

INDIAN MOUNDS  
ROCK & MINERAL CLUB  
WYOMING, MICHIGAN  
**A** RROWHEAD  
NEWS

*The Canadian  
Rockies*  
*presented by Kevin Cole*

See page 7 for details

**FEBRUARY 17**  
**AT 7PM**

## CANADIAN ROCKIES ROADSIDE

THIS PICTURE WAS TAKEN  
IS 'SOMEWHERE' DOWN THE  
ROAD IN THE CANADIAN  
ROCKIES.

I THOUGHT IT A FITTING  
SUBJECT AS OUR FEBRUARY  
MEETING WILL BE ABOUT  
THE ROCKIES IN THE  
NORTH.

(EDITOR'S NOTE: THERE WAS  
NO CAMERA AT JANUARY'S  
MEETING, SO WE HAVE NO  
PICTURES TO SHARE THIS MONTH)

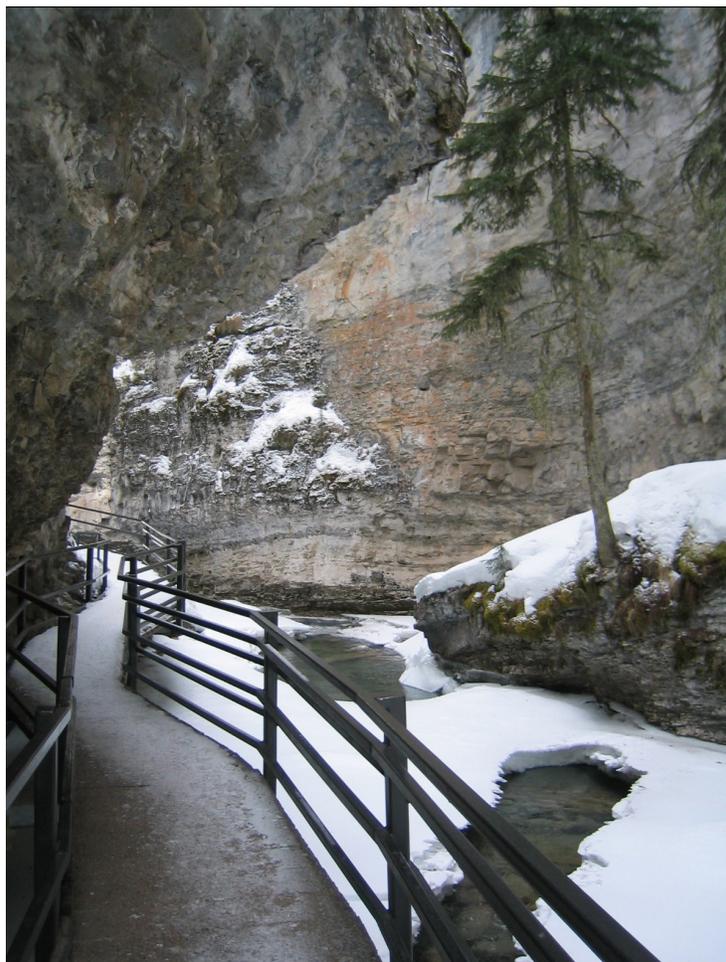


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VOLUME 46 #2  
**February 2009**

*The Indian Mounds Rock and Mineral Club  
is a nonprofit organization, incorporated under the laws of the State of Michigan.*

*This club's objective is to develop and encourage interest in, and to further the study of minerals, gems,  
fossils, rocks, lapidary arts, and earth science.*



AFFILIATED WITH THE MIDWEST AND AMERICAN FEDERATIONS OF MINERALOGICAL SOCIETIES

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or other non-profit organizations only, as long as proper credit is given (unless stated otherwise.)*



Welcome to the *ARROWHEAD NEWS*, official publication of the Indian Mounds Rock & Mineral Club of Wyoming, Michigan.



**Visitors are welcome at all Meetings!**

## WHEN & WHERE

**Club Meetings** are held at 7:00 PM on the 3<sup>rd</sup> Tuesday, September through May, in the fellowship hall located in the basement of the Wesley Park United Methodist Church. The church is on the corner of Michael and 32<sup>nd</sup> Street, south of 28<sup>th</sup> Street, in Wyoming.

At 6:30 PM, on the 3<sup>rd</sup> Tuesday, June through August, our club has a **picnic** at Pinery Park in Wyoming, which is on DeHoop just north of 28<sup>th</sup> Street. Our usual spot is behind the north parking lot on the west side of DeHoop. Bring a dish to share, your own drinks, and table service.

**Board Meetings** are held right after the club meeting, or by special announcement on the 4<sup>th</sup> Tuesday of the month.

**Club Membership** dues are \$15 per family, \$10 per individual and \$5 per junior. Payment is due by the 3<sup>rd</sup> Tuesday of September and is for the following January – December. **New** members that join at or after the annual show, pay only one-half of the yearly dues. Membership includes 9 issues of the Arrowhead News.

## WHO'S WHO

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The **subscription rate** for the **Arrowhead News** is \$8.00 per year.

*Emailing is encouraged - just ask!*

Article submission is due to the Editor **before** the 1<sup>st</sup> of the month.

The Arrowhead News is also available on our website.

Send **exchange newsletters** to the Editor.

*All articles without a byline have been written by the Editor.*

## FROM MY ROCK PILE

*By Jim Elliott, President*



Here it is February already. The cold of winter is upon us, not to mention all of the snow. We had a great and educational program presentation last month with Kreigh's "Are you Smarter than a Seventh Grader?" By the time we got through the last station I found out I wasn't! This was a very revealing, humbling and informative program that was also a lot of fun. I blame the consistent cold weather for slowing down my brain and for my lack of performance in these tests! My results seemed to be more at the Elementary school level. Speaking of which... Elementary schools are a fun and rewarding place to give lectures on rocks and minerals that at some point in the school year will fit in with the existing classroom studies.

What are we doing to educate others? What are you doing?

Education is a key item in our By Laws, which includes the following text "...to further the study of minerals, gems, fossils, rocks, the lapidary arts, and earth science. The Club will provide specimens and speakers

to those interested."

One of my current goals is to help develop a program that can be presented by all of you as needed. This would be a program that includes the teaching guidelines, mineral specimens, educational reference items, and a copy of the Mineral/periodic charts that the club has purchased for schools. This should make it easier for everyone interested in doing this to provide a good standardized program that is bound to see improvement and it should get better the more we present it.

I found several good articles on the Internet that provide a pretty thorough understanding on hardness (you do remember Mohs scale from our last program, right?) and color streak methods of mineral identification. I wish I had reviewed these articles prior to Kreigh's program! You should be able to find them elsewhere in this issue of the Arrowhead News. *(Editor's note: see page 7 for The Hardness of Rocks and Minerals and the March issue of the Arrowhead News for Streaking Minerals - Streak Testing!)*

Education and exposure to what we do in our club is key to its growth, and let's face it ... survival. We need to promote the interest in Rock Clubs, gems, fossils, rocks, the lapidary arts, and earth science. We do an OK job right now, but it takes our interest, passion, education of others and dedication to push it along just a bit further. We need to dig deep (corny rock metaphor, I know) and see what we can all do to help educate others as indicated in our By Laws and to further interest about our club.

Otherwise, we might be headed the way of fossils.

Best to All, Jim

**See mailing address page for a notice regarding your Arrowhead News subscription!**

## INDIAN MOUNDS ROCK & MINERAL CLUB EVENTS

- February 17      **IMRMC MEETING**  
Wesley Park United Methodist Church  
Tuesday - 7 PM - 9 PM  
Program: "Geology of the Canadian Rockies" (see page 7)  
presented by Kevin Cole
- March 17      **IMRMC MEETING and MINI SALE** (see page 4)  
Tuesday - 7 PM - 9 PM  
Program: DVD presentations - "Mexican Agates: Majestic Treasures" and  
"Exhibits at the Wonderful World of Agates"
- April 9, 10 & 11      **IMRMC 34<sup>th</sup> ANNUAL SHOW** (see page 8)  
Rogers Plaza  
Thursday, Friday and Saturday 10 AM - 9 PM
- April 21      **IMRMC MEETING**  
Tuesday - 7 PM - 9 PM  
Program: "Life of a Michigan Copper Miner", Larry Molloy, Speaker
- May 19      **IMRMC MEETING**  
Tuesday - 7 PM - 9 PM  
Program: "Best Of the Year"
- June 20      **IMRMC SUMMER SUPER SALE**  
Wesley Park United Methodist Church  
Saturday 9 AM - Noon
- October 20      **IMRMC SILENT AUCTION**  
Wesley Park United Methodist Church  
Tuesday - 7 PM - 9 PM

## ***OTHER THINGS TO DO***

- Feb. 28 & March 1      **37TH ANNUAL SPECIAL AUCTION**  
**Roamin Club, Livonia, MI**  
Schoolcraft College, Visatech Center Bldg; 18600 Haggerty Rd; Livonia, MI  
Hourly oral and silent auctions, hourly and daily door prizes  
**Free parking and admission**  
Saturday 11 AM - 6 PM, Sunday noon to 6 PM  
Contact: Clarence Sterling (248) 969-2196 or Don Brown (734) 421-8159
- March 28      37TH ANNUAL METRO ROCK SWAP  
**Midwest Mineralogical & Lapidary Society**  
Democratic Club of Taylor, 23400 Wick Rd; Taylor, MI  
Swap, sell or buy minerals, fossils, jewelry, lapidary items, slabs and crystals  
Free parking and admission  
Saturday 10 AM - 5 PM; Contact: (734) 525-1684

**TREASURER'S REPORT**  
**2008 YEAR END & JANUARY 2009***By Dave Lehker, Treasurer***2008 - Summary**

Beginning of '08 balance:	\$4942
End of 08 balance	\$6887
Net gain for year:	\$1945
<u>Major costs:</u>	
Midwest Federation dues:	\$526
Newsletter costs:	\$1251

**January 2009**

Beginning Balance:	\$7,199.06
Treasurer stamps:	\$20.21
Holiday party:	\$29.66
MGAG expense:	\$167.75
Newsletter:	\$173.29
Sunshine:	\$35.56
Total Expenses:	\$426.47
Ending balance:	\$6,772

**MARCH 17<sup>th</sup> MINI-SALE - TABLES ARE GOING FAST***By Ed Krzeminski, Sales Chair*

As described in the December bulletin, our March 17th monthly meeting program will include not only a nifty video program about agates, it will also include a Club "Mini-Sale" of rock and mineral items during the second half of the meeting. The Mini-Sale will feature our Club members selling specimens and equipment at their own sales tables. This new sale format is an experiment by the Club Board to help our members buy and sell specimens and equipment amongst ourselves at a reasonable cost. Only Club members may sell, but ANYONE can come and buy that evening (cash only), so feel free to invite a friend to the meeting – and maybe we'll recruit some new members!



**Attention Sellers!** Sales tables are going fast, so be sure to reserve a table before they're all gone. Sellers will have to use the covered tables provided by Club, and you will manage your own table items and your own money (bring coin change). There is no charge for a table, but at the end of the Sale, you will pay our Treasurer a Club commission of 20% of your total gross sales before leaving. To avoid disruption, Sellers will not be allowed to set up or

to sell during the meeting program. The recommended sale format is to use the Silent Auction Bid Slips (online at [www.indianmoundsrockclub.com](http://www.indianmoundsrockclub.com)); that is more fair to members, and will avoid disruptive "shopping" during the agate program. Once the Sale is underway, however, you may sell and haggle as you like. Sales will be cash only, unless you are willing to accept a check.

**To reserve a table, please contact Ed Krzeminski at [edkrzeminski@juno.com](mailto:edkrzeminski@juno.com) or 616-530-9571.** Indicate if you want 1 or 2 tables (only 1 table will probably be available), and all table assignments are first come first serve until gone.

## CLUB AND MEETING MINUTES

*Rhonda Leep, Secretary (2009)*

### **Club meeting** - January 20, 2009

President Jim Elliot welcomed everyone to the meeting. Nancy Spalenka turned the meeting to Kreigh and he started the program 'are you smarter than...'. Everyone had a great time and surely learned a thing or two regarding rocks and minerals. We had at least 36 people there including 3 visitors and one of the visitors signed up as a new member!

Consent Agenda: The club members present approved the *Arrowhead News* since there was no Club minutes to review due to the last meeting was Silent Auction night and there was no club meeting that night.

Treasurer's Report: Report was presented by Dave Lehker with details on ending the 2008 year.

Sunshine Report: Eleanor presented the sunshine report and John Brummel will be filling in for Eleanor while she is south the month of February.

Website: Brenda no new reports.

Editor's Report: Brenda can always use more articles.

Show Committee Report: Show is on for April at Roger's Plaza. Sign up sheet for volunteers started. Let Gordon Spalenka know if you need a display case.

New Business: March meeting featuring Agates and a mini silent auction. Everyone will be responsible for their own sales and commission to club. See Ed Krzeminski for details.

Old Business: Egg cartons and mineral bags needed for April show.

Correspondence: Was not reviewed

Program: Discussion for February show.

**Everyone's Business: Most of the dues have been paid - contact Dave Lehker or Rhonda Leep to pay this reasonable fee.**

The meeting was adjourned.

### **Board meeting** - January 20, 2009

The Board Meeting took place after our club meeting. Don and Lois Van Dyke, Nancy & Gordon Spalenka, Eleanor and Harry Brummel, Ed Krzeminski, Dave Lehker, Jim Elliot and Rhonda Leep were present.

President Jim Elliot called the meeting to order.

Secretary: There were no board minutes to be read.

Treasurer: Dave gave us a complete report at the board meeting. Membership payments were turned in to Treasurer. Dave to pay our annual MWF dues- Rhonda to update on number of paid memberships.

Program: Discussion of how to conduct our mini silent auction - keep it the same as regular auction. Ed has details.

Show Committee Report: Nine dealers so far. Tables available. Diane & Joan working on grab bags and egg cartons. Not paying mall rental until March. Advertising - Ed, Nancy, and Nick will all help.

Editor: No editors report this month.

Field Trip Chairperson: Discussion of a bus trip to schedule for next winter.

Librarian/Historian: Nothing new to report.

Membership Chairperson: New members but no detailed report.

Old Business: More discussion of safety deposit box - key was found. Labels for periodic charts still needed. Motion to order 5 more charts approved.

New Business: Discussion of speaker fees - typically \$50.00, out of town speaker may receive \$75.00.

Sunshine: Next month's lunch Nick Van Dyke and Nancy Spalenka.

The meeting was adjourned.

**!THE 2009 INDIAN MOUNDS MALL SHOW!***Harry Brummel, Show Chairperson and John Kuipers, Assistant*

It's hard to believe, but the Indian Mounds Rock & Mineral Club's 34<sup>th</sup> annual Mall Show is just around the corner! **The show will be held at Rogers Plaza from 10:00 AM to 9:00 PM on April 9, 10 & 11.** Our annual Mall Show is one of the high points on the club's calendar, presenting great opportunities for fun and education for the public and our members, as well as generating revenue needed to support club activities throughout the year.

Please note: **THE ENTIRE SHOW BEGINS AND ENDS WITH YOUR HELP!** "How so?", you may ask. Well, just consider these examples:

**Show setup** begins at 7:00 PM on Wednesday, April 8. We need **everyone** to be there to help set up and skirt tables, arrange material in the club area, install and fill display cases, and much more. And all this work must be completed by the time the mall locks its doors at 11:00 PM!

Then there are the **displays**, an important part of the show if ever there was one. Displays give you a great opportunity to demonstrate your love of the rock and mineral hobby by showing some of your collection in display cases. Don't be bashful—your display need not be "museum quality." If your items relate to our hobby, are meaningful to you and will interest our visitors, then they are adequate and needed. Display chairperson Gordon Spalenka is always looking for more "displayers," and our newer members are especially encouraged to participate. No display case? Contact Gordon (249-0513) and he'll try to help. Likewise if you have an extra case to lend someone. And don't forget the possibility of joining one or more fellow club members in filling a case jointly.

The **memorial case** is also important. This display is dedicated to the memory of deceased club members and usually contains a varied assortment of minerals, lapidary work, gem trees, faceted items, metalsmithing, etc. loaned for display by club members and returned to them after the show. Nancy Spalenka (249-0513) oversees this project, so please say "yes" if she contacts you for an item!

**Demonstrators** are absolutely essential! We really need members willing to demonstrate the various aspects of our hobby to mall visitors all during the show. If you have a hobby-related skill that can feasibly be demonstrated at the club table area, please let demonstration chairperson Don Van Dyke (669-6932) know—he'll appreciate it!

The show simply can't function without **club table workers** (also known as "hosts and hostesses") to staff the club table area throughout the show. So please sign up for as many shifts as you can when sign-up sheets are circulated at the next club meetings. Table workers are needed to sell mineral specimens, egg cartons and grab bags, to answer any and all questions about our hobby and club, and (hopefully!) to enroll new members. We guarantee you'll meet lots of interesting people!

**Donors** are necessary too! The club will again be selling donated items made by members. Please donate quality material, preferably donor-made, although other good quality items are also acceptable. The donor sets the selling price, and any unsold member-donated material is returned after the show. Don't forget to bring in your unwanted hobby-related magazines for the club to sell. That surely beats dumping them into the landfill!

**Publicity people** are indispensable! And that includes **all** of us! So take as many show flyers and 4x6 cards as you can reasonably use to promote and publicize our show in as many ways and places as possible. Talk it up with your friends and acquaintances!

Last, but by no means least, we need **take-down help!** Remember, "what goes up must come down." So at 9:00 PM on Saturday we will need **you** to help take all show paraphernalia down and put it away until next year's show. And all this must be accomplished by 11:00 PM when the mall doors slam shut. Please be there to help ensure that our show ends on a "happy note."

In conclusion, the basic provisions from previous shows also apply this year. Security will be provided; no blue jeans may be worn by club members during show hours; "hawking" of show visitors is not permitted; and all trash must be removed from the mall.

Our mall show is educational, rewarding, satisfying and fun! But to enjoy these benefits **you** have to participate. Please do!

## PROGRAM REVIEW AND PREVIEW

*By Nancy Spalenka, V.P. and Program Chair*

**Review:** Our thanks to Kreigh Tomaszewski for the work he put into setting up a challenging program, "Are you Smarter than a Seventh Grader," for our January meeting. Forty members and guest were put to work identifying minerals and answering questions about them. Thanks, Kreigh, for letting us work in groups and see the answers after we tried our knowledge at each table. We learned that the seventh graders who took this test did much better than we as a collective group did. There is much to learn in the field of rocks and minerals.

**Preview:** Join us for an interesting evening on **Tuesday, February 17**, when Dr. Kevin Cole, professor of geology at Grand Valley State University, will show pictures, videos, and rock samples, taken on a geological field trip to the Canadian Rockies.

### ♥ COURTESY CORNER ♥



#### **Hosts/hostesses for February:**

*Nancy Spalenka and Nick Van Dyke*



The owner of the towels that were left after the Christmas party has reclaimed them.



**NEEDED:** Specimens for the Memorial Display Case at our April Gem and Mineral Show.

Do you have a particularly nice mineral specimen that could be placed in the case? These specimens will be returned at the close of the event.

Please call Nancy Spalenka at (616)249-0513.



## THE HARDNESS OF ROCKS AND MINERALS

*Written especially for Lapidary Digest by Dr. Bill Cordua; University of Wisconsin-River Falls*

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Hardness tests of minerals are among the easiest and most useful tests to perform. What rockhounds speak of as hardness is more accurately described as resistance to abrasion. We are testing how easily one substance will scratch another. As an example, copper is relatively easy to scratch, but would you bet on diamond or copper standing up better to blows from a hammer? Hammer blows measure the ease with which something fractures or its tenacity. There are other hardness scales than are based on ease of indentation, resistance to twisting and so forth. For the sake of simplicity and standard usage, in these articles, hardness will refer to the resistance to abrasion as given by Mohs' Scale.

*THE HARDNESS OF ROCKS AND MINERALS continued on page 13*

## KIDS CORNER

### For 'Pups' of All Ages

*By Don Van Dyke*

Hey Kids, the next several months we will learn about the names of some of the rocks, minerals and gemstones that we as rockhounds talk about. Some are named by the person who first found them, others by where they were first found, or their color, or something that sets them apart from other minerals. The names we use today came from several other languages.

Write your answers on a separate paper so everyone in the family can do the quiz. Compare your answers. Make this a family game, keep track of how you are doing. After you do the quiz in the May issue, see who is the smartest in your family.

### Quiz

1. Agates are named agates because:

- A - They are named after the man that discovered them
- B - Because of their color
- C - The name of the place where they were found

2. Copper

- A - It is named after its color
- B - It is named after where it was found
- C - It is named after Mr. Copper who discovered it

3. Rhodochrosite

- A - It is named after where it was first found
- B - It is named after Mr. Rhodes, a famous man who lived in Africa
- C - It is named after its color

4. Hiddenite (A gemstone)

- A - It is named after Hiddenite, a town in North Carolina
- B - It is named after a Mr. Hidden who owned the mine, and 'discovered' it
- C - It is called Hiddenite, because it hides and is hard to find.

See answers on page 14

**KEWEENAW WEEK 2009***By Peter Sparks, Editor of The Facets*

Keweenaw Week 2009 information has finally been released, and the registration will open March 2. Below is a copy of the information on the website.

There are some things to note that are different this year. First, the cost per normal trip is \$20. So two trips in one day is \$40. There are also two days set aside as a "collect any location" for \$50 (in one day). No "3 yard buckets." No trips on Saturday. Banquet cost is \$24/person (egads!). Registration is \$15/one, \$25/couple, \$30/family. If you do the math you'll quickly figure that one person doing trips every day + banquet + registration is \$259. Then you need to add in lodging separately, meals, gas, buying specimens at swaps, ...

I was asked to provide some information on collecting at the various mines. Below is a short synopsis of the stuff to expect based upon my collecting experience. There's usually exceptions to everything, so keep your eyes open and keep anything that seems unusual.

- Kearsarge - micros of quartz, epidote, hackly copper
- Seneca - thumbnails of copper crystals in small vugs, micros of epidote, etc., possible micros of silver in epidote, hackly copper
- Mohawk - possible mohawkite: listen for solid ring but low reading
- Wolverine - agates with copper inclusions
- Delaware - datolite, greenstones, lots of prehnite nodules
- Connecticut - datolite, lots of prehnite nodules
- Drexel - datolite (chunks of massive prehnite all shattered)
- Mass C - copper scarce but I have seen the largest silver specimen collected in 10 years pulled from this pile. Datolite of orange & yellow. Most people don't get much on this pile.
- Knowlton - Chunks of copper in prehnite, datolite nodules & seam datolite, greenstones
- Nebraska - Micros of adularia & quartz. Massive prehnite. Possible hammer stones, but not much copper.
- Central Exploration - Datolite, greenstones, copper in prehnite. I have found analcime at this pile.
- Michigan - usually a bust for anyone, but small copper usually not crystallized, very hard-to-find datolite, but plenty of hammer stones.
- Minesota - chisel chips, crystallized copper, conglomerate, seams of prehnite, thomsonite, and so forth. Probably one of the best for collecting in the southern trips.
- Baltic - Big chunks of hackly copper in matrix, plenty of chalcocite, conglomerate. Great place for getting bookends with copper in it.
- Champion - Possible to get superb copper crystals of size, but more-than-likely you'll get a bunch of scrap iron and lots of rocks with calcite & copper.
- Cliff - chisel chips upwards to six inches or so, silver in prehnite, prehnite cutting material, copper crystals
- St. Clair - datolite nodules, copper & copper crystals, prehnite cutting material
- Phoenix - crystallized prehnite, copper crystals in laumontite vugs, datolite (perhaps even yellow!), greenstones, copper, calcite crystals.
- South Cliff - datolite, greenstones, some copper.
- Caledonia - white, pale pink, to red datolite, epidote, milky quartz, copper in basalt and calcite, copper crystals are rarer, and greenstones. Silver can be found in the milky quartz veins that are in the pistachio green epidote. Copper crystals can be found in the yellowish rusty-stained calcite.

**KEWEENAW WEEK 2009**

*Continued from page 9*

**Saturday, August 1**

Registration

**Noon - 4:30 pm**      **New registrations, additions, and changes to activities accepted.**  
A.E. Seaman Mineral Museum, central Michigan Tech Campus (EERC 5th floor), Houghton.  
Free weekend parking anywhere on campus.

**Sunday, August 2**

Registration

**Noon - 6:00 pm**      **New registrations, additions, and changes to activities accepted.**  
Registration for Monday paid events closes at 6:00 pm. A.E. Seaman Mineral Museum, central Michigan Tech Campus (EERC 5th floor), Houghton. Free weekend parking anywhere on campus.

Afternoon Events

**1:00 pm-2:00 pm**      **Featured Retreat Speaker sponsored by the A. E. Seaman Mineral Museum Society - "Microminerals of the Iron Country: Michigan, Wisconsin, and Minnesota"** by Dan Behnke, micromineral collector and photographer. Room 642 DOW Building (follow signs). Open to participants and Society members.

**2:00 pm - 5:00 pm**      **Mineral and Gift Shop Sale at Museum** - A. E. Seaman Mineral Museum (EERC 5th floor), central Michigan Tech Campus, Houghton. Mineral and gift shop sale with special discount ONLY for registered participants.

**5:00 pm - 6:00 pm**      **Keweenaw Mineral Identification - Advice and Tips**

A short introduction to Keweenaw mineral identification for first-time collectors by Dr. George Robinson and Bob Barron, DOW 642. This event is open to registered participants.

**Monday, August 3**

Registration

**9:00 am - 4:30 pm**      **Registration for Tuesday paid events closes at 4:00 pm.**  
A.E. Seaman Mineral Museum, central Michigan Tech Campus (EERC 5th floor), Houghton.  
Free Parking in front of Rosza Center for the Performing Arts building, follow signs to museum.

Half Day Events

**9:00 am – noon**      **Kearsarge #4 Prepared Surface Mineral Collecting**

**9:00 am – noon**      **Seneca #1 Mine Prepared Surface Mineral Collecting**

**1:00 pm - 4:00 pm**      **Mohawk #1 Mine Prepared Surface Mineral Collecting**

**1:00 pm - 4:00 pm**      **Wolverine #2 Prepared Surface Mineral Collecting**

Full Day Events

**9:00 am - 4:00 pm**      **Datolite Day #1 Lunch included**

**9:00 am - 4:00 pm**      **Caledonia Mine Limited Access Underground Collecting #1**

Evening Event

**7:30 pm - 8:30 pm**      **Retreat Presentation**

"Mineral Collecting in the Copper Country: Past-Present-Future" by Tom Rosemeyer, well known author of numerous Copper Country mineral articles, Room 642 DOW Building (follow signs). Event is open to registered participants.

**KEWEENAW WEEK 2009***Continued from page 10***Tuesday, August 4**Registration**9:00 am - 4:30 pm Registration for Wednesday paid events closes at 4:00 pm.**

A.E. Seaman Mineral Museum, central Michigan Tech Campus (EERC 5th floor), Houghton.

Free Parking in front of Rosza Center for the Performing Arts building, follow signs to museum.

Full Day Event**10:00 am - 4:00 pm Collect at Any or All of the following DATOLITE localities for one price:** Delaware Mine, Connecticut Mine, and/or Drexel Mine.

Number of registrants will be restricted so that, on average, there will be less per site than usual.

If there are sufficient registrants all three will be prepared otherwise, only two will be prepared, see

Details of Events for more explanation.

**Noon B.Y.O. Lunch**Evening Event**7:00 pm - 9:00 pm Quincy Mine Rock Swap and Sale** - Quincy Mine Hoist Parking Lot.

his event is open to the public.

**Wednesday, August 5**Registration**9:00 am - 4:30 pm Registration for Thursday paid events closes at 4:00 pm.**

A.E. Seaman Mineral Museum, central Michigan Tech Campus (EERC 5th floor), Houghton.

Free Parking in front of Rosza Center for the Performing Arts building, follow signs to museum.

Full Day Event**10:00 am - 4:00 pm Collect at Any or All of the following localities for one price: Mass C Mine, Knowlton Mine, and/or Nebraska Mine.**

Number of registrants will be restricted so that on average, there will be less per site than usual.

**Noon B.Y.O. lunch at pavilion,** Caledonia souvenirs available.Half Day Event**1:00 pm - 4:00 pm Central Exploration Prepared Surface Collecting.**Evening Event**6:00 pm - 9:00 pm CCMR Mineral Banquet and Auction** - Banquet with door prizes, voice and silent auction, and social with cash bar. Michigan Tech Wadsworth Dormitory Dining Hall, U.S. 41 - Social begins at 6:00 pm, Banquet begins at 7 pm. Silent auction closes at about 8:00 pm after the banquet. The A. E. Seaman Mineral Museum benefit voice auction begins about 8:00 pm. Voice auction open to banquet attendees ONLY.**Thursday, August 6**Registration**9:00 am - 4:30 pm Registration for Friday paid events closes at 4:00 pm.** A. E. Seaman Mineral Museum, central Michigan Tech Campus (EERC 5th floor), Houghton. Free Parking in front of Rosza Center for the Performing Arts building, follow signs to museum.Half Day Events**8:30 am - noon Micromineral Photography Workshop** - lead by Adjunct Curator and Professor Dr. John Jaszczak recognized mineral photographer. Bring a few micromounts to photograph with a high quality photo on CD. Assemble in room 216 EERC (same building as museum).

**KEWEENAW WEEK 2009***Continued from page 11*

**9:00 am – noon**            **Ontonagon Mining History** with Larry Molloy as your guide. Trip begins at the Red Metal Minerals Retail Shop in Ontonagon.

**9:00 am – noon**            **Michigan Mine Prepared Surface Collecting.**

**9:00 am – noon**            **Minnesota Mine Prepared Surface Collecting.**

**1:00 – 4:00 pm**            **Either Baltic or Champion Prepared Surface Collecting.**

(For Champion, we are trying to get access to the half of the pile previously not used for the retreat)

**Noon - 4:00 pm**            **Open House at Red Metal Minerals.**

Gitchee Gumee Landing Building, 202 Ontonagon Street, west end of downtown Ontonagon. Refreshments, mineral sale, copper cleaning demonstrations, tours of the Lake Sturgeon hatchery, and door prizes. This event is open to registered participants.

**Friday, August 7**Half Day Events

**9:00 am – noon**            **Cliff Mine Prepared Surface Collecting.**

**9:00 am – noon**            **St. Clair Prepared Surface Collecting.**

**1:00 pm - 4:00 pm**        **Phoenix Mine Greenstone Collecting with on-site water.**

**1:00 pm - 4:00 pm**        **South Cliff Prepared Surface Collecting.**

Full Day Events

**9:00 am - 4:00 pm**        **Datolite Day #2 Lunch included.**

**9:00 am - 4:00 pm**        **Caledonia Mine Limited Access Underground Collecting #2.**

Evening Event

**7:00 pm – 8:00 pm**        **“ Sneak Peak”- Future Home of the A.E. Seaman Mineral Museum**  
on Quincy Hill.

Participants can go inside the stabilized Machine Shop (one of two building which will be the future permanent home of the museum. This event is open to registered participants and friends. Museum Director Ted Bornhorst will be on site to explain and answer questions.

**Saturday, August 8**Evening Event

**6:00 pm - 10:00 pm**        **Open House at Keweenaw Gem and Gift, M-26 in Houghton.**  
Refreshments, mineral sale and hands-on demonstrations.

Mineral shows before and at the end of the retreat.

The Ishpeming Rock and Mineral Club offers a Gem and Mineral Show on the weekend immediately before the Copper Country Mineral Retreat.

The Copper Country Rock and Mineral Club offers a Gem and Mineral Show from Friday August 7 to Sunday August 9 concurrent with the end of the Copper Country Mineral Retreat.

For more information on the shows please refer to club web sites.

EVENTS LISTED ABOVE ARE TENTATIVE UNTIL MARCH 2, ALTHOUGH WE DO NOT EXPECT SIGNIFICANT CHANGES FROM NOW UNTIL THEN.

NOTE: CCMR events subject to cancellation if there are insufficient reservations by June 1, 2009.

The field trips listed above are tentative. We expect them to be confirmed as of the end of February, 2009. Even when confirmed should unforeseen circumstances require a change (e.g., rock pile being worked, removed from active-status by owner) we reserve the right to make an appropriate substitution. The latest version of the schedule will be posted to Copper Country Mineral Retreat Website:

[http://www.museum.mtu.edu/copper\\_country\\_mineral/index.html](http://www.museum.mtu.edu/copper_country_mineral/index.html)

**THE HARDNESS OF ROCKS AND MINERALS***Continued from page 7*

The classic scale for hardness was published in 1822 by Frederick Mohs, an Austrian mineralogist who got the basic concept from scratch tests performed routinely by miners. Since Mohs published the scale, it bears his name rather than that of the unknown genius who thought of it. The scale selects 10 minerals as standards, arranging in order of increasing hardness. These are, as most of you probably know:

1 = Talc	2 = Gypsum	3 = Calcite
4 = Fluorite	5 = Apatite (fluorapatite)	6 = Orthoclase
7 = Quartz	8 = Topaz	9 = Corundum
10 = Diamond		

These minerals were selected for their abundance, as well as their differing hardness. The scale is uneven. For example, diamond at 10 is much harder than corundum at 9, while fluorite at 4 is only slightly higher than calcite at 3.

A more limited but practical scale can be easily and cheaply obtained by observing your fingernail has a hardness of 2.5, a penny has a hardness of about 3.5, glass and a steel nail have nearly equal hardnesses of 5.5 and a streak plate has a hardness of 6.5. If I carry a nail and streak plate with me and can scrounge up a penny, I've got a handy, light weight mineral testing lab in my pocket.

More expensive sets can be bought. A set with small samples of all of Mohs' minerals allows a bit more precision in testing. The specimens do lose their usefulness the more they are scratched up in various tests. As an alternative, one can custom build their own Mohs set through collecting or purchasing small fragments of the needed minerals. Other vendors provide sets of hardness pencils with tips of two natural or artificial substances of measured hardness. These are handy in that they are very precise and allow one to test a small surface easily.

Most mineralogy texts give tables of mineral hardness. Particularly complete and useful tables appear in John Sinkankas' "Gemstone and Mineral Data Book."

Doing hardness tests requires some technique. You need to find a good surface or edge on your unknown to test. Take care to make sure you are testing the right grain - not the bit of quartz right next to it. In some case it is easier to scratch the unknown across the standard (the point of a unknown mineral grain across a calcite cleavage). In other cases it is easier to test the standard across the unknown ( tip of a nail across cleavage surface of the unknown grain). In an ideal case, you should try to do both, to double check your findings. You need to press hard enough to good effect, but not so hard as to fracture either sample. Practice will help you get the proper level of stress to exert.

As a result of your test, you will look for a scratch. Rub aside any powder to see if a distinct scratch has been left. Calcite will leave a trail of powder across quartz. Rub away the powder and you'll see the quartz is unharmed. A hand lens will help you see the scratch. In this way you can bracket the hardness of your unknown between two of your standards (harder than a fingernail, softer than a penny). The ease with which one substance scratches another is also useful. Quartz easily scratches calcite, telling you of a large hardness difference. Quartz will scratch feldspar with much more difficulty. When testing a standard against an unknown that is of equal hardness, both substances will leave shallow scratches on each other.

## THE HARDNESS OF ROCKS AND MINERALS

*Continued from page 13*

The hardness of a particular mineral may vary with direction within the same grain. Kyanite is a good example. Kyanite generally occurs in long bladed crystals. The hardness taken the short way across the blade has a hardness of 7 the hardness taken the long way along the same grain will be 4.0. Muscovite is another good example of this. Its hardness is 2.5 when taken across a the flat surface of a cleavage sheet, but 4 when taken across the grain of a book.

The reason hardness varies in this way is that the phenomenon depends on the strength of the bonds holding the mineral together. The bond strength can be significantly different in different directions in the mineral, giving the different hardness. In most minerals this difference with direction is minor and doesn't affect the test. In the case of kyanite, this difference in hardness is a confirming test by itself.

Some minerals' hardness may vary from sample to sample depending on that mineral's exact chemical composition. Hornblende's hardness can vary from 5 to 6, meaning some hornblende is softer than glass, some harder. This reflects the fact that hornblende can accommodate varying amounts of sodium, calcium, iron and magnesium in its structure, which affect the details of its chemical bonding, hence its hardness.

Testing the hardness of rocks is less effective than testing the hardness of minerals. A rock is basically a mixture of various minerals, although it can contain non-mineral materials such as natural glass and fossils. (Fossils aren't minerals because they are organic, while glass isn't a mineral because it lacks an internal crystalline structure). Let's take a granite pegmatite for example. This might contain grains of topaz (H= 8), quartz (H=7), feldspars (H=6) and muscovite mica (H= 2.5). You could thus get a range of hardness depending on which grain you tested. In a coarse grained rock, identifying the individual minerals allows you to identify the rock. If the rock is fine-grained, it's harder to interpret the results.

The hardness of fine-grained rocks tends to reflect the average hardness of the minerals in them. Shales are made mostly of clay and tend to be soft. Limestones and dolostones are also soft, with a hardness of 3-4. Just watch out if quartz sand is present mixed with the carbonates! Quartzite and chert being made mostly of quartz are both very hard. The hardness of sandstone may be difficult to test. If the sand grains have not been cemented well or have been cemented by calcite, the sandstone will seem softer. The individual quartz sand grains will still have a hardness of 7, but the rock may crumble or disaggregate in your hand, making it look soft. If you think it is really soft, trying dragging the disaggregated sand grains across a piece of glass and you'll readily see the effects. Most igneous and metamorphic rocks contain much feldspar, quartz, pyroxenes and amphiboles. Their hardness is thus going to be between 6 and 7. This means hardness is not a good way to distinguish one of these rocks from another. Volcanic glass will typically have a hardness of 5.5 - 6.0 depending on its particular chemical composition.

The hardness of rocks and minerals is also dependent on the degree of weathering. Weathering may convert feldspars (H=6) to clay minerals (H =2 -3). Even corundum (H=9) can alter and have rims of softer minerals such as margarite (H= 3.5-4.5 ) around it. This is why it is important to test as fresh or unweathered a surface as you can while doing hardness tests.

Mohs' scale has stood the test of centuries as a useful tool for mineral identification. Its simplicity and effectiveness will likely assure its relevance well into the future.

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1. **C** They are named after a river in Sicily, the AChates River. Do you know what agates are composed of?
2. **B** Copper is a name derived from a Latin/Greek word meaning metal from Cyprus, which is an island in the Mediterranean Sea.
3. **C** It is named after its rose color, from the Greek word rhodochros 'rose colored.'
4. **B** Hiddenite is named after A.E. Hidden who owned the mine in North Carolina where it was first found and named. Hiddenite.