Diggin's from Dakota

Volume 35, No. 8, October 24, 2000

About the Diggin's

Monthly Publication of the Central Dakota Gem & Mineral Society.
PO Box 2445,
Bismarck ND 58502.

In Association with: Rocky Mt. Federation of Mineralogical Societies and the American Federation of Mineralogical Societies.

All members are encouraged to submit articles/news items for publication. Material for the Newsletter should reach the editor by the 10th of each month. Advertisements are encouraged for the Newsletter. Rates are $2 for 1/8 page per month or $20 per year.

Diggin's has won several small bulletin competitions:
RMFMS, 1st Place, 1993
RMFMS - 3rd Place, 1997
RMFMS - 2nd Place, 1992
RMFMS - 2nd Place, 1987
AFMS - 2nd Place, 1986
RMFMS - 4th Place, 1985

President's Message

Our Gem & Mineral Show for the year 2000 is now history. It was a great show, and now we need to make some critical decisions concerning the future of our annual show. At our October meeting, we had a lively discussion concerning the need for changes in show format, dates and location. We need to keep these discussions in focus, and continue to explore options for increasing attendance at and effectiveness of the show. Please give this some thought because we are going to continue these discussions until we an come up with some positive and constructive ideas, and then put them into action. Congratulations to our new Show Chair. She did a great job and we all appreciate her efforts.

And now let us review our schedule for the next few months:

- Sunday, November 5 2000 - This is the time of the year when we start our meetings at (early class at 1:30 PM, business meeting at 2:00 PM). We will have two events: a report on the Oliger's October 12-15 Rocky Mountain Federation meeting in Moab, Utah, and another Club Silent Auction. So bring things for the Silent Auction and exchange. We will also elect Officers for the year 2001.

- Sunday, December 3, 2000 - Look out for it. This is our annual pre-Christmas Banquet. We always have this as a Brunch beginning at 12:30 PM at the Doublewood Best Western in Bismarck. The Brunch will probably cost approximately $6.50 each. We also collect annual dues and install Officers for the next year. We will need to have a count of attendees, so please plan ahead and let us have an idea at our November meeting of your plans to attend.

We still need volunteers for refreshments. Part of the fun of coming to one of our meetings, is to enjoy the goodies afterward. Be sure to offer your services to Carol Hickle.

The Nominating Committee has announced most of the Officers for the your 2001. Election will be in December and Installation in January. The nominated Officers are:

- President	Duane Robey
- V-President	Rodney Hickle
- Treasurer	Neill Burnett
- Secretary	Colleen Huber
- Alternate Sec.	Kathleen Vetter
- Show Chair	Debbie Martinsen

Committee Chairs will be appointed by the new President.

Yours in Rocks, Your President,
Neill C Burnett

JUNIOR ROCKHOUND CORNER
How Do Rocks React To Vinegar?

The acid test is used by scientists to identify rocks that contain calcium carbonate. Limestone, marble, calcite and chalk are made of calcium carbonate and will fizz in the presence of vinegar.

Here's what you need to do your own experiment: Collection of rocks, Vinegar, Plastic cup for each rock, Chalk.

1. Put each rock in a separate cup. Put the chalk in one of the cups as one of the rock samples.
2. Pour a small amount of vinegar on each sample.
3. Record what is happening.
4. Group the rocks according to the way they respond to the vinegar.

About the Central Dakota Gem and Mineral Society

The Society was organized in March 1966 and serves central North Dakota. Its objectives are to:

1. Further the study of mineralogy and geology;
2. arrange field trips to collect minerals, gems and fossils;
3. assist members to improve in the art of cutting, polishing & mounting gem materials;
4. provide opportunities for exchange, purchase & exhibitions of specimens and materials; and
5. share knowledge about gems, minerals and activities of the Society with the general public.

Meetings: Held on the 1st Sunday of each month at the Masonic Center, 1810 Schafer Str., Bismarck, North Dakota.
November through March--meetings begin at 2:00 PM, April through October at 7:00 PM
Visitors and guests are always welcome!
Early Class: One-half hour before each meeting.

Annual Dues:
Junior $6, Single $10, Family Membership is $12.

Committees:
Program: Neill Burnett / Duane Robey
Hospitality/Lunch: Carol Hickle / Emma Brady
Hospital/Cards: Open
Field Trips: Open
Newsletter Editor: Lila Marquart
Annual Show: Debra Martinsen
Early Class: Harold Brady / All Members
Greeter: Open
Stamp Chair: Doris Hickle
Librarian: Agnes Berg
Publicity: Open
Historian: Betty Mautz
Door Count: Secretary

RMFMS State Director for ND:
Ray Oliger, 516 N. 20th Str, Bismarck ND, 701-223-4986

Opal - the October Birth Stone

Opal is the most colorful of all gems. Its splendid play of color is unsurpassed, and fine examples can be more valuable than diamond. The play of color consists of iridescent color flashes that change with the angle at which the stone is viewed. This phenomenon is often called opalescence. The play of color may consist of large, individual flashes of color (known as schillers), or may be of tiny, dense flashes.

There is a superstition that suggests that it is bad luck to wear an opal if opal is not your birthstone. This superstition probably is not rooted deep in history but only goes back to the early or middle 19th Century. It may stem from the fact that opals can deteriorate and change from a highly colorful, somewhat glassy stone to a rather colorless mass of a chalky silicon dioxide. That is because opals are unstable and are just one of the phases through which gel-like silica (SiO_2) can pass on its way to becoming stable crystalline quartz.

Opal is neither very hard (5 1/2 to 6 1/2 on a scale of 10) nor very tough. It has a conchoidal to splintery fracture and is often very brittle. The play colors from the stone can occupy almost any wavelength in the visible spectrum but red and orange are more often preferred than yellow, blue or green. Opal doublets, often used in jewelry, are thin slices of precious opal glued onto a matrix material. Such gems are considerably cheaper than solid opals, yet provide the same play of color. Opal doublets are sometimes coated with a thin layer or dome of clear Quartz to make them more resistant to scratches . These are known as triplets.

Common opal (stones without play of color) often have dendritic patterns or nice body colors and these are often called opalite.

Old World sources for opal were Czechoslovakia and Hungary. Many important opal fields were discovered in New South Wales, South Australia, and Queensland in Australia in the late 19th Century. These fields still produce much of the world's opal but newer sources have been discovered in Brazil, Guatemala, Honduras, and Mexico. In the United States, opal has been found and commercially worked in Nevada, Oregon and Idaho.

Strangely, gem opals were not discovered on the African Continent until quite recently when material was reported from Tanzania and Ethiopia.

"Geologic" Curiosities in North Dakota

by John P. Bluemle

North Dakota has its share of features that may or may not have something to do with geology, but which are in any case commonly associated with geology. Some of them are really more related to anthropology or history, but that's because many people lump all of these disciplines together. I'd like to take a look at just a few of the many things that have been misunderstood about North Dakota geology over the years. I'll also offer some suggestions about what they really are.

"Bottomless Pits" – Awhile back, a person from Hope, North Dakota sent me an article from the July 30, 1896 issue of the Hope Pioneer newspaper. The article describes *"that famous Mud Springs, in the Sheyenne bottom."* The mud spring is "about 15 miles south of Hope, across on the other side of the river" (as nearly as I can tell, that would probably place it beneath Lake Ashtabula today). The writer says the spring *"has been sounded fifty feet down, and no bottom found."* He went on to say: *"During the summer months it is full of nice clean ice below the mud, which is about four feet deep and very sticky with pure but salty water below the mud."*

In this case, the Hope Pioneer writer doesn't offer an explanation for the Mud Springs. He just describes them. Over the years I've heard of a number of very deep or "bottomless" pits in various places, mainly in eastern North Dakota. Most of them are located at places where a well was drilled to the Dakota Formation, which is an artesian (pressurized) aquifer that underlies most of North Dakota ("artesian" is a word derived from the French *"Artois,"* a region in northern France where flowing wells were once common). Large numbers of wells were drilled to the Dakota in much of eastern North Dakota in the late 1800's in search of a water supply. Many of these wells flowed salty water to the surface and in some of them the water was initially under considerable pressure. In some cases it was impossible to control the wells after they were drilled and they continued to flow indefinitely. Some of them are still flowing, although at much slower rates than when they were drilled. Because there was a continual upward flow of water from these wells, they gradually broadened into deep pools at the surface (deep, but not really "bottomless").

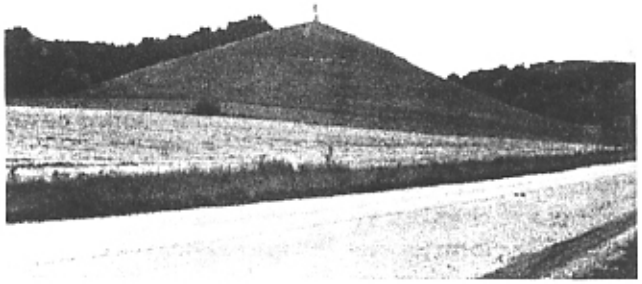
There are also a number of natural seeps in eastern North Dakota where slightly salty groundwater is escaping to the surface. Kelly Slough, just east of Grand Forks, is an example. Lake Ardoch, between the towns of Ardoch and Warsaw, is another.

Burial Mounds – In another article dated August 13, 1896 from the Hope Pioneer, the writer commented on a picnic held at a place known as Sander's Grove or *"the mounds,"* southeast of Cooperstown. Part of that article reads as follows: *"Now just a word about those mounds. Much has been said about their construction; how they came there, and what they are; and many of us differ in our opinion, but the writer believes that they were built there by man, or men, long, long, ago."*

The mounds southeast of Cooperstown. The mounds described in the Hope Pioneer are in the same area along the Sheyenne River that our geologists collected the fossil bones of a mosasaur in 1996. Several large hills (the Pioneer writer's "mounds") were within sight of the fossil excavation. When I walked over to look at them, I found that they are actually entirely natural erosional features, carved from shale and shaped by water that flowed down the Sheyenne River Valley at the end of the Ice Age. In fact, there is almost no limit to the possible shapes that erosion can cause naturally.

The mounds southeast of Cooperstown

Another place where a human, man-made origin has been attributed to a naturally eroded feature is at Fort Ransom. There, a pyramid-shaped hill has been promoted over the years as a man-made feature. It is not. Rather, it is just a hill that kind of looks somewhat like a pyramid if you view it from the proper angle. I was there a couple of years ago and climbed to the top of the hill to look at the metal statue of a Viking on top.



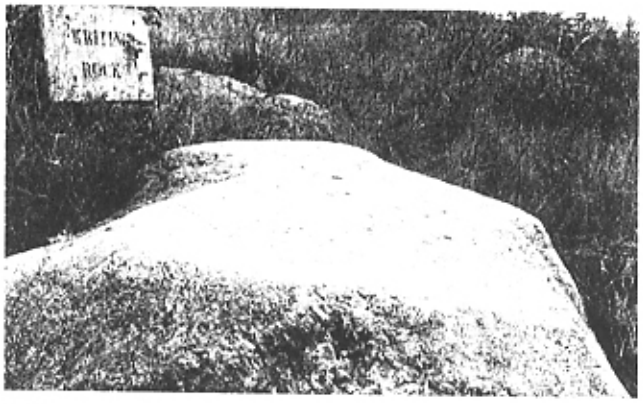
Ancient "Runestones" – Also at Fort Ransom, close to the site of the old fort, are several large glacial erratics. Some of the erratics have markings on them that have been interpreted to be a kind of ancient runic writing of Scandinavian origin. The markings, at least the ones I've seen on these boulders, are not man-made. Rather, they are cupped-out depressions formed when rocks being carried by the glacier were rubbed across the surface of rocks underlying the flowing ice. Similar "striations" are often found on glacial erratics, especially limestone boulders. I've seen rune and Ogham stones in Sweden, Ireland, and Scotland and I know that similar stones have often been reported from North America.

Straited limestone boulder at Fort Ransom

The Kensington Stone from Minnesota was especially interesting, as it provided an account of *"8 Swedes and 22 Norwegians"* on an exploration journey from Vinland westward. *"We had our camp by 2 rocky islets one day's journey north of this stone. We were out fishing one day. When we cam home we found 10 men red with blood and dead. AVM save us from evil. We have 10 men by the sea to look after our ships, 14 day's journey from this island. Year 1362."* The quote is a translation of the message on the Kensington Runestone by Erik Wahlgren (1958)."

Alas, the whole thing was a hoax. However, other rocks such as Writing Rock in Divide County, are almost certainly genuine petroglyphic rocks. Many of the other stones with so-called ancient inscriptions that I've seen in North Dakota are, like those at Fort Ransom, natural features, not messages from very early European explorers or ancient, non-native people.

Mooring Stones – I've also seen some large boulders in the Fort Ransom area many years ago that had cylindrical shaped holes drilled in them. Some people have suggested that these are *"mooring stones,"* shaped by the Vikings when they sailed their ships up the Sheyenne River. Some of the legends I've heard from people in the Fort Ransom area claim that Vikings sailed their ships up the Red River of the North (or even up Lake Agassiz) and thence up



Writing Rock - Glacial striae and chattermarks on a boulder in the Fort Ransom area.

the Sheyenne River (if they sailed up Lake Agassiz, it had to be no more recently than about 8,000 years ago because that's the last time the lake flooded eastern North Dakota. I find that especially hard to believe).

I've also seen similar "mooring stones" in the Turtle Mountains, at fairly high elevations. Again, Viking ships, this time navigating glacial Lake Souris, supposedly sailed into the Turtle Mountains. This idea is even more far-fetched than the Lake Agassiz sailors because, to get a ship into the Turtle Mountains would require a lake flooding much of North Dakota.

My own assumption has always been that the holes were drilled in the rocks to accept an explosive charge. The rocks were blasted into smaller pieces, either to make it possible to move them off the fields or to make it possible to use the pieces for building homes or other structures. I remember my grandfather telling me that identical holes, which he showed me, were chiseled into boulders for that reason – this on his farm in northeast Iowa where I grew up.

Just one more non-geological observation: I think it's interesting that, in most cases, these so-called "man-made" features are promoted as something done by Vikings or some other race of people of European origin. Once it was decided that the feature was man-made, then it was also obvious (to white European settlers and their descendants anyway) that mere Native Americans couldn't have done the job; it had to be white men. I'm not sure what this says about our [mainly white, European-male-oriented] thought processes. Maybe nothing. Maybe that they never heard about Cahokia near St. Louis or any of the various Maya engineering feats. Or maybe just that the Native Americans in North Dakota had more important things to do.

Many other natural features in North Dakota are misunderstood and I could go on indefinitely, but it's time to end this discussion. But ask me sometime about the castle, built by dinosaurs 70 million years ago, and now eroding out of the ground near Freda, North Dakota!

Collecting Fossils on Federal And Indian Lands

The Department of Interior is in the process of introducing bills to Congress for uniform, tighter restrictions on the collection of fossils on Federal lands by amateurs, according to the American Lands Access Association, Inc. In their September 2000 newsletter, the ALAA published the following tables which list the existing restrictions by agency.

Table 1: Practices of the DOI for Collecting Fossils

Agency	Invertebrates	Vertebrates	Petrified Wood	Other Fossil Plants
BLM	Reasonable amounts for personal use, no permit required	Must have a permit	Up to 25 lbs/day/person + 1piece; not to exceed 250 lbs/year, for noncommercial use. BLM treats petrified wood as a mineral material	Reasonable amounts for personal use, no permit required
BOR	Permit required; scientific purposes only	Permit required; scientific purposes only	Permit required; scientific purposes only	Permit required; scientific purposes only
FWS	Special Use permit required; scientific or educational purposes only	Special Use permit required; scientific or educational purposes only	Special Use permit required; scientific or educational purposes only	Special Use permit required; scientific or educational purposes only
NPS	Permit required; scientific or educational purposes only	Permit required; scientific or educational purposes only	Permit required; scientific or educational purposes only	Permit required; scientific or educational purposes only

Table 2: Requirements for Obtaining a Scientific Collecting Permit

Agency	Qualifications	Permit Types	Other	Repository
BLM	Graduate degree in paleontology or related topics; or equivalent experience with one who meets that standard	Survey/limited surface collection (<1 sq m disturbance); or excavation (1 sq m surface disturbance or more)	Reports required annually and at the end of project. Work in Special Mgmt Areas requires additional reviews	Designated by permit applicant; must meet DOI/BLM standards
BOR	Similar to BLM	Scientific collecting permit	None	Designated by BOR or permit applicant; must have letter from repository showing intent to accept specimens
FS	Same as BLM	Varies with forest unit, from survey and inventory to excavation and collection	Reports required annually and at the end of project. Work in Wilderness Areas may be restricted	Designated in application for Special Use Permit; must meet FS standards. Standards added to permit
FWS	Related to nature of work	Special Use permit required for survey or collection	Reports required at the end of the project	Similar to BLM
NPS	In revision; qualifications and experience to conduct scientific study or represents reputable scientific or educational institutions or state/federal agencies	Scientific research and collection	Reports required annually	At NPS units, or in an approved repository designated by permit applicant; must meet DOI/NPS standards

CALENDAR OF EVENTS

OCTOBER 2000

10/28&29 - Biannual Show "Treasurers of the Earth", Tulsa Rock & Mineral Soc., Exchange Center Building at the Tulsa Fairgrounds, Tulsa, Oklahoma

NOVEMBER 2000

11/3-5 - Rock & Gem Show, hosted by Old Pueblo Lapidary Club, Tucson Convention Center, 250 S. Church Ave., Tuscon, Arizona

11/5 - Central Dakota Gem & Mineral Club Meeting, Masonic Center, Bismarck, North Dakota

11/11&12 - 26th Annual Mineral & Gem Show "A Rock Hustler's Dream," hosted by Huachuca Mineral & Gem Club, Oscar Yrun Community Center, 3020 Tacoma, Sierra Vista, Arizona

11/11&12 - "Our Millennium Gem & Mineral Extravaganza," hosted by the Lake Havasu Gem & Mineral Soc., Inc., Community Center Facility, 100 Park Ave., Lake Havasu, Arizona

DECEMBER 2000

12/3 - Pre-Christmas Banquet, Central Dakota Gem & Mineral Club, Doublewood Inn, Bismarck, North Dakota

Exhibit List from the 26th Annual North Dakota Gem & Mineral Show

October 23 - 24, 2000

Case No.	Class	Content	Exhibitor
1	Mineral	Thumbnail Minerals	Bob Randall
2	Mineral	Calcites	Ray Oliger
3	Dealer	A variety of minerals	Phantom Rocks
4	Mineral	Forms of Selenite	Dave Jensen
5	Open	Painted rocks & slabs	Ruby Jensen
6	Open	Carved turtles	Carol Hickle
7	Mineral	Geodes	Ray Oliger
8	Lapidary	Church & lamp	Pete Gartner
9	Mineral	"Pretty Rocks"	Colleen Huber
10	Open	"Stone People Medicine"	Rod Hickle
11	Lapidary	Agates	Rod Hickle
12	Dealer	Rhodochrosite & Smithsonite	Costigan's Minerals
13	*Lapidary	Faceting	Michael Brady
14	Lapidary	Cabochons	Walt Weisenberger
15	Fossil	Pine cones & dinosaur bones	Jim Nevland
16	Lapidary	Cabochons	Jim Nevland
17	Open	Rock type samples	Rod Hickle
18	Lapidary	Montana agate brooches	Carol Hickle
19	Lapidary	Spheres	Harold Brady
20	Fossil	Shark teeth	Ray Oliger
21	Fossil	Fossil bone	Rod Hickle
22	Fossil	Fossil fish	Doug Hanson
23	Fossil	Cephalopods	Doug Hanson
24	Fossil	Leaves, cones, ammonites etc.	Andrew Pomonis
25	Fossil	Field work	Paleontology Soc.
26	Fossil	Misc. North Dakota fossils	Paleontology Soc.

Junior Exhibits

J1	Open/lapidary	Carving & necklaces	Kara Thomas
J2	Lapidary	Polished stones	Jessica Liffrig
J3	*Minerals	Assorted minerals	Elaina Liffrig
J4	Educational	Montana minerals	Kara Thomas
J5	Open/fossils	Fossils & arrowheads	David Thomas
J6	Lapidary	Polished stones	Brianna Thomas
J7	Fossils	Miscellaneous fossils	Elaina & Kristen Liffrig

* Indicates "Best of Show" as chosen by the public.

Diggins from Dakota
Central Dakota Gem and Mineral Society
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First Class