



THE MINNESOTA GEOLOGIST

OFFICIAL BULLETIN
OF

THE GEOLOGICAL SOCIETY OF MINNESOTA

VOL V

MAY 15TH, 1948

NO 3



G E O L O G I C A L S O C I E T Y O F M I N N E S O T A

831 SECOND AVENUE SOUTH
MINNEAPOLIS 2, MINNESOTA

THE SOCIETY IS DEVOTED TO THE STUDY OF GEOLOGY
AND MINERALOGY FOR THEIR CULTURAL VALUE.

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MEETINGS: OCTOBER TO MAY INCLUSIVE, 7:30 P. M. EVERY MONDAY,
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FIELD TRIPS: JUNE UNTIL SEPTEMBER INCLUSIVE.

ANNUAL DUES: RESIDENTS OF HENNEPIN AND RAMSEY COUNTIES \$3.00
PLUS \$1.00 ADDITIONAL FOR HUSBAND, WIFE, OR DEPENDENT FAM-
ILY MEMBERS; FOR STUDENTS AND NON-RESIDENTS, \$1.00.

MEMBER

MIDWEST FEDERATION OF GEOLOGICAL SOCIETIES



NATIONAL CONVENTION: The first annual convention of the American Federation of Mineralogical Societies will be held at Denver, June 13th to 16th. Our annual "DELUXE" Field Trip is scheduled to coincide. The last report indicates that practically all seats in the bus have been taken. If you have not made your reservation, you should contact Mr. Charles H. Freston, Leader of the trip immediately. The bus will leave Minneapolis, Saturday morning, June 12th, and will arrive in Denver the following evening. Three nights and one day will be spent in Denver, giving the guests an opportunity to take in much of the Convention. Others will drive their own cars, and it is expected that we will have at least fifty representatives at the Convention. In addition to the Convention, our group will visit Garden of the Gods, Rocky Mountain National Park, Royal Gorge, Pikes Peak, and various other geological attractions in Colorado. We submit that this is just about the cheapest and finest vacation one could have.

FIELD TRIPS: Our Field Trip schedule prepared by the Field Trips Committee, of which Theodora G. Melone is Chairman, is without question the finest and best schedule in the history of our society. This brings forcibly home to us the great value that our members receive for the small amount of dues they pay. When you consider that we receive a course of sixteen lectures by University Professors, which alone would cost \$15.00 otherwise, and in addition seven or eight other lectures, a bulletin every other month, and a whole summer of field trips, all for \$3.00, or a family membership for \$4.00, it is little short of amazing. In addition to these material benefits should be added the personal satisfaction that results from learning something new about the planet on which we live, and a wonderful opportunity to enjoy the great outdoors with many friends having mutual interests. Throughout the summer everyone of us should make an effort to sell our friends "this bill of goods", as the greatest bargain on the market.

ELECTION OF OFFICERS: At the annual election of officers, Mrs. Loretta E. Koppen, Dr. Edward H. Mandell and Mr. Fred Wunderlich, were reelected as directors for another two years. J. Merle Harris was elected to succeed Miss Leone P. Knox, who declined the nomination to succeed herself. Since the election, the Directors have met and elected Hal E. McWethy, President, J. Merle Harris, Vice-President, Loretta E. Koppen, Secretary, and Mary Lupient, Treasurer. The Board expressed their appreciation for the services of its officers during the past year, remarking that they had served with great efficiency and faithfulness. With new officers we look forward to another year of advancement in the growth of our society. After all, the success of the society depends largely upon the success of its officers and directors, as the society looks to them for leadership.

ATTENDANCE: The attendance during the past year has been the highest in the history of the society. For 27 lectures, the average attendance was 86.51. Having laid the foundation in general geology, by Dr. Bell's course of sixteen lectures during the past year, the Directors hope to "follow through" next year with a course on historical geology.

TRIVIA: It has been the practice to send members only monthly notices of all field trips. Accordingly, please preserve your copy of the notice for the entire month. Also in telephoning officers, or others, in connection with society matters, please avoid calling before 10:00 O'clock in the morning, or after 8:00 O'clock in the evening, and when possible avoid calling members at their places of business. Your cooperation is invited.

BULLETIN BOARD

Our FIELD TRIP SCHEDULE for this summer is, we believe, unexcelled, considering the places to be visited, and geological objectives, as well as leadership. You will miss a great opportunity if you do not take advantage of every single trip. Following is our schedule:

- | | |
|------------------|---|
| MAY 16, 1948 | SPRING VALLEY MINNESOTA IRON MINES Leader - Prof. F. M. Swain |
| JUNE 6, | ANOKA SAND DUNES Leader - Prof. E. F. Wright |
| JUNE 12-20 | FIRST NATIONAL MEETING OF AMERICAN FEDERATION OF MINERALOGICAL SOCIETIES - DENVER, COLORADO Leader - Chas. H. Preston |
| JULY 10, 11, | MESABI IRON RANGE Leader - Prof. George A. Thiel |
| JULY 25, | MISS NOENBERG'S MINNETONKA ESTATE Leader - Dr. Edward H. Mandell |
| AUGUST 1, | FOSSILS Leader - Prof. Wm. E. Bell |
| AUGUST 15, | FORD PLANT - GLASS SAND MINES Leader - Miss Elsie Hinchley |
| AUGUST 29, | MISSISSIPPI RIVER TRIP Leader - Joseph W. Zelusky |
| SEPTEMBER 11, 12 | NORTH SHORE - LAKE SUPERIOR Leader - Prof. George M. Schwartz |
| SEPTEMBER 26, | MANKATO AREA - KASOTA STONE, ETC. Leader - Mrs. Loretta E. Koppen |
| OCTOBER 10, | ALMA CENTER, WHITE QUARTZITE (Bus Trip) Leader - E. F. Bean, Phd. Wisconsin State Geologist |

Collecting mineral specimens is a natural hobby and its devotees are numerous throughout the world. Who in his childhood hasn't picked up a "pretty stone" for his "treasure box"; who hasn't marvelled at the colorful beauty of crystals of minerals exhibited in museums. Born with man who has treasured stones of all kinds, this hobby is destined to live as long as the human race endures; it will continue to give pleasure to thousands of collectors-people like you and me all over the world.

You do not have to be a mineralogist or a scientist to enjoy collecting minerals; a beautiful flower is not appreciated by a botanist alone. A person may enthuse over the beautiful colors of a sunset, a rainbow, or the color and form of a butterfly, but these are not permanent delights. Consider an opal, however- its vivid flashes of color will endure for all time if the specimen is cared for reasonably. The banding of an agate, the chatoyancy of the moonstone, the geometrical symphony of a pyrite crystal, and the multitudinous combinations of form, color, and markings among minerals assure you of perpetual beauty and enjoyment.

The knowledge gained by collecting and studying minerals will also gain for you a certain distinction and admiration among your friends and acquaintances. And who doesn't like to be looked up to? At the same time, you'll probably find yourself taking a new interest in life. Your senses will become more acute to color, form, and beauty; you will become more observant more conscious of a sense of accomplishment-of restfulness and relaxation-goals which all of us strive to attain. And the hours spent outdoors searching for minerals are healthful to say the least!

How can you begin your mineral collection? That's easy-go to the nearest beach, gravel pit, rock outcrop, quarry or mine dump. Minerals are everywhere because the earth is made up of them. Each time you make a trip, pick up some specimens to bring home. This specimen will not only be a mineral or group of minerals, but it will also be a souvenir of your trip. In this manner, you will accumulate many specimens which you can study and examine. Go to your library and borrow one of the many books on minerals and read it; get in touch with some fellow-collector; visit a museum and look over the mineral collection; subscribe to one of several magazines devoted to mineral collecting, and almost before you know it you will find yourself on the road to becoming an informed collector!

Because of your increasing knowledge of minerals you will gradually become more particular about the specimens you collect. Then and only then will you be able to decide whether you want to specialize in certain minerals or continue with a general collection. Some who have specialized have collections of high intrinsic value, but choice specimens are not always collected in the field personally.

Most collectors sooner or later accumulate duplicate specimens which can be used in exchange for other specimens with fellow-collectors. Geographical boundaries are no obstacle to the mineral-collecting devotee and minerals are found in practically every part of the world. Exchanging specimens with other collectors not only serves to improve and build up your own collection, but the practice widens your field of friendships and acquaintances. When two people with similar interests get together, a pleasant time is enjoyed by both. There is a certain kinship among collectors that is difficult for a non-collector to understand. Join or organize a club of fellow-collectors and you'll get the feel of it.

Make up your mind to build a good collection. Take good care of your specimens, keep them free of dust, label them as to name and the place you found them. Study your specimens and learn all you can about the minerals represented. Once you have established this habit, you will find that the information you have gleaned will enable you to spend many hours of interesting and educational conversation. Your store of knowledge and of appreciation of Nature will develop to-



gether. Things you saw in the past and will see in the future will have a new meaning to you. As you go along you will want to know more and more about your hobby. If you are like most collectors your hobby will broaden your horizons, provide a new zest for life, and a broader understanding of things about you. This is possible because in studying minerals you learn geography, geology, economics, chemistry, physics, and a host of other sciences. So the next time you are hiking, swimming, fishing, hunting or riding, pick up that colorful stone, put it in your pocket, take it home, and start a new chapter in your life by becoming a collector of minerals and rocks. All they cost is the effort it takes to pick them up.

The Author is Vice President of the
Midwest Federation of Geological Societies
Reprinted from "Home Desirable"

CLASSIFICATION OF SEDIMENTARY MATERIALS

Following is a standard classification of materials found in sedimentary deposits, used by the Bureau of Soils, U. S. Department of Agriculture;

| <u>Name</u> | <u>Size of Particles</u> |
|----------------|--------------------------|
| Colloids | less than 0.001 mm. |
| Clay | 0.001 to 0.005 mm. |
| Silt | 0.005 to 0.05 mm. |
| Very fine sand | 0.05 to 0.1 mm. |
| Fine sand | 0.1 to 0.25 mm. |
| Medium sand | 0.25 to 0.5 mm. |
| Coarse sand | 0.5 to 1.0 mm. |
| Fine gravel | 1.0 to 2.0 mm. |

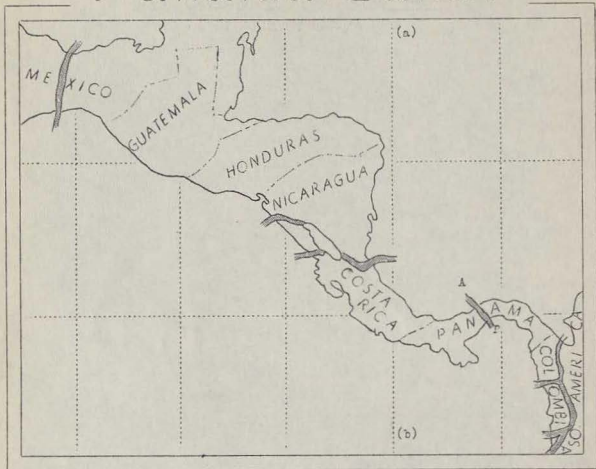
COAL-MINE BURNING SINCE 1884

An underground coal-mine fire in Hocking Valley, Ohio, has been burning steadily for 63 years and has now reached such proportions that the Federal Government has been asked for funds to fight it. The flames have now consumed some 50 million tons of coal. If not checked the fire will probably burn for at least another half century.

IS AFRICA RICH?

Although Africa is the second largest continent and occupies 20% of the world's area, it has only 7.5% of the population, 3% of the agricultural products, 9% of the metals, 5% of the railroads, 5% of the trade. Contrary to a general impression, much of the soil, even in the areas of tropical forests, is relatively poor.

Panama Canal

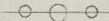


A frequent question asked on quiz programs is, "which entrance to the Panama Canal is farther east". It is difficult for most of us to imagine that the Pacific entrance to the canal is actually farther east than the Atlantic entrance. The above map shows why this is so. From the meridian lines as shown on the above map it seems obvious that point "P" is farther east of the meridian line (a)-(b) than is point "A". It is to be observed also that the canal actually extends northwest-southeast across the Isthmus, and because of this fact, the Pacific entrance is actually farther east, than the Atlantic entrance.

This map also shows the following three alternate routes which have been projected across the Isthmus, one through the lower part of Mexico, another through Nicaragua, and a third through Colombia. The first man to propose a canal across the Isthmus was a Spaniard by the name of Gil Gonzales de Avila, who made the proposal to the King of Spain in 1523. In 1780 a party of Spanish engineers actually surveyed the Nicaraguan route.

EDITOR'S NOTE: Miss Laura Millar, the author of this article, is a teacher of World History in the Sexton High School, Lansing, Michigan. During vacations she manages personally conducted tours to Europe and Mexico. The tour here described was planned and conducted by The Education Division of the Michigan Conservation Department. Miss Helen Martin, Research Geologist of the Michigan Geological Survey cooperated. Our members will recall her as author of *NE-SAW-JE-WON*, the geological story of the Great Lakes. Those who were at the Detroit Convention of the Midwest Federation will remember her as one of the principal speakers. This tour was planned by the Conservation Department for the purpose of interesting teachers especially, in the resources of their State, that they might be able to point out, particularly in the teaching of history, how, and why, the resources and geology of the country influences history. Miss Martin informs the editors that the work in conservation education is based upon geology, and that a staff from the Conservation Department conducts the work in conservation education with the Department of Public Instruction, which is beginning to use some geology as background for their work. Miss Martin also informs us that the author took this trip, largely because she was interested in travel, and that she has now become enthusiastic about geology, and astonishingly aware that the earth had a fascinating history before man appeared.

We are reprinting this article, not so much because of the fact that the story is interestingly told, as to serve as an example of what can be done by those who are interested in making people conscious of geology. Perhaps we could do something similar.



Thirty-two teachers of the public schools of Lansing packed their bags, hurried into their slacks and flannel shirts and dashed to meet the special bus booked for their trip. School closed at 3:30 and the bus left at 4:00. It was Friday night. The prospects of a week end in the north of Michigan were too good to be true. We were going to go to school the Michigan Conservation Way. Our school room would be Michigan's great outdoors.

The day had been full of sunshine. It was the 17th of October and the trees, as we rode north on U. S. 27, were just beginning to turn red and yellow, giving promise of greater beauty to come-maybe within a week.

Time passed merrily. Laughter rode with us all the way to Higgins Lake. There we stopped for the night. We piled out of the bus, took long deep breaths of this northern air, perfumed with pine and falling leaves. The week's fatigue was gone. The next morning after a big breakfast of pancakes and sausages, school began. We received our outdoors textbook-our field trip log of Northern Lower Michigan. We were going to school the Michigan Conservation Way.

Higgins Lake is a pit lake, made by the melting of a buried mass of glacial ice. "That's geology," someone said. "Michigan had a wonderful pre-historic period," said another teacher, who taught World History but had hitherto confined it to the Greeks, Romans, Java and Heidelberg Nan. She would put Michigan's pre-past into her work now. Her eyes were agleam. We drove north toward Grayling, eyeing the field trip log and the countryside at the same time. We were looking for the moraine-accumulation of sand, gravel, clay or boulders deposited by the glacier as the ice melted. With cries of enthusiasm, we spotted it. We loved the dark green against the shaded yellow of the maples

and the red of the oak. We recognized the Jack and Norway pines. Still nearing Grayling, we looked for the Au Sable River-- and learned from our outdoor textbook that it is the most "canoeed" and "trouted" water in the state. We knew about the trout and pike and bass. But we did not know that it is 180 miles long and that its upper waters are good for cooking and drinking. Yes, we knew where the Grayling Airport was, but we did not know that this Au Sable River, 20,000 years ago had done the basic work for the airfield by laying a splendid flat outwash for the flying machines of 1947. That was when this lovely stream flowed westward as the headwaters of the Manistee.

As we drove northward, hills loomed up on our right in the distant east. These we learned were once the shores of Saginaw Lake. Saginaw is a city today, but thousands of years ago it was a huge lake that has left its washed shores, hills of beauty, for us to enjoy. There in those hills are found pudding stones and granite from north of Georgian Bay. But Georgian Bay is in Canada and Pudding stones were made a billion years ago from clusters of tiny pebbles of this ancient beach solidifying into many-hued stones. Now, to the left, we saw hills rising far in the distance, and discovered from our log that these were made by the drift deposited by the Lake Michigan Lobe. In the far past these lakes came very near meeting.

In Gaylord, just north of Grayling, we saw huge boulders left long, long ago by the obliging Mr. Glacier. Some had been used by masons in the foundations of the homes in Gaylord and could be easily spotted. Others were still along the roadside or nassed in the fields in small piles--nuisances to the farmer. We made our first stop on this grand Saturday morning at the Pigeon River State Forest headquarters of the Conservation Department, which had been used for the Conservation Training School while the one at Higgins Lake was being built. We were in the Pigeon River State Forest which covers 187,298 acres. Here the largest herd of elk east of the Rocky Mountains finds protection.

We grabbed our cameras and hurried to the rear of the lodge where the crowd was gathering around Helen Martin, Michigan's research geologist. She was our teacher, a matter-of-fact one, witty and clever. We were standing on a high embankment looking down on the Pigeon River when a shout of laughter came from the rear of the lodge. Turning, we saw a group of men who appeared to be weather-beaten hardboiled backwoodsmen. One of these characters came sauntering over to our group and was properly introduced. We learned who these men were. They were Michigan's men of the out-of-doors teaching the geography of Michigan and living with it at the same time. They were from the Geography Department of the University of Michigan. We took pictures of this lovely spot. The trees on the banks of this river were sharpened into relief by the deep reds and the varying yellows and greens.

At the sound of the siren we piled into the bus and were on our way looking for lakes known as the Emeralds of the South. Twin Lakes and Lost Lake appeared, each encircled in color twice, for these lakes mirrored the autumn tones of their shores. They were made thousands of years ago from roofs of caves when the underlying limestone fell in, producing circular sink holes. We saw pit lakes, sink hole lakes, and now our log said we were coming to an "esker" -- a hogback Indian trail-made by a stream flowing through a tunnel in this glacier a billion years ago. These eskers furnished in 1947 thousands of tons of gravel for the making of Michigan's good roads. Thanks to the foresight of Mr. Glacier. As we sped toward Onaway, the fire towers appeared. Each has a two-way radio, and when the flag flies from its topmost peak, there is a man on duty--a silent keeper of the forest. Onaway steered the world, for when steering wheels for autos were made from wood, Onaway made them.

Later we sped over long cigar-shaped hills. The road seemed to roll away from us in the distance, tinged with the subdued autumn colors. We learned

that these rolling hills were drumlins left by Mr. Glacier. Twenty thousand years ago they were under ice-today they are pictured woodlands. We stopped at Ocqueoc Falls. These and Rainy Falls are the only two in lower Michigan. Cameras clicked and movies hummed. "Lime stone made those delightful falls", said Miss Martin. We rode over a flat plain-once the lake bottom of old Lake Algonquin, one of the ancestors of Lake Huron which once encompassed this part of Michigan. Lake Mississipping succeeded Lake Algonquin and cut the cliffs to be seen from this highway.

We stopped at the largest limestone quarry in the world at Rogers City and climbed the hill to watch Diesel trains come in one after another and dump their gravel into the limestone crushers. All this was automatic, and done precisely. It fascinated one. Then we went over to watch huge cranes dig up tons of this limestone, swing slowly around and unerringly fill car after car of each of the trains. This huge mechanical digger was handled by but one man. One-tenth of the world's lime used in cement comes from this plant.

We looked for fossils. There they were, coral-like lacework today, living animals a million years ago. We slowly wandered back to the bus, our pockets filled with the specimens. We were hungry. Mackinaw City lights glowed in the distance. The bus was a twitter. It was evening and we were on top of the world-a little closer to the North Pole! Recreation is one of Michigan's greatest industries. We stopped at the Pontiac tourist cabins and discovered that the group from Lansing were the only ones there. The overhead lights of each lodge came on. We felt that we were a tiny village of our own. Get-togethers and fun ruled the evening. Fires were built and bridge games were begun; the call of the north was in our bones. Up at 6:30, breakfast at 7, and into the bus at 8 gave us a full day for our homeward journey down the west coast of Michigan. We rode through yellow and red canopied lanes. The branches of the maples lining our roadway, almost met over our heads. We drove through a gorgeous fairland of changing color, spotted with sunlight and shadow painting. "Autumn fires", someone said with awe. I saw a rapt face, oblivious to everything but those gorgeous trees. It was the face of a poet. As we came into Petoskey, we noted the outcroppings of limestone. And then we saw a house made of fossils and coral, a house thousands of years old actually, but built by the hand of man today! "The Fossil House" we called it. There the lacework of the coral and the bones of the fossils could be seen from the roadway, embedded in stone. There were fossils all over the place. It was the pre-past history of Michigan brought to view-to whet the curiosity of travellers. The road on which we were driving was a part of the beach of Lake Algonquin, from which had come the coral for this house. Fragments of this ancient coral reef are highly polished and sold as "Petoskey stones." We saw piles of green shale near the Petoskey cement plant. This limestone made a waterproof cement which was used to line the muniton dumps in California during the war.

As we leave Petoskey on highway 131 we are on an old lake plain and sure enough a portion of this old lake is still here. It is Walloon Lake whose previous lake levels show as terraces leading down to its beaches, enhancing the beauty of this old lake. On down through this country we travelled on this old lake bed, sometimes riding the crest of a drumlin left by Mr. Glacier a million years ago.

We entered Lansing on the bottom of a channel of a great river which was the outlet of the ancestor of Lake Huron and Lake Erie. We returned to our classrooms, after traveling some 700 miles, treading with respect and awe, over the glacial past of Michigan, including corals, fossils, drumlins, eskers, etc. We faced our boys and girls with a revitalized enthusiasm for geology in the Michigan Conservation Way. We gave grateful thanks to Mr. Glacier and also to our teacher, Miss Martin, who did a magnificent job.

In Memoriam

We regret to announce the death of MABEL EDITH WILLIAMS, which occurred on May 11th, 1948, at Gardena California, following a long illness.

Mrs. Williams was born at Greenville, Illinois. She was graduated from the Minnesota State Teachers College at Wirona, Minnesota, and taught in the Minneapolis schools for more than twenty-five years. She retired about a year ago to live in California. She is survived by her husband, Edwin, one son, Gordon, residing at Enid, Oklahoma, and a daughter, Mrs. Robert D. Willits, residing in Minneapolis.

Mrs. Williams became particularly interested in geology while her daughter was attending the University. She joined our society in 1940, and served as a member of the Board of Directors, 1944-46. She always took an active interest in its work and affairs. She had many friends in the society, and they will regret her passing.

The society extends its sympathy to her husband and family.

GEOLOGICAL SOCIETY OF MINNESOTA
831 Second Avenue South
Minneapolis 2, Minnesota

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