

NEWS

Geological Society of Minnesota

FIRST CLASS

MINNEAPOLIS, MINNESOTA



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RETURN REQUESTED

OFFICERS

| | | | |
|----------------|------------------|----------------------------------|----------|
| PRESIDENT | Mary Kimball | 1711 Marshall Ave., St. Paul | 644-6429 |
| VICE PRESIDENT | Dr. V. O'Malley | 942 Lowry Med. Arts, St. Paul | 222-4421 |
| SECRETARY | Ethel Swanson | 4944 Girard Ave. N., Mpls. | 522-7688 |
| TREASURER | Bernice Tepel | 1269 S. Cleveland Ave., St. Paul | 699-1793 |
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| | Dr. Harold Harbo | 1520 W. 31st. St., Mpls. | 825-4341 |
| | Dr. J.S. Lewis | 1830 N. Hamline Ave., Roseville | 644-7382 |
| | Dr. Alex Lowe | 2206 Caroline Lane, So.St. Paul | 451-2822 |
| | Martha Peterson | 3527 Pleasant Ave., Mpls. | 825-1147 |

GEOLOGIC PLAQUES

TABLET INSCRIPTION #30
Geology of Minnesota

Grand Marais

The harbor of Grand Marais is the result of unequal weathering or erosion of two types of rock. One of these, called diabase, resulted from the cooling of molten material which was forced between two earlier lava flows. The dark, massive diabase, being very hard and resistant to wave action, has become the outer barrier to the harbor, while the lava, which was much fractured and easily eroded, was worn away to form the harbor basin.

To the west of Grand Marais, the serrated crest of the Sawtooth Range, clearly visible from the harbor breakwater, is another example of unequal erosion. Here the relatively soft basalt and the more resistant diabase have, through the process of weathering, produced the notched profile of the hills along the coast.

To the east of Grand Marais rise the hills near the mouth of the Arrowhead River, while to the north along the Gunflint Trail, are older rocks. At Saganaga Lake, the Saganaga granite, one of the oldest granites in North America, marks a core of the ancient mountains of the Laurentian highlands.

Location: Grand Marais, in the sea wall at the foot of the hill, on Hwy. 61 where it overlooks the anchorage inside of the breakwater.

TABLET INSCRIPTION # 31
Geology of Minnesota

Detroit Lakes

The great ice ages that began about one million years ago, were characterized by the advance and recession of huge ice sheets over vast areas of North America. These continental glaciers, originating in Canada, moved southward, scraping up mantle rock and soil which was dropped in central and southern Minnesota to produce plains and irregular belts of hills. Most of Minnesota's 10,000 lakes lie in such deposits and trace their origin directly or indirectly to glaciation.

In the rugged surface that extends from Detroit Lakes to Alexandria, where glacial action was particularly vigorous, the lakes are irregular in outline. Elsewhere they may be round, long, wide, narrow, big, little, sun-warmed or ice-cold, shallow and sandy or rocky and deep, mucky and weed-fringed or clear as crystal, with or without islands, inlets, bays, sand bars, beaches or cliffs. Taken together, they give Minnesota a water area greater than that of any other state. Many exhibit landscapes of unusual beauty, but all, regardless of location or character, add to Minnesota's most valuable mineral resource--WATER.

Location: Wayside development on the shore of Detroit Lake, U.S. Hwy. 10 about one mile southeast of Detroit Lakes.

Board of Directors **news** Briefs

The new Board of Directors took over its responsibilities in January. Officers for the coming year are Mary Kimball, president, Dr. Alex Lowe, vice president, Ethel Swanson, secretary, and Bernice Tepel, treasurer.

The various committees have begun to plan their assignments. If you feel you can help with the work of the Society, they would welcome your interest.

The 1973 roster is now being prepared, and will be published soon.

Michael Link, Director-Naturalist at the Northwoods Audubon Center near Sandstone, has requested help from the G.S.M. in making a display of native Minnesota rocks for use at the Center. The Board has agreed to undertake the project, which will become one of the responsibilities of the new Special Projects committee and Sam Mayo, its chairman. The Northwoods Audubon Center is operated by the Audubon Society for the use of all nature oriented groups and school classes. Mr. Link is a member of the G.S.M.

The Board would like to remind all members to circle April 23 on their calendars as the date of the annual Spring Banquet.

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BARTELS FAMILY ARRIVE IN BRAZIL

We have received word that the Bartels family have arrived safely in Salvador, Brazil, and are now settled comfortably in their new apartment there. Bart, Ann and the children all left Minneapolis January 8, carrying only 44 pounds of luggage per person, including books. One of their first problems was to locate furniture. That done, Bart is getting established in his new teaching position and deciding on the need to study Portuguese. Ann is making friends with a group of American wives in the community who like to play bridge, and the children already have acquired summer tans under the warm Brazilian sunshine.

For those in the Society who are interested, Bart left us his address:

Richard Bartels
Department 01
Department of Geoscience
Federal University of Bahia
Salvador, Brazil

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DR. O'MALLEY HAS NEW NAMESAKE

Dr. Valentine O'Malley, Board member of the G.S.M., has been honored as the namesake of one of St. Paul's prominent babies. The following is reprinted from the Jan. 22 issue of the St. Paul Dispatch:

"Como Zoo gained another resident today when Ginger, a dromedary (one-humped) camel gave birth to a baby named Valentina, weighing about 75 pounds. The baby was named after Dr. Valentine O'Malley, president of the Minnesota Zoological Society, who is celebrating his birthday today. Ginger has been at Como since 1970. Her father, Shiek, came to the zoo in 1967."

SPRING SHOW

The Bloomington Mineral Club will hold its spring show this year March 24-25 at the Northtown Shopping Center, Hwy 10 and University Ave. N.E. (Hwy 47). Hours on Saturday are from 9 a.m.-2 p.m., and on Sunday from 12-6 p.m. The G.S.M. will again have a display booth at this show.



NEW MINNESOTA GEOLOGY TEXT
TO BE PUBLISHED SOON

The *Geology of Minnesota*, a centennial volume in honor of George M. Schwartz, will soon be published by the Minnesota Geological Survey on the occasion of its 100th anniversary in 1972. The book will be a comprehensive review of the geology of Minnesota with 33 authors contributing papers. The format will be that of an historical geology text, and will contain approximately 550 pages. Mary Kimball has information on the book and is taking names of people interested in ordering it at a group discount price.

How the continents

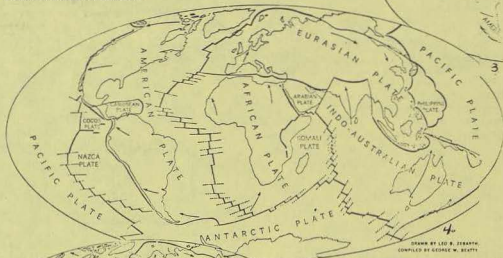


1. 200 MILLION YEARS AGO. A single supercontinent — which geologists now call Pangaea, "all lands" — is washed by a universal ocean, Panthalassa.



2. 135 MILLION YEARS AGO. The northern landmass, Laurasia, has split from the southern, known as Gondwana or Gondwanaland. This has also divided, with India heading north toward Eurasia.

3. 65 MILLION YEARS AGO. The North Atlantic and Indian Oceans have taken shape (far right), and the South Atlantic widens. Australia is still attached to Antarctica.



4. TODAY: Australia has torn from Antarctica. Laurasia has finally separated into North America and Eurasia. India has creased into Eurasia, thrusting up the Himalayas.

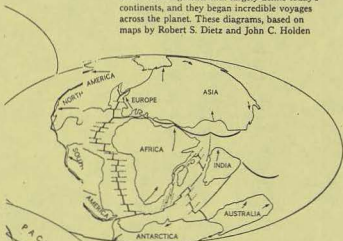
5. 50 MILLION YEARS FROM NOW. Australia plows north. The Atlantic and Indian Oceans continue to widen; the Mediterranean shrinks. California west of the San Andreas Fault, detached from the mainland, slides toward the Alaskan Trench.

DRAWN BY LEO H. JERBAK
COMPILED BY GEORGE W. BEATTY

have drifted apart

SLOWLY AND Ponderously, the continents are traveling across the face of the planet, carrying us as passengers. In the lifetime of a man, North America and Europe will move farther apart by about his own height.

Some 200 million years ago, only yesterday in earth's time span of 4½ billion years, the land areas formed a single supercontinent. Then it broke into fragments that largely define today's continents, and they began incredible voyages across the planet. These diagrams, based on maps by Robert S. Dietz and John C. Holden



DRAWN BY LEO B. SEBERT,
MAPPED BY GEORGE W. BEATTY

of the National Oceanic and Atmospheric Administration, trace the continents' majestic progression, and even plot their predicted positions 50 million years hence (bottom).

How can colossal landmasses cross the seemingly solid earth?

In the 1950's oceanographers discovered that a continuous mountain range 40,000 miles long winds through all the ocean basins. Along its crest runs a narrow rift valley, floored with hot rock. In a process known as "sea-floor spreading," material from earth's interior wells upward in these valleys. The ocean floor moves steadily outward from the rift, pulled or pushed across a less rigid layer beneath by forces still not understood. Offsetting the steady creation of new surface, other regions of the ocean floor plunge down, or "subduct," into earth's mantle along deep-sea trenches.

Earth's shifting crust, scientists postulate, is actually a mosaic of perhaps 70 great segments, known as "plates" (pages 10-11). They carry the continents and ocean basins on their backs like great rafts.

The National Geographic, January 1973 issue, contains an article entitled "This Changing Earth", a well illustrated report on the dramatic new discoveries in geology concerning crustal plate movements.

The maps reproduced here describe the relative positions of the continents during various ages of the past, the present, and the projected future.

The graphic text of the article is easy to read and the geologic processes are described as vivid, dynamic sequences in our planet's evolution. Excellent maps and illustrations help to elaborate the story.

G.S.M. AT HISTORICAL SOCIETY SUNDAY PROGRAM

The G.S.M. participated recently in the Sunday afternoon program of the Hennepin County Historical Society Museum, 2303 Third Avenue S., Minneapolis. On January 21, some of our members were at the museum to explain about Minnesota geology and to inform visitors about the activities of our group. On display were rocks, books, Society bulletins, and a chart of the geologic column of Minnesota. The display can be seen any time during the museum's regular visiting hours.

welcome

NEW MEMBERS:

We would like to extend a welcome to the following new members of the G.S.M.:

William J. Bingham, Jr.
P.O. Box 522
Minneapolis, Minn. 55480

Robert E. Hunt
6017 Bass Lake Road
Crystal, Minn. 55429

Donald Ruffenach
3630 Queen Ave. N.
Minneapolis, Minn. 55412

Mrs. Sidnew Lobben (Willmeta)
15 West Diamond Lake Road
Minneapolis, Minn. 55419

Edward Zeleznikar
Earth Science Department
Glencoe Middle School
Glencoe, Minn. 55336

PAUL AND BEVERLY VOGT SEND
GREETINGS FROM OREGON

Now that Paul and Beverly Vogt are relocated in Portland, Oregon, they have sent a letter to all of us in the G.S.M. Here is what they have to say:

"Greetings from the Oregon branch of the G.S.M. Although we have been very busy getting settled here and learning a little about this beautiful and interesting state, we think often of you all back in Minnesota--and miss you very much. We're hoping that some of you will plan vacations in Oregon sometime--and will stop and see us--or even stay with us at the same time.

"Oregon has lots to offer in both scenery and geology. So far we've seen miles and miles of basalt in every shape and form, dormant and extinct volcanoes, lava flows, cinder cones, lava tubes, lava casts, fossils, mountains, glaciers, the ocean, sea stacks, sand dunes, a spit that is about to be breached by the winter ocean, landslides, a tuya (look that one up), the Columbia River Gorge--and lots of other things.

ADDRESSES ARE CHANGED

The following members have changed their addresses:

Mrs. Elmer Koppén
3080 E. Broadway B 207
Tucson, Ariz. 85710

Harold C. Foreman
253 Glenmoore Lane
Long Lake, Minn. 55356

Mrs. Ruth Benson
1694 W. Glendale, Apt. 451
Phoenix, Ariz. 85021

Mrs. Emma J. Cooper
P.O. Box 92
Wahkon, Minn. 56386

Mrs. Marcy E. Preeshl
2011 E. 122nd St. #38-D
Burnsville, Minn. 55337

MS Virginia Knapp
9400 Cedar Ave. S., Apt. 212
Minneapolis, Minn. 55420

"We've just begun to learn a little about all these things--but if you come out here, we'll show you what we know, and take you along as we try to learn more."

Beverly has been invited by her geology department to accompany a group of students on a field trip down the Grand Canyon in April. They plan to hike down the canyon on the Bright Angel Trail, carrying backpacks, and will float down the Colorado River on rafts. No doubt she will put to good use all the background information on the Grand Canyon formations given us by Bart during the 1970-71 lecture series.

She is reported as doing well in her classes as she works on her training to become an earth science teacher.

CINCINNATI SITE OF MWF SHOW

The Midwest Federation is planning its 1973 Gem and Mineral Show and Convention to be held July 26-29 in Cincinnati, Ohio's Convention Center. You might want to plan a stop there while on vacation this summer.
