April minutes

The meeting was called to order at 7:15 by president Steve Daukas and the minutes from the January meeting were accepted as reported in the newsletter. Vice president Larry Bull presided over the meeting as Steve had to leave early.

Ken Carlson gave the treasurer’s report. The beginning balance was reported as $9,114.44 and the ending balance was $7,954.30. There were no new club members, but there were several renewals.

Items of old business were brought up.

The purchase of a projector for the club was not made. News had reached the committee that there would be a substantial price reduction within 30 to 60 days, and the decision was made to wait for a better price.

New business items were discussed.

Two field trips had been planned with no participants. It was suggested that either Larry Johnson or the trip organizer be notified by members planning to attend. A member also reported that she had gone to Fonda for the cleanup, but no one else was present, and she did not know how to proceed. There apparently is a need for improved communication regarding field trips.

The Chester field trip is planned for 3 days from May 21 through May 23. Members may attend all or any number of days.

The WMC still holds the original Fonda claim plus Larry La-mont’s claim. Many members believe Larry’s claim is the better site and would like to retain it for the coming year. There was some discussion about the owner wanting to split the claim. A suggestion was made that we purchase rights to both sites in that event since access violations will be more likely with two parties. Larry’s site is also subject to flooding, but there are still good areas to work along the floor and the wall that will be dry. Good crystals may be found in the soil as well as in the rock. A suggestion for joint club membership was also considered in case the site was split. A motion was passed to pay for the site we currently have and investigate adjacent site availability.

Members discussed posting rules for care of the Fonda sites on the website. Such rules would include such things as keeping the site clean and not violating trespass rules of other sites. The club discussed a committee to put together a slate of candidates for WMC offices for the coming year. Officers are elected for 2 year terms, and will take office in September. If you have an interest in holding office, please contact one of the current officers or volunteer at the next club meeting.

President’s Stump

May, as usual, is a very busy month. This year, April also turned out to be a busy month because of the warmer than usual weather. Still, I find myself behind with all the chores associated with warmer weather!

This year's weather has also proven to be a challenge as far as being outside for any length of time. This year’s collecting season may prove to be interesting - will it be cold or warm, dry or wet... And, let's not forget, 'tis the season for severe weather!

As you know, I'm not only into geology, but also weather and climate. I'll spare you the sometimes out-of-place enthusiasm we weather types can have for severe weather, and I won't repeat my message from last Spring about thunderstorms and lightning. Suffice it to say weather is fickle and when outside at some distance from shelter, potentially dangerous.

This month’s program will be on a topic related to rockhounding - weather. I hope to offer a glimpse into what goes into a weather forecast with the goal of better equipping you to interpret what you see on TV and hear on the radio before heading into the great outdoors. We'll start with a quick look at Temperature, Moisture & Motion to better understand how the atmosphere works, followed by an overview of Weather Analysis. From there we'll take a look at how weather forecasts are actually put together.

Important Note: We are approaching the end of the club year and need a nominating committee to put together a slate of officers for the coming term. Please consider helping the club select its officers, and please also consider offering your services as an elected officer.

I hope to see you at the meeting!

Best, Steve
Lunar Minerology, by Andrew A. Sicree

Mineralogists who would study lunar mineralogy face a dearth (scarcity) of samples. Apart from tripping to the Moon by yourself in your own private spacecraft, there are only two sources of lunar minerals: samples returned by the American and Russian lunar missions, and lunar meteorites.

Lunar meteorites are meteorites that have their origin on the Moon. Blasted off the Moon by the impact of a "bolide," a large asteroid that impacted on the Moon, some lunar rocks picked up enough speed to escape the Moon’s gravity. Lobbied into outer space by the force of the impact, some lunar rocks are swept up by the Earth's gravitational field and fall to the ground as lunar meteorites. Several of these meteorites are known and they command hefty prices when sold. We only know that they are of lunar origin because we have other lunar minerals with which to compare them.

For example, pieces of the meteorite known as NWA 4734 were purchased from nomadic Bedouins in Erfoud, Morocco. The Bedouin found it somewhere in the trackless deserts of Northwest Africa. The Bedouin have learned that meteorites can be sold for a good price, and they have begun picking up black rocks in the desert that they otherwise would have ignored. They have become the world’s most accomplished meteorite finders. (Although it had been customary to name meteorites after towns near which they fell, the Bedouin have found so many meteorites in the uninhabited wastelands of North West Africa that meteorite specimens found in the desert are given the “NWA” tag followed by a serial number.) NWA 4734 is composed of highly fractured pyroxenes with plagioclase laths and minor amounts of silica and silica-feldspar glass. Accompanying minerals include ilmenite, baddeleyite, zircon, olivine, tranquilityite, and pyrrhotite – enough to make it a pretty interesting rock even if it didn’t come from the Moon.

Six Apollo missions reached the Moon and returned with samples. Nearly 2200 samples weighing a total of 842 pounds (382 kg) were collected by American astronauts between 1969 and 1972. Russian robotic landers returned with about 0.75 pounds (0.3 kg) of lunar rocks. The mineralogy of the collected lunar rocks and soils has been studied extensively and from these studies we can draw up a preliminary mineralogy f the Moon.

Some new minerals, such as tranquilityite and armalcolite, were first encountered among the Apollo samples. Tranquilityite, (Fe,Ca)₈(Zr,Y)₂Ti₅(Ο₄SiΟ₄)₃, hexagonal, is named after its discovery locality, the Sea of Tranquility on the Moon. The mineral armalcolite, (Mg,Fe)₂Ti₅O₈, orthorhombic, is derived from the surnames of Apollo 11 astronauts Neil Armstrong, Edwin Aldrin, and Michael Collins, who collected the first specimens. Subsequently, some of these unusual “lunar” minerals have also been found on Earth. For instance, armalcolite is reported from the Kerguelen Islands in the southern Indian Ocean. Generally speaking, most minerals found on the Moon are also found on the Earth, but not vice-versa. The absence of water and an atmosphere prevent the formation of common Earth minerals such as goethite (FeOOH). But this does not mean that there are no oxides on the Moon.

Oxide minerals found on the Moon include ilmenite, spinels, armalcolite, and chromite. Ilmenite is worth noting because it occurs in some lunar rocks in much higher concentrations than in similar Earth rocks.

Lunar silicates include pyroxenes, plagioclase feldspar, olivine, zircon, tranquilityite, and garnets. Pyroxenes such as augite and pigeonite are among the most abundant minerals in the Moon’s crust.

Crystalline silica in the form of quartz, tridymite, and cristobalite is found on the Moon, but quartz is much less common than it is in Earth rocks. The crust of the Moon is less evolved than the Earth’s crust. There has been much less magmatic activity on the Moon and thus less opportunity for quartz to be formed by magmatic differentiation, i.e., to segregate as quartz crystals from a magma – the way quartz forms in granites, for instance. Although not technically minerals, silica and silica feldspar glasses are also found. They formed due to rapid cooling of molten rocks produced by meteorite impact or lunar volcanism.

Olivine is a common mineral on the Moon. Olivine’s general formula is (Mg,Fe)₂SiO₄ and it exists as a solid solution series ranging from the magnesium-rich end member forsterite (Mg₂SiO₄) to the iron-rich fayalite (Fe₂SiO₄). Lunar olivines have a wide range of compositions but most tend toward the forsterite end of olivine series. But almost pure fayalite has been found on the Moon, too.

Troilite is a common lunar sulfide mineral. Native iron and other metals (such as nickel) also occur. Other lunar minerals include schreibelite, cohenite, niningerite, and lawrencite. Interestingly, the phosphate minerals apatite and whitlockite were also found.

Lunar rocks are extremely old. Samples have been radiometrically dated at between 2.8 and 4.5 billion years old. Rocks this old are rare on Earth (we recycle!). Among the oldest non-meteoritic Earth materials are 4.03 billion year old rocks from northwestern Canada. Tiny crystals of zircon from Western Australia are thought to be at least 4.38 billion years old – making them the world’s oldest minerals. The antiquity of lunar rocks gives planetary geologists the opportunity to study actual samples of rocks that formed at the time the crust of the Moon solidified (presumably the same time that the crust of the Earth formed).
WMC Fonda Claim Gives Up Treasure, by Larry Bull

Over the weekend of April 24th and 25th four club members, Ed Anderson, Guy and Cheryl Roberge and Larry Bull made the excursion to and wrestled with the dolomite rock of Diamond Acres. They were successful to the extent of unpinning from the rock six pockets filled with crystals of both calcite and Herkimer Diamonds. The results of the match were seriously in doubt throughout Saturday’s collecting with nature fighting back fiercely with waves of black flies and void rock. Finally around 4:00 pm two pockets were located and excavated. We emptied one and left the other for Sunday.

Sunday dawned for continuation of the match with overcast and threatening skies but nature held back from any rains washing over us as we continued to wrestle with the rock. Even the black flies harassing efforts were minimal on Sunday. We wrestled with the second very large block of rock separating it from the formation with great difficulty. Guy was like a machine. He was relentless with his assault upon the rock especially with the sledge hammer. His time in the gym really paid off. Upon removing the large block of rock and dispatching it to the realm of small rocks over the bank four additional pockets were located and cleaned out. There was some assistance from the mechanized work of a generator and hammer drill, but a full 90% of all the work was done the old fashioned way, by hand with hand tools. That means sledge hammer and spring steel along with wood wedges, and any assortment of tools and probes. Ed Anderson drew the cleaning duty for the treasure Herks. Hopefully they will be available for the members to see at the May meeting.

So come see the treasure and then get out there to the Club Claim to wrestle your own treasure from the rock.

Editors note:

The club requests that all visits to the Fonda Claim be logged in with our webmaster, Ron Morin. For those of you not able to do so by email, please call Ron and let him know when you intend to visit the club claim. The intent of this request is to get a better idea of the usage and to let others know when the claim will be occupied. Ideally this information would be supplied to Ron prior to visiting the claim.

WMC Officer Contact Information

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When
The Worcester Mineral Club generally meets on the third Tuesday of each month at 7:15 PM at Trinity Episcopal Church, Main Street, Shrewsbury. Show up 15 min. early, bring a couple of cool specimens and share a story or two.

Where
Exit 22 off I-290 (Main Street, Shrewsbury). Follow Main Street toward Shrewsbury for about 1.5 miles. Trinity Church is on the right just after St. John’s High School.

Our next meeting is Tuesday May 18th, 2010 @ 7:15 PM
This month’s program will be "Climatology and Geology" presented by our own club President, Stephen Daukas

New Diggings
Newsletter of the Worcester Mineral Club
PO Box 2278
Worcester, MA 01613

Check us out on the web @ worcestermineralclub.org