



Vol. 36 #1

DIGGIN'S FROM DAKOTA

1st Quarter - 2024

This quarterly publication of the CDG&MS serves Bis/Man and the surrounding areas of North Dakota

A message from Tim Wiser, President of Central Dakota Gem & Mineral Society:

My name is Timothy Weiser and I have just been elected president.

Our list of what we are trying to accomplish in the next few months is as follows:

- On January 22, 2024, several of our members organized our club storage trailer. A four drawer filing cabinet was also installed that will keep our archives better organized.
- Maintain our current membership and hold Membership drives throughout the year.
- Develop more fieldtrips for our membership.
- Re-establish our newsletter, "DIGGIN'S FROM DAKOTA" with four issues per year.

Ask for a 2024 Rock Club Calendar Schedule.

The Officers of the CDG&MS:

- Tim WeiserPresident
- Brenda MorganVice President
- Skye Fasching Treasurer
- Joe Martinetti..... Secretary
- Steve Fasching Representative to the Rocky Mountain Federation of Mineralogical Societies.

Membership:

Individual memberships \$15.00 per year

Visitors are welcome to attend.

Executive Board meetings 1:00 P.M.

Regular meetings 2:00 P.M.

We meet the first Sunday of each month at the

Bismarck Public Library down stairs Room B.

Central Dakota's 50th Annual Gem and Mineral Show

The 50th Annual Gem and Mineral Show sponsored by the Central Dakota Gem & Mineral Society will be held at the Bismarck Eagles. Set up time is on Thursday, October 24, (4 PM to 8 PM) * Show hours for Friday, October 25 (10:00 AM to 6:00 PM) * and Saturday, October 26 (10:00 AM to 5:00 PM), 2024. There will be lots of activities for children, demonstrations for the adults, free prizes on Saturday.

Ethiopian Welo Opals (part I)

By Michael Simonson

Ethiopian Welo opals are a precious (colored fire) opal discovered in 2008 in the Welo Mountains of Ethiopia. They often have extraordinary fire equal to the best Australian opals. Most are transparent, called "crystal" opals. Some have an opaque base color of white, yellow or brown. White ones fetch the highest price because they resemble much better known Australian opals. Australian opals typically sell for 3 to 10 times as much as Ethiopian opals. Ethiopian opals offer an excellent bargain price, but the price is increasing as they become better known. Inexperienced cutters and collectors may think they are fake, but they are a completely natural and well documented gemstone accepted by gemologist worldwide.

Most Ethiopian opals are "hydrophane", meaning they absorb water. Their weight can even change based upon humidity. Hydrophane opals have microscopic passageways that absorb water. This results in a lower density with less weight than regular opals. An easy test for hydrophane opals is to touch your tongue or a moist finger to them. They will feel sticky as the opal absorbs moisture. They are, however, remarkably durable. They survive falls and impacts better than regular opals. Another excellent trait is that they do no craze from prolonged dryness like regular opals often do. There are potential hazards that occur in the cutting and preparation of them, which are addressed later in this article.

When hydrophane opals absorb water they typically will temporarily turn clear and lose their fire. After a day or so they turn milky white. This can be disheartening if you don't know that within 3-5 days they will regain all of their original color and fire. Short immersions in water, such as washing hands or dishes may not cause a noticeable change but longer exposures probably will.

Regular opals are often stored in water or oils. DO NOT do this with Ethiopian opals! Long term exposure can result in a loss of fire, especially from oils. Also consider the effects of leaving tap water to evaporate in a glass. A whitish mineral deposit is left on the glass - not something you want left inside of your hydrophane opal. When applying oil or lotions to the skin, avoid the opal. Carefully wipe away accidental oil contact with warm soapy water. Then give it a good but short rinse to remove any soap deposits.

Ethiopian opals offer an exceptional range of brilliant colored fire at an affordable price. Many offer the rarest color - purple. Purple fire Australian opals commands higher prices! Red fire, which also commands a premium in Australian opals, is common in Ethiopians. Ethiopian opals will also typically have fire throughout the entire gem. The backs and sides of Ethiopian cabs are often as colorful as the top domes. No matter how many times I examine a high quality Ethiopian opal, I am still amazed that anything so unbelievably beautiful can even exist.

A tragic situation has developed regarding Ethiopian opals. There is an internal war in Ethiopia ravaging the country. Although world news rarely cover African conflicts, they are as heartbreaking and deadly as the Ukrainian and Gazan wars that we are familiar with. It can be very difficult to obtain new, quality Ethiopian opal other than stocks of previously mined opal on the market now. The Ethiopian government tries to maintain and oversee the opal market, but this can be of limited effect. A friend of mine visited the mines 7-10 years ago, but it is very difficult to safely go there now.

Ethiopian opal is excellent for carving, cabbing or faceting. There are a number of things you should know first. Ethiopian opal is typically found in nodules coated in a 'sand' layer. Australian opals often have a similar effect. However, Australian 'sand' is a soft sandstone, whereas Ethiopian 'sand' is a harder rhyolite despite looking similar. Rhyolite is harder to remove, and thus care is needed to avoid quickly grinding away the much softer hydrophane opal underneath. Go slow, and in short burst, to remove the relatively thin rhyolite and you can avoid that problem. (continued on page 3)

Ethiopian Welo Opals - continued from page two

By Michael Simonson

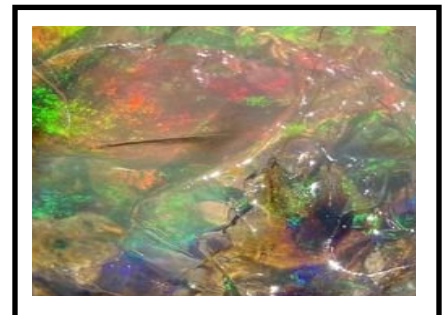
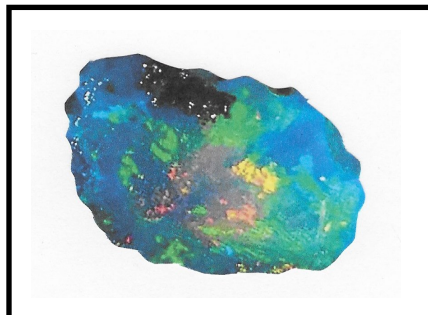
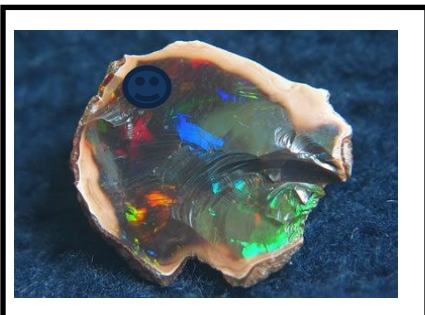
Preparing and Cutting Ethiopian Opal

You should avoid wetting the rough nodules prior to removal of the 'sand'. Hydrophane opal quickly absorbs water while the rhyolite does not. This results in tiny differences in expansion/shrinkage rates which can cause cracks in the opal. It is fine to wet the nodule just prior to removing the sand, not until then. In general, it is best to do the entire cutting process at one sitting if possible, but don't wet the nodule unless you are prepared to immediately remove the 'sand'.

Ethiopian nodules often have cracks which can be hard to see prior to the 'sand' removal process. These cracks were undoubtedly there prior to the sand removal process if you followed the steps above. The cracks can be shallow and easy to remove, but often go through the entire nodule. It is interesting to note that you can frequently pull the opal apart with your fingers along the crack. This probably sounds undesirable but it can be surprisingly beneficial. It results in several smaller, often flawless, pieces with clean surfaces showing the opal in all its glory. This lets you assess the opal and the best cutting approaches to use. Nodules can be rather large, so there may be cracks resulting in pieces of different size. The smaller pieces are often more desirable as they can be used in a wider array of jewelry applications than large pieces. Because you can pull the pieces apart with your fingers, there may be less loss of precious opal to due to saw blades.

The next thing to consider is whether to wet or dry cut the opals. Hydrophane opal has special characteristics to consider. Since it is less dense and softer than regular opal. Although it is overall more durable than regular opal, it is more quickly ground away. Regardless of what approach you take, be careful not to accidentally remove too much fiery precious opal. Wet cutting is the more familiar technique to most people, but remember that prolonged water exposure causes temporary loss of fire and an opaque whiteness. You may be unable to see the colorful fire as you proceed which is one of the greatest joys of opal cutting. It also provides an important guide in the cutting process. You can probably address the problem by carefully examining the opal prior to wetting and cutting. Making sure to determine which side that you wish as the top, etc. Then keep your bearings while cutting. This applies to capping or faceting.

Unlike many gemstones, dry cutting can be a good option for hydrophane opals. You must take care not to overheat your opal in the process. Part II will appear in the next issue of "THE DIGGIN'S"



Photos courtesy of public domain: Welo Mountain opals display high clarity and intense colors.

Fossils that Cannot be Seen by the Naked Eye - Microfossils

Dinosaurs come to mind when one talks of fossils or ancient marine reptiles, like mosasaurs or plesiosaurs. The Dakotas and Montana are also the home of ancient invertebrate fossils. Ammonites thrived in the



Cretaceous ammonite, *Scaphites sp.*

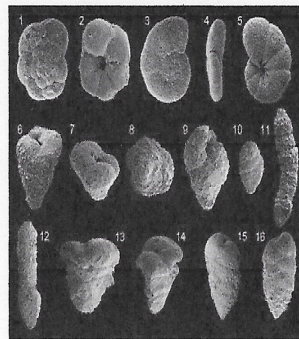
ancient oceans for hundreds of millions of years.

Scaphites sp. are common Cretaceous ammonites that are

found in the Pierre Shale Formation throughout the Dakotas and Montana.

There are literally millions of fossils to be found in the Pierre Shale, but you'll need a microscope to identify them - they're microfossils.

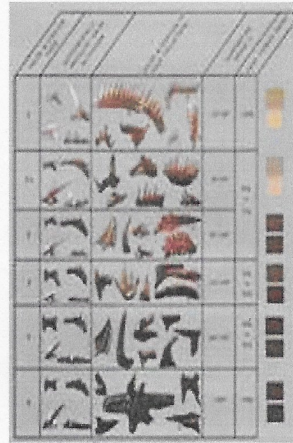
Microfossils of the Pierre Shale include coccolithophores, foraminifera (forams), and ostracods (to name a few). Forams (below) are particularly



important as they can be used to determine the oxygen content of

the atmosphere, temperature and salinity of the ocean, and ocean depth.

Conodonts are another microfossil that has at least two important



Color vs. temperature

qualities - first, they are used in biostratigraphy. Since most species span only a few million years, they can be used to identify formation ages.

Also, conodonts vary in color from light to dark brown and the color indicates the highest temperature that the conodont was subjected. The Minnelusa Formation of South Dakota has an abundance of conodont fossils.

Another important use of microfossils comes from the oil industry. When drilling through thousands of feet of rocks, tools are needed to identify where you are and what formation you're located. Foraminifera are used to help geologists locate oil-bearing formations.

* Above Article courtesy of Joe Martinetti

FIND - A - HOBBY FAIR

This exciting community event open to the public was held at the Morton Mandan Public Library on February 2, 2024 beginning at 5:30 PM. There were tables available for 30 different clubs, organizations, guilds, or societies. If you were looking for a hobby, this would be the place to find it. It was very well organized.

Our Club, the Central Dakota Gem & Mineral Society was well represented. Tom Tupa & Joe Martinetti were kept busy answering a lot of questions about our club and sharing information about gems & minerals. This is a success story.

Story submitted by the editor.



This is a very nice looking display.



The event room was packed with people looking for a hobby and sharing their knowledge.

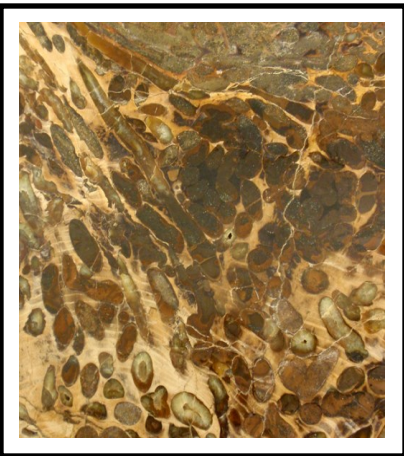
Teredo Wood by Darrel Spencer

Imagine a warm weather swampish area next to an inland sea. The environment was very similar to what a Florida swamp is today. A dead Sequoias tree falls into the water and parts of it gradually washes out to the Cannonball sea. As part of the never ending cycle of life & death a small worm shaped marine mollusks of the genus *Teredo* that in modern terms is called a shipworm would tunnel into a piece of the driftwood looking for nourishment. Eventually this sea gradually disappears but the conditions were just right for the process of fossilization. The process occurs because of permineralization in which the wood is replaced by silica. As the original wood is replaced by silicates, the appearance is similar to Swiss cheese with a lot of holes. This fossil and many like it would become part of what is now known as Paleocene deposits that are found in the southwestern area of the state. Over a period of about 58 to 60 million years this area became part of what is now know as the Cannonball formation which includes Morton County, North Dakota.

This fossil over a period of years became very popular with collectors in North Dakota as well as rock lovers all over the world. So much so that in 1967, State Representative W. G. Sanstead of Minot, North Dakota, with the assistance of R. W. Carlson of Bismarck, and Harold Brady, of Mandan, (1919-2017) both founding members of CDG&MS successfully promoted "Teredo Wood as the North Dakota State Fossil during the States 40th Legislative Session Assembly with House Bill 933. What an accomplishment!

References: include, *The North Dakota State Fossil, "Teredo Petrified Wood"* (Condensed from the original by Dr. Gordon L. Bell and reprinted in the June, 1974 issue of Diggin's From Dakota

The CDG&MS online website: managed by Becky Barnes, Paleontologist Lab Manager with the North Dakota Geological Survey.

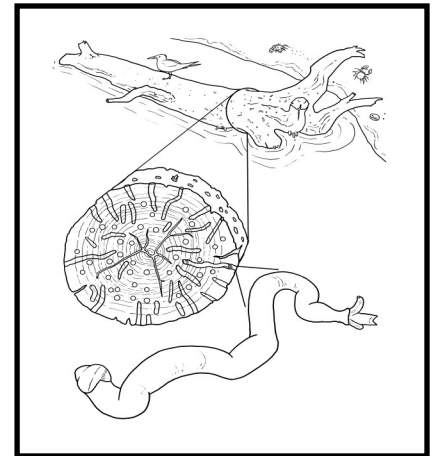


Borings with Teredo Cross-sections

All CDG&MS members are encouraged to submit articles & photographs to the editor.

Permission is granted to reprint non-copyrighted articles if proper credit is given.

Disclaimer: CDG&MS newsletter cannot guarantee 100% accuracy with information



Magnification of Teredo

Lapidary **Beading Wire** **wrapping** **Museums** **Jewelry**

We have a wide range of interest:

Silver Smithing **Education** **Gold Panning**

Fossils **History** **Lapidary** **Volunteer-** **Rocks**

The **“DIGGIN’S FROM DAKOTA”** was organized: March, 1966

Objectives

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

Meetings: First Sunday of each month in downstairs Room B of the Bismarck Public Library.

1:00 PM for the Executive Board Meetings. 2:00 PM Membership meetings.

See calendar for exceptions

Annual dues \$15.00

A PUBLICATION OF THE CENTRAL DAKOTA GEM & MINERAL SOCIETY

SERVING BISMARCK, MANDAN, AND SURROUNDING AREAS IN NORTH DAKOTA

DIGGIN’S FROM DAKOTA

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