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February 2014

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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!

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President's Article

By Tim Campbell

Never underestimate the value and impact of volunteerism and outreach to profoundly change people's lives.

In Gordon's last article, he took the time to thank the many people who volunteer for tasks that keep the club running. I agree. These people really are the backbone of our club.

Each year, we turn in our \$25 annual membership dues. Those dues fund only the most basic of club operating expenses. It turns out most of our benefits come at no cost—thanks to numerous volunteers who make it all happen.

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STAR STUFF

February 2014 - Vol. 24 No 2

STAR STUFF is published eleven times each year by:

FORD AMATEUR ASTRONOMY CLUB
P.O. Box 7527
Dearborn MI 48121-7527

PRESIDENT: Tim Campbell
VICE PRESIDENT: Art Parent
SECRETARY: Ellen Duncan
TREASURER: Gordon Hansen
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Club Information:

The Ford Amateur Astronomy Club (FAAC) meets on the fourth Thursday each month, except for the combined November/December meeting on the first Thursday of December - at Henry Ford Community College Administration Services and Conference Center in Dearborn. Refer to our website for a map and directions (www.fordastronomyclub.com).

The FAAC observes at Spring Mill Pond within the Island Lake State Recreation Area near Brighton, Michigan. The club maintains an after-hours permit, and observes on Friday and Saturday nights, and nights before holidays, weather permitting. The FAAC also has a private observing site near Gregory Michigan and lake Erie Metro Park. See the FAAC Yahoo Group* for more information.

Observing schedules and additional info are available on our website, or via the FAAC Yahoo Group.* Or call the FAAC Hotline, for info and leave a message, or ask questions: 313-757-2582. or send email inquiries to info@fordastronomyclub.com.

Membership in the FAAC is open to anyone with an interest in amateur astronomy. The FAAC is an affiliate of the Ford Employees Recreation Association (F.E.R.A.). Membership fees:

Annual - New Members: \$30 (\$15 after July 1)
Annual - Renewal: \$25 (\$30 after January 31)

Membership includes the STAR STUFF newsletter, discounts on magazines, discounts at selected area equipment retailers, and after-hours access to the Island Lake observing site.

Astronomy or Sky & Telescope Magazine Discounts

Obtain the required form from the FAAC club treasurer for a \$10 discount. Send the completed form directly to the respective publisher with your subscriptions request and payment. Do not send any money directly to the FAAC for this.

Star Stuff Newsletter Submissions

Your submissions to STAR STUFF are welcome! Send your story and/or images to the editor: StarStuff@fordastronomyclub.com Email text or MS Word is fine. STAR STUFF will usually go to press the weekend prior to each general meeting. Submissions received prior to the 15th can be included in that issue.

* FAAC Members are welcome to join our Ford Astronomy Club Yahoo!Group. Messages photos, files, online discussions, and more! URL: groups.yahoo.com/group/FordAstronomyClub.

This months background photos of the moon Page 1 courtesy of John Kirchhoff. See more of John's photos at:

<http://www.flickr.com/photos/33926475@N06/with/4311533997/>

It isn't just the club members who benefit... the community benefits from this volunteerism as well.

As a boy, I had found an old trash-quality Tasco refractor buried in the garage and tried to use it. I did not succeed. I presumed the experience was typical and that interesting objects could only be seen by looking through gigantic professional observatory instruments — not through a backyard telescope.

When I was 19, I visited the Cranbrook Institute of Science. The observatory was open to the public that evening — so I would be able to look through the telescope.

I presumed that since this was an "observatory" at a "science center" that it was probably enormous and had some massively large instrument inside. I reached the observatory and waited in line. I noticed the room was fairly large, but it didn't house the impressive instrument I had imagined in my mind (though it certainly was larger than the Tasco refractor.)

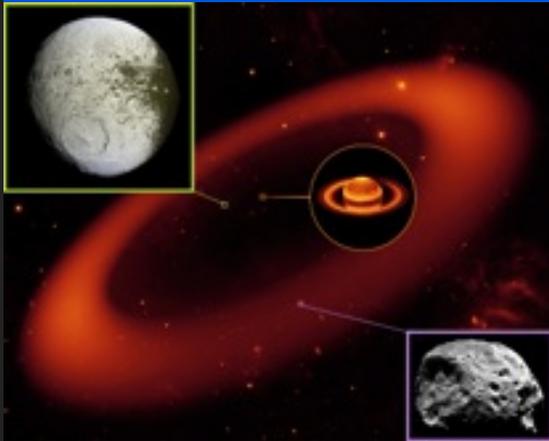
What happened next is important. When it was my turn to look through the telescope, I glimpsed in and saw Saturn... rings and all. I was gobsmacked!

My experience is probably not unusual — Saturn seems to have that effect on a lot of people.

But my point — why I think it is important — is that this experience changed me. Suddenly the planet became real to me. It was no longer just a picture in a book. This fueled my interest in pursuing astronomy.

It's amazing how our human brains work. We probably forget most of our life's experiences because they are ordinary. Yet some experiences stay with us forever. Most of us know exactly where we were when the Apollo 11 mission astronauts landed on the moon. Seeing Saturn and those rings, was such an event. It was unexpected that a glimpse of a planet should be ranked as something our minds will remember decades later — yet this seems to be a typical result. It isn't merely that the experience was memorable... it's that was memorable and provided a motivation to learn more.

(continued on Page 7)



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.

Surprising Young Stars in the Oldest Places in the Universe

(continued from Page 1)

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!

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>

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

Treasurer's Report February 20, 2014

By Gordon Hansen

	<u>Feb 20, 14</u>
ASSETS	
Current Assets	
Checking/Savings	
10000 · Checking	1,289.40
11000 · FAAC Savings	
11100 · FAAC Club Savings	586.00
11200 · Equipment	1,781.43
11300 · Scholarship	506.21
11400 · GLAAC	3,759.56
	<hr/>
Total 11000 · FAAC Savings	6,633.20
12000 · Petty Cash Account	100.76
13000 · CD's	
13100 · CD 200599272	1,058.98
13200 · CD 205196033	1,003.82
13300 · CD 89265268	1,106.16
	<hr/>
Total 13000 · CD's	3,168.96
	<hr/>
Total Checking/Savings	11,192.32
	<hr/>
Total Current Assets	11,192.32
	<hr/>
TOTAL ASSETS	11,192.32
	<hr/>

Meeting Agenda - February 27th

HFCC – Berry Auditorium -Admin. Services & Conference Center www.fordastronomyclub.com
5:30

Opening/Introduction/Member Observing

Main Presentation:

Great Telescopes of the World Dr. David Dunifer, WSU

Tech Talk:

A Guide to the Messier Marathon Jim Frisbie

Club Projects/Committees/Member Support

Club Business/Secretary/Treasurer/Equipment Reports

Club Wear

You can order online from LL Bean, using the instructions contained in a file that you can view on our club Yahoo Group website Club Wear file folder at

<http://tech.groups.yahoo.com/group/FordAstronomyClub/files/Club%20Ware/>

Astro Imaging SIG

Gordon Hansen

All are invited to join us in the Astro Imaging SIG meetings, to share and discuss images, experiences, and techniques.

We always have a good time, with lively discussion, and sharing of valuable information.

Next meeting is **March 13th**. The meeting room location - HFCC Admin. Services and Conference Center (same building), Berry Amphitheater Auditorium.

Topics invited. Pizza served.

FAAC Events 2014

March 15th - Expo & Swap

March 29th - John Kirchoff Messier Marathon at Lake Hudson (possible alternate on Friday)

April 5th D-Bar-A Scouting all-clubs astronomy event

April 15th - (Night of April 14) Full Lunar Eclipse

May 10th - Astronomy Day

May 17th - Annual Club Banquet

Background Photo from Lunt Solar Scope Image taken at the Hector J Robinson Observatory, June 28, 2010

One FAAC members blog

<http://hjrobservatory.blogspot.com/>

A few updates on the observatory, quick articles and photos. I'll try to improve my writing on this blog. Also, I try to keep daily updates on this blog. - Greg Knekleian, HJRO volunteer.

Member Photos



Above: Photo taken by Greg Knekleian through Ken Anderson's large Dob. No processing. 20mm Ethos eyepiece in lens discovery.

REMINDER: FAAC membership renewals were due by January 31, 2014.

Annual - New Member: \$30

Annual - Renewal: \$25 (\$30 after January 31)

Send your check for \$25 to:

FAAC
P.O. Box 7527
Dearborn, MI 48121-7527

Or bring your money to the FAAC General Meeting at 5:30 PM in the Berry Amphitheater Auditorium in the Administrative Services and Conference Center on the campus of Henry Ford Community College.

If you have a new Address, Phone Number or e-Mail address please include that information with your renewal.

Membership includes the STAR STUFF newsletter, discounts on magazines, discounts at selected area equipment retailers, and after-hours access to the Island Lake and Lake Erie Metropark observing sites, use of the FAAC Yahoo Group, and mentoring program.

FAAC General Meeting Minutes January 24th, 2014

By Jim Frisbie

Opening:

The meeting was called to order in the Berry Auditorium at 5:40 pm by President, Gordon H. All attendees introduced themselves. Gordon H. welcomed new members and guests. Members contributed their observing experiences. New Hardware, M42, Sunspots, Io Transit Measurements were discussed.

Observing Experiences:

Several Members had observed comets Lovejoy and ISON

What's Up in February:

John S. presented via Skype.

Main Presentation:

Some technical difficulties were experienced, but the main program did launch. Neil Mottinger a JPL gave a talk via Skype on: "Any Landing You Drive Away From Is a Good One".

Elections:

- Bob F. conducted the election process. A quorum was present.
- Tim C. was elected President; Art P. was elected Vice President; Ellen D. was elected Secretary; and Gordon H. was elected Treasurer. No other nominations were received. Consequently, no vote was required.

Business Meeting:

- Secretary's Report in Star Stuff - Approved
- Treasurers Report in Star Stuff - Approved
- Sirius Award Nominations were welcomed.
- FAAC Dues for 2014 can be paid now for \$25 or after Jan 31 for \$30.

Projects and Events:

- Jan 30 - HFCC Welcome Back Students
- Mar 15 - FAAC Show & Swap
- May 10 - Astronomy Day
- May 17th - Annual Club Banquet

The meeting was adjourned at 7:40 pm by President Gordon H.

FAAC Equipment Report February 15, 2014

By Dennis Salliotte

Item	Currently Held By:	Date Last Verified
Telescopes		
4" Dobsonian	George Korody	1/18/14
4 1/2" Galileo Alt/Az Reflector	James French	1/30/14
8" Orion 8XTi Dobsonian	James French	1/30/14
4" Donated Reflector in need of repair	George Korody	1/30/14
Presentation Tools		
Projector	Gordon Hansen	1/8/14
Projection Screen 8'	Bob MacFarland	2/13/14
Speaker System w/wireless mic	Bob Mac Farland	2/13/14
Bullhorn	George Korody	1/18/14
DVD Player	Gordon Hansen	1/8/14
Projection Screen 6'	Gordon Hansen	1/8/14
Demonstration Tools		
Weight On Planets Scale	George Korody	1/18/14
Lunar Phase Kit	Bob MacFarland	2/13/14
100 ft Scale Model Solar System Kit	Bob MacFarland	2/13/14
Display Items		
Astronomy Event Sign (3' X 6')	Gordon Hansen	1/8/14
PVC Display Board - Folding	Dennis Salliotte	2/15/14
Banner - Large (32" X 16')	Dennis Salliotte	2/15/14
Banner - Medium (24" X 72")	George Korody	1/11/14
Banner - Small (24" X 32")	George Korody	2/12/14
Tri-Fold Presentation Boards	Don Klaser	2/6/14
Tri-Fold Poster Board (Early Club Photos)	George Korody	1/23/14
Other		
Sky Quality Meter	Syed Saifullah	12/5/13
Canopy (10' X 10')	Greg Ozimek	2/6/14
Equipment Etching Tool	Dennis Salliotte	2/15/14
Pop Cooler	Michael Dolsen	1/23/14

President's Article

By Tim Campbell

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This experience is the sort of thing we regularly provide at outreach events. Consider that probably few schools can offer such opportunities as part of their science curriculum. Without volunteers to make these events happen, few people would get such a glimpse through an instrument which has been carefully pointed to an otherwise elusive object hidden among the stars.

We have a unique opportunity when we participate in outreach. Whether or not we have considered it, what we do may change some person's life forever. A young student may become increasingly more interested in science. They may refocus their studies. They may further their education in ways that might otherwise not have happened... just because of one glimpse through a telescope that sticks with them throughout the rest of their life. If you have been doing outreach for a few years, you probably had such an impact on someone already — even if you don't know it.

Many of our volunteers participate in a way that doesn't necessarily involve bringing a telescope to a public outreach event, yet their volunteer efforts make it possible for a club to exist which can perform these outreach events. The monthly featured speakers, the food and drinks, the newsletter, the website, the ongoing list of scheduled events (club events and outreach events), the relationships with schools and parks all happen because of volunteers.

A well-deserved "thank you" is in order for all of our club's dedicated volunteers! Your efforts are noticed and appreciated.

As I write this, I am preparing to head down to the Winter Star Party. Twelve club members are planning to make the trip (we will be "suffering for science" in the Florida Keys). Hopefully we'll have some stories to share when we return.

Clear skies!

Ford Amateur Astronomy Club
Star Stuff Newsletter
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