

# The Living Stones

Livingston Gem and Mineral Society

August 2010

## President's Message

It is hard to believe that half of 2010 is done and our show in September is quickly coming upon us. Be thinking about what you want to show. How are your showcases coming along? Have you signed up to volunteer for the show? The sign up sheet for areas that need help is on the wall in the shop. As always when everyone helps it goes better - and then is fun.

Summer activities are in full swing. The club took a field trip to the quarry in Rockport. I've been walking the beach at Lake Michigan and have found some fun stones.

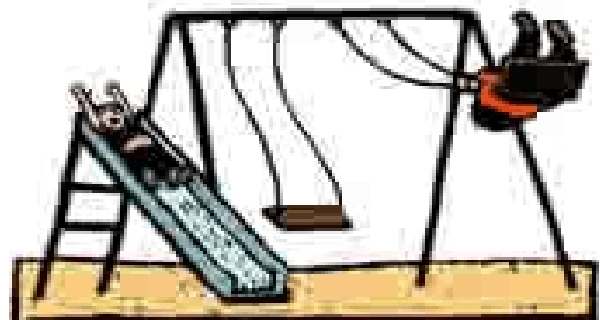
Dave Riggs and I put on a Michigan Stones presentation for the Ingham County library in Webberville. Although only about 10 people attended it was well received. Thank you, Dave. This kind of activity is great publicity for the club and help spread the word about the hobby we all enjoy.

The August picnic will be August 17<sup>th</sup> at 6 p.m. at the home of Sue and Paul McEwen. As usual bring a dish to pass and your tableware.

Thank you, for cleaning your area each day. It seems to have kept the shop from getting out of control and hopefully when we clean for the show in September it will not be the "chore" that it has been in the past.

A special thank you to Isla for continuing to do the newsletter. *Enjoy your vacation!!!* *Marv*

*Congratulations to  
Alan Zielinski  
winner of our cabochon contest*



**LGMS Workshop Hours**  
**Monday 10 a.m. to 2 p.m.**  
**Tuesday 9 a.m. to 9 p.m.**  
**Wednesday 2:30 p.m. to 9 p.m.**

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**Official Minutes of the Livingston Gem and  
Mineral Society**  
**July 20, 2010**

Bryant called the meeting to order at 7:30 p.m.  
Julie made motion to approve the June minutes.  
Sharon seconded.

Bob K gave the SHOP REPORT. We appreciate Phil for ordering oil for the saws. Phil has oil for members to buy if they want it. Also, thanks to Bob Kalis for the plastic arm rests on the water pans.

Peggy gave TREASURER'S REPORT for May 18 to July 20. We have taken in money for memberships, beads, etc. Paid out for rent, supplies, etc. Our rent went up. We pay every 3 months instead of once a year now. The silent auctions are bringing in money for the saw and the new saw is almost paid off.

Dave and Marv went to the Webberville library to give a talk about Rocks of Michigan. It was well received.

July 10, 2010 some members went to Rockport, Michigan for a field trip. They collected Petoskey stones, and other fossils.

A cabochon contest was recently held at the shop. Judges were Bob, Dave, and Hazel. The winner was Al, 2nd place Ken, and 3rd place Ed. Congratulations to all who participated. The cabs were beautiful!

Only 2 months until the SHOW. If you want to use a show case from the shop you need to reserve one before they're gone.

Our next meeting will be a picnic at Paul and Sue McEwen's house.

In August Bryant will be attending the Midwest Federation Meeting in Peoria, Illinois.

Bryant brought attention to the Rock Sale at Manitou Beach July 25 & 26.

Dave mentioned that the Hartland American Legion needs a new flag. Theirs fell apart. There was discussion about donations and businesses that may help with the cost of replacing the flag. Mary expressed appreciation for those who cleaned the floors. They did a good job! They were Bryant, Dave, Al, and Juanita. Many thanks from everyone!

Mattie and Bev plan to sell their crafts at the Milford Memories on Aug. 13, 14, and 15.

Peggy mentioned we need updated signs at the doors posting the days, hours etc. that the shop is open.

At 8:05 Phil made motion we close the meeting, Dita seconded.

Respectfully submitted: Violet Porritt, Secretary

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**Officers and Chairpersons**

**President: Marv Martin, 517-521-3135**

**Vice President: Bryant Hiiter, 248-889-3974**

**Secretary: Violet Porritt, 810-235-6286**

**Treasurer: Peggy Petito, 248-887-8847**

**Second year Directors:**

**David Riggs, 810-632-7146**

**Bill Barnett, 734-449-2907**

**First year Directors:**

**Ken Blake, 810-750-6078**

**John Petito, 248-887-8847**

**Sunshine and Hospitality: Mary Barnett, 734-449-2907**

**Shop Chairpersons:**

**Bob Krautheim, 810-701-3776**

**Chuck Amberger, 248-446-0818**

**Marv Martin, 517-521-3135**

**Newsletter and Membership:**

**Isla Mitchell, 248-685-7804**

**Chuck Amberger, 248-446-0818**

**Library: Bryant Hiiter 248-889-3974**

**General Membership Meetings are held monthly on the 3<sup>rd</sup> Tuesday at 6 p.m. (Except in January and February when they are held in the shop at 1 p.m.)**

## **Our Mission**

**The Livingston Gem and Mineral Society is a nonprofit organization  
and member of the Midwest Federation of Mineralogical Societies and  
the American Federation of Mineralogical Societies.**

**Our purpose is to promote, through educational means,  
public interest and increased knowledge in the fields of  
mineralogy, archaeology, paleontology, and the lapidary arts**

## **Coming Shows and Sales**

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### **“Massive Estate Sale”**

**3022 Francis St.**

**Jackson, MI**

**August 5, 6, and 7 ~~~9 a.m. to 3 p.m.**

**Sale includes minerals, fossils, gemstones, jewelry, gem trees, and much more!**

**Information: 517-260-1087**

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### **Livingston Gem and Mineral Society's**

**Gem and Mineral Show**

**September 18 and 19, 2010**

**Hartland Education Support Service Center**

**9525 E. Highland Road, Howell, MI**

**Information: Chuck Amberger, 248-446-0818 or Bryant Hiiter, 248-889-3974**

# About Metamorphic Rocks

Andrew Alden

Metamorphic rocks are the third great class of rocks. These are what happens when sedimentary and igneous rocks become changed, or metamorphosed, by conditions underground. The four main agents that metamorphose rocks are heat, pressure, fluids and strain. These agents can act and interact in an infinite variety of ways. As a result, most of the thousands of rare minerals known to science occur in metamorphic ("shape-changed") rocks. Metamorphism acts at two scales, the regional scale and the local scale.

## The Four Agents of Regional Metamorphism

Heat and pressure usually work together, because both rise as you go deeper in the Earth. At high temperatures and pressures, most rocks break down and change into a different assemblage of minerals that are stable in the new conditions. The clay minerals of sedimentary rocks are a good example. Clays are surface minerals, which form as feldspar and mica break down in the conditions at the Earth's surface. With heat and pressure they slowly return to mica and feldspar. Even with their new mineral assemblages, metamorphic rocks may have the same overall chemistry they had before metamorphism.

Fluids are an important agent of metamorphism. Every rock contains some water, but sedimentary rocks hold the most. First there is the water that was trapped in the sediment as it became rock. Second is the water that is liberated by clay minerals as they change back to feldspar and mica. This water can become so charged with dissolved materials that the resulting fluid is no less than a liquid mineral. It may be acidic or alkaline, full of silica (forming chalcedony) or full of sulfides or carbonates or metals, in endless variety. Fluids tend to wander away from their birthplaces, interacting with rocks elsewhere. That process, which changes a rock's chemistry rather than just its mineral assemblage, is called *metasomatism*.

Strain refers to any change in the shape of rocks due to the force of stress. Movement on a fault zone is one example. In shallow rocks, shear forces simply grind and crush the mineral grains (cataclasis) to yield cataclasite. Continued cataclasis yields the hard and streaky rock mylonite.

Under greater heat and pressure, when metamorphic minerals such as mica and feldspar begin to form, strain orients them in layers. The presence of mineral layers, called *foliation*, is important to observe when identifying a metamorphic rock. As strain increases, the foliation becomes more intense, and the minerals sort themselves into thicker layers. The foliated rock types that form under these conditions are called schist or gneiss, depending on their texture. Schist is finely foliated whereas [gneiss is organized in wide bands of minerals.](#)

## **The Basic Metamorphic Rock Types**

**The sedimentary rock shale metamorphoses first into slate, then into phyllite, then a mica-rich schist. The mineral quartz does not change under high temperature and pressure, although it becomes more strongly cemented. Thus the sedimentary rock sandstone turns to quartzite. Intermediate rocks that mix sand and clay — mudstones — metamorphose into schists or gneisses. The sedimentary rock limestone recrystallizes and becomes marble.**

**Igneous rocks give rise to a different set of minerals and metamorphic rock types; these include serpentinite, blueschist, soapstone and other rarer species such as eclogite.**

**Metamorphism can be so intense, with all four factors acting at their extreme range, that the foliation can be warped and stirred like taffy, and the result is called migmatite. With further metamorphism, rocks can be turned into something hard to tell from plutonic granites. These kinds of rocks give joy to experts because of what they say about deep-seated conditions during things like plate collisions. The rest of us can only admire the laboratory skills needed to make sense of such rocks.**

## **Contact or Local Metamorphism**

**A type of metamorphism that is important in specific localities is contact metamorphism. This usually occurs near igneous intrusions, where hot magma forces itself into sedimentary strata. The rocks next to the invading magma are baked into hornfels or its coarse-grained cousin granofels, another subject for specialists. Magma can rip chunks of country rock off the channel wall and turn them into exotic minerals, too.**

**Surface lava flows and underground coal fires can also cause mild contact metamorphism of the same degree as occurs when baking bricks.**

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**Livingston Gem and Mineral Society**

**9529 E. Highland Road**

**Howell, MI 48843-9098**



**Next General Meeting**

**6 P.M. ~ August 17, 2010 Potluck Gathering**

**Sue and Paul McEwen's home**

**16397 Oakhill Drive**

**Fenton, MI**

**810-735-5832**

**Directions:**

- 1. Take US 23 to White Lake Road exit**
- 2. Turn right onto White Lake Road**
- 3. Stay on White Lake Road for 1.5 miles, to a stop sign at Bennett Lake Rd.**
- 4. Turn left on Bennett Lake Rd.**
- 5. Stay on Bennett Lake Rd for 2.1 miles**
- 6. Turn right on Crosby (gravel road), the first road to the right after crossing Linden Road**
- 7. Follow Crosby for .6 miles. Crosby becomes Oakhill Dr. when you cross back into Genesee County.**  
**House is on the right, wood fence around property and 16 foot Blue Heron in the drive.**

**Please bring a dish to pass along with your own table service, a drink, and your own chair.**