

CRACK 'N CAB



Gem & Mineral Society of Syracuse, PO Box 2801, Syracuse, NY
web <https://www.syracusegemsociety.com> Volume 52 Issue 4, April 2022
209 Oswego St (Ponderosa Plaza), Unit 15, Liverpool, NY



SPRING AUCTION

Monday, April 18 – Doors
Will Open at 6:00 pm,
Auction Starts at **7:00** PM!
John Sweeney will be
our auctioneer!

Please review the Auction Rules which are posted on [Page 7](#) in this newsletter. If you are planning to bring something for the auction, there are a couple short forms you need to fill out beforehand. The doors to the clubhouse will be open by 6:00. Please come early to fill out the necessary paperwork.

March 21, 2022 Meeting Review – Calvin Prothro – “The Rocks and Minerals of Mars” Pages 8 - 11

Lapidary Class Graduates
See Page 6

John Baumler Memoriam
See Page 4



Show Exhibitions - See Pg 5

President's Message

Dick Lyons



Keith Gilmer is looking for volunteers to take over one of the **officer positions** for our next fiscal year. Please seriously consider making this your future with our club.

As listed in this newsletter, the **Wayne Co. Club** is finally having a **show again in June**.

Please consider a trip to the **West Springfield Show in August**. I highly recommend a visit to one of these shows. Any of those events would be a fun-filled trip for you.

Our **next show committee** will be on April 26th. As of this week, 50 retail dealers have returned their completed contracts for our show. We need you to help make this show a success.

Please let Kris Boronczyk know if you have any interest in joining us to the previously **suggested field trips** for this year. Do you have any locations where you have visited in the past and would like to go there again? I heard that you can find **Larvikite** on the beach at Sandy Pond which is just North of Rainbow Shores.

Dick Lyons

Secretary's Reports

Charlie Brown

Monthly Member Meeting, 3-21-22

Calvin Prothro, Associate Professor of Geology & Planetary Science at S.U.N.Y Onondaga Community College was our guest speaker. His topic was *The Rocks and Minerals of Mars*. Professor Prothro provided information about how far Mars is from earth in distance and travel time, U.S. unmanned exploratory expeditions *Mariner 4* (1964), *Viking I* (1976), and *Sojourner* (1997) from the U.S. that have been sent to the planet, Mars evolutionary history as we believe it, and Mars

surface features such as impact craters, valleys, dunes, and polar ice caps. It is believed that vast mineral deposits exist in its surface. The presentation was well attended and well received.

Show Committee Meeting, 3-22-22

February meeting determined committee coordinators and their responsibilities were reviewed to assure clarity and specifics. A suggestion of inclusion of a silent rock auction running each of the two show days was discussed at length and adopted. Details as to how the silent auction would operate and the source of the rock to be offered for purchase were discussed at length. Keith will be overseeing a **Work Day on April 23rd** to inventory, check, and service display cabinets to be used by participants at the show. Our **next monthly Show committee meeting date will be April 26th** at the clubhouse.

Executive Board Meeting, 4-5-22

The meeting was called to order by President Dick Lyons. Jr. Rockhound Leader Rick Moore and Webmaster Dana Schwartz were not in attendance.

Webmaster Dana Schwartz requests that any club info or photos should be sent to her at danathewebdiva@aol.com A reminder that our club website address is now *SyracuseGemSociety.com*

Treasurer Mary Davis reported that additional Show contracts have been received. Transfer of our club's financial institution of record has been delayed by difficulty in locating our Certificate of Incorporation from 1969. Files located on our library shelves and in the library file cabinet have been searched by Mary and Secretary Charlie Brown. IRS documentation pertaining to our 501(c)3 status were located. If necessary, a replacement Certificate of Incorporation will be sought from Albany.

Keith Gilmer reported that the **Nominating Committee** anticipates being able to have a full slate of proposed officers to announce at our membership meeting on April 18th. Presently, two individuals are considering their commitments to run for office. *If anyone is interested in running for the offices of President, Vice President, Secretary, Sergeant at Arms, or Treasurer, please contact Keith prior to our April general meeting.* Candidates for office will be listed in our May newsletter, our annual election will be in June. Elected officers for '22-'23 will assume office at our September member meeting.

A second Clubhouse Work Day will be held on Saturday, April 9th from 10 AM – 2 PM.

The focus of Saturday's 4-hour effort will be to identify, sort, and organize in boxes:

- rock samples to be auctioned in box lots at our April general meeting's bi-annual auction
- identify and box excess rock samples that the club does not have use for that will be offered for purchase in hourly silent auctions both days of our annual two day show July 9 & 10th at the Center of Progress Building at the State Fair
- finish processing donated member collection samples to be displayed in cabinets in our meeting room. (This was begun at last month's workday)

Last month's **March 5th Work Day** was very productive. Our library materials were culled, sorted, organized, and re-shelved by a three-member team, three display cabinets were emptied, cleaned, and subsequently, three former members' donated rock collections were partially processed for display. Lastly, the general cleaning and straightening of rooms included moping of the workshop floor in 14 and vacuuming of the meeting room carpet in 15. Many thanks to those who were able to come for the 4 hours of work time or any part of it.

Saturdays are not possible for everyone. Come when you can, on April 9th, leave when you need to. If you can join us, you will be a big help!

Our **annual fire/safety inspection** took place on March 29th by two employees of the Village of Liverpool. Our landlord's maintenance person, John, will take care of two lighting-related items identified and the annual certifying of room fire extinguishers. An upgrade to the electrical system related to the workbench area in 14 will also be accomplished by John.

EFMLS Regional Vice Presidents are up for election at this September's Annual Convention. Our Region, Region III, is in need of a vice presidential candidate. Dick Lyons or Bob Livingston are knowledgeable individuals to talk to about the position.

Cheryl Brown and Dick Lyons reported on updates pertaining to our **July show**. As of April 5th, we have 50 retail vendors/ demo contracts received and 4 wholesale and 6 metaphysical participants. Display cases will be included pertaining to the Ukraine and dedicated to our former member John Baumler. A silent auction is being planned to take place hourly both days of the show.

Keith will have a **work day at our storage unit in Camillus on April 23rd** to inventory, check and repair the participant display cabinets needed for the show. The **next monthly meeting of the Show committee is scheduled for April 26th at 7 PM.**

Respectfully submitted,

Charlie Brown

A Nudge to YOU from a Former GMSS President

by Bob Livingston

It's in the cards. Officer nominations are coming up and an election comes about in June. So now hear this. Nominations chair Keith needs several of you to step up and volunteer to serve. Let me tell you of my story.

I joined our club in September of 1988 and just one year later I was asked to serve as Treasurer no less. I was green to the club and (admit now) I was not the best accountant (the treasury did remain sound however). But they needed officers then, like now, and so I said YES when asked. I served that role for two years, and later as VP for probably two and then in '93 and '94 as President of GMSS. I learned so much and met so many great fellow members as by then we were expected to attend, and did, the Eastern Federation Annual Meeting and Conventions. From that and being an attendee at Wildacres in NC a couple times, I got nominated and served in the chairs of 2nd and 1st VP and then ultimately in 2002 President of the then 125 clubs of Eastern Federation from Maine to Florida. This job gets you as a delegate to American Federation conventions and shows. In our case, my wife and I attended conventions in Roswell, NM and suburban Seattle. And I served nearly 10 years as show consultant for American Federation (the whole U.S.). So, there is no end to the possibilities. Just look at the pluses of actively serving GMSS:

- + Your Syracuse club needs persons to fill these slots and if YOU don't do it chances are it won't get done. So, then what -- a ship without a captain or rudder goes nowhere good
- + You learn so much about the club and its issues and workings

- + You get to meet our movers and shakers
- (Continued on next page)

close up and become valued lasting friends in many cases

- + Many times, it is new officers' ideas that move the club forward in positive ways
- + You get to be involved in big decisions on speakers, club workshop doings, club growth, innovative ideas, new challenges/ things to try at GemWorld show and on and on
- + Our president gets to give out the accolades/ awards to club members -- the best job
- + What you learn from your fellow board members can help many times in being a better you at your work job
- + Plus plus -- Eastern Federation needs lots of new persons to fill slots now or when you get experience serving as GMSS board member
- + The possibilities for growth in any of many directions are truly endless

So, step and don't worry, just be happy as one of our new leaders/ board members. Just say YES, I am here for you like I did those many years ago. I have never been sorry.

In Memoriam -- John Baumler

We have learned that GMSS Life Member John Baumler passed away on January 22. Not only a hard-working guy in our club but he had many interesting jobs in both the Air Force and 40 years in the Department of Defense. Born in New York City, John became an Electrical Engineer and in his various jobs has lived in several places. In fact, he, and wife Marilyn, whom he met in Indiana, even lived for a spell in Wiesbaden, Germany. (For the German Beer? Well, having been there, it was a plus for sure.) Towards the end of his working career, John worked for Grumman Corp over at Griffiss in Rome. This was handy as they lived in Lee Center north of Rome, NY.

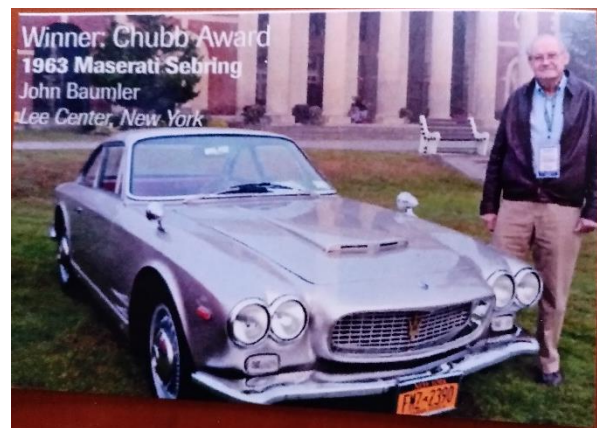
John and I had a lot of chances to chat and work together on the set up and tear down of GemWorld shows back when we met at the Presbyterian Church at 600 West Genesee St. I recall many a Sunday night finishing up tear down by being two of the 6 or 8 guys who had to carry all those cases down two sets of turning stairs to the basement of the church along with all the other stuff making up a full box truck load. We were absolutely dog tired at the end when we stopped for some cool sodas supplied by Dave Zobkiw. John was a wear gloves guy, and I am

not. He was smarter. But after all this, I had only a short drive home after dark, and he had to still drive to north of Rome where he lived.

John and Marilyn were able to go to Wildacres workshop in Western North Carolina which they enjoyed, and he became quite skilled in lapidary and silver work. He was proud to show his creations at the club meetings. John was Eastern Federation Region III VP back approximately 20 years ago. Nearly 20 years ago he took one raffle chance at an Eastern Federation convention on a 5500 CT Cubic Zirconia, faceted-stone and lo and behold, John won. He has exhibited it several times in our Syracuse show. With some luck maybe we will get to see it again this July there. It is a huge handful.



John had a myriad of hobby interests that included photography, building stuff and even rehabbing some houses near his home. But his all-time favorite was restoring a 1963 Maserati which he just loved for 53 years.



John was a good friend to many of us GMSS older members and will be sorely missed by many. Our heartfelt Sympathy goes out to wife Marilyn and his family. There will be a memorial service this summer for John. Bob Livingston

The Joy and Importance of Show Exhibitions

By Keith Gilmer

When I was very young, I was a member of the Gem and Mineral Society of Syracuse. I, like most children, was both fascinated and awestruck with the gems and minerals that were in the annual show[s]. Although I was impressed by the specimens that were for sale on the main floor I was also struck by the quality and uniqueness of the material in the exhibit display cases. I imagined that someday I too might have a collection worthy of the quality of what I remembered as a child. When I rejoined the club back around 2007-2008, I realized my childhood dream of placing my collection in the show for the first time ever! I was moved not only by my submission but by all of the others that were there as well. I felt a belonging and connection that I never had before. It was, and continues to be, very special to me. I eventually took the position of Exhibit Committee Coordinator and have embraced it ever since. Collecting is part of the reason that brings us together; but exhibiting what we have acquired and sharing that experience with friends, family, and often total strangers extends our experiences to all those who wish to learn and understand. Our collection[s] may enrich us, but our exhibition[s] enrich everyone who sees and experiences them. So please consider an exhibit in the annual show. Share your passion for the hobby with others and they too may find that passion within themselves. Thanks.

The following are some examples of club members' show exhibits.



**Geo Lexis (Puzzle)
By Anne Fitzgerald**

"Cruel April?"

T.S. Eliot wrote in "The Waste Land" *"April is the cruellest month, breeding Lilacs out of the dead land."* I always thought that maybe those lilacs were dying to come out, and T.S. Eliot lacked motivation. But he may have had a point.

Some scientists now think they have pinned down the season of the mass extinction of the dinosaurs roughly 66 million years ago to spring in the northern hemisphere. If indeed the extinction happened in April, that was a cruel end. Eliot perks up his motivation near the end of his poem by asking, as many of us do in spring: *"Shall I at least set my lands in order?"*

By testing fish fossils in North Dakota from the time of the extinction, scientists found that sturgeons and paddle fish were in their beginning growth spurts, stages that happen in spring. Clogged with cosmic debris, their gills provided additional proof that their deaths occurred at the time of their growth spurt, and during the mass extinction.

Unscramble the following to find fossils found in North Dakota from the time of the extinction. On a hopeful note, all but one group survived, and some have helped to set our lands in order.

- snat
- fowbins
- cedilorcos
- seatfher
- spaterosur
- skarsh
- sethurt

A solution is on Page 8 of this newsletter.

Lapidary Class Graduates



Here are some photos of the two most recent graduates of the club's lapidary classes, Donna Coleman and Robert Palmer. Classes run continuously on Saturday morning, and we can fit anyone's schedule. Classes consist of three 2-hour sessions from 10 AM to 12 noon on Saturdays. The classes need not be consecutive Saturdays. So, if you have to skip a day because of a family or club event we can continue the following Saturday. If you have any questions, please call Bill Verge at 617-872-4528. Space is limited so give us several days advance notice that you are coming to the classes. Bill Verge



Upcoming Events

April 9 – WORK DAY at GMSS Clubhouse 10am – 2pm. See page 3 for details.

9-10—JOHNSON CITY, NEW YORK: Annual show; New York Southern Tier Geology Club; Johnson City Senior Center, 30 Brocton St, 96 West Main St.; Sat. 9-5, Sun. 10-4; \$4.00 Adults Kids under 12 Free; Ultra Violet Display, Beads and Supplies, Minerals and Fossils Sales, Jewelry and Gemstone Sales, Flintknapping, Silent Auction, Door Prizes, Food and Drink for Sale; contact Thomas Ogden, 96 West Main St, Bainbridge, NY 13733, (160) 796-78552; Email: stonecutterton@yahoo.com

April 15 - Herkimer Diamond Mines & KOA Resort Opening Day. 4601/4626 State Rt 28, Herkimer, NY. 315-891-3099/315-891-7355; herkimerdiamond.com.

April 15 & 22 - Crystal Grove Diamond Mine & Campground Opening Day, camping. 161 County Rd 114, St Johnsville, NY. 518-568-2914; crystalgrove.com.

April 18 - GMSS meeting - 7:00 pm start
Our semi-annual auction is back! Will our auctioneer John Sweeney be back as well? Come and find out! See "Auction Rules," next column.

April 23 - WORK DAY at storage unit in Camillus; rain date April 30. See page 3 for details.

April 23 - Onondaga Free Library - Geology Day - Dave Millis will have a program for kids: "Mineral Identification" at 10 am, and for adults: "Mineral Potpourri" at 2 pm. Registration required. info@oflibrary.org; 315-492-1727.

April 23—WEST FRIENDSHIP, MD: Annual show; Chesapeake Gem and Mineral Society; Howard County Fairgrounds, 2210 Fairgrounds Rd; Sat. 10-4; Free; New Location Minerals, Fossils, Original Jewelry, Rough & Cut Gemstones Silent Auctions, Door Prizes Free Minerals for Kids; contact Lynne Emery; Email: chesapeakegemandmineral@gmail.com; Website: chesapeakegemandmineral.org

April 26 - NYS Fair 2022 Show Committee meeting - 7 pm at the Clubhouse, led by Cheryl Brown.

April 30 - May 1 - Pittston, PA - 18th Annual Treasures of the Earth weekend show and sale sponsored by the Mineralogical Society of Northeast Pennsylvania. St. Joseph's Oblates, 1880 Highway 315, Pittston, PA, Sat 10 - 5, Sun 10 - 4. Over 20 vendors and numerous free activities. Admission \$3, children under 13 free. Website: www.msnepa.org.

April 30-May 1 - Burlington, MA - 57th Annual New England Gem & Mineral Show, sponsored by the North Shore Rock & Mineral Club. Note: This is a change in location: Burlington Senior Center, 61 Center St, Burlington, MA. Sat 9 - 5, Sun 10 - 4. Admission \$6.00, Seniors \$5.00, children under 12 free. Contact: www.northshore.org e-mail: northshorerockandmineral@gmail.com.

MAY 3 - GMSS Board meeting - 7 pm at the Clubhouse. All are invited.

MAY 7 - Field Trip! - with Dave Arcaro, and Dave Millis (with his group from PA) to Deep Springs Road in Madison County, between Lebanon, Hamilton and Earlville. Plenty of fossils to find: brachiopods, cephalopods, crinoids, gastropods! Meet at Clubhouse at 8 AM. Call Dave Arcaro 315-935-3627 for reservations, questions.

May 16 - GMSS meeting - 7:30 pm
We'll have a Pre Work Night for our July Show - a demonstration of a display case setup, various job descriptions, and maybe snacks, too!

GMSS Auction Rules:

1. Only club members can sell items. Anyone can bid on auction items.
2. The auction begins at 7:30. If you are selling items, please come early to obtain the two auction label forms and set your items up on the auction tables. The doors will be open by 6:00.
3. Each item must have two completed auction labels. One is a description form for each item, which will be given to the successful bidder. (Mineral name and location collected) The second form will be given to the treasurer for the club records.
4. There is an upper limit of five (5) items per seller. There is no maximum limit for the number of items donated to the club.
5. This is not a silent auction. Each bidder will be given a number on a sign to display.
6. Any material with a specified minimum bid that does not sell will be returned to the seller.
7. The club will retain 15% of the selling price. The full selling price of the donated items will be given to the club.
8. The highest bidder wins the auctioned item. Runners will deliver each item to the winning bidder and collect the payment for that item. Bidders need not leave their chairs. **BIDDERS, PLEASE BRING PLENTY OF CASH.** Items selling for more than \$15.00 can be purchased by personal check. All other items will be cash only. We have no means for swiping credit cards.
9. Sellers cannot bid on their own items.

Answers to Geo Lexis

| | |
|-------------------|------------|
| snat | ants |
| fowbins | bowfins |
| cedilorcos | crocodiles |
| seatfher | feathers |
| spaterosur | pterosaurs |
| skarsh | sharks |
| setlurt | turtle |

Sources and further reading:

<https://www.smithsonianmag.com/science-nature/asteroid-that-decimated-the-dinosaurs-struck-in-spring-180979621/> By Riley Black

<https://insidescience.org/news/north-dakota-fossil-site-evidence-suggests-dinosaurs-may-have-died-spring>

<https://www.nature.com/articles/s41586-022-04446-1>

During, M.A.D., Smit, J., Voeten, D.F.A.E. et al. The Mesozoic terminated in boreal spring. Nature 603, 91–94 (2022). <https://doi.org/10.1038/s41586-022-04446-1>

<https://www.poetryfoundation.org/poems/47311/the-waste-land>

[https://en.wikipedia.org/wiki/Tanis_\(fossil_site\)](https://en.wikipedia.org/wiki/Tanis_(fossil_site))

Prof. Calvin Prothro – “The Rocks and Minerals of Mars”

**March 21, 2022 Meeting
Photos by Judy Cook**



Calvin Prothro is a tenured Full Professor of Geology at Onondaga Community College with over two decades of multidisciplinary professional environmental and hydrogeologic consulting experience. He has been certified by both the National Association of State Boards of Geology (ASBOG) and the American Institute of Professional Geologists (AIPG), and has had or currently holds Professional Geologists licenses and certifications in the following states: New York, Indiana, Delaware, Pennsylvania, Illinois, Minnesota, Tennessee, and the American Institute of Professional Geologists. As project geologist/project manager/Senior Hydrogeologist, he has conducted environmental and hydrogeological site investigations at numerous sites across the Eastern United States. The investigative work he has performed includes aquifer testing, Soil Vapor Extraction (SVE) pilot testing, groundwater flow, and solute transport modeling, rock cores and soil logging, contour and isopleth mapping, and remedial design. Calvin is also the author of the Dark Solar System Sci-fi Series, which includes the novels: A Mission So Dark; In the Cold and the Dark; and The Devil in the Dark.

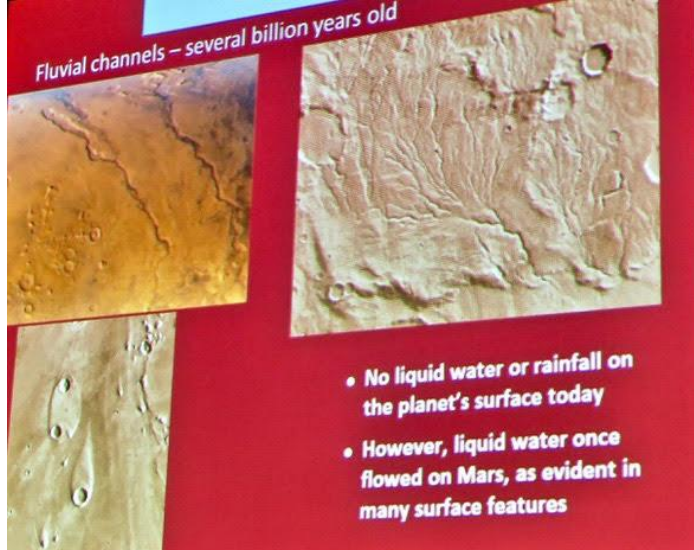
On the following pages are some of the slides from this fascinating presentation about Mars.

(Continued on next page)

| | | |
|-----------------|---|---------------------------------------|
| Size | 53% of the Earth | Roughly The Same Internal Structure? |
| Mass | 11% of the Earth (Surface gravity = 3.71 m/s^2) | |
| Density | 3934 kg m^{-3} (Earth Venus = 5500 kg m^{-3}) | Days and Seasons similar to the Earth |
| Solar Distance | 1.52 AU | |
| Year | 687 days, 1.9 Earth years | Similar Surface |
| Obliquity | 25° (Earth = $23\frac{1}{2}^\circ$) | |
| Rotation period | 24hrs 37 minutes (Earth = 1 day) | |
| Surface | Earth-like rocks and landforms Some parts heavily cratered | |

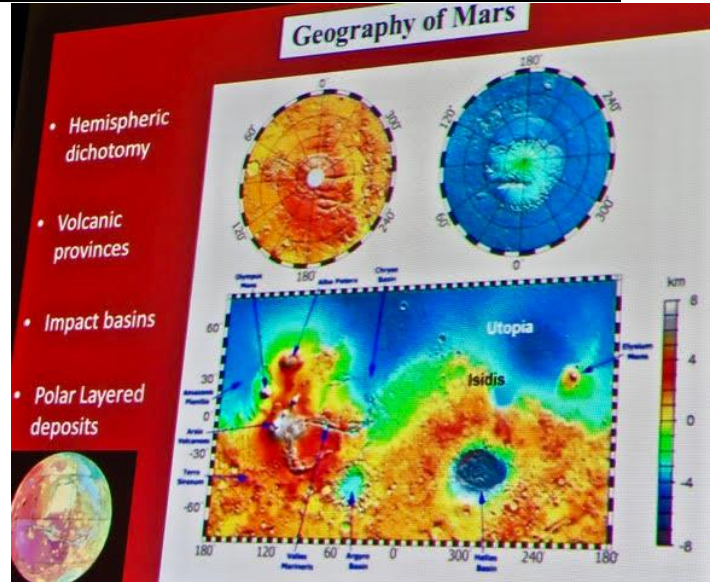
| | | |
|-----------------------|---|---------------------------|
| Mars | | Very Different Atmosphere |
| Atmosphere | ~ 95% CO_2 (Earth = Mostly nitrogen) | |
| Pressure | 0.006 bars (Earth = 1 bar) | |
| Average Surface Temp. | 186 to 268 K (-85 to -5° C) (Earth = 300 K) | |
| Clouds | Water ice and dust (Earth = water vapor) | |
| Magnetic field | None current but had one (Earth has a strong field) | |
| Seasonal ice | Carbon dioxide (Earth has water frost) | |

Fluvial channels – several billion years old



- No liquid water or rainfall on the planet's surface today
- However, liquid water once flowed on Mars, as evident in many surface features

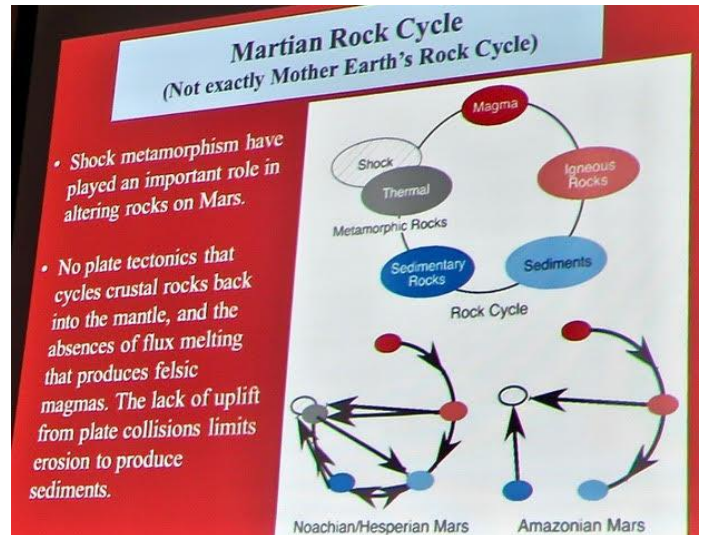
Geography of Mars



- Hemispheric dichotomy
- Volcanic provinces
- Impact basins
- Polar Layered deposits

Martian Rock Cycle

(Not exactly Mother Earth's Rock Cycle)



- Shock metamorphism have played an important role in altering rocks on Mars.
- No plate tectonics that cycles crustal rocks back into the mantle, and the absences of flux melting that produces felsic magmas. The lack of uplift from plate collisions limits erosion to produce sediments.

Noachian/Hesperian Mars Amazonian Mars

Mars Meteorite



- Northwest Africa-7034 was found in 2011.
- It is estimated to be two billion years old and contains the most water of any Martian meteorite found on Earth.
- It is a volcanic breccia that has a porphyritic appearance, consisting of plagioclase (andesine) and pyroxenes (pigeonite and augite).

Cut surface of the NWA 7034 meteorite, a regolith breccia. Photograph courtesy of Carl Agee.

Giant volcanoes: Olympus Mons (Mars)-Hawaii Comparison

Arizona, USA

Olympus Mons

Mauna Kea Everest

Igneous Petrology of Mars

- The surface geology of Mars is somewhere between the basalt (Mafic) or andesite (Intermediate) rocks on Earth.

Curiosity image Called "El-Then"

Basalt on Earth

Note: Chemical analyses of Mars rocks by instruments on rovers and laboratory characterization of Martian meteorites, indicate that the planet's crust is composed primarily of rocks having basaltic composition, with lesser amounts of ultramafic.

Valles Marineris - "Grand Canyon of Mars"

- It stretches for at least 2500 miles (NYC ↔ LA)
- "rift valley" - region broken by crust motions earlier in Mars' history

signs of river erosion in early history of Mars (3-4 Billion years ago) like Grand Canyon

Identification of Minerals on Mars

The visible/near-infrared spectrometers on orbiting spacecraft have identified and mapped mineral species including: phyllosilicates, serpentine, zeolites, silica, sulfates, carbonates, chlorides, and oxides

Example of Mars imagers:

- Thermal Infrared Imaging Spectrometer (TIS)
- Compact Reconnaissance Imaging Spectrometer (CRISM)

NOTE: Phyllosilicates refer to minerals which have parallel sheets of silicate tetrahedra. Clay minerals fall into this group of minerals.

Interior of Mars ???

- Mars had a liquid metal core
 - Cools off faster than Earth due to smaller size
 - Once the core froze there was no more magnetic field

3,389 km

Crust of variable thickness (-100 km in south; 30 km in north)

Convecting silicate mantle (may be layered)

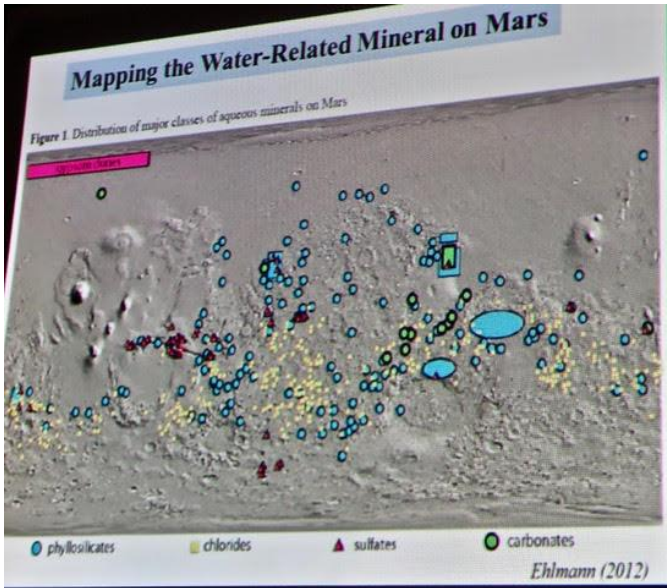
Fe-S(-Si?) liquid outer core

Possible solid Fe inner core

Possible transition to perovskite (equivalent to 660 km discontinuity in Earth)

Layered Sedimentary Rocks

Enhanced-color composite image of the delta at Jezero Crater. The delta formed billions of years ago from sediment that an ancient river carried to the mouth of the lake that once existed in the crater. Taken by the Mastcam-Z instrument - Perseverance rover (Nov. 28, 2021)



Evidence of Perchlorates

- The presence of perchlorate, in high percentages, forms highly saline soils.
 - Perchlorates are compounds that contain the anion ClO_4^-
 - The perchlorates are present in the form of:
 - $\text{Ca}(\text{ClO}_4)_2$
 - $\text{Mg}(\text{ClO}_4)_2$
 - $(\text{NH}_4\text{ClO}_4)$
- These perchlorates may lower the freezing point of water and allow it to flow for a short time on the surface.

Perchlorates Could explain Gullies

- Recently carved gullies observed on crater walls
 - Occur preferentially on poleward facing slopes in the mid-latitudes

Almost certainly carved by liquid water
Water is not currently stable on the Martian surface, theories:

- Gully formed beneath snowpack
 - Under a recently deposited mid-latitude snow layer
- Local or deep pressurized aquifer

> Dissolved fraction of Perchlorates and other mineral salts

Mars in the recent past...

- Martian weather today
 - Seasonal frost
 - Ice clouds
 - Dust storms
- Recap
 - Ancient Mars
 - Transition to cold dry conditions
- Giant Floods
 - Outflow channels
- Climate change on Mars
 - Polar ice caps
 - Orbital variations
- Running water today?
 - Gullies
 - Flowing ice
- Volcanism and life?
 - Methane in the atmosphere

Problems With Future Mars Exploration

- Perchlorates are compounds that contain the anion ClO_4^- . They are present at concentrations between 0.5 and 1% in the Martian soils. They could become a critical chemical hazard to astronauts. Perchlorate ions are toxic to the thyroid gland.
- Low atmospheric pressure creates a danger of decompression and little protection from space debris (i.e. meteorites)
- Radiation levels at the surface of Mars (mainly induced by Galactic Cosmic Rays (GCR)) are high enough to have an impact on biological lifeforms and other organic materials.
- No magnetic field to protect the surface of Mars from Solar Radiation and Solar Storms.

IT IS JUST A LONG WAY FROM HOME!

Future Mars Exploration

- We can process the Micas and other Phyllosilicates present on the surface and produce building materials like drywall, glass, ceramics, filtration systems, Solar Panels, and electronic components.
- With organic materials produced by the humans (and eventually other animals) and minerals like Montmorillonite $((\text{Na,Ca})(\text{Al,Mg})_6(\text{Si}_4\text{O}_{10})_3(\text{OH})_6 \cdot n\text{H}_2\text{O})$ and Aragonite (CaCO_3) fertility organic soils could be created on Mars.

Professor Prothro suggested under current world conditions, it probably wouldn't be until the 2060s that there might be a human mission to Mars. So, a field trip will have to wait.



Gem and Mineral Society of Syracuse
P.O. Box 2801
Syracuse, NY 13220
First Class Mail

Time Dated Material



www.amfed.org www.amfed.org/efms **Future Rockhounds**

Eight people organized the Gem and Mineral Society of Syracuse in 1951. Since that time it has grown in membership to include adults, families, and young folk. The Society was incorporated in 1969 under the same name.

The objectives of the Society are to stimulate interest in mineralogy, paleontology, and the lapidary arts. Member interests include collecting, identification, and display of minerals, gems, fossils. Members share and develop their artistic skills in jewelry design and creation.

Our monthly meetings provide social and educational experiences. Field trips give collectors chances to find specimens and enjoy the out of doors, exercise and time with old and new friends.

Meetings - 3rd Monday of the month
Future Rockhounds @ 6:30 - General Meeting @ 7:30
(NO Meetings Jul, Aug, Dec)
209 Oswego St (Ponderosa Plaza) Unit 14 & 15, Liverpool, NY
Visitors are ALWAYS welcome!

See online Newsletter <http://gmss.us/resources/newsletter>
 You can also visit our facebook and flickr pages
Annual member dues
Adult \$10 • Family/Couple \$15 • Junior \$5 • Life \$5

If you would like to join or renew membership download the application form (PDF), see <http://gmss.us/about/membershipform.pdf> You can get a form at a meeting or send requests to **GMSS, PO Box 2801, Syracuse, NY 13220** We will mail an application/renewal form to you.

2021 – 2022 GMSS Officers/Contacts

-President: Dick Lyons 315-672-5328
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-Vice-President: Kris Boronczyk 315-487-5202
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-Treasurer: Mary Davis 315-885-4416
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-Secretary: Charlie Brown
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-Jr Rockhounds:
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-Membership Chair: members@syracusegemsociety.com

-Sgt at Arms: John Sweeney
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-GemWorld Show Chair: Cheryl Brown 315-708-9122
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