GEOLOGICAL SOCIETY OF MINNESOTA

NEWS

FALL 1992
VOLUME XLVI, NO. 3

CONTENTS

Annual Meeting Combines Business and Pleasure

On September 28, 1992, the Old Country Buffet Maplewood saw the annual GSM Fall Meeting "draw down" at the steam tables as hungry members fueled up for a last field trip down memory lane. President, Dwight Robinson, called for reports from the various committee chairs and then called for the election of new directors. Directors whose two year terms had expired were Dorothy Kuether, Sylvia Huppler, Allen Cox and Tom Lonsky. Nominees were Ed Huppler, Tom Casey, Tom Lonsky and Eva Selander. There were no further nominations. All candidates were voted in by unanimous voice vote.

With the "ship of state" back on course, the fun could begin. Barbara Gudmundson, recently back from cataloguing diatoms in Iceland, sent fragments of various Icelandic volcanics around the room while she shared tales of where they came from and how she got them. Fortunately, diatoms did not consume all of her time in the land of ice and fire.

Next, GSM pioneer member, Eva O'Leary, recalled the early days of the Society. Back then (late '30s and 40s), members gave the lectures and conducted field trips! She also brought photos of some early field trips. Except for some of the clothes, these pictures could have been taken last season. It was gratifying to see how GSM has endured and resisted erosion over the years.

Speaking of erosion, the recent exposure of one of the world's best specimens of Tyrannosaurus rex has created a furor over the question of just whom should "own" (have rights over, control) fossils. A private fossil company dug up the fossil in 1990. In May 1992, the bones were seized by a federal posse. Member Tom Casey traveled into the eye of the storm when he attended the Northern Plains Governor's Conference entitled "Fossils for the

- continued on page 2 -

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Future." Tom presented the cases for and against "public" vs "private" ownership as presented at the conference. The issue remains as unsettled as it is unsettling.

Members then recalled highlights and "lowlights" of the 1992 field season. (Considerable time was spent underground in mines and caves). Slides and discussion ended around 9 p.m. and the meeting adjourned.

Submitted by
Dwight Robinson, President

It Was A Good Summer

June 15 - June 26: Southeast Missouri

Leaders: Richard Uthe and Mary Kimball

About thirty members traveled to southeast Missouri to study sedimentary deposits ringing exposed igneous core (St. Francois Mountains) with stops at the Old Lead Belt Mine, Bonne Terre Mine, the Viburnum Trend (New Lead Belt, Buick Mine tour), Mammoth Spring, Mingo National Wildlife Refuge and Onondaga Cave. Highlights included descent into the lead mines and ascent to view the world's largest "bathtub" (reservoir atop Proffit Mountain, Union Electric Power Plant).

July 25 & 26: Karst Area, Southeastern Minnesota

Leader: Calvin Alexander

This two-day trip covered two roadcuts, the Olmstead County Landfill, and discussion of dye tracing at the Fountain, Minnesota community drainfield. Tours of Niagra and Mystery Caves took us deep into the recesses of ancient caverns. On a visit to Fairview Blind Valley we observed a creek disappearing into a sinkhole. Our final stop was Rifle Hill Quarry (a working, fossiliferous quarry) where some of the attending thirty-eight members found 400 million year old fossils.

August 15: Cedar Creek Natural History Area

Leaders: Dave Grigal and Ed Nader

Twenty-four members slogged through bog and field on this one-day trip. Cedar Creek is an experimental ecological reserve operated by the U of M. The area derives from a glacial outwash sandplain (Anoka Sandplain). Dave Grigal took a couple of 30 foot soil borings and Ed Nader dug into the sand so we could observe sedimentary layering. What a surprise to discover also that Minnesota has an active sand dune.

September 12 & 13: Virginia-Eveleth Area of the Mesabi Iron Range

Leader: Jim Welsh

Thirty-eight members traveled to the iron range on this lovely fall weekend. We learned there is a folded erosion surface (unconformity) separating older Archean granites, metamorphosed sedimentary rocks (metagraywacke), and metamorphosed basaltic lava flows (pillowed greenstone), all of which are about 2700 million years old, from younger Proterozoic iron formation, quartzite and slate of the Animikie Group (about 2200 million years old). The older metagraywackes have been intruded by gold-bearing quartz veins, probably derived from small granite-like intrusions nearby. The metagraywackes show evidence of being deposited by underwater land slides (turbidity currents) in a closing marine basin.

A special thanks to all our trip coordinators for a job well done: Dick Uthe, Mary Kimball, Eva Selander, Don Swensrud, Galen O'Connor, Judy Hamilton and Paul Lemke.

Jurassic Park Revisited or Forever Amber

Just when you thought it was safe to go back outside, Jurassic Park notches another step closer. The dinosaurs in Michael Crichton's bestselling sci fi thriller are reconstituted from the blood meals of insects trapped in ancient amber.

Scientists at the American Museum of Natural History have succeeded in extracting fragments of DNA from a 30 million year old termite trapped in amber. Using a technique of molecular biology called PCR ("Polymerized" Chain Reaction), the tiny fragment could be amplified and "fingerprinted." (DNA is made up of base pairs; the order of these bases differs for each species. The closer the species the more closely their base pairs will match).

Morphologically this primitive looking termite looked like something between the cockroaches and the termites. Was it a "missing link?" The genes said no. You can read more about this study and its implications in Science Magazine. Vol. 257, September 1992. Before you lock your doors and windows against the velociraptors, you might now want to check that the termites didn't get there first.

Submitted by
Dwight Robinson

Book Review: Amazing Geology

In the cold winter of 1991, Robert Sloan was speaking to the Geological Society on Precambrian fossil life. He also recommended a book, Oasis in Space (W.W. Norton, 1988), by his friend and colleague, Preston Cloud. Contemplating historical geology in this nearly textbook format, I found a reading oasis.

As an avid lay reader of geology, I was delighted to read a scientist-in-the-field book which was part of a Commonwealth Fund series done with the belief that it's important for the general public to have access to what scientists are learning, thinking and doing. Certainly out of shared ideas come cultural reflections and the hope of a better world.

Not only does Cloud present the usual 4.6 billion year history, but he presents many theories scientists hold such as the sources of original water and the influence of that water throughout time. The presence of the earth's early carbon may have come from comets and asteroids. These are not done in speculation, but based on scientific method. Evolution brings many questions and observations such as a mammal may return to the sea, but will not become a fish or an octopus. Stromatolites first thought to be simple chemical concretion have taught scientists they can be wrong and their decoding is presenting a picture of pre-phanerozoic life and environment. Cloud discusses extinctions and near the end of the book asks, "How can our species most affectively come to terms with nature and itself?"

Oasis in Space can be ordered through B. Dalton Bookstores, available only in hardcover, for $18.95.

Submitted by
Margret Rodina

Notice to all Members

RENEWAL REMINDER: Check the mailing label on this newsletter for **EXP** in the upper right hand corner. The year indicates your membership expiration date. If the year is '92, our records indicate you have not renewed your membership for 1993 as of this mailing. All you need to do to renew is pay your dues for 1993. Members are the Society. If you are uncertain about your membership status, contact Membership Chairperson, Fran Corcoran. Thanks.

Conodant: Microscopic, toothlike fossil composed of calcium phosphate commonly used in biostratigraphy to date and compare sedimentary deposits. Source animal is uncertain.

Minnesota Geological Survey (MGS) Celebrates 120th Year

by Priscilla C. Grew

The Minnesota Geological Survey, a unit of the Institute of Technology at the University of Minnesota, is celebrating its 120th year of research, teaching and service to Minnesotans. The Survey, founded in 1872, had a close call last year when it was in danger of being abolished and endured a veto crisis lasting 7 months. However, thanks to active support for MGS by the earth sciences community and the public, funding was restored by a new bill signed by Governor Carlson on January 17, 1992. The legislative vote to restore the Survey was overwhelming--196 to 1. (Rumor has it that the no" vote was the result of a prankster pushing the electronic voting button for "no" for an absent legislator!)

The Survey is back to normal in the new fiscal year, and has expanded its activities with new funding from the Minnesota Environment and Natural Resources Trust Fund and contracts pursuant to the Groundwater Protection Act of 1989 and the Mineral Diversification program. The Legislative Commission on Minnesota Resources (LCMR) recommended that the Trust Fund (associated with the state lottery) should help accelerate geologic mapping at MGS. The Survey is now worKing on county geologic atlases in Fillmore, Rice, and Stearns Counties, and on regional hydrogeologic assessments in the Red River region and in Minnesota's southwestern counties.

On the publication front, MGS is very proud to issue the new Ramsey County Geologic Atlas, which we hope will be of great interest to people living in St. Paul and the Metro area. We think it is our best county atlas to date. Also this year we published the new color versions of the state aeromagnetic and gravity maps--the result of over a decade of work paid for from the state cigarette tax, as recommended by LCMR. These are spectacular geophysical images reflecting properties of the hidden bedrock below Minnesota--great wall hangings as well as interesting to earth scientists and industry!

The image accompanying this article is a black-and-white version of the aeromagnetic map. G.B. Morey, the Chief Geologist of MGS, has compiled a new bedrock geologic map of Minnesota to replace the page-size "placemat" version of 1976; a still more generalized version will be printed as a color postcard. The new map draws together information from the geophysical surveys, scientific drilling through the overburden of glacial deposits, and recent bedrock mapping.

We hope members of the Minnesota Geological Society will stop by the Survey to look at our new maps. Hope to see you soon?

Priscilla Grew is Director of the
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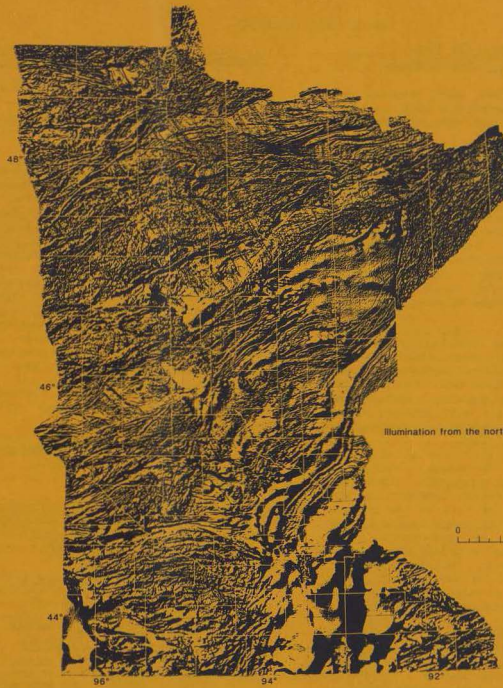
History In Stone

There are thousands of good reasons to visit the newly opened Minnesota History Center in St. Paul. The building's exterior features native stone - bands of buff-colored Winona travertine limestone and gray granite from Cold Spring, Minnesota. Accents of copper and Georgia marble help link the History Center to the State Capitol building nearby.

Cnidarean: Aquatic invertebrate (phylum Coelenterata) including jellyfish, sea anemones and corals. Fossil cnidarians date from late Proterozoic.



This is an artificial image of Minnesota made with a computer. Slight variations in the magnetic properties of bedrock make this image possible. Using the digital data from the aeromagnetic survey, the computer plots a picture looking like a landscape you would see from an airplane--with the sun shining at an angle, "hills" (areas with more magnetic bedrock) and "valleys" (areas underlain by less magnetic bedrock) stand out more. To bring out the patterns in this image, the computer plotted the picture as though the sun were shining from the northwest at an inclination of 45 degrees. Some of the major features easily seen are the Mid-Continent Rift, the Duluth Complex, the Vermilion Fault, and the great system of northwest treading dikes (appearing as parallel lines) in the Precambrian bedrock.

Paleomagnetism: "Fossil magnetism", i.e., the magnetism present when rocks were formed. Paleomagnetic traces are used to infer the original orientation of rocks and their subsequent movements due to plate tectonics.

A Word Or Two About Our New Officers

At the September Board meeting, new officers were elected for 1993. A mini-introduction of the new officers-elect follows:

Judy Hamilton, President: Judy says she is an obsessive "rock picker" whose love of rocks began in childhood on her parents' southwestern Minnesota farm. She used pebbles and stones to decorate mud pies and window sills and had her very own rock pile behind the grove. Judy was introduced to GSM by Barb Gudmundson and has been a member for 2 1/2 years. Although yearning to be a novelist, Judy earns her living as a Word Processing Specialist at a Mpls. law firm.

Conrad Nelson, Vice President: A member of GSM since 1979, Connie discovered the Society when he wandered into the GSM booth at the Minnesota State Fair. Connie joined the Society after attending a lecture that fall. A retired air force officer, he has three degrees in aeronautical engineering and is a member of MENSA.

Dwight Robinson, Secretary: Dwight has been a GSM member since 1975. Dinosaurs ignited his life-long interest in the history and role of life on the planet. GSM speaks right to these issues and he contends without any reservations that anyone who knows nothing of geology, doesn't know enough. When not dreaming about ages past or the future possible, he works as a plant protection specialist for the Minnesota Department of Agriculture.

Ed Huppler, Treasurer: Dr. Huppler and Sylvia attended a GSM lecture in 1981 after seeing a program schedule at the Sun Ray Public Library. They went on a field trip to Duluth that same summer during some cold and rainy weather. Ed recalls thinking "These people don't know enough to come in out of the rain." He has previously served as Treasurer for two terms. Dr. Huppler is a retired surgeon.

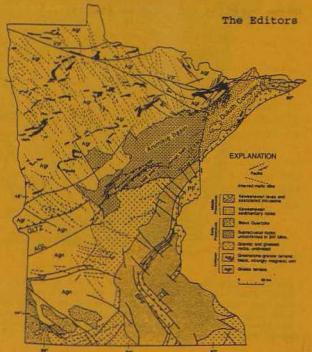
Metamorphism Hits the NEWS

With this issue of the NEWS, we are using a new format. Since the old format was used for several years, we thought a new look would be refreshing. We hope you will agree.

The map you see here and in the masthead is a computer generated summary of the best available information about Minnesota's bedrock geology. It was created by Val Chandler of the Minnesota Geological Survey. Val is a geophysicist and supervisor of the aeromagnetic survey program 1979 to 1991. He warns such maps may look very different 100 years from now as new data comes in. For now, this remains one of the best we've seen. It was used in an article in the May 1992 issue of the U of M publication *Update*. We plan to run this article and more information on the map in an upcoming issue of the NEWS.

Let us know what you think of the new NEWS. Member ideas, comments and submissions are always welcome.

The Editors



Metamorphism: The changes induced in the mineral composition, texture or structure of igneous or sedimentary rock by high heat and/or pressure without melting.

Geology Goes Xmas

Try these over on your (electronic) piano....to paraphrase the tickler page from those great old pieces of sheet music from the turn of the Century. Spread those rocks around the Xmas tree and sing a geo Xmas song!

Chip and Flail
(To the tune of Jingle Bells)

Dashing to and fro,
In a crack bang nab rock way,
"Ore" the hills we go,
Sacking rocks all day.

Steel on rock face sings,
Specimens take flight,
Oh what fun it is to swing,
Those picks with all our might!

Chip and Flail! Chip and Flail!
Chip and flail all day!
All that fun is now a ton
Of rocks to put away!

The Xmas Song (Geo Style)
Was it Santa or Something Else?

(Sung With Feeling!!)

Magma bursting out in open flames;
Glaciers glide and rivers flow;
Cratons adding exotic terranes;
And fault lines primed to just let go.

Every now and then...a visitor from outer space;
Makes the atmosphere burn bright;
Whistling down at a terrible pace;
What's there to see won't sleep tonight.

There are big changes on the way;
Species big and small call it a day;
And later prying eyes are going to spy;
Iridium in amounts that are way too high!

But things are not always just what they seem;
No matter what we think was true;
Species you'd think must have really been creamed;
Kept on going right through!

Deck the Halls (with Bones of T. rex)
(Sung lightly with spirit)

Deck the halls with bones of T. rex
Fa la la la...
Cranking up the hoists and derricks
Fa la la la...
Mount we now our bony treasure
Fa la la la...
Six inch teeth in might measure
Fa la la la...

Stack those bones in perfect order
Fa la la la...
Reinforce with pins and mortar
Fa la la la...
One false move and we're in trouble
Fa la la la...
T. rex or a pile of rubble
Fa la la la...

See the giant rise before us
Fa la la la...
Master of Cretaceous Forest
Fa la la la...
Stands he now with iron braces
Fa la la la...
Laughing at our gaping faces
Fa la la la...

The Geo Xmas series began in 1982 with "The 12 Days...REVISITED (as based on hard rock science!). While author Dwight Robinson must bear full responsibility for the lyrics, he is not responsible for anything that might happen once the singing begins. Look for "Wonder Hinterland!" coming soon to a piano near you. For a copy of "The 12 Days...," just send an SASE.

Graptolites: Generic name for any of a large group of extinct, branched marine invertebrates but classified as "protochordate" (ancestral to vertebrates?). Most important use: Ordovician biostratigraphy.

IMA Offering Saturday Morning Mini-Classes

The Institute for Minnesota Archaeology is offering six Saturday morning mini-classes each month from October, 1992 to March, 1993. Class #4 on January 9, 1993 may be of special interest to GSM members. Dr. Howard Mooers, Associate Professor of Geology at the U of M Duluth, will present "Changing Landscapes: Geology, Geomorphology and Archaeology". Dr. Mooers will discuss how the study of changing landscapes helps archaeologists determine where to look for sites. He will also demonstrate how maps are used to detect the changing course of rivers. Cost of each class is $8 for Friends of IMA and $11 for all others. Classes are held from 9 a.m. to about noon. Call Loranda at 612/623-0299 for more class information or to register.

Calender

- GSM Lectures Jan 4 - Mar 22, '93 Room 133, Physics Bldg.
- Caves, Nat'l. Geographic, Nov. 18, 7 p.m., Channel 2
- Dinosaurs, Nov 22 - 25, 7 p.m., Channel 2

Look for more exciting new features in upcoming issues of your newsletter.

The purpose of this newsletter is to inform members and friends of the activities of the Geological Society of Minnesota. NEWS is published four times a year - Feb. 15, May 15, Aug. 15, Nov. 15. Deadline for article submission is the 1st day of the month of publication.

Officers: Dwight Robinson, Pres. Judy Hamilton, V. Pres. Dorothy Kuether, Secy. Sylvia Huppler, Treas. Directors: J. Allen Cox, Tom Lonsky, Conrad Nelson, Galen O'Connor, Dee Schmalz NEWS Editors: Dwight Robinson, Judy Hamilton

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