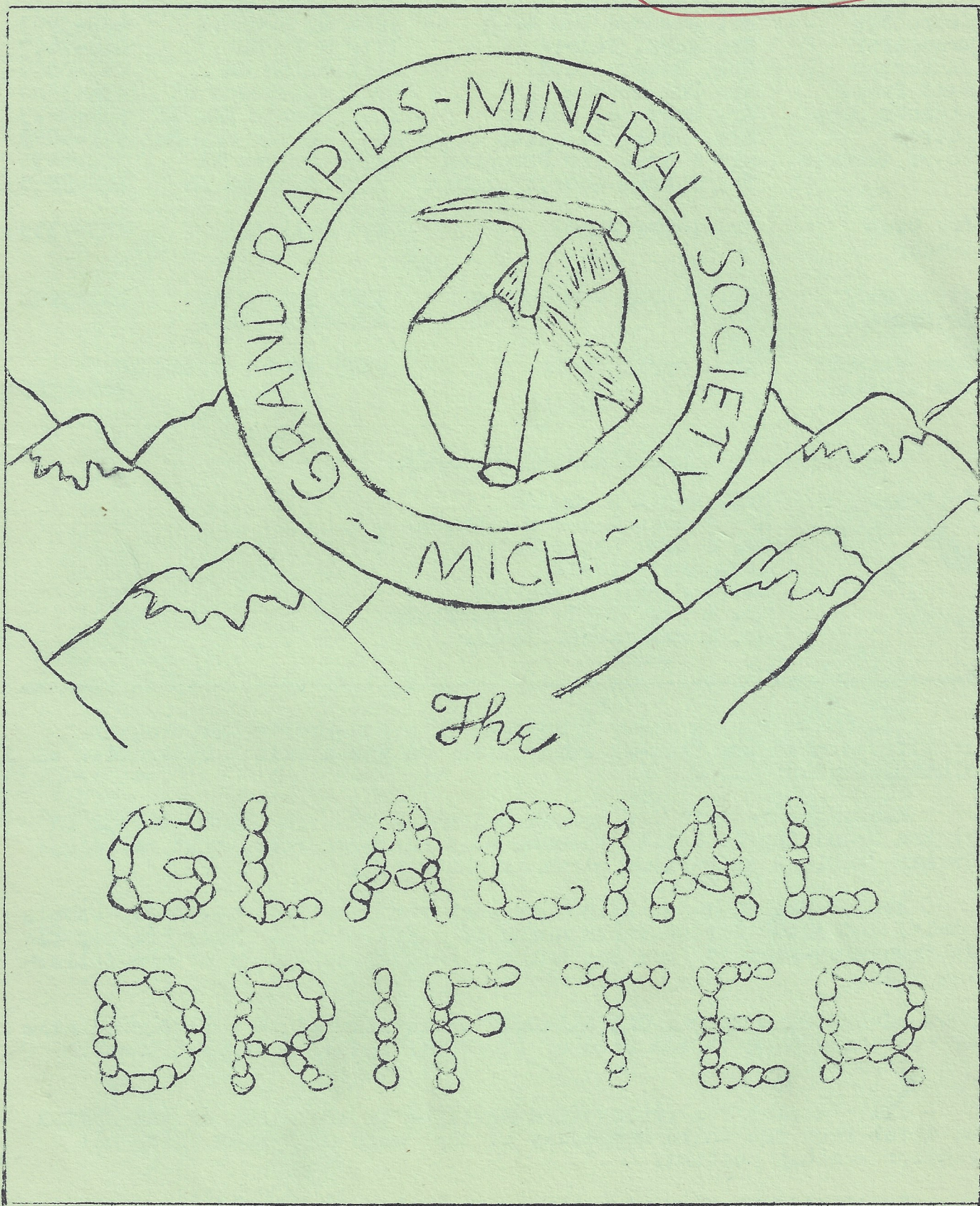


Volume 10 No. 3 ~

April, 1969





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The Grand Rapids Mineral Society is a Non-Profit Corporation affiliated with the Midwest Federation and the American Federation of Mineral Societies.

Meetings are held the second Wednesday of each month at 7:30 PM at the Grand Rapids Public Museum, Multi-Purpose room, East Building. Summer meetings at various parks as announced.

Membership dues are \$5.00 per year for a family, \$3.00 for single adult, and \$1.00 for students under 18 years of age. Dues are payable to Treasurer-year is from September 1 through August 31 of the following year.

Advertising in the GLACIAL DRIFTER is limited to a uniformed six of one third page at the rate of \$3.00 per issue, September through May only.

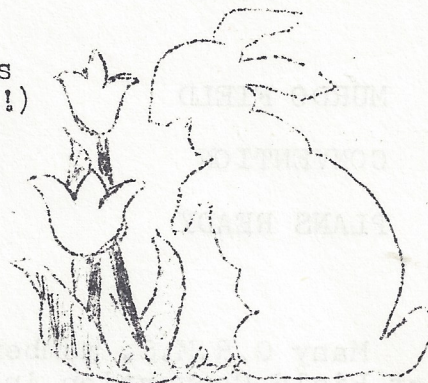
All material for publication shall be in the hands of the EDITOR no later than the third Wednesday of the month or a week after the regular monthly meeting.

Permission to reprint articles appearing in the GLACIAL DRIFTER IS HEREBY GRANTED, PROVIDING PROPER CREDIT IS GIVEN.



April

- Apr. 6, 5 p.m., Take Out Museum Exhibits  
(plus Kaffe Klatch--cookies welcome!)
- Apr. 9, 7:30 p.m., Reg. Meeting, Museum  
E. Bldg., "Faceting" by Karl DeBack
- Apr. 12, 6 a.m., Field Trip, Lizzadro  
Museum (leave from Rogers Plaza)
- Apr. 14, 7:30 p.m., Board of Control  
A. Ferguson, 2748 Pohens N.W.
- Apr. 23, 8 p.m., Mineralogy Group  
J. Parish, 2212 Thornwood S.W.



- Apr. 19, 20--Illowa Gem & Mineral Show, Community Center,  
Bettendorf, Iowa
- May 10, 11--Cedar Valley Rocks & Minerals Soc. Show, Armar  
Ballroom (between Cedar Rapids and Marion, Iowa)
- June 7, 8--7th Annual Rock Swap, State Line Gem & Mineral  
Society, Wauseon, Ohio
- June 12-15 -- Midwest Field Convention, Murdo, S. Dak.
- June 19-22 -- "Gemboree of the Rockies", Salt Lake City, Utah



#### A CLOSE LOOK AT THE ART OF FACETING

The glamour stones of the lapidary arts -- yet a highly precise, mathematical exercise -- that is the combination which makes faceting a fascinating and satisfying experience. Our own Karl DeBack has been doing faceting for about five years, and he is prepared to give us a thorough explanation of the delights, and the problems, in this field.

Karl will bring down equipment to show us the procedure in using a faceting machine. He will bring samples of materials and finished stones. He has also prepared a series of slides, diagrams, etc. giving close-up details of working the stones. If you ever wanted to know more about the art of faceting stones--and who doesn't?--you'll find this the most sparkling program of the year! For the rest of us--the judges are waiting to choose your cabochon for the "Lapidary of the Month" ribbon.

*Make the meeting on time ...  
by having coffee and cookies  
after you get there. Remember  
your contribution will help put  
us "100%" behind the A.F.M.S. Scholarship Fund!*





MURDO FIELD  
CONVENTION  
PLANS READY



SAFETY  
REGULATIONS  
ANNOUNCED

Many G.R.M.S. members are planning to attend the Midwest Field Convention in Murdo, S. Dak., June 12-15. By now, everyone should have received full information, maps, brochures, etc. Remember that advance registrations are necessary, so you should tear out the registration sheet from your brochure and mail it in at once. For further information write Bob Wilson, Murdo, So. Dak. 57559.

If you have the time, the Field Convention is to be followed by the National Show of the American Federation with the Rocky Mountain Federation, "The Gemboree of the Rockies", to be held June 19-22 in Salt Lake City. Field trips will be scheduled here, too. It would be wise to make plans ahead, so write Norman Hamilton, 1105 South 7th East, Salt Lake City, Utah 84105. It should be a great show.

The following Safety Rules apply to the Field Convention and to most of the western regions:

1. Do not drive on private land without securing permission.
2. Wear good leather shoes (preferably boots) with grip soles.
3. Wear loose rather than tight slacks, long sleeves, hats.
4. Never hunt alone.
5. Do not drive over cactus.
6. Be alert for washouts on trails.
7. Stay off dirt trails if rain is threatening.
8. Keep your gas tank full.
9. Carry extra water - just in case.
10. Be careful around range cattle, they could stampede.
11. Grass fires start easily and are disastrous. Never throw down a match until it is cold and broken in two. Never throw down a cigarette unless it has been completely extinguished in water or reduced to cold ashes, then ground into the dirt.
12. Never reach over a rock, ledge or plant without looking first. Do not walk fast in any grassy area.
13. Never let your dog run loose in field trip areas.
14. If you think you are lost, stay with your car; if not near the car stay out in an open and conspicuous place where a plane could spot you.



How I Became a Rockhound. . . by  
Mary Jane Dockeray

"What's this?" "Why that's a piece of quartz." This was the way it all began at about age five, along the gravel road near the poultry farm of my youth. An innocent question--a curious question, answered by an aunt who was walking with me. This led to other stones and other questions culminating with, "What is a person called who studies rocks?" From that day on I was determined to be a geologist.

As the years passed, my always understanding parents realized that I was truly serious about this and they took me to Frank DuMond, the director of the Public Museum. They wanted to know what was the future for a woman in the field of geology. He assured them that it was a widening field and encouraged me to stick to it. Little did he know that one day he would hire me!

During my high school years, Mrs. Anna Nelson, biology teacher at Oakleigh School, gave me much more help and encouragement and I immediately leaped into an elementary geology class my first term on the Michigan State University campus. I already knew quite a bit about rocks, but Wow!, there was a lot more to geology than naming rocks! It was heady stuff--the real thing, but Mother, knowing my stubbornness, made me promise that I would change majors if I felt geology was not the right thing!

I might have worked for a scientific supply house or the Conservation Department, but who could have fallen heir to a finer spot than the G.R. Public Museum?! Now I can share my interest with all of you and maybe answer some questions--  
--"What's this?" "Why that's a piece of quartz!"



LIZZADRO MUSEUM TRIP SET FOR APR. 12: The fabulous Lizzadro Museum in Elmhurst, Ill. has advised Field Trip Chmn. Ted Duprey that they have reserved Sat., Apr. 12 for our club. Upon arrival, we will be shown a program concerning the Museum's exhibits, after which we may view the displays at leisure. At 2 p.m. a scheduled program, "Come Camping in Alaska" will be shown. There is a 25¢ admission charge for adults, with children under 18 admitted free.

Now Ted Duprey, LE.2-3841, must know exactly who is going, so call him immediately. We will leave from Rogers Plaza at 6 a.m. Coffee and rolls will be served on the bus. A number of restaurants are within walking distance of the Museum for lunch. We will leave the Museum about 4 p.m. and stop for a bite to eat at the Firebird Restaurant near Benton Harbor on the way home. Round trip bus fare will be about \$7.30 (with all seats filled), and that's a bargain for that distance. Too good a chance to miss!



BY-LAWS TO BE UP-DATED

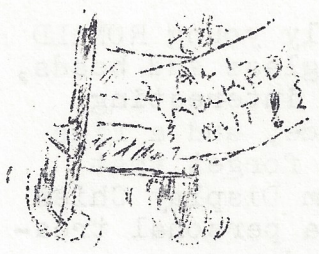
The Board of Control is considering revisions and amendments to the By-Laws (which are printed in the new membership directory), in order to bring them in line with current programs and purposes. If anyone has any suggestions, please contact the President, or bring them to the next Board meeting. Proposed revisions will be announced at the Annual Meeting in May. It might be pointed out that all business of the club is conducted by the Board at Board meetings, except for the Annual (May) Meeting. This is done so that our regular club meetings will not be taken up by a lot of announcements and business. It also means that any club member wishing to know more about the business of the organization is invited to attend any Board meeting at any time.

*DRIFTER'S ANNUAL*

Our new Travel and Field Trip Scrapbook promises to be an interesting and worthwhile project. Most of these articles are personal reports culled from other bulletins from throughout the country (if you read a good article about rock collecting somewhere, you might donate it to this project). So if you're planning a trip, call Casey Doornbos to see if "the book" has any tips or articles about the locality where you are going to be. .... WE NEED TO KNOW if any of you have given talks before groups, furnished rocks for projects, etc. It may help make our club eligible for a special merit award. Please call Elaine Smith, 949-4093, if you have done anything like this during the past year. .... Don Crabbs, Jim Van Vuren and Bob Teunis are to be our official "hosts" at the next meeting--do see that you get to meet them! .... The Board has voted to donate a diamond wheel dresser to the Museum Craft Shop. Now maybe our demonstrators and junior lapidarists can have grinding wheels that aren't quite so bumpy. .... Dr. Robert Smith and Jim DeZwaan Sr. will represent G.R.M.S. at the Midwest Field Convention, with alternates still to be appointed. .... Thanks to Harriet Ross for helping out on the typing in this month's "Drifter". (Actually, thanks to her daughter, but Harriet is paying for it with a little drssmaking help!) Ye Editor, still "under wraps" on her broken left wrist and elbow, finds that one-handed typing doesn't make for the best stencils. So you know whose the good ones are! .... COMING NEXT MONTH--a special feature on camping hints and safety tips. .... The Tchozeskis and Doornbos's had a fine time as guests at the annual dinner of the Grand Haven Club. Dupreys were there, too. .... A VACATION consists of 2 weeks, which are 2 short, after which you are 2 tired, return 2 work, and 2 broke not 2. Therefore, pay your bills before you leave for the 2 weeks, or you will be 2 far behind 2 catch up. (via Rockhound News)



MUSEUM SHOW ROCKS  
WAY INTO HISTORY



By the time this article reaches you, our tenth annual Museum show, "Rocking the Rapids", will be history. As always, we can be proud of the exhibits, and proud, too, of the educational impact which our annual, month-long, free-to-the-public display provides.

This is perfectly illustrated by one incident. A teacher at the outlying Cummings School suggested that her 8-year-old pupils might enjoy a visit to our show. The pupils came, and did enjoy it. They noticed the Wendt exhibit, and realized that these people lived quite near their school. They called Arnold Wendt and asked if they could bring some of their own rocks over so that he could help identify them. The Wendts found them to be wonderfully bright and interesting kids. And these youngsters surely got a big lift along the way to a satisfying lifetime interest in earth science or rock-hobbling through the show and through the friendly response and help of our members.

Multiply that by the possible influence on thousands of adult visitors and hundreds of student tour groups especially brought in to our show every year, and you know our efforts are all very worth while. We might also mention the enthusiasm which has greeted Jim DeZwaan's making it possible for ever-so-many kids to hand-polish--and keep--a Petoskey stone, on Tuesday and Thursday afternoons. These things, rather than fabulous displays, are what make our show great.

Not that the displays aren't outstanding, too! For the record, let's briefly review this year's exhibits. In the center cases we find: H.C.ROSE--a fine group of Petoskeys, honey-comb coral, etc. polished in their natural shapes; also cabochons of colorful and interesting materials from Kent Co. gravel pits. R.B.SMITH, western Oligocene fossils of fine quality, such as rhinoceros vertebra and molars, oreodon jaw fragments, coryphodon teeth, and brontosaurus teeth fragments.

Neighboring hobbyists DORIS and CARLTON PLETCHER from Niles, Mich. shared with us a stunning collection of brilliant crystals; as well as slabs and cabs of the intriguing Owyhee Jasper "picture" stones. ROGER KING had a well-presented group of minerals of southern Illinois, with some outstanding specimens of fluorspar (calcium fluoride), sphalerite (zinc sulfide); galena (lead sulphide), quartz (silicon dioxide, and others. The ARNOLD FAMILY showed some excellent specimens from Bellevue, including Marilyn's favorite massive chunk of interlaced pyrite and calcite crystals.

(cont.)



(Museum Show--con't.)

One of the most colorful displays was surely young RONALD PORTER'S large map of the U.S. done in crushed glass and beads, with fine attention to detail. The FORD HURD'S interesting geodes were centered between one very large geode, and a fine piece of drusy quartz on barite. And let's not forget that charming child's rocker--it was put in by Museum Display Chief ARDATH ALLEN to carry out our theme, and it is a personal treasure which has been in her family for many years!

LOUIS and DOROTHY MURRAY effectively combined a large coral they found in Florida with representative Michigan materials. LIZ and CLYDE LITTLEFIELD displayed a wealth of chain corals, Mich. geodes and vugs, and high-quality jasper conglomerates; highlighting their exhibit with a handsome, tall glass jar filled to the brim with polished native materials.

#### Beautiful Silver Pieces

The silver-smithing case was outstanding, with handsome, imaginative jewelry crafted by ESTHER HALL, DAVENA LETT, MARNIE COLLINS, LUCILLE PEARL, BETTY SIMONS AND BILLIE WHITCOMB. NELLIE MEAD was responsible for the display of Upper Peninsula materials, with maps and pictures, giving a good idea of what to look for in those areas. This was supplemented by a group of large black garnets and other materials loaned by JIM DEZWAAN. RICH VAN BEEK and DAVE VEENSTRA provided a nice group of fossils from Grand Ledge, Terra Haute and Sylvania.

In the wall display cases, the GEORGE ARNOLD FAMILY showed that it is sometimes most effective to stick to one material. Their stunning amethyst collection, mostly from Port Arthur, was set off beautifully by the pink satin backdrop. Showing the amethysts in many forms--in the mass, as crystals, in geodes, faceted, tumbled, in cabochons, set into mountings, made this a lively and interesting exhibit.

#### Imaginative Carving

Of great interest, too, was HENRY TCHOZESKI'S large grapevine from which were suspended open grape clusters and butterflies crafted in Henry's inimitable style from bottle glass. Driftwood planters held bouquets with gypsum leaves and buds of garnet and jade nodding on wire stems. Nearby an obsidian spider lurked on a wire net sprinkled with moon agate dewdrops. Petoskey stone toadstools and glass oak leaves on a driftwood log completed this sylvan scene.

HERB PAPKE'S unique agate slab-topped table, lit from within by its own fluorescent bulbs, was another crowd-stopper. The wrought iron ends of the table came from an old sewing machine; the slabs, set into coarse carborundum grit and covered with glass, are interchangeable at any time. An

(con't.)



(Museum Show--con't.)

artistic sign designating slabs of particular interest, such as cycad sections, added to the merit of this display.

### Lapidary Work, Symbols and Copper

Both faceting and cabochons were shown by ERWIN ATKINS with a striking uniformity of presentation which let his materials speak for themselves. Some of the faceted stones were of material not often seen faceted, such as Apache tears. Highlight of this display, however, was the large frame holding 49 identically-mounted 30x40 mm cabochons suspended on identical squares of red corduroy.

MARIE SPIELMAKER and RUTH STEELE assembled a group of "stones, symbolic and legendary". In addition to faceted hearts representing the birthstone for each month, plus samples of rough, they also showed and told about such stones of legend as Apache tears, amber, etc. In contrast to the jewel-box sheen of some of the lapidary exhibits, JIM and BERTHA DEZWAAN'S display of outstanding formations of native copper stood out strongly against a rough wood background, with chrysacolla encrustations echoed in a turquoise colored burlap shelf below. A hammered copper replica of both Michigan peninsulas, mounted on a blue board, made a fine finishing touch.

The variety of materials in TED and MARIE DUPREY'S exhibit included those fine selenite crystals found in the local gypsum mine. Also shown were fine mineral specimens from a number of states, along with corals and seashells.

### Gold Mining Scene

The VAN VUREN family cleverly set up a western mining scene in miniature, complete with a miner panning for gold, waiting horse with properly loaded saddlebags, real gold nuggets, and even a real rattlesnake! Old gold pans and other items were included; also a good way of showing magnetic sand in a jar. The ARNOLD WENDT case presented fanciful carvings in gypsum of animals and birds; copper, flanked by copper vases; various local polished materials including that wearable Petoskey stone bow tie!

A fine educational display prepared by our LES PEARL JR. ROCKHOUNDS included topographic models and maps, and lapidary work done by this group. Our neighboring INDIAN MOUNDS CLUB, with whom we share many activities as well as members, lived up to its name with Indian rugs and pictures, as well as a delightful miniature model of the Hopewell Indian Mound park as it might have looked about 2000 years ago. Fine mineral specimens and lapidary work were shown also. Also credited to the Indian Mounds group was BILL and NANCY AMMERMAN'S collection of petrified woods, all polished and identified as to kind and location. Here, too, were two outstanding floral bouquet

(con't.)



(Museum Show--con't.)

pictures, wood-framed, with petrified wood "vases", and myriads of tiny flowers and leaves made from polished gemstones.

#### Carvings Featured; Outstanding Collection

The many features on GORDON and DOROTHY WILLIAMS' clever display are almost impossible to summarize. "Rocky" is fishing in the rapids this year and has a carved gypsum fish on his line; while he sits on a dream riverbank loaded with polished agates. Above him, in a baroque-hung tree, are birds carved from onyx and septaria. Elsewhere are angels of agate and onyx; tiny birds carved from chert, opal and labradorite; a marble snowman and toadstool; a petrified wood flower picture; vases shaped from septaria, one filled with a bouquet of barite roses. All what the Williams called "smile" stones--fun to collect, work and live with. Some of their Colorado collections were also shown.

Superlative is also the word to describe "some favorite pieces from the collection of BOB and NINA ROZEMA. Worthy of long study are these breathtaking fossils of museum quality and unique value; plus the outstanding jades, agates, variscite, selenite, petrified wood, etc.

The POTTER FAMILY also had a case of varied interest, with lapidary and mineral specimens. Of particular interest were the clay pot and the artistic carved pieces of fired clay assembled by DONNA to form impressionistic pictures of clown, guitar, etc.

In quick conclusion, the outside winders added much to first impressions for our show. JIM DEZWAAN did the old prospector's cabin with its rocker; ELAINE SMITH put her rocking chair into a quiet rockhound's library scene; the Museum staff clinched the whole idea by setting a rocking chair right alongside the Grand River rapids themselves! ELAINE and ROBERT SMITH added the window showing the kind of rockhounding to be found on Beaver Island; while GORDON WILLIAMS and DICK ROSE prepared the fine display of colored photographs of specimens and geological sites.

That was it--"Rocking the Rapids" of 1969. Co-Chairmen Jim DeZwaan and Marion Jennings deserve the club's heartiest "Well done!"

WINNER ANNOUNCED: Miss Joan Afton, Junior College student and long-time G.R.M.S. member, will receive our all-expense scholarship for a week at the Mich. Conservation School at Higgins Lake. Joan has shown outstanding interest and ability, assisting with the junior group and on the Museum staff as well as being a faithful club member. The Board also named as alternate winner Miss Eunice Gunn, a Grandville teacher.



UPPER PENINSULA FIELD TRIP

(The following article deals with a 1967 Michigan State University Summer Field Camp, and tells many things of interest about our own Upper Peninsula. It was written by James Fisher for the "Grand Valley Conglomerate News".)

Our next move was north into Michigan and up to the Keweenaw Peninsula. We spent three days touring this famous area of igneous geology. The highlight of the trip for me was our group going into one of the most famous copper mines in the world--the Calumet and Hecla, Calumet mine.

Here we all loaded into a tram car with seats. We plunged down into the mine on rails. The shaft was on an angle of 50° and the mine reaches approximately 6,000 feet underground.

The mine geologist took us on a tour of the mine. We first saw how the ore is mined. Cuts are made alternately into the wall and the ceiling of a drift so that when the blast is set off, a long low pile of rubble is produced next to the ore car rails. Next the miners pull their small single bit drills up the first pile to drill a new series of holes up in back of and above the first pile. Then another blast is set off. This method is continued until there is produced a long sloping pile of the ore on about a 35° angle. Then the ore cars are brought in and by means of raking the ore out at the bottom of the pile, the entire slope of rock slowly slides down into the cars. We were high on the slope (pile of rock) when we first started and we followed the pile down to the next level as we climbed down.

In one place the ore was just being cut away and we waited at one end of the drift while the blasts were set off. It is a strange feeling to hear a dull thud far back in the mine. As the blast goes off, the pressure in the mine increases just like closing the door on a car with the windows up. My ears popped in and out a couple of times. In fact, it felt as if the walls jumped at you and then back when the blast occurred.

After the all clear we went up to the pile of ore to look for specimens. The ore in this mine is mostly a red conglomerate with the copper between the pebbles. I found a piece of the rock where the conglomerate was shattered into little pieces but the copper held the rock together in little wiry strands. Try as I would, my rock hammer could knock off only little pieces. I needed a hack saw to get much of it.

As I picked up some loose pieces we continued our tour. The next thing the geologist showed us was a large solid sheet of copper draping from the walls and ceiling in one of the drifts.

(con't.)



I hit the mammoth chunk of copper with my rock hammer and it gave off a long deep bong! When I asked why they did not mine this obviously pure copper, the geologist told me it would take special machinery to cut the copper out and the cost would be prohibitive. It truly was a rockhound's dream.

When we arrived back at the surface we toured the hoist room with its two large cable reels to lift the ore in the cars out of the mine. The room is kept clean so that no dust or dirt can clog the machinery of the hoist and cause an accident. The group was not allowed to walk on the floor except on certain rubber mats. The foot prints on the floor would cause too much dust and would get the machinery dusty.

We then wandered around the dump near the mine looking for copper specimens but I had little luck. I walked over toward the buildings to inspect a pile of rocks under a window. The whole pile of rocks was of excessive copper chunks that had been taken into the geologist's office over the years and set on the window sill. As the sill filled up, they would open the window and toss out the old chunks out to make room for new ones. I really made a haul of beautiful copper specimens there.

After filling my bag with my treasures we went to an old abandoned mine to look at one of the largest steam driven hoists in the world. It was once used to remove water from a sump more than a mile underground.

The last four weeks of the field camp were spent in the Marquette area. Here we had many projects to occupy our time. We were given two square mile sections of unmapped woods north of Marquette per two students. We had to pace and compass survey the total area, reporting outcrops, types of rock and overall geology determined from the area. We drew a map of a large island with the means of a plane-table alidade, something like the instrument surveyors use.

We were given a set of chemicals and a section of stream to test for traces of valuable metals such as gold, copper, zinc and iron. We also had time to go to the various popular areas around Marquette to collect rocks and minerals. We collected Kona dolomite from the quarry southwest of Marquette and verde antique from an old mine near Ishpeming. This mine also contained nice specimens of chrysotile asbestos.

The group took a trip to the new iron ore mine and pelletizing plant near Palmer, Michigan, just south of Negaunee. The Empire Mine, owned by the Cleveland-Cliffs Iron Company is only a few years old but one of the largest around the area. We watched the very low-grade ore being mined, then crushed in a tremendous gyratory crusher and followed it through its long and interesting

(con't.)



trip to become concentrated iron pellets. The total operation is staggering in its size. To give an example, the plant uses more than 150,000 gallons of water per minute over a 24-hour day.

Our last project was to draw a large map of the entire Marquette Basin, following the rock units on the map and to write a report on the area.

All in all, it was one of the busiest times I ever spent but still one of the most fun-filled and interesting periods I can recall.

\* \* \* \* \*

NEW USE FOR OLD BLACK INNERTUBES



Doris Freda of Waterloo, Ioaw, says she is not too much of a rockhound, but she goes along on her husband's rock trips. She is a landscape painter, but she will carry, or help carry, her husband's finds.

One day, about 2 1/4 hours away from their car, rock bag full, and good finds piled up on the way back, she found an old bucket, filled it, and struggled back toward the car. Her husband would not cull the piles, they were all "too good".

He found an old innertub on the creek bank, cut a hole in it, and he slid rocks down into the tube. It held all they had in the bucket, and a few from Doris's bag. He slung the loaded tube over his shoulders like a newspaper boy starting on his route. "Boy, what an invention!!! Feels good, not heavy. Bet you even could carry this," he yelled to his wife. She gave him an "OH, NO!" look and he went off bouncing his NEW BLACK RUBBER ROCK SACK.

Doris says it is the best way they know of to carry 87 pounds of rock.

(via 'Rockfinder')

THE GEODE by Frances Townsend

They said it was not strong enough to build into a well, too light to bear the weight of other stones. They threw it back into the field and there it lies, close to the song of meadow larks, vibrant to the sweep of wind. Its roundness nudged by dusty boots, its roughness scored by metal ploughs, it waits the searcher, who will see within the drab encirclement a crystal forest.

(Christian Science Monitor, via 'Geo-Logic')



(by Dick Johannesen, Illowa "News Grinder")

### EARTH SCIENCE

What is it? Many of us rockhounds use these words in talking or writing about our hobby in a general sort of way, but exactly what IS earth science?

My Webster's dictionary does not contain a definition, but Professor Richard M. Pearl's "Geology - An Introduction to the Principles of Physical and Historical Geology" comes pretty close in its opening statement:

"Geology is the science of the earth ---- its composition and structure, its history, and its past plant and animal life."

So, when we (you and I) talk about being interested in earth science, or when we encourage some young person to consider study of the field of earth science when they enter college, here is what we mean:

Geochemistry - study of the chemistry of rocks, waters and atmosphere

Geodesy - measuring the form and size of earth

Geomorphology - study of land forms, their origin and development

Geophysics - applying the principles of physics to the study of the earth, under which we find geomagnetics (study of the earth's magnetic fields) and Seismology (study of earthquakes)

Mineralogy - the study of minerals, and one of the two earth sciences fields most often claimed by rockhounds

Hydrology - study of surface and underground waters

Oceanography - study of the oceans and their basins

Paleontology - study of the list of past geologic periods, and the evolution of plants and animals whose remains or traces are found in the rocks. This is the second area most familiar to rockhounds. Paleobotany deals with plants, and paleozoology with animals of the past.

Petrology - the systematic study of rocks and especially their origin

Stratigraphy - study of layered rocks, especially sedimentary.

All ten of these are based on subject matter. But some earth science studies are based on use or application such as:

Agricultural geology - study of soils, their depletion and erosion

Engineering geology - applied to the building of dams, reservoirs, highways, bridges, tunnels and other such construction projects.

Mining Geology - applies to the finding and extraction of ores, and of non-metallics such as coal, clay, building stone



"THE TALE OF EVOLUTION OR THE CAUSE OF ALL WARS" is the title of a very long poem written by Milton M. Betterly and printed in installments in the "Grand Valley Conglomerate News". This verse was part of the concluding installment.

ANIMALS IN SPEECH

In lieu of the animals we practice and preach  
A strain of the same, it runs in our speech.  
As wise as a serpent. As gentle as a dove.  
As gay as a lark that sings from above.  
As bold as a lion. As string as an ox.  
As meek as a lamb. As sly as a fox.  
As graceful as a swan. As busy as a bee.  
As hungry as a rat. As quick as a flea.  
As fleet as a hare. As slick as a seal.  
As blind as a bat. As slippery as an eel.  
As stubborn as an ass. As slow as a snail.  
As cruel as a shark and as big as a whale.  
Thus similar qualities in all life are instilled  
In physiognomy and action. In make-up and build.  
'Tis a slow process to try to be what we are not  
While the moulding of ages has forged what we've got.  
And left in our beings each earmark and scar  
Of the road we have travelled and just what we are.

PRICES ARE GOING UP

From a letter in the Nebraska "Rear Trunk"--"I judged at the Tucson Show last week. It really is one of the best Mineral Shows. The specimens were exceptional...The prices of minerals are going up so fast it really amazes me. I guessed what the cost on one case of minerals would be, and I thought I guessed high, but it was twice my estimate. At the show there was one specimen of Legrandite that sold for \$6,500."

SPEAKING OF CRYSTALS!

Did you know that several quartz crystals weighing up to 13 tons have been mined in Siberia? One, tall as a 2-story building, was discovered in 1959. Beryl crystals up to 36' long and weighing over 27 tons, have been uncovered in several New England mines. The largest known crystals in the U.S. are the huge spodumene crystals of the Black Hills near Mt. Rushmore. Many of these are 20-25 feet long; one monster weighed in at approximately 90 tons and is 47 feet long and 5 feet in diameter.

But for the grand-daddy of all crystals, one must travel to the Ural Mountains of Russia. There have been reliable reports that there are several quarries in the area which are being worked in single gigantic crystals of feldspar. (The Collecting Bag)



## CLEANING SPECIMENS -- by Dick Matych

Last Month we talked about the "American Federation Uniform Rules" and how they can be used as a guide in preparing our collection. And I stated that our goal is to prepare our hard-won mineral so that it may even win a prize or repose in a museum some day. So here we are with a few choice minerals and we have an hour or so from the daily grind to clean one up.

Having reviewed the Uniform Rules we have pretty much established what is required in a good mineral specimen. We should now look over our piles of rocks and discard any that are bruised, unsightly or otherwise do not meet the qualifications. Much care should be used when culling out unsightly specimens. You may be pleasantly surprised to find that some specimen that you had classed as a "dog" really came out like a little red wagon when it was trimmed and cleaned properly. Occasionally I will go back through my unwanted material to find one that makes me wonder why in the world I discarded it for another. Study your specimens from all angles' try to imagine how it would look trimmed and cleaned. Then if it looks like it might be worth the effort, you can proceed with the trimming.

Many purists collect only individual crystals, but generally a specimen is deemed more valuable if a small amount of matrix is left on the specimen. This authenticates the mineral and gives an indication as to the type of material on which the mineral was found. So, when trimming, try to retain a small amount of matrix--not too much or it may divert attention away from the mineral.

As to the matter of what to save, if you have access to Dana's System of Mineralogy, you have a fine book for reference, as many crystal forms for each mineral are illustrated. You have probably heard of a Dana specimen. This means that the mineral pretty much matches a crystal form shown in Dana's book. Also, looking up a mineral in Dana or some other textbook will greatly contribute to your knowledge of the mineral.

Now, for trimming. First, we must consider how to remove any unwanted matrix. If the matrix is soft, judicious use of small, pointed tools will suffice. I find that dental tools, nut picks and splinters of bamboo, shaped as required work very well on soft material. Handle the material very gently on soft matrix such as limonite: scrape away the matrix with care or you may end up with a handful of nothing.

On hard material, if a chisel must be used, a small gad which has a point is preferable. Using a pointed tool will

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result in less shock and consequently less shattering of the material. A bladed chisel can be used as a wedge to open up cracks as required. Then several light taps with the gad and a hammer are much more effective than a resounding blow. This might be termed the wedge-and-gad method. If you ruin your specimen, other terms to suit your mood might be used.

Steady, even pressure along a matrix cleavage line is the best way to trim away hard material and should be done whenever the occasion permits. This can be accomplished in several ways. A tile nipper is a fine tool to use, or you might want to modify a C clamp or vise by having hardened steel points or blades welded to its jaws. The thing to remember is: any shock to the material will most likely result in the shattering of your specimen - and your composure.

If you have an arbor or a flexible shaft, you have an excellent tool at your disposal. Mount small silicon carbide separating disks or diamond disks on this tool and trim away matrix as required.

Most thumbnail collections are of minerals without matrix - that's because of space limitations. However, even these little ones may require trimming. You might want to get rid of some bruised crystals in a group, or clean some impurities from a single crystal. Trimming crystals requires a little more caution than trimming matrix for most crystals have cleavage plans, some pretty well defined. It doesn't take much shock in minerals such as these to destroy their crystal form; we all know of the easy cleavage of calcite, and sphalerite for example has six cleavage plans.

**TRIMMING IS AN ART:** Trimming is a challenge, and an art in itself that only comes with practice. But it is a very self-satisfying phase of the hobby, especially when you come up with a winner. All it requires is a little patience, much thought and the touch that comes only with experience.

**CLEANING:** There are as many formulas for cleaning minerals as pebbles on an agate beach. Of the many fine articles describing the various solutions for cleaning minerals I prefer distilled water. Distilled water is devoid of any minerals in solution and will readily soak up any impurities on your mineral that are water soluble. Using tap or mineralized well water is like trying to wash your clothes in dirty water. It just won't work -- my wife tried it! Don't try water on water soluble minerals though, or you'll end up with a saturated solution of the mineral you're trying to clean. Alcohol works much better.

**USE ACIDS WITH CARE:** Acids are good cleaning agents, but you must use them with great care. If you're not sure of the

(cont.)



reaction that might take place, try acid first on a discarded piece of the mineral you intend to clean. Never use acid on carbonate minerals such as calcite; you'll severely etch, or lose the mineral entirely. Different acids accomplish different things. Of the methods described by others, I prefer using oxalic acid for removing iron stains, especially on quartz crystals. Add one tablespoon of oxalic acid crystals to one gallon of water and boil the mineral in this solution for one hour. Remove the mineral after the solution has cooled and wonder where the iron went. Always do your boiling outside; oxalic acid fumes are highly poisonous.

USING A WIRE WHEEL: It's a matter of personal preference, but I find that burnishing the bright minerals on a wire wheel works very well. On such minerals as copper and silver this will bring out the highlights of the material making it more natural and attractive than if it were brightened all over by cleaning acid.

You will find that many minerals do not require the cleaning methods described above. All you will need in most cases are some small brushes and picks of different shapes. With a little planning and ingenuity, many specimens can be cleaned without resorting to the use of various acids and other solutions.

There isn't really much we can do to improve on Ol' Mother Nature. All we can hope to accomplish is to show our mineral in its most natural and attractive setting. So, don't over do the cleaning. The mineral may end up looking artificial and not at all like Mother Nature!

(Via "Redskin Stone News" and "Prospector")

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