Westminster Astronomical Society Inc, of Maryland

Volume 31, Issue 3
March 2014

The Mason-Dixon Astronomer

March Meeting:

- Wed., March 12th – 7:30 pm
  Bear Branch Nature Center
- **Slava Murygin**

  "Lowell Observatory & Barringer Crater in Flagstaff, Arizona"

Dinner With Our Speaker!

- Wed., March 12th – 6pm.
- Harry's Main Street Grill
  65 W Main Street
  Westminster, MD 21157

INSIDE THIS ISSUE:

St*r Points

Roving the Moon and Mars

March 2014 – Curt Roelle

The moon seems be frequently in the news lately. In August, NASA launched the Lunar Atmosphere and Dust Environment Explorer (LADEE) from the Virginia coast. As the name suggests LADEE's mission is sniffing out thin clouds of dust and searching for the tenuous lunar atmosphere from lunar orbit.

It turns out that during the Apollo missions, some astronauts observed something both interesting and unexpected. From lunar orbit they sketched glowing patches over the moon in the direction of the sun when it was just below the horizon. Thus the moon may actually possess an exceptionally thin atmosphere consisting of dust and perhaps some gas. LADEE's extremely sensitive instruments are designed to detect it.

Then late last year, just as LADEE was getting settled in around the moon, China launched its unmanned Chang'e 3 moon lander named after a Chinese moon goddess. This alarmed scientists who feared the contamination spread by Chang'e 3 would interfere with LADEE. Space.com quoted Jeff Plescia , a space scientist at The Johns Hopkins University Applied Physics Laboratory in Maryland:

"*The arrival of the Chang'e 3 spacecraft into lunar orbit and then its descent to the surface will result in a significant contamination of the lunar exosphere by the propellant*."

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President's Message

March 2014 – Tony Falletta

Greetings Fellow Astronomers!

March is upon us and I eagerly look forward to the warmer temps of spring! This winter has been a bit of a challenge with dare I say, less than friendly temperatures. Our February monthly meeting was cancelled ultimately due to the weather. First, a winter storm came through than gave us plenty of ice and in return took away electricity from many of us. BBNC was also a victim of this storm, taking away power and heat. As we collectively recovered from this event, BBNC remained without heat. On the heels of this storm approached another that was to begin near the onset of our meeting. With these factors in place, a cancellation of the meeting was in order. I hope you all fared well with these storms and stayed safe and warm. Our speaker, Dr. Marc Swisdak has been rescheduled and will speak at a future meeting.

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March Meeting – Guest Speaker

SLAVA MURYGIN – WASI Club Member

"*Lowell Observatory & Barringer Crater in Flagstaff, Arizona*"

Last summer I brought my son and my dad on a trip around the US. The turning point of our trip was the little Arizona town Flagstaff - the most astronomical city of the world.

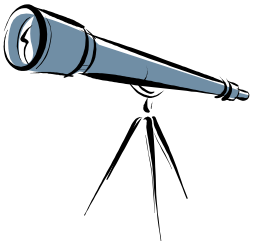
My talk is about the trip and Flagstaff and its astronomical history. The presentation will include a lot pictures from Flagstaff and our travels around the county.

Bio:

Slava was Born in the middle of Russia, in the Ural Mountains, on the border of Europe and Asia (on the Asian side). Since childhood he looked at the stars and dreamed to be a Cosmonaut. At the age of seven he wrote a letter to the Russia space center with a proposal of a linking module for a space station. Later, the same design was used for station 'Mir' and currently for ISS.

After his parents moved to Belarus he earned a degree in Computer Science from Belarus university. Slava immigrated to the US right before 9/11. Since about 2004 he has been a regular at all of the Soldier's Delight Stargazing parties and very active in WASI.

Upcoming Events From Our Calendars



- **Monthly Meeting** March 12th, 7:30 p.m., at Bear Branch Nature Center (BBNC)
- **Planetarium Show** March 8th, 7:30 p.m., at Bear Branch Nature Center (BBNC)
- **Soldiers Delight Public Stargazing** March 8th, 8 p.m., at Soldiers Delight Natural Environment Area in Owings Mills
- **Messier Marathon** March 29th, Sunset, Marstown Observatory – New Windsor – More details on page 5

Join The Westminster Astronomical Society…

Joining WASI gives you a great opportunity to meet fellow astronomers and provides group memberships to the Astronomical League and the International Dark-Sky Association. Additionally, benefits include access to our Library (over 500 astronomy-related books), the ability the borrow club scopes, a subscription to the Astronomical League's *Reflector*, access to members-only observing sessions and sites, and club discounts on astronomical magazine subscriptions.

Adult Membership is still only $25 per year.

NEW THIS YEAR – JUNIOR MEMBERSHIP

Yearly Membership For Anyone Under 18 Is Now Just $5!
(YES…JUST FIVE DOLLARS!)
http://www.westminsterastro.org

St*r Points for March…

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Another view is that the controlled release of gases from Chang'e 3 would offer an opportunity to track the spread of those gases around the moon. A cosmic instance of turning lemons into lemonade.

The pro or con contamination news wasn't very wide spread. Instead, the big news was Chang'e 3's lunar rover Yutu named after a mythical Chinese jade rabbit. The rover was designed to survive for three months. Apparently Yuto has suffered a mechanical breakdown.

Although according to Space.com Yuto "can now receive signals normally" the rover hasn't budged an inch since January. Designed to travel around a 1.2 square mile region, Yuto appears to have moved a few dozen yards since rolling off the lander in December.

China is the third country to land a rover on the moon, with Yuto arriving more than 40 years after all the others. How good was the old technology of the previous century? The Soviet Union's unmanned Lunokhod 1 and 2 rovers drove a combined total distance of 29.5 miles on the lunar surface. Although the United States has never landed an unmanned rover to the moon, it did manage to land three manned rovers carried aboard Apollos 15, 16 and 17 that transported a total of six astronauts a combined distance of 51.6 miles.

The real realm of the rovers so far in the 21st century is the planet Mars. A total of four rovers have landed since 1997, all of which were sent by the United States. Their names are Sojourner, Spirit, Opportunity, and Curiosity. Even after ten years of operation Opportunity is still going strong, having traveled more than 24 miles to date. Curiosity, the latest rover, landed in 2012.

There are more ambitious plans for Mars in the future. In February the U.S. Congress held a hearing to consider sending a manned mission aboard the Orion Crew Exploration Vehicle (CEV) on a flyby mission to Venus and Mars as early as 2021. Orion is the next generation of U.S. spacecraft and is designed for interplanetary exploration. No manned spacecraft has left earth orbit since Apollo 17 in 1972.

Speaking of Mars, it is starting to be well placed for viewing. It may be found low in the east-southeast sky at 11 p.m. To its right you'll also see the bright star Spica in the constellation Virgo. The angular distance between Mars and Spica is less than the width of your outstretched fist. Mars is brighter and has a distinct orange hue. Both are easily visible to the unaided eye.

In a telescope Mars is best viewed at its highest point in the sky, or between 2 and 3 a.m. On April 8 Mars reaches opposition and will be visible all night long. Its small disk should be visible in a telescope. How small? Mars' angular size will only be 15 arc seconds, or less than one percent the width of the full moon.

Don't miss the March 9 debut of the new 13-part Fox documentary, Cosmos. The original Cosmos was a landmark series that premiered in 1980.

President's Message

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March is the month of the Vernal Equinox. This year's equinox occurs on March 20, 2014 at 16:57 UTC. As I write this I realize that the equinox is 6 weeks past groundhog day. Hmmm, didn't that groundhog predict 6 more weeks of winter? I sense a trick here!

This month also means it's time for the annual Messier Marathon. I have done quite a few Messier Marathons. On my last outing, I was able to see 97 of the 109 targets. If you haven't done a marathon, I highly recommend it. It's a fun way to enjoy a full night of stargazing from dusk to dawn among the camaraderie of friends. Once again, member Curt Roelle will host the event this year. Details are forthcoming from Curt.

This month, Paul and Paula Henze are retiring to North Carolina. On February 23rd, members of WASI gathered at O'Lordan's Irish Pub in Westminster to bid them farewell. Paul has been an instrumental member of WASI for many years. Paul was one of the key members who constructed the domed ceiling of the planetarium here at Bear Branch. When I spoke to Paul at our gathering, he assured me he would be back up to Maryland to see our official opening of our observatory. Even though he and Paula would soon be in Asheville, he is excited to know that our long awaited observatory is near fruition. As we departed the Pub, all of us gave hearty handshakes and hugs to him and Paula. I will miss seeing Paul at our meetings. His absence will be felt by many, myself included. If Paul joins a local astronomy club there, that club will be gaining a true asset. Their gain is truly our loss. I wish Paul and Paula a happy retirement. May they enjoy the beautiful night skies that the Blue Ridge Mountains offer.

Member Observing will be commencing soon. Members observing sessions are one of the things that really define who we are as a club. Members Steve Conard and Paul Henze ran the members observing sessions last year. With Pauls' departure, Steve will be heading this up solo. If anyone is interested in helping Steve out just let him know. If you can't, when Steve announces the observing dates, plan to join us with your scope in your arms, hot chocolate in your thermos and astronomy in your heart!

On the Observatory front, we have sent some tweaks of the MOU back to the County for their consideration. We feel we are very close to a final document that satisfies the County, BBNC and WASI. Once past this phase, we move on to the realization of the Dome. Frank Roelke continues to work with BBNC staff to have all the pieces in place for when the time comes for delivery and installation. Meanwhile, over in Taneytown, we are preparing to meet with those town officials to start the process of bringing a roll-off roof observatory to life there. Member Erich Bender continues to be our point of contact and conduit for moving forward in building this observatory.

Our Speaker for March will be Wasi Member Slava Murygin. His presentation is titled, "Lowell Observatory & Barringer Crater in Flagstaff, Arizona." I look forward to hearing Slavas' discussion. I used to live in Arizona and have visited both. I have flown over Barringer Crater many times and yet each time I see it I am I awe.

Finally, I would like to add that in each edition of the MDA, I will be posting a monthly "Astronomy Target". Each monthly target will be one that you are most likely familiar with, is easy to find and is on Meridian (overhead at 9pm). For March, I offer Cancer the Crab. Cancer is on Meridian on March 15th. The highlight of Cancer is M44, The Beehive. Located right at the center of Cancer is this beautiful open cluster. There are well over 200 stars in the Beehive which are spread over an area of about 1 ½ degrees of sky (for comparison, the Moon is about ½ degree wide.) and has a magnitude of 3.2 making this an excellent binocular object. Take a moment when the skies are clear to see this wonderful cluster.

Clear Skies

Tony Falletta

Messier Marathon 2014

Primary date: March 29th
Backup date: April 26th
Location: Marstown Observatory - New Windsor, MD

Site is located off Marston Road (Md. 407) in New Windsor. Directions and other information will be posted at Marstown.org (http://www.marstown.org) prior to the event.

Setup begins at 6 p.m. Sunset at 6:29 p.m.

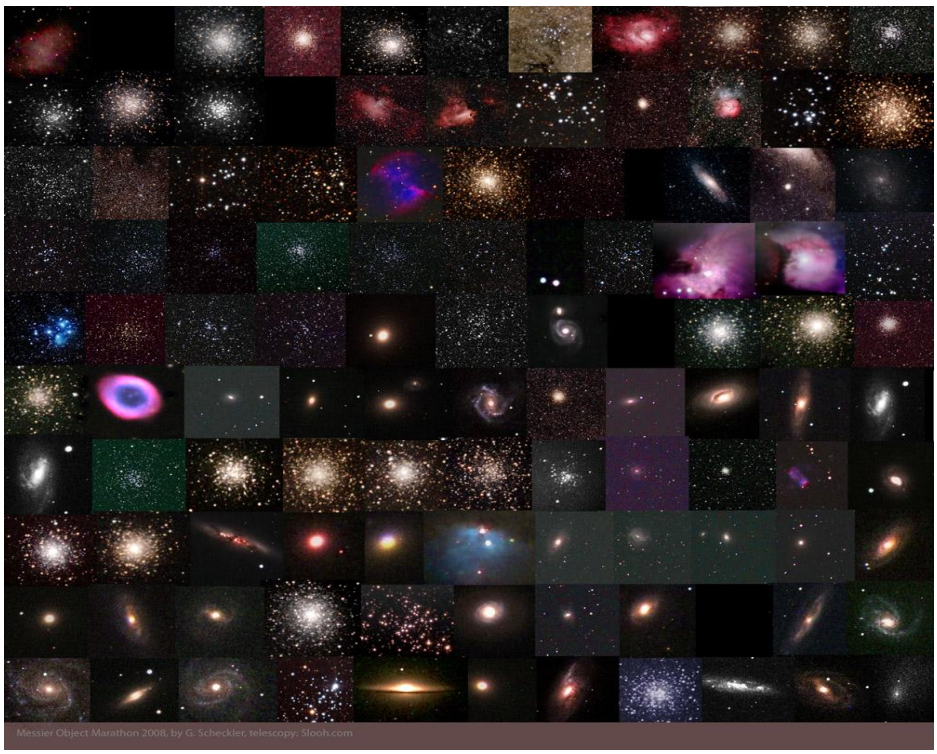
For those not familiar with the marathon…here is a good explanation from Wikipedia:

"A **Messier marathon** is an attempt, usually organized by amateur astronomers, to find as many Messier objects as possible during one night. The Messier catalogue was compiled by French astronomer Charles Messier during the late 18th century and consists of 110 relatively bright deep sky objects (galaxies, nebulae, and star clusters)."

The full article can be found at the following location:

http://en.wikipedia.org/wiki/Messier_marathon

Charles Messier



Regulus Occultation…

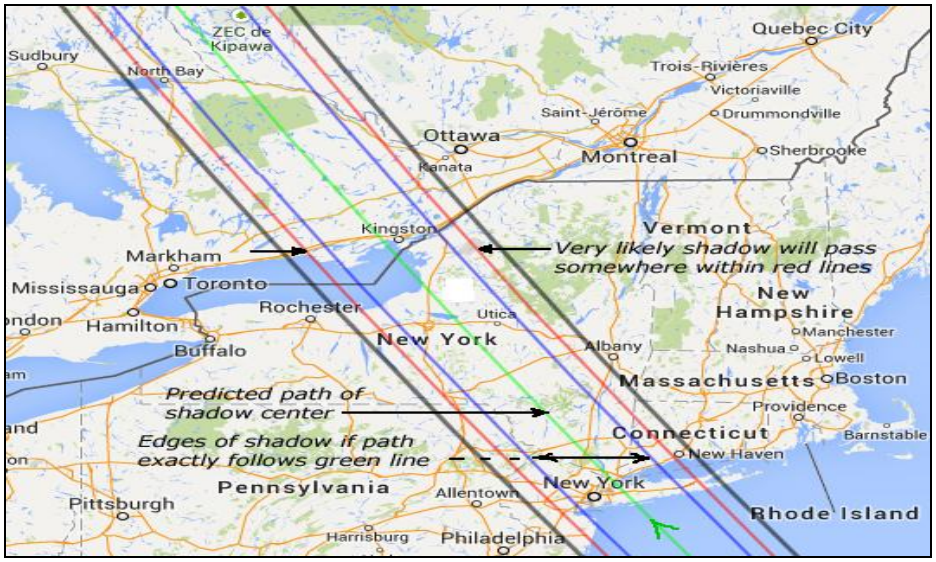
Skip Bird

THE GODS MUST BE ANGRY REGULUS IS GOING TO DISAPPEAR!!!!

It's time to round up the sacrifices and prepare for the disappearance of Regulus. Yes a very bright star is going to disappear on the morning of March 20, 2:07 am EST. It's up to all of us to pull together with our sacrifices and hope the Gods return Regulus to us. What would a lion be without its heart? What's a backward question mark without its period? The loss of this star could bring the whole world of Astrology down (Oh wait this is an article on Astronomy). NEVER MIND!!!!!!

It's true Regulus will be occulted by asteroid Erigone 163 (Eh-RIG-uh-nee) on that date and time but only if you're on a line that runs through Canada, New York (New York City), New Jersey and Connecticut. If you want to see this once in a lifetime event then prepare now. You can do real science with just your eyes, GPS, and a radio or take it to a whole other level with a telescope, video camera, and a timing signal. If interested contact your local astronomy club and see what they are doing. Can you imagine 10 million observations of an object 177 million kilometers (110 million miles) away and from even the light polluted skies of New York City? It's going to fantastic as long as the weather gods are appeased also, which brings us back to the sacrifices…..

Articles about this occultation can be found in the March issue of Sky & Telescope and Astronomy magazines. More detailed and technical info can be found at the International Occultation Timing Association (IOTA) website .



Predicted path of the asteroid shadow. Shortly after 2:06 am EDT on March 20, 2014, observers between the red lines have the best chance of seeing the bright star Regulus temporarily disappear as asteroid (163) Erigone passes in front of it. Click on the map for a more detailed view of the path from Long Island and New Jersey to southwestern Quebec.

NASA's Space Place

A Two-Toned Wonder from the Saturnian Outskirts

By Dr. Ethan Siegel

Although Saturn has been known as long as humans have been watching the night sky, it's only since the invention of the telescope that we've learned about the rings and moons of this giant, gaseous world. You might know that the largest of Saturn's moons is Titan, the second largest moon in the entire Solar System, discovered by Christiaan Huygens in 1655. It was just 16 years later, in 1671, that Giovanni Cassini (for whom the famed division in Saturn's rings—and the NASA mission now in orbit there—is named) discovered the second of Saturn's moons: Iapetus. Unlike Titan, Iapetus could only be seen when it was on the west side of Saturn, leading Cassini to correctly conclude that not only was Iapetus tidally locked to Saturn, but that its trailing hemisphere was intrinsically brighter than its darker, leading hemisphere. This has very much been confirmed in modern times!

In fact, the darkness of the leading side is comparable to coal, while the rest of Iapetus is as white as thick sea ice. Iapetus is the most distant of all of Saturn's large moons, with an average orbital distance of 3.5 million km, but the culprit of the mysterious dark side is *four times* as distant: Saturn's remote, captured moon, the dark, heavily cratered Phoebe!

Orbiting Saturn in retrograde, or the opposite direction to Saturn's rotation and most of its other Moons, Phoebe most probably originated in the Kuiper Belt, migrating inwards and eventually succumbing to gravitational capture. Due to its orbit, Phoebe is constantly bombarded by micrometeoroid-sized (and larger) objects, responsible for not only its dented and cavity-riddled surface, but also for a huge, diffuse ring of dust grains spanning *quadrillions* of cubic kilometers! The presence of the "Phoebe Ring" was only discovered in 2009, by NASA's infrared-sensitive Spitzer Space Telescope. As the Phoebe Ring's dust grains absorb and re-emit solar radiation, they spiral inwards towards Saturn, where they smash into Iapetus—orbiting in the opposite direction—like bugs on a highway windshield. Was the dark, leading edge of Iapetus due to it being plastered with material from Phoebe? Did those impacts erode the bright surface layer away, revealing a darker substrate?

In reality, the dark particles picked up by Iapetus aren't enough to explain the incredible brightness differences alone, but they absorb and retain *just enough* extra heat from the Sun during Iapetus' day to sublimate the ice around it, which resolidifies preferentially on the trailing side, lightening it even further. So it's not just a thin, dark layer from an alien moon that turns Iapetus dark; it's the fact that surface ice sublimates and can no longer reform atop the leading side that darkens it so severely over time. And that story—only confirmed by observations in the last few years—is the reason for the one-of-a-kind appearance of Saturn's incredible two-toned moon, Iapetus!

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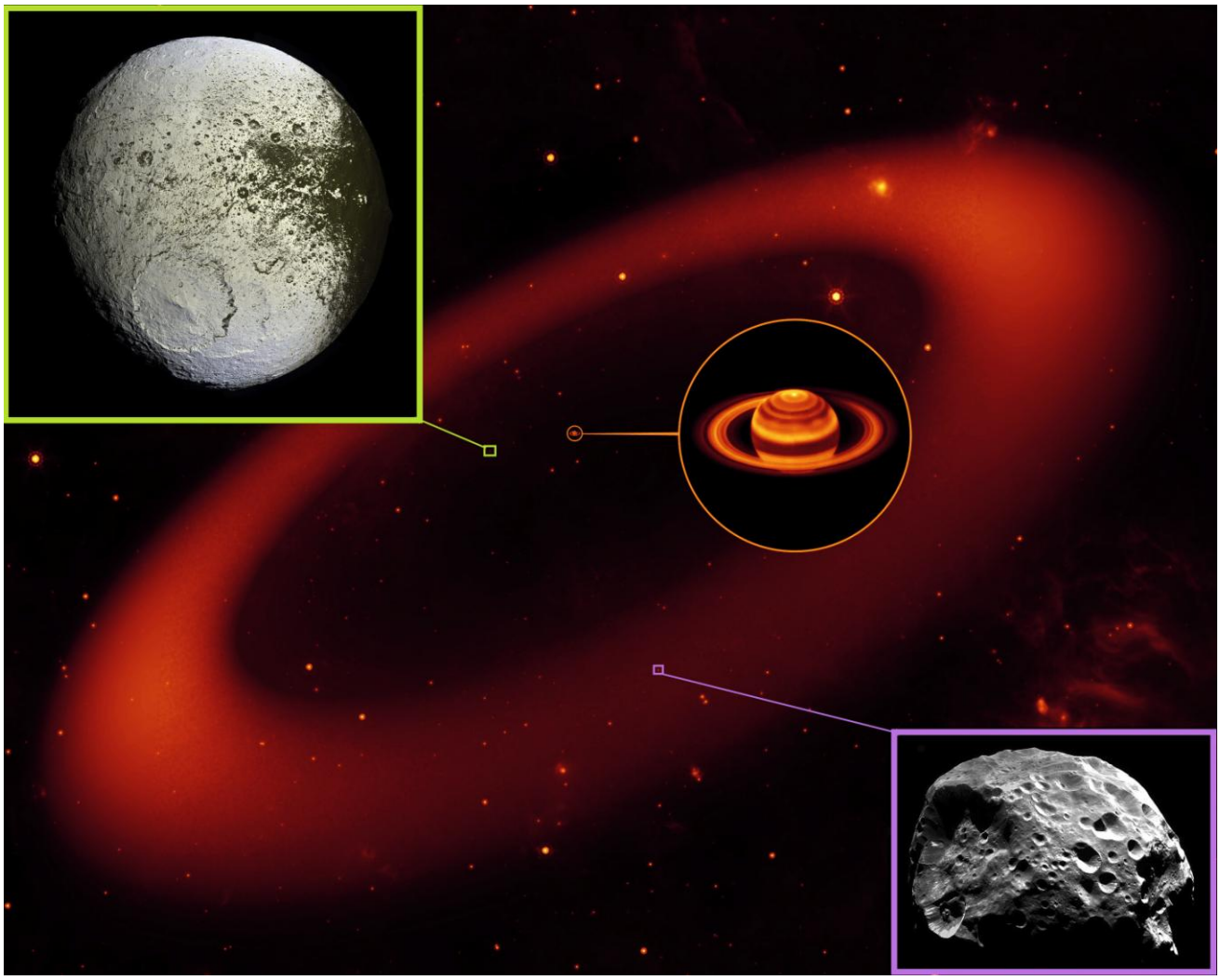

Images credit: Saturn & the Phoebe Ring (middle) - NASA / JPL-Caltech / Keck; Iapetus (top left) - NASA / JPL / Space Science Institute / Cassini Imaging Team; Phoebe (bottom right) - NASA / ESA / JPL / Space Science Institute / Cassini Imaging Team.

Learn more about Iapetus here: http://saturn.jpl.nasa.gov/science/moons/iapetus.

Kids can learn more about Saturn's rings at NASA's Space Place: http://spaceplace.nasa.gov/saturn-rings.