



# PICK & SHOVEL

April 2016, Volume 58, Issue 8

Editor: Sharon Marburger

The purpose of this 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, especially to youth and student groups.

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## 2016 MEETINGS AND ACTIVITIES

Regular monthly meetings are held at 7:00 p.m. at the Bethany Park Shelter House. Youth activities begin at 6:00 p.m. Board Meetings begin at 6:30 p.m.

Thursday, Apr. 21

Program: Ancient America's "Gila Cliff Dwellings": a National Monument

Thursday, May 12

(Please note the May 2016 meeting is to be held on the second Thursday of the month)

Thursday, Sep. 15

Thursday, Oct. 20

Thursday, Nov. 17 (Annual Business Meeting)

Sunday, Dec. 4 (Christmas Party & Awards)

### Board

Wednesday, Apr. 27 (May Meeting):  
The Jewelry Connection

### Activities

Roadside Clean-up & Rock Party, May 14  
Meet at 1:00 p.m. at Hickman Rest Area

## REFRESHMENTS

**Apr 21:** Tiedje & Ashmore  
**May 12:** Ashmore & Schleiger  
**Sep 15:** Lyman & Beer  
**Oct 20:** Schleiger & Ashmore  
**Nov 17:** McMahan & Beer

## APRIL

### BIRTHDAYS

**Corey Beer**

**Logan Guenter**



# No Rock Party in April

## FIELD TRIP!

by Jim Marburger

A field trip for the Lincoln Gem and Mineral Club members and friends will be on Sunday, May 1, 2016. We are going to the Bartels Museum at Concordia College in Seward, Nebraska. It is located at 800 N. Columbia Ave., in the northeast corner of the Link Library basement. The museum will be open 1 to 4 for our **VIP** visit (the museum is usually closed on Sundays). Afterwards, we can go to Sam & Louie's Pizza, 1519 W. Hwy. 34, Suite #3, for a food and fun extravaganza.

### BARTELS MUSEUM

The Bartels Rock Museum contains 75 displays of minerals, agate, fossils, and rocks, and several hand-carved pieces. These rock specimens have been painstakingly collected and brought to Seward from all over the world. Even though the museum is located in the basement of Link Library, not many are aware that such a collection exists. Caretaker, and one of the original architects of the museum, Marvin Plamann, attended Concordia from 1952 – 1956, where he became primarily focused in geography and life sciences. He returned to teach geography in 1961.

In 1983, Walter and Ella Bartels of Clarinda, Iowa, decided to donate most of their rock collection to Concordia. The couple spent nearly three decades accumulating the various specimens in their collection. During this time, the Bartels also built several displays and traveled to gem and mineral shows, showcasing their unique collection. The Bartels initially intended to donate the collection to UNL, but were unhappy that UNL would not display the specimens in the manner they wanted. How did Concordia end up with such a valuable collection?

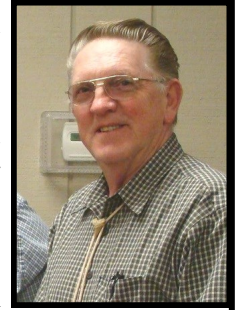
## PRESIDENT'S MESSAGE

by Ed Dvorak

The Show is over and we all can take time to relax for a bit. But while the show is still fresh in your mind, take time to write down what you want to do different or change for next year, to make it easier, or a better Show.

I would like to THANK EVERYONE who participated in the Show preparation, who was there to work, and to tear down and pack up. THANK YOU!!! We all played together like adults and that made for a great time for all. So now take a little time to sit back and relax.

Be safe and be happy.



## FIELD TRIP - CONTINUED

The Bartels were members of the Lutheran Church - Missouri Synod and had a connection with Concordia. In addition, President Stelmachowicz of Concordia Teachers College from 1978-1984, worked tirelessly in the effort to bring the Bartels' collection to Concordia.

As a result, Walter and Ella decided Concordia would be home for their collection, and the process of constructing a museum in Link Library began. "You see, none of this was here in 1983," says Plamann, referring to the museum. "This was all unfinished, and we had to move everything in and display it in a way that Walter would accept. He had

*(Continued on page 9)*

## **J J & L Rocks & Minerals**

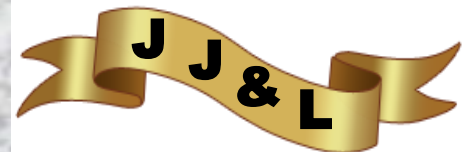
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the hobby for  
40 years

## GENERAL MEETING MINUTES

General Meeting Minutes for March 17, 2016  
Bethany Park Shelter House  
James Marburger, Secretary

- ◆ Meeting called to order at 7:10 p.m. by President Ed Dvorak.
- ◆ Attendance: Junior members - 6  
Adult Members - 21  
Guests - 0
- ◆ Minutes of the February meeting were published in the Pick & Shovel. Motion by Sharon Marburger to accept the minutes; second by Karen Messenger. Passed.
- ◆ Treasurer's Report was given by Vera Lyman. Motion to accept by Pat Dvorak; second by Karen Messenger. Passed.

### OLD BUSINESS:

- ◆ None.

### NEW BUSINESS:

- ◆ A Field Trip is being planned to visit the Bartel Museum at Concordia College in Seward, Nebraska on or near May 1.
- ◆ Susy McMahan thanked the Board for purchasing the new public address system to be used during meetings and other events. She said it was a great improvement and should be useful during many club events.

### SHOW REPORT:

- ◆ Show Chairman Ed Dvorak gave the following report:
  - ◇ The Show is coming. Please make yourself available for setup on Friday, April 1 starting at 8 a.m.
  - ◇ During the show, check with those who are working to see if they need help or a break.
  - ◇ 4x6 foot show advertising signs are available (made by Ed D.) for placement in yards around town.
  - ◇ Jim Null should be available for the Club Booth.
  - ◇ Rock for the Nebraska Gem Dig will be delivered around 11 a.m. Please have your "salt" donations there at that time.
- ◆ Motion by Fred McVay to adjourn to the

program; second by Sharon Marburger. PASSED.  
Meeting adjourned at 7:30 p.m.

The program was presented by Charles and Karen Messenger on *Stories Bones Tell*. They brought in many types of bones and some very small skeletons. Looking at a jawbone and teeth can tell us if an animal was a carnivore or herbivore. Flat teeth indicate the creature was a vegetarian, and sharp teeth indicate carnivore. Sharp teeth assisted in the ripping and tearing of meat, while flat teeth gave more surface for chewing softer plant material. A big thanks to Charlie and Karen for an educational lesson!



frog and  
turtles

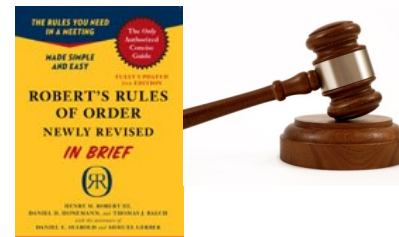


skulls & jawbones



## BOARD MEETING MINUTES

Lincoln Gem and Mineral Club, Inc.  
 March 2, 2016 Board of Directors Meeting  
 Meeting held at the McVay Residence



- ◆ Called to order by Jayne Beer, First Vice President at 6:30 p.m.

Ed Dvorak	absent
Charles Wooldridge	present (arrived 6:45)
James Marburger	present
Vera Lyman	present
Carolyn Ashmore	present
Sharon Marburger	present
Fred McVay	present
Andrew Tiedje	absent

Two guests: Ed Ridge & Judy McVay

- ◆ Minutes of last meeting were handed out. Motion to accept the minutes by Fred, second by Carolyn. Passed: 7 yes, 0 no.
- ◆ Treasurer's Report was given out. Motion to accept the report by Carolyn, second by Fred. Passed: 7 yes, 0 no.

### OLD BUSINESS:

- ◆ Motion by Fred to pay dues to the Friends of the Museum for 2016. Second by Vera. Passed: 7 yes, 0 no.
- ◆ Motion by Jim to purchase a PA system from Staples online for \$82.89 to be used during meetings, second by Charles. Passed: 7 yes, 0 no.
- ◆ Motion by Charles to purchase an 8-inch slant grinder/polisher from J.J.&L. Rocks and Minerals for the Lapidary Class, second by Fred. Passed: 7 yes, 0 no.
- ◆ A discussion of the Gem Show coming up by Sharon to get information for the Program that she needs. Charles said the gravel will be delivered at 1 p.m. on Friday and hopes everyone brings salt material for it.
- ◆ A letter was received from Erma Pharaoh about the NAES meeting needs. We will set up area for them to meet on the floor.

- ◆ Science Fair is March 3 and everything is set for it.
- ◆ A discussion on the Pick and Shovel cost to the club was held. Thirty-eight (38) printed copies are sent out at this time to the juniors, members, and exchange bulletins that do not have access to the internet for electronic copies.
- ◆ Repair materials for the club trailer have come in and will be installed at the show site. Jim will present bill for it next month, "around \$100".
- ◆ Audit committee will look at the books for the past three years, as soon as they are converted to new format from the double entry format, hopefully before the show.

### NEW BUSINESS:

- ◆ Field trips were discussed. Concordia College in Seward and other sites were added to the list.
- ◆ The Grinding Party is coming up with setup at 12:30 and open to public from 1-4 on July 13 at Pioneers Park.
- ◆ Board Meeting April 6 at Vera Lyman's residence at 6:30 p.m.
- ◆ Board Meeting April 27 at The Jewelry Connection at 6:30 p.m.
- ◆ March 19 is the March ROCK PARTY at The Jewelry Connection at 5 p.m. St. Pat's food.
- ◆ Roadside clean-up is May 14 at 1 p.m., with Rock Party to follow at the Marburgers'.
- ◆ A possible camp-out rock party field trip at Big Indian Creek Campground near Beatrice or Wymore is in the planning for June.
- ◆ Motion by Fred to adjourn at 8:00 p.m., second by Charles. Passed: 7 yes, 0 no.

Meeting Adjourned.

## FACETING WOOLY'S SMOKEY QUARTZ

by Si Kelly

(edited and condensed by Sharon Marburger, with permission)

Not that it is particularly relevant to this faceting project, but since I am documenting this for Wooly, I may as well include a little background so you will know more about this exercise.

### **BACKGROUND**

I have been faceting for around 50 years, primarily self-taught with information from a lot of books and friends. About a year ago, I down-sized from a stick-and-brick house to a 5th wheel travel trailer, going from more than 3,600 square feet of living space to 280 square feet. Although I really looked forward to being out from under all that "stuff", I didn't want to give up faceting for a hobby. Since I didn't need much closet space, I built my faceting workbench into half of the closet in my new abode.

I should explain why a gemstone would be faceted and how it done. Opaque stones like jade, malachite, turquoise, and so forth, generally look best when smoothed and polished. The light is reflected from the surface and would not be enhanced by faceting. Clear or translucent stones are sometimes polished smoothly and a flat back is mirrored or covered with foil to reflect light. Light which enters the stone from the top or front will travel through the stone to the rear mirror, reflect and travel back through the stone to the front, thus producing twice the color than if light were to simply shine in the back of the stone while the front was viewed.

The next level of translucent stone presentation is faceting. Typically the rear or bottom of the stone (called the pavilion) is covered with flat, highly polished surfaces and is cone shaped. The front, or top, of the stone (called the crown) usually has a large center facet called the table, and smaller facets around the outer edge of the front. Light enters from the front through the table, traveling through the stone to a facet on the pavilion where it is reflected across the stone to the other side of the pavilion where it is reflected back to the front and out the table and other crown facets. This gives the light more than twice as much color as just shining the light through the stone. Further, a careful design of the facets will gather the light efficiently and reflect it back with tiny flashes from different facets as the stone is moved slightly.

If you hold a well-faceted stone in front of a bright light, it will look completely dark when viewed from

the rear, because nearly all of the light entering the stone is reflected back out the front. When viewed from the front, it should show light and color because the pavilion facets admit light that will reflect off other facets and out of the front of the stone.

Some stones are natural crystals, perhaps with specific axis features. An axis being left/right, up/down, front/rear for example, and these three would generally be referred to as the x, y and z axes. Iolite, for instance, may look clear viewed in one axis, violet viewed in another, and yellow viewed in the third. Can you imagine finding a little purple rock, thinking it might be amethyst, drop it in your pocket, and later when you take it out to show someone, the only stone in your pocket is yellow!? And later it is clear!? It is pretty amazing how distinct the axes and colors are.

Topaz, for instance, has two very distinct axes and, because they form a flat plane surface, the stone is very easily broken along those planes. When faceting topaz, a careful design will include choosing facet positions and angles so that no surface will exactly match any of the shear planes.

In addition, rough gemstones have flaws, bubbles, foreign material, color bands, or wisps, as well as axis considerations. When deciding on the gem design, the various factors are all weighed. As size goes up, value goes up exponentially. Flaws or clarity, intensity of color, shape, hardness, and sparkle all affect the gem's value. Cutting a piece of rough in half and making two small flawless stones might be worth more than one large stone with a flaw in the center. Of course, if the flaw happens to look like a pink panther, perhaps it would add value. Every stone is a challenge to choose the best design that will optimize the gem.

### **BEGINNING THE PROJECT - PREPARATION AND DECISION**

After examining the smoky quartz, I suspect the flaws in this particular stone are color bands. Wooly and I decided to go for a round brilliant cut, using as much of the stone as possible.

Before beginning, one must picture the finished gem inside the rough material. The pointed end of the pavilion must be as close to the surface of the rough as you dare and on the opposite side the large

*(Continued on page 6)*

## FACETING - CONTINUED

*(Continued from page 5)*

flat table facet. The girdle around the stone between the crown and pavilion must be entirely inside the rough. In this case, quartz is not particularly sensitive to axes and we can ignore the crystal axis. However, the color bands are sort of fan shaped and the gem design should place those as nearly perpendicular to the table as possible. This will hide them from casual view, but will add the most color to the stone as light is reflected from one side of the pavilion to the other through the color bands.

The faceting process will start with attaching the rough to a brass stick (called a dop) with wax. The rough will be oriented with the crown of the gem toward the dop stick and the pavilion will be where we begin cutting facets. The pavilion will have 16 break facets and 8 main facets which meet at the point of the pavilion. The pavilion main facets will be cut first, very roughly intersecting at a point outside of the rough. Then the pavilion break facets are cut so they all meet just inside the rough. Girdle facets are cut, all meeting at the pavilion break facets. Then the pavilion main facets are recut so they also meet at the same point as the pavilion break facets. So, three triangles and two rectangles all meet at a single point, eight times around the pavilion.

After the pavilion facets are cut and polished, another dop stick is attached to the pavilion with epoxy glue. When the glue cures, the wax attached dop is removed and the crown facets are cut.

The sixteen crown break facets are cut first so they meet at the girdle correctly. Then the eight crown main facets are cut so they meet the break and girdle facets. Then the eight crown star facets are cut so they correctly meet the break and main facet intersection points. Finally, the table is cut so that the star facets correctly meet around the table. Once the crown facets are cut and polished, the dop and gem are dropped into a bottle of methyl chloride and left for a few days. The epoxy is dissolved and the gem easily removed and cleaned with alcohol.

### CUTTING THE STONE

The rough stone is a smoky quartz that Woolly and Donovan Harris found in some sand near Fairbury, Nebraska. The stone is certainly not a raw crystal; it has been rounded and shaped by eons of geological processes and is now a slightly lopsided pear shape,

flattened on one side. There is something in the stone that appears to be either a color band or a fault, but even under magnification, I can't determine which until further into the cutting



process. The decision to cut the stone as a round brilliant with 57 facets will result in a sparkly gem. I believe the final stone will be approximately 18mm in diameter.

The first step is to attach the stone to a 1/4" brass dop stick that will fit the quill on the faceting machine. This is a pretty critical step in the process. The stone must be dopped with high temperature wax, heated to just below spontaneous combustion and the stone heated as close to that temperature as you dare. (If you touch any of these things with your fingers, it will make you cry.) The alignment is critical; the rough stone must be aligned perpendicular to the dop or it will cause the loss of a lot of material, resulting in a much smaller stone.

The rough stone must be centered on the dop; that is, where the center of the finished gem is to be must be centered on the dop, regardless of where it is within the mass of the rough gem stone. Again, failure to center the stone correctly will cause a loss of material and greatly reduce the finished gem size.

When all the elements are heated and positioned correctly, they must be held in that exact position for about a half hour, until all the components cool to room temperature. This is best done with a transfer jig that will hold some of the pieces for you.

I start with a diamond saw blade 0.005" thick and whack off the sides of the stone at an angle of 90°. Then change to an angle of 42° (a few degrees less than the critical angle for quartz) and whack off triangles from the stone, creating a rough preform of the pavilion of the gem.

I begin cutting facets with 600 grit. Pavilion Main facets: 46.5° are the large diamond shaped facets reaching from the center of the stone to the girdle. Pavilion Break facets: 43° are triangular facets reaching from the girdle about halfway up the stone toward the center. Girdle facets: 90° are the rectangular facets around the outside circumference of the stone. (These

*(Continued on page 7)*

## FACETING - CONTINUED

*(Continued from page 6)*

will be aligned with the Crown Break facets also when they are cut.)

Once the cuts are made, I started cutting the pavilion facets with 3,000 grit, making the inside of the stone a little more obvious. This process will bring the facet points closer to a proper meeting. Presently, some of them don't quite touch and some overlap slightly. As with most projects, I ran into a little trouble. I couldn't get the 3,000 grit level to cooperate, so I moved on to 14,000 grit, then backed up to 1,200 grit, recutting all the facets to meet properly. You never know how a stone will behave.

One of the tricks to faceting is to use a strong light to check the surface finish. Use a 200 watt or better clear bulb with the manufacturer's logo and printing written in black ink. To check the surface finish, move the stone around until you can see the light bulb reflected in it. With the 600 grit finish, you will barely be able to tell when you are looking at the bulb image. With 1,200 grit finish, you will be able to see the bulb filament as a fuzzy orange worm-like thing. The 3,000 grit finish will cause the filament to become white and not so fuzzy. A 14,000 grit finish will allow you to see that the filament is a tiny coil of wire, sort of like a coiled phone cord, but bright white. With 50,000 grit finish, you will be able to see that there is writing on the end of the bulb, and with 100,000 grit finish, you will be able to read the writing easily.

As I continued cutting the stone, the 14,000 grit would not work properly for quartz. I once again backed up, using 8,000 diamond and re-cut / pre-polished the pavilion break facets and pavilion main facets. I then polished the pavilion main (long diamond shaped) facets and the pavilion break (smaller triangular on either side of the pavilion main) facets with Cerium Oxide.

At this stage of the process, the pavilion break facets points meet evenly at the intersection with the pavilion main facets. The pavilion break facets meet at the point of the pavilion main facets but the girdle facets do not yet meet at that point. After the crown facets have been cut, the width of the girdle facets (between the pavilion break facets and the crown break facets) will be, for a quartz stone this size, approximately 2mm. The final step of polishing the girdle facets will bring all four corners together. If the girdle is too thick, the gem will not sparkle as much. If the girdle is too thin, the stone will become so fragile that mounting it could cause the

mounting prongs to break a piece out of the girdle, damaging the stone.

The next step is to securely attach a dop stick to the pavilion of the stone, exactly and precisely aligned with the dop stick presently attached to what will become the crown of the gem. Typically, transfer jigs are used for this process.



In the bad old days, the new dop stick was heated to the melting point of the wax, the wax was heated and applied to the dop stick, and the stone was <shudder> heated to the melting point of wax so the wax would stick to the pavilion of the stone. Of course, this would soften the wax on the crown side of the stone and the existing dop would likely shift around in spite of your best efforts, making the precision of the alignment mostly a matter of luck.

Nowadays, epoxy is used to attach the pavilion dop stick. If you add a little talcum powder to the epoxy, it will be easier to soften and remove later on. After the epoxy on the pavilion cures, the wax on the crown side can be softened by heating it a bit and scraping it away to remove the original dop stick.

Preforming the crown with 325 grit and rough cutting the crown facets with 600 grit is next. At this stage, the facets are deliberately cut with the points not quite meeting. As the facets are fine cut later with 3,000 grit, the facets will each get slightly larger and the facet points will approach each other. If all goes well, polishing of the facets will remove EXACTLY the right amount of material to polish the facet and exactly meet the other facet points.

When the faceting process is complete, the stone, epoxy and crown dop can be placed in solvent overnight which will soften the epoxy enough that it can be removed.



## REACHING ACROSS GENERATIONS

by Sharon Marburger

Each of the Mineral Monkeys teamed up with their respective senior member at the March General Meeting to participate in a seashell-painting activity. Co-Youth Leader, Carolyn, provided seashells and painting paraphernalia for the project.

Once the shells were painted and dried, Carolyn sprayed them with a lacquer to prevent the paint from chipping off. The shells were put on display at the Youth Booth at the Annual Show. It is fun to see creative minds at work, and the end results.

Thank you, Carolyn, for another fun project for the kids to earn their Reaching Across Generations badge.



## MINERAL MONKEYS

by Carolyn Ashmore

WOW, what a show, huh!!

So glad to see you all there. I hope you all had as much fun as I did. Our show is a good time to reach out to the public and show just what our juniors' program is all about. We had a lot of interest this year about our club activities and it was fun talking and answering the many questions parents had about us. It takes a team effort to make something this big like a show a success and I couldn't have been more proud of all of you. YOU ALL WERE WONDERFUL!!!



And to all the adults that volunteered in our booth, what can I say but a heartfelt THANK YOU!! Without your continued support, we would not have much of a junior program and I truly appreciate your commitment to our kids.

This month is the last month we will be doing our junior/senior projects before your written reports are due in May, so if any of you have any last minute questions you might want to ask your senior member, you might want to write them down and ask them at this meeting. I hope you all have had a good time learning from these experienced rock people. We have some people who have been in the club 40+ years and the knowledge they share with you is something you can take with you all of your life.

I have already mailed out the poster contest entries. If any of you still want to compete in the contest, you will have to send your posters out yourselves by the April 15th deadline.

## ALAA NEWS

Excerpted by Tom Noe  
(From the Oct.-Dec., 2015, ALAA Newsletter)

### ROCKHOUND SOAPBOX

by John Martin, ALAA Webmaster

Grass roots! Those two words are now the most important words in the rockhound vocabulary. Without the grass roots efforts of rockhounds and fossil and mineral collectors, collecting areas will soon be swallowed up in wilderness, national monuments and environmental study areas and maybe even in wind and solar generating facilities.

Rockhounding organizations (like ALAA) do not have the financial resources, personnel or legal representation needed to wage the legal struggle against the groups opposing mixed-use access to public lands. The only way to keep collecting areas open is with grass roots efforts by all rockhounds who may collect or have collected in these areas. The voice of the rockhound needs to be heard—and as loud as possible. If our voices are not heard in the places where laws and regulations are made, we, the amateur collectors of rocks, minerals and fossils, will lose access now and for future rockhounds.

—ALAA is the lobbying arm of the American Federation, working on behalf of rockhounds to keep public lands open and accessible to all, including the elderly and handicapped.

LGMC is a  
proud member  
of ALAA



## REGIONAL SHOWS

**April 16-17:** Cedar Valley Rocks & Minerals Society, Hawkeye Downs Expo Center, 4400 6th St. SW, Cedar Rapids Iowa, Sat. 8:30-6:00, Sun. 9:30-5:00.

**April 23-24:** Blackhawk Gem & Mineral Club, Hotel Davenport, 5202 Brady St., Davenport, Iowa, Sat. 9:00-5:00, Sun. 10:00-4:00.

## FIELD TRIP - CONTINUED

*(Continued from page 2)*

a design for the display cabinets where they were lighted from the top, and the specimens were organized on steps. Once the cabinets were constructed, we set about organizing all the rocks. It was a great deal of work, but I am truly proud of this collection and of this museum.”

The Bartels continued to expand their collection until Walter's death in 1989. Since Walter's passing, Ella enjoyed talking with curious visitors until her death in 1999.

The Bartels Museum has a voluminous collection of rocks and fossils that come from nearly all corners of the globe. With the Bartels gone, Plamann is left with the responsibility for taking care of the museum, making sure that nothing is out of place in the intricate displays, and that the glass on the displays stays crystal clear.

Excerpted from an article by Jacob Lias, published in *Sower*, Concordia College's student newspaper.

## Silversmithing classes

Tuesday Evenings

7:00 p.m. - 10:00 p.m.

The Jewelry Connection Ltd.  
Indian Village Shopping Ctr.  
13th & Arapahoe, Lincoln

Tuition: \$120 plus \$30 supply deposit

Session 2: Mar 1 - Apr 19

Session 3: Apr 26 - Jun 14

Summer Break

Session 4: Aug 9 - Sep 27

Session 5: Oct 4 - Nov 22

Contact:

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or e-mail

[jbeer60070@aol.com](mailto:jbeer60070@aol.com)

## DISCOVER THE SAND HILLS OF NEBRASKA

Norfolk Daily News, July 15, 2004

Susy McMahan offered this "Blast From the Past" from the *Norfolk Daily News*, which led this editor to do a little research.

The Sand Hills Discovery Center Foundation was chartered in January 2001, for the purpose of providing comprehensive information about the Sand Hill area. The Foundation builds on the legacy of several community experts, including the family of the late, world-renowned paleontologist, Morris F. Skinner.

Each year, the organization holds a conference. The 2016 Annual Sand Hills Discovery Conference will be on July 13, 14, and 15 at the Ainsworth Community Schools Learning Center in Ainsworth, Nebraska. Check the website at the address shown below for registration information.

The Sand Hills Discovery Foundation offers annual memberships for \$20 or lifetime memberships for \$250. Both types of memberships are considered to be charitable contributions. The membership form can be found at [www.sandhillsdiscovery.org/](http://www.sandhillsdiscovery.org/).

All contributions are tax deductible and should be made to:

Sand Hills Discovery Foundation  
P.O. Box 444  
Ainsworth NE 69210

Thank you, Susy, for reminding us of things past, resulting in pointing us toward another way to promote interest in the hobby.



SANDY BENSON/CORRESPONDENT

**EXAMINING FOSSIL FRAGMENTS** found earlier this week during a dig near Bassett are (from left) Richard Albrecht, Sand Hills Discovery Center Foundation chairman; Debrenee Atkisson; Barbara Lamb of Ainsworth, daughter of the late paleontologist Morris Skinner; and Mike Voorhies, geologist and paleontologist with the University of Nebraska-Lincoln.

# Professionals, amateurs unearth Sandhills fossils

By **SANDY BENSON**  
News Correspondent

**BASSETT** — The leg bone of a large mammal, part of a rhino jaw and the tooth of a three-horned deer were among fossils unearthed north of here earlier this week.

People attending the third annual Sand Hills Discovery Experience had the opportunity for hands-on learning using shovels, trowels, brushes and screens to find the fossil remains of mammals that roamed the area millions of years ago.

The leg bone from the large mammal may have come from a three-toed horse or camel.

**MIKE VOORHIES**, a paleontologist with the University of Nebraska-Lincoln, pointed to a grayish layer of sediment visible in the hillside.

"This ash layer is 6.6 million years old," he said.

As he scooped shovels full of sand from the hillside into a sifting screen, he explained that the site was once a river

bed that had filled in, eroded and filled in again many times.

Because it was a river, it attracted a variety of animals. The river also caused their fossilized remains to be scattered widely and broken into many fragments.

Complete skeletons are rarely found in the area, due to the nature of fluvial deposits. Although there are many beautifully preserved skulls, jaws and individual bones, it is more common to find pieces and fragments.

**THE SITE** was originally discovered by a Nebraska Department of Roads employee during highway construction in the early 1990s.

Since then, paleontologists have quarried and screened the area over several years, and they have recovered nearly 15,000 identifiable remains of mammals, reptiles, amphibians and fish. Most of the remains are microfossils.

Shane Tucker, highway salvage preparator with the Uni-

versity of Nebraska State Museum in Lincoln, received his master's degree in science in paleontology from UNL this year.

His thesis focused on this particular site.

**HE WAS ON HAND** to give the background of the project and to help the diggers identify their finds.

"So far we have found 17 types of carnivore here, which makes it the most diverse carnivore site in North America," he said.

"The site is significant because it fills a partial gap in the rock record in this portion of the Niobrara River Valley."

Barbara Lamb of Ainsworth, daughter of the late, world-renowned paleontologist and Ainsworth resident, Morris Skinner, was present and shared stories of her father's many discoveries.

The annual event is sponsored by the Sand Hills Discovery Center Foundation.

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Subscription to the Pick & Shovel is \$15.00 per year for mailed copy.

Membership dues for the Lincoln Gem & Mineral Club are as follows:

- Adults (age 16 and over) - \$15 per year or \$25 per couple (within the same household)
- Juniors - \$2 per year (with a responsible adult)

All new memberships must be accompanied by a written application. Prospective members must gain Board approval and attend one regular meeting before being approved for membership.

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# PICK & SHOVEL

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