

SIDEREAL TIMES

The Official Publication of the
Amateur Astronomers Association of Princeton

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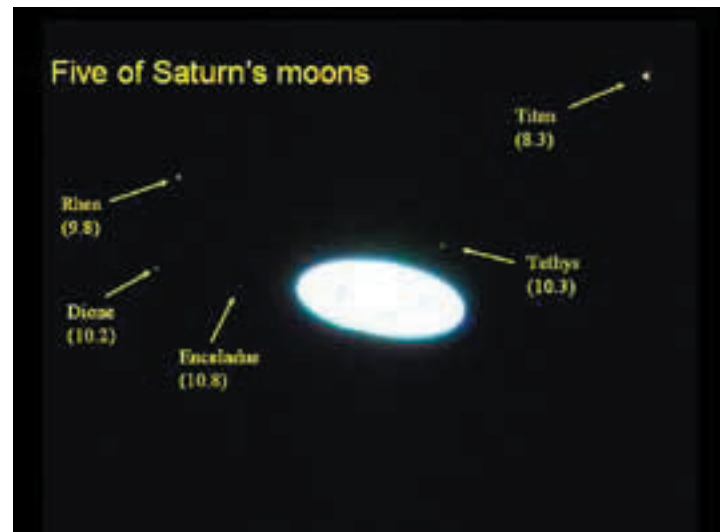
March 2005

Number 3

From the Directors

Observing Saturn at opposition Jan 2005. The past month has been a perfect time to personally observe the object of Cassini's affections, as Saturn reached opposition on Jan 14-15. For observers on Saturn or its moons such as Titan, earth would be seen transiting the sun, somewhat similar to the Venus transit that we observed last June.

moons demonstrates the challenges Bob Vanderbei discussed at AAAP in January regarding CCD detection of objects with large differences in brightness (in his case, exoplanets). With an apparent magnitude of -0.3, Saturn is $\sim 26,000$ ($\approx 2.5 \times 10^{11.1}$) times as bright as Enceladus (mag 10.8). Interestingly, using a good telescope and eyepiece the human eye for most observers can readily detect both Saturn and Titan with ~ 2600 -fold ($\approx 2.5 \times 10^{8.6}$) difference.



Saturn photos by RA Parker Feb 6 2005
(Visit the AAAP Website for the Full Size Photos)

I was fortunate to get out amidst the snowdrifts in early Feb about two weeks after opposition to photograph Saturn using my CCD camera, an SBIG ST-10XME with RGB filters, and a Celestron C-11 with a 2X Barlow for an effective focal length of 5.6 meters. The first image (below) shows Saturn with detail in the rings and in the planet's cloud bands. The second image (below) is the same composite frame further processed to bring out fainter details. This necessarily overexposes the planet but reveals the presence of five of Saturn's moons, labeled with their respective apparent magnitudes: Titan (mag 8.3), Rhea (9.8), Dione (10.2), Tethys (10.3), and Enceladus (10.8). The identity and location of these moons at the time of the photography was confirmed using the ephemeris feature of The Sky software. Imaging Saturn with

AAAP Meeting March 8 (8:00 Peyton Hall). If necessity is the mother of invention, and art is the illusion of spontaneity (Japanese proverb), then last month's presentation was "necessarily spontaneous inventive art"! A big thank-you goes to Dr Ken Kramer, AAAP member and Solar System Ambassador of JPL and the Planetary Society, who gave us a wonderful multi-media presentation on the NASA Mars rovers and Saturn Cassini missions. By stepping up when scheduled speaker Michael Laine (LiftPort) had to cancel at the 11th hour, Ken once again highlighted not only his own talents, but the depth of the AAAP and its Program series run by Michele and the program committee.

For the March 8 meeting, we are indeed bringing in **Michael Laine of LiftPort Group.** The subject of the **Space Elevator**

(Director, continued on page 2)

Simpson Observatory (609) 737-2575

From the Program Chair

Join us on Tuesday, March 8, for a fascinating discussion with Michael Laine, President of the Liftport Group (LPG), on the technology, science, and development plans for the Space Elevator.

The Space Elevator, as an idea, originally appeared in a Russian newspaper in 1960. Now, forty-five years later, the same basic idea, matured through the scientific advances of the past four decades, is being considered the future in mass transportation. Most interestingly, according to the clock on Liftport's website, the Space Elevator is due to liftoff 4826 Days, 2 hours, 22 minutes, and 40 seconds as of the date of this writing (April 12, 2018).

"The simplest explanation of the space elevator concept is that it is a ribbon with one end attached to the Earth's surface and the other end in space substantially beyond geosynchronous orbit (62,000 miles-altitude). The competing forces of gravity at the lower end, and outward centripetal acceleration at the farther end, keep the ribbon under tension and stationary over a single position on Earth. This ribbon, once deployed, can be ascended by mechanical means to Earth orbit. By releasing at specific altitudes, low-, medium-, or high-Earth orbit can be achieved. If a climber proceeds to the far end of the ribbon and releases, it would have sufficient energy to escape from Earth's "gravity well" and travel to the Moon, Mars, Venus, and the Asteroids.¹

Once built, the space elevator will be a great boon to virtually all space missions. In particular, the space elevator will be able to support missions to the Moon and to Mars by providing inexpensive, large-scale transport of supplies and infrastructure. In the future, it will also fill additional roles in the exploration and commercial development of a space-based economy.

Mr. Laine, in addition to his talk, will present a short animation video of the construction process, and will bring a sample of the carbon nanotubes (the building block of this project) as well as a technology test robotic lifter.

Members interested in attending the dinner, should email Michele Novatski, AAAP Program Chair at

by Monday, February 7. Dinner will begin promptly at 6:00pm at the Annex Restaurant in Princeton.

Note 1. Dr. Bradley C. Edwards, NIAC Phase 1 Report

Michele

(Director, continued from page 1)

stimulates excitement and great interest in the scientific and technical community, and perhaps soon the investment community too, as the work begins to move from concept to reality. Michael Laine and LiftPort group, a Washington state -based company, are attempting to do just that. They are dedicated to the goal of building a mass transportation system to open up access to the inner solar system, and the Space Elevator is central to this revolutionary idea. Michael will present "*The Space Elevator - Countdown to 2018*". For more information see Michele's article in this issue.

Upcoming Events: Jersey StarQuest and NEAF. We are shooting for a really high turnout of AAAP members at the

upcoming **Jersey StarQuest, June 3-5** near Hope NJ (near the Water Gap). This is the premier annual astronomy and observing event in the state and region, sponsored and run by your own club. A lot of thought and work goes into the planning and staging of StarQuest (led by Don & Anthony Monticello, Ron Mittelstaedt, Larry Smith, Bill Murray, and others) and your early registration commitment will help us with the planning. This event is oriented to individuals as well as families, and is set up for both experienced observers and those just beginning to get a feel for how to use telescopes and related instruments. The accommodations are rustic but nice, and this year we'll be trying out a new caterer (for Saturday meals). Pass the word on and get friends and family engaged! The **StarQuest registration form** is in this issue of ST as well as on the AAAP Website.

The **Northeast Astronomy Forum (NEAF)**, the largest astronomical exposition east of the Mississippi, will be held **April 16-17** at the Rockland Community College in Suffern NY. Among many equipment displays and excellent talks, an opportunity for direct solar observing using H-alpha technology (see solar prominences!) featuring Barlow Bob and associates will be available. See the website, <http://www.rocklandastronomy.com/neaf>.

Dark skies! -- Rex

Science Outreach and Exploration Update

"**Looking for Life at Mars and Saturn**" Feb 8, 2005, 8 PM. Due to a last minute speaker cancellation, program chair Michele Novatski asked me to fill in. I was honored and humbled to accept this invitation on a days notice. So, I scrambled to create an informative presentation at this very exciting time in Solar System exploration.

Thank you for the opportunity to present "*Looking for Life at Mars and Saturn*" as the featured AAAP monthly lecture following an excellent member presentation by Brian van Liew on astronomy software.

The lecture began with an animation entitled "*Birth of a Martian Robot*", showing how the twin robots Spirit and Opportunity arrived at Mars and operate on the surface. This audience of adult professionals then laughed even louder than the kids at the rover arm spin spoof, which I also narrate at public outreach events.

A description of the scientific equipment, capabilities and functions (including astronomy) of the rovers followed.

The most likely abodes for Life beyond Earth within our Solar System (Mars, Europa, and Titan) were detailed and tied into a discussion about the extreme environments where life exists on Earth, the chemistry of prebiotic Earth, the possible roles of meteorites and comets, and the NASA strategy of "Follow the Water".

A summary of the year long rover explorations and their key science finding that the surface of Mars was once covered in parts with liquid water and had an environment that could have sustained life, concluded the lecture.

Thank you for the wonderful audience participation and many excellent questions, which included: Night time operations, how they communicate with Earth and how long they operate each day, life expectancy and failure modes, future rover funding

(Outreach, continued on page 3)

(Outreach, continued from page 2)

and Mars exploration, extent of rover self control vs. JPL control, surface temperatures and climate, who built the rovers and where, activities of the outstanding scientists and engineers running the mission at JPL, Cornell, Manhattan, Germany and elsewhere around the world.

Visit the *NASA/JPL and The Planetary Society* websites listed below. To learn more about extreme life on Earth and a future imagined mission to Europa, see the new IMAX 3D Movie "*Aliens of the Deep*" by director James Cameron.

The Planetary Society: 50% off New Membership

Discount offer renewed until 30 Sep 2005, includes free nebula poster. Email:

"Science Night Live" at Upper Freehold Regional Elementary/Middle School: Scheduled for Friday, March 4, 2005, 7PM to 9PM. High Street, Allentown, NJ, 08501. (609) 259-7369. This upcoming event will include my program on "*Mars in 3D*".

For further details, please email me or check the school web site at:

<http://www.ufrsd.net/UFRES/index.htm>

Super Science Silver: NJ State Museum, Trenton, May 21/22, 2005. Over 3 dozen scientific organizations featured; including the AAAP and my astronomy presentation entitled "*Exploring Mars and the Search for Life*".

Jersey Starquest: June 3-5, 2005

Has been listed on *The Planetary Society* website:

<http://planetary.org/html/society/calendar.html>

Robotic Mission Exploration Update

Spirit and Opportunity on Mars: Both rovers continue their scientific explorations, now over 13 months!!! Opportunity investigated the depth of charring of its protective Heatshield and chemical analysis of the nearby meteorite, and set new daily distance records while driving south to Vostok crater. Thereafter it will head to the very rocky and ancient water laden "Etched Terrain". If the rover can maneuver thru this rugged area, then it will continue on South to the gigantic Victoria Crater, ca. 3 miles away and at 1300 feet wide, nearly 5 times larger than the football stadium sized Endurance Crater.

Meanwhile, Spirit has found the saltiest soils to date, bright and rich in magnesium sulfate on the trail up the Columbia Hills, which may be more evidence for past water. Both rovers continue to function well.

Cassini/Huygens: Close flyby's of two moons provided stunning new images and data, of smoggy Titan on Feb 15 and wrinkled Enceladus on Feb 16. This Titan flyby featured the first overlapping radar and imaging coverage and detected a large impact crater, 273 miles across. The paucity of craters is indicative of extensive resurfacing, possibly via burial by organics, methane flooding or cryovolcanism of thick ammonia/water mixtures.

Listen to the winds of Titan at:

http://www.planetary.org/sounds/huygens_sounds.html

Cassini swept within 730 miles of the Europa-like surface of icy Enceladus, providing the highest resolution images ever of one of

the brightest, most reflective surfaces in the solar system. The resurfaced terrain was revealed to be a complex system of fractures and ridges and is relatively crater free. This may be indicative of recent volcanic or tectonic activity. Watch for an even closer flyby on March 9.

Mars Express (ESA): Water bearing minerals have been identified across vast regions of ancient Mars by the onboard OMEGA spectrometer. High resolution images reveal an apparent sea of water ice, covered by dust, near the Martian equator. The MARSIS radar experiment has been approved to deploy in May and begin the search for underground water reservoirs.

Rosetta (ESA): This comet chasing mission makes a close flyby of Earth on March 4, visible with telescopes and binoculars. ESA is sponsoring a "*Rosetta Up Close*" photo contest.

Websites for daily updates/perspectives:

<http://marsrovers.jpl.nasa.gov/home/index.html>

http://www.esa.int/export/SPECIALS/Mars_Express/index.html

<http://saturn.jpl.nasa.gov/home/index.cfm>

<http://www.esa.int/SPECIALS/Cassini-Huygens/>

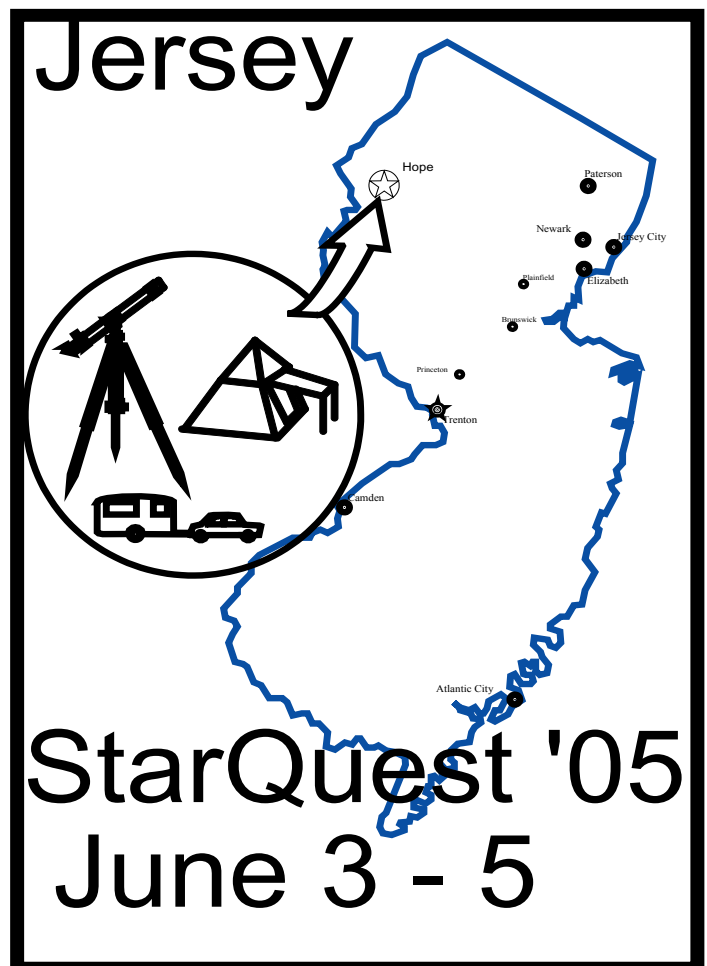
<http://www.esa.int/export/esaMI/Rosetta/index.html>

<http://www.planetary.org/>

Email:

Volunteer for The Planetary Society, AAAP and JPL

Ken Kremer



2005 Events

- February 7 – 12 Winter Star Party
Florida Keys, Florida
<http://www.scas.org/>
- April 8 - 10 Delmarva Star Party
Tuckahoe State Park, Maryland
<http://www.delmarvastargazers.org>
- April 8 – 10 South Jersey Spring Star Party
Belleplain State Forest, New Jersey
<http://hometown.aol.com/sjastroc/sjacsp1b.html>
- April 16 - 17 Neaf
Neaf Solar Star Party
Suffern, New York
<http://www.rocklandastronomy.com/neaf/>
<http://www.sungazer.net/field.html>
- June 3 -5 Jersey Starquest Star Party
Hope, New Jersey
<http://www.princetonastronomy.org>
- June 2 – 6 Cherry Springs Star Party
Cherry Springs Park, Pa
<http://www.cherrysprings.org>
- June 11 Starconn
Wesleyan University, Middletown, Ct
<http://www.asgh.org/>
- July 8 – 9 Rochestar Fest
Rochester, Ny
<http://www.rochesterastronomy.com>
- July 6 - 10 Mason Dixon Star Party
Shreveport Airport / Footlight Ranch
York County, Pa
<http://www.masondixonstarparty.org/>
- July 6 – 10 Green Bank Star Quest
Green Bank, West Virginia
<http://www.caacwv.org/gbstarquest.htm>
- July 29 – Aug 7 Rockland Summer Star Party
Savoy, Massachusetts
<http://www.rocklandastronomy.com/>
- August 5 – 6 Stellafane
Springfield, Vt
<http://www.stellafane.com>
- August 26 – 28 The Conjunction
Northfield, Ma
<http://www.philharrington.net/astroconjunction/>
- Sept 9 -11 Black Forest Star Party
Cherry Springs State Park, Pennsylvania
<http://www.bfsp.org/starparty/index.cfm>
- Sept 9 -11 Connecticut Star Party
Marlborough, Connecticut
<http://www.asnh.org/>

- Sept 2 - 4 Arunah Hill Days
Cummington, Ma
<http://www.arunah.org/calendar.htm>
- Sept 28 – Oct 2 Delmarva No-Frills Starparty
Tuckahoe State Park, Maryland
<http://www.delmarvastargazers.org/archive/nofrills2005/index.html>
- Oct 1 Novac Star Gaze
Manassas, Va
<http://www.novac.com/gaze/>
- Oct 7 - 8 Astro Assembly
Skyscrapers, Inc
Amateur Astronomical Society
Of Rhode Island
<http://www.theskyscrapers.org/>
- Nov 1 – 8 Mid Atlantic Star Party
Robbins, NC
<http://www.masp.org/>
<http://www.asnh.org/calendar/bobsannual.html>

Barlow Bob

Minutes of the General Meeting of the AAAP

February 8, 2005

Director Rex Parker called the meeting to order at 8:05 PM.

The scheduled speaker, Michael Laine of the Liftport Group was forced to cancel at the last minute.

Larry Kane gave a brief update on the status of the AAAP library. Brian Van Liew gave a ten minute presentation on “The Planets” software package. Ken Kraemer gave a full-length presentation on “The Search for Life on Mars and Saturn” concentrating on the results of the MER missions to Mars.

The business meeting resumed at 9:38 PM.

Program Chair Michele Novatski stated that we need a speaker for the April meeting and that she was trying to get someone from the Mars Sprit project. Charles Liu will be the speaker in May, his topic will be “The Teenage Universe”.

Treasurer Ron Mittelstaedt reported that the treasury balance was \$XXXX. The insurance has been paid.

Rex noted that the club still needs a volunteer to act as auditor to go over the books.

John Miller stated that a letter needs to be sent to those club members who have not yet renewed their membership. The website has been updated to include the latest Starquest information.

Starquest Chair Don Monticello reported that Ron had contacted a new caterer for Starquest. This new caterer would charge ~\$52 per head for meals (The old caterer was asking \$45 for adults and \$30 for children). This led to a discussion of whether to go with the new caterer or to stick with the old one. Ron said that he would confirm the new caterer’s price and report back to the club.

Secretary Mark Jaworsky was not present at the meeting. The minutes from January’s meeting have yet to be published.

(Minutes, continued on page 8)

(Minutes, continued from page 7)

Observatory Co-Chair Gene Ramsey reported that the observatory was closed due to the fact that the roof was jammed because ice had heaved the floor up and the road back to the observatory had not been plowed. Observatory Co-Chair Brian Van Liew reported that the training of new keyholders has begun but has been interrupted by weather related closings of the observatory.

Nominations Chair John Church reported that a nominations committee has volunteered to consider nominations for the slate of candidates for the board next year. The committee consists of Vic Belanger, Don Monticello, John Church, Bill Murray and Larry Kane. The committee will report its choices at the meeting in April.

ST Editor Vic Belanger reported that the deadline for submissions to for the March Issue of the Sidereal Times will be February 25th. Brian Hubbard may take the post of assistant Editor of the Sidereal Times.

Brian Van Liew thanked the AAAP members who helped out with the observing session at the Lawrence School.

Publicity Chair Louisa Lockette was not present at the meeting

John Church stated that he was in the process of editing the club by-laws to remove obsolete material.

The meeting was adjourned at 10:16 PM.

Bill Murray, Acting Secretary

From the Treasurer

The treasury balance stands at \$XXXX. We currently have 90 paid-up members and no new members this month.

There are still quite a few members that have overlooked paying the annual dues last October. Those members will be receiving letters from our Membership Chair as a reminder of our new procedure.

Ron Mittlestaidt

Deadline

for the

April Issue of the

Sidereal Times

April 1, 2005

See us on the Web: www.princetonastronomy.org

March 2005

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