oliver Perry on the Hay Ranch which is located in southwestern Wyoming and is known as the GREEN RIVER FORMATION.

According to Dr. Paul O. McGrew, Museum Director, University of Wyoming and Geology Departments of the Universities of New Mexico and Iowa, the EDEN VALLEY forest was killed where it stood during the EOCENE PERIOD EPOCH, some 55 million years ago. The geologists confirm that the young forest flourished in a valley boxed in by the Rocky Mountains, which hemmed in the rivers. There was sudden and great volcanic activity and consequently deep deposits of ash buried the still standing trees of sapling forest without being leveled by direct lava flow.

As the volcanic ash began building up the valley, the water that once flowed in the river, flowing out through the depression until the valley had been drained. The volcanic ash washed away, leaving the trunks of the still standing trees exposed, but encased in a cement-like matrix. The seepage of water down thru the volcanic ash hardened around the wood to produce casts that preserved the original shapes of the forests. This happened not once but many times as the trees stood for millions of years thru all these vicissitudes. Minerals gradually replaced the wood fibers, bark, charred cores, etc. Some pseudomorphic agatization occurred, but other structures show wood opal structure peripheral to the agatized core. Examples of central opalization have been found. Some clear chalcedony has been noted. These minerals have been identified by hardness, infra red and fluorescent tests in several geology laboratories.

As violent earthquakes disrupted the land, tree trunks fell and were broken. With all this volcanic action, parts of the individual trees remained in proper relation to other parts, trunks near stumps, branches near trunks, twigs near branches, so the story can be read in sequence like the well ordered pages of a bound book. This, then, is essentially what makes EDEN VALLEY carbonized, agatized, and slightly opalized wood very unique.

For the geologist and for the rock hound, there are many peripheral points of interest about EDEN VALLEY WOOD. You can still see in some specimens in this exhibit, bark, knots, burls and the symbiotic relationships of algae and lichens, the work of borers, beetles and even dust from these workings so real you want to brush it away...this is impossible. Even the dust has turned to stone!

The formations and colors of EDEN VALLEY WOOD are different from those of Arizona specimens, as they are more subdued, ranging from ebony blacks to smokey, pale blues, brown to beige and translucent whites. In general, EDEN VALLEY WOOD produces higher gloss and reflections than Arizona specimens.

CONCLUSION: With these observations and comments, you will be able to interpret the exhibit and the metamorphosis of the young EDEN VALLEY forest to its present, unique character

Midwest Federations NEWSLETTER

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March 1980 - Issue No. 202

AFMS SHOW NEWS

HARRIET GEORGE NAMED COMPETITIVE EXHIBIT COORDINATOR

Harriet George, Naperville, Ill. will coordinate efforts to obtain an extensive slate of competitive exhibitors for the 1980 combined AFMS-Midwest show and convention to be held at the Bob Devaney Sports Complex, Lincoln, Neb., June 12-15.

Judging will be based on the new 5th edition American Federation Uniform Rules, available from Show Chairman, 1980 National Gem and Mineral Show, Lincoln Gem and Mineral Club, Box 5342, Lincoln, NE 68505. Copies are also available from many club Secretaries.

All entries for competition, and requests for entry blanks, should be sent to Harriet George, Competition Director, 5 S 144 Webster, Naperville, IL 60540.

* * * *

There will be 5,000 parking spaces at the AFMS show grounds. Both wet and dry camping spaces will be available on the show grounds.

JUDGES CHOSEN FOR ALL AMERICAN-MERIT AWARDS

By June Zeitner

I am glad to announce that the very able judging team for the 1979 All-American-Merit Awards program of AFMS and Midwest is from Wisconsin, the home state of Midwest President, Bernice McCloskey and Treasurer, Bill Parch. With Fred Bermke, State Director for Wisconsin as chairman, the committee also includes Dr. Katherine Nelson, Harry Pease, Margaret Pearson and Edward Wilder.

The job of judging all the entries of the Midwest, has been a major one, both because the Midwest clubs send in so many entries, and because most of the entries are so excellent. The entries are the club histories of the previous year, with trophies being awarded to clubs of unusual accomplishments.

Fred Bermke, a member of the award winning Wisconsin Geological Society and the Kettle Moraine Geological Society has been President and Director of Wisconsin Geological, show chairman, judging chairman and Midwest delegate. Fred and his wife Evelyn won the AFMS Educational Trophy in 1975 and have exhibited at many shows in competition and in the special section. Fred was chairman of Wisconsin Geological Societies All American entry committee the year that club won the All American top award for the nation.

Dr. Katherine Nelson, Curator of the Greene Museum of the University of Wisconsin, and Geology Professor, was given the Neil Miner Award in 1978 as the most outstanding Geology Teacher of the Year in the United States. A 40 year member of the Wisconsin Geological Society, Dr. Nelson has held all the offices of the Society and is an honorary member. She has been a member of the Midwest Executive Committee, serving many years on the Paleontological committee.

Harry Pease, of the Kettle Moraine Geological Society has been Science Editor of the Milwaukee Journal for twenty years. He is also an editor of the magazine section "Insight" which every Sunday carries articles of scientific interest, and, with the Milwaukee Journal, is an award winning publication. A participant in the Milwaukee Public Museum Dinosaur Dig in Montana in 1978. Pease has written and lectured about this interesting project.

Margaret Pearson, a member of Wisconsin Geological Soc-

Judges... Continued on other side

ENVIRONMENTALLY SPEAKING....
IN THE MIDWEST

By John Boland
MWF Enviromental Committee

The Toxic Substances Control Act (TSCA) became effective in 1979 to control industrial disposal of harmful waste. The MWF membership, 16,000 strong, is greater than most industrial plant size. Every little bit counts. Dispose of lapidary and silver-smithing waste in landfills where leachate is monitored for many years.

SECOND ANNUAL FOSSIL EXPOSITION SCHEDULED FOR MARCH 22-23

The Mid America Paleontology Society (MAPS) is hosting the Second Annual National Fossil Exposition, March 22-23, Tanner Hall on the campus of Western Illinois University, Macomb, Illinois.

Exposition II will feature the displaying, trading, and selling of fossils from all over the world. MAPS members from outside the U.S. have also indicated they will be in attendance.

For information on displaying or swapping fossils, contact Don Good, 410 Northwest 3rd Street, Aledo, IL 61231.

* * * *

During the past year, MAPS has continued to grow and attract a wider membership. The society now has over 200 members from 11 countries. Meetings with a speaker are held at the Fryxell Museum, Augustana College, Rock Island, Illinois on the first Saturday of the month at 2:00 P.M., October through May. During the summer, field trips are held in some very interesting locations throughout the Midwest. Speakers during the past year have demonstrated how to find, clean and identify fossils as well as lectures on trilobites and crinoids just to name a few.

Judges... Continued from front side

iety, is interested in geology, paleontology and archeology. Active in the annual gem shows, Margaret has been official show photographer for the past two years. She is Editor of The Trilobite, the fine bulletin of the Society. Margaret is on the Geology Committe of the Midwest Federation.

Edward Wilder is a charter member of the Racine Geological Society and has been president of that club and served in other offices and as chairman of many committees. He has exhibited in many club and Federation shows. He is the "Lapidary Artist in Residence" at the Wustum Museum of Racine, and lectures on geology to many groups. He is a competitive display judge, and was recently appointed Assistant State Director of Wisconsin.

CHICAGO AREA SELECTED FOR SPRING EXECUTIVE MEETING

President Bernice McCloskey has announced the Spring Executive Meeting of the Midwest Federation will be held in the Chicago area on Saturday, March 29. Complete information will be mailed to officers and committee chairman by the Secretary, Jean Reynolds.

MAKE COPIES OF THIS NEWSLETTER AVAILABLE TO YOUR MEMBERS

You can have copies of this Newsletter to include in your monthly bulletin or to distribute to your members at monthly meetings at a very low, cost price.

AT only 2¢ per copy, plus shipping cost, these copies will be shipped to you each month. You can order as few months or as many months as you wish. An order blank is included in the Directory. If you do not have a Directory, address a request for an order blank, Parrot Printing, 2125 Forest Ave., Des Moines, Iowa 50311.

Order NOW and let your members enjoy the monthly Newsletters!

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Read your bulletin to spot *new materials* or *specials* of the above advertisers.

Advertising by a rock-hobby business or interest is permitted with approval of the Board, at a rate now set at $10.50 per full page per insertion, paid in advance. 1/2 page $5.25, 1/3 page $3.50, 1/4 page $2.75 (min). These ads will be placed throughout the bulletin as space permits.

Subscriptions to THE PICK & SHOVEL are $3.00 per year mailed.

Dues to LINCOLN GEM & MINERAL CLUB are as follows:

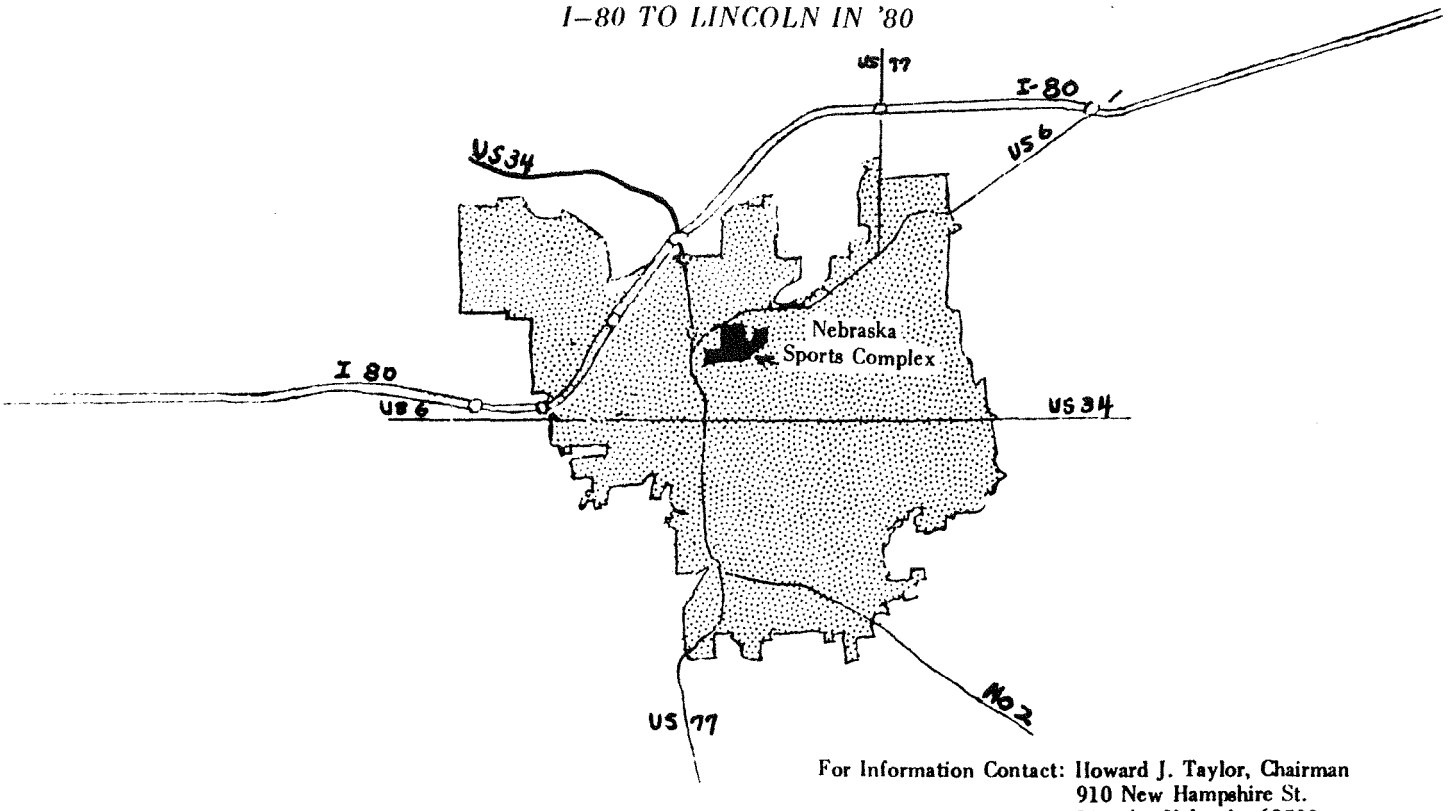
Adult membership fee **$5.00** (age 16 and over)
Junior membership fee $1.00 (age 12-16)
Family membership fee **$11.00** (husband, wife and all children under 16 – permanent residents of household)

New membership must be approved by the Board, after applicant attends at least one (1) regular meeting of the club, and pay the above dues plus $1.00 registration fee.

HOST TO

NATIONAL GEM AND MINERAL SHOW, June 12-15, 1980

I–80 TO LINCOLN IN '80



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