



ASTRAL PROJECTIONS

December 2013
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NOVEMBER MEETING: Rich Brady presented "Telescopes II - Telescopes Bob Didn't Tell You About."

DECEMBER MEETING: Dec 13, 2013, Club officers will be elected for 2014 and awards will be presented. John Gianforte, a co-chair of the Planetarium Steering Committee, would like to introduce himself and say a few words about the Planetarium and tell us about his research.

Announcements

ELECTION OF CLUB OFFICERS: The Election Ballot for 2014 is given below. It was also e-mailed out separately. Just follow the instructions to cast your vote. John Endreson has agreed to collect and count the votes for the December meeting.

SCHEDULE FOR 2014: Ideas for the 2014 schedule are being solicited. (See last page of Newsletter.)

DONATED TELESCOPES: John Endreson posted pictures of the two donated telescopes on the ASTRA Message Board. The Celestron NexStar 8i SE needs some work. John estimated about \$200 would be needed to fix the telescope after which it

would be available for loan to the members. With additional donations the cost has gone down. By e-mail and vote at the last meeting, the members agreed that the cost, not to exceed \$206, would come from the ASTRA Telescope Fund. John can provide an update on the progress of the repairs and the final cost.

What's up this month?

JAKE'S BRANCH COUNTY PARK: Come join us under star filled skies to observe the Universe. Saturday, December 7, 2013, 6:00 PM - 8:00 PM. Location: Jakes Branch County Park, Double Trouble Rd, Beachwood, NJ 08722

WINTER STAR WATCH: Members of the Astronomical Society of the Toms River Area (ASTRA) will setup their telescopes on campus to share views of the planets and stars. We will explore the constellations and other celestial objects of the winter season. Free Event Ocean County College Campus. Dress warmly! Saturday, 12/21/2013, 7:00 PM - 11:00 PM. Location: Ocean County College, In front of the planetarium, TOMS RIVER, NJ 08723

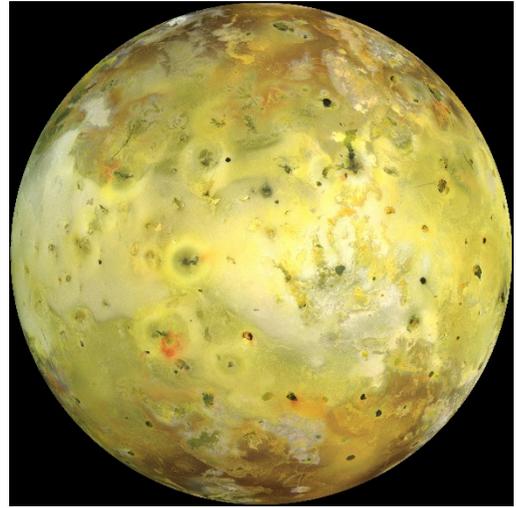
Check the online message board on the date of the star party for up to date information on these events and directions.

The most volcanically active place is out-of-this-world!

By Dr. Ethan Siegel

Volcanoes are some of the most powerful and destructive natural phenomena, yet they're a vital part of shaping the planetary landscape of worlds small and large. Here on Earth, the largest of the rocky bodies in our Solar System, there's a tremendous source of heat coming from our planet's interior, from a mix of gravitational contraction and heavy, radioactive elements decaying. Our planet consistently outputs a tremendous amount of energy from this process, nearly three times the global power production from all sources of fuel. Because the surface-area-to-mass ratio of our planet (like all large rocky worlds) is small, that energy has a hard time escaping, building-up and releasing sporadically in catastrophic events: volcanoes and earthquakes!

Yet volcanoes occur on worlds that you might never expect, like the tiny moon Io, orbiting Jupiter. With just 1.5% the mass of Earth despite being more than one quarter of the Earth's diameter, Io seems like an unlikely candidate for volcanoes, as 4.5 billion years is more than enough time for it to have cooled and become stable. Yet Io is anything but stable, as an abundance of volcanic eruptions were predicted before we ever got a chance to view it up close. When the Voyager 1 spacecraft visited, it found no impact craters on Io, but instead hundreds of volcanic calderas, including actual eruptions with plumes 300 kilometers high! Subsequently, Voyager 2, Galileo, and a myriad of telescope observations found that these eruptions change rapidly on Io's surface.



Io. Image credit: NASA / JPL-Caltech, via the Galileo spacecraft.

Download photo here:

<http://photojournal.jpl.nasa.gov/catalog/PIA02308>

Learn more about Galileo's mission to Jupiter:

<http://solarsystem.nasa.gov/galileo/>.

Kids can explore the many volcanoes of our solar system using the Space Place's Space Volcano Explorer:

<http://spaceplace.nasa.gov/volcanoes>.

Where does the energy for all this come from? From the combined tidal forces exerted by Jupiter and the outer Jovian moons. On Earth, the gravity from the Sun and Moon causes the ocean tides to raise-and-lower by one-to-two meters, on average, far too small to cause any heating. Io has no oceans, yet the tidal forces acting on it cause the world itself to stretch and bend by an astonishing **100 meters** at a time! This causes not only cracking and fissures, but also heats up the interior of the planet, the same way that rapidly bending a piece of metal back-and-forth causes it to heat up internally. When a path to the surface opens up, that internal heat escapes through quiescent lava flows and catastrophic volcanic eruptions! The hottest spots on Io's surface reach 1,200 °C (2,000 °F); compared to the average surface temperature of 110 Kelvin (-163 °C / -261 °F), Io is home to the most extreme temperature differences from location-to-location outside of the Sun.

Just by orbiting where it does, Io gets distorted, heats up, and erupts, making it the most volcanically active world in the entire Solar System! Other moons around gas giants have spectacular eruptions, too (like Enceladus around Saturn), but no world has its surface shaped by volcanic activity quite like Jupiter's innermost moon, Io!





CELESTIAL EVENTS FOR December:

Mercury is in the dawn sky early in the month then goes to superior conjunction. Venus is in the SW evening sky and gets lower as the month goes on. Mars is in Virgo in the morning sky. Jupiter rises ENE early evening – in Gemini. Saturn is in the morning sky in Libra. Highlights for the month:

- 1 Saturn 1.3° N of Moon
- 3 New Moon
- 6 Venus 8° S of Moon
- 9 First Quarter
- 14 Geminid meteors peak
- 17 Full Moon
- 19 Jupiter 5° N of Moon
- 21 Winter Solstice 17:11 UT
- 25 Last Quarter Moon
- 26 Mars 5° N of Moon
- 27 Spica 1.1° S of Moon
- 29 Saturn 0.9° N of Moon

Credit: Observer's handbook



CLUB TELESCOPES:

A.S.T.R.A. owns five small telescopes:

- 6-inch Dobsonian (in need of repairs)
- 8-inch Dobsonian
- 80mm Celestron Refractor
- 120mm EQ AstroView Refractor.
- Lunt 35mm H-Alpha solar scope

These telescopes are available for club members to borrow and use for a month or two at a time.

ASTRA-WEAR – Embroidered and/or Printed items with the ASTRA Logo

You can see some samples at ASTRA meetings. To order by mail: Shelter Cove Embroidery Co. 1333 Bay Ave Toms River, NJ 08753 call 732-506-7700 or E-mail astra-wear@estitches.com. Order form is on the ASTRA website.

ASTRA LIBRARY OF BOOKS AND DVDS: Many books and DVDs are available for loan from the ASTRA Library for a one month period. A list of these items is available on the ASTRA website. Request for these items must be made prior to our regular meeting and returned by the following meeting. Please e-mail your request for these items to our Librarian Barbara Novick at Library-Loan@astra-nj.org or call her at 732-840-3111.

ASTRONOMICAL LEAGUE MEMBER SOCIETY

Astronomical League National Headquarters
 9201 Ward Parkway; Suite 100
 Kansas City, MO 64114
 1-816-333-7759 or www.astroleague.org

The REFLECTOR is published in March, June, September and December. If you do not receive your copy of the REFLECTOR magazine, contact Astronomical League Coordinator (Alcor) Ro Spedaliere (Treasurer@astra-nj.org)

ASTRONOMICAL ITEMS FOR SALE, OR HELP WANTED ADVERTISEMENTS: If you have an item to sell, or need help with an astronomical problem (a question, or telescope setup) contact the President President@astra-nj.org to announce it at a meeting and send the advertisement to the newsletter (See Newsletter below).

NEWSLETTER: E-mail material (meeting reports, observing reports, or other items of interest) to Newsletter@astra-nj.org.



EXECUTIVE BOARD

President – Rich Brady President@astra-nj.org
Vice President-Secretary – Bob Salvatore, VP@astra-nj.org
Treasurer – Ro Spedaliere Treasurer@astra-nj.org
Newsletter Editor – Rich Brady Newsletter@astra-nj.org
Webmaster – Donald Durett Webmaster@astra-nj.org

SCHEDULE FOR 2014: If anyone would like to do a presentation or suggest one, please contact the executive board.

ASTRA TENTATIVE SCHEDULE FOR 2014

Jake's Branch and other star parties not included

(Subject to Change – Comments and Suggestions are Welcome)

Jan 10* Telescope Workshop
Feb 14* Top Stories for 2013 – Rich Brady
Mar 8 *Saturday – Spring Star Watch – Public star party at OCC. (Moon 1st Qtr)*
Mar 14* Famous Astronomers IX – Bob Salvatore
Apr 11* Terminology Guide II – Sam Micovic
April 12/13 *Saturday/Sunday – North East Astronomy Forum*
May 9* Astronomy on-line – Ryan Knipple
May 10 *Saturday – Astronomy Day – Exhibits and Public Star Party at OCC*
Jun 7 *Saturday – Summer Star Watch – Public star party at OCC. (Moon 2 days after 1st Qtr)*
Jun 13*
Jul 11*
Aug 8 No Meeting
Aug 9 *Saturday - Perseid Picnic*
Sep 6 *Saturday – Fall Star Watch – Public star party at OCC. (Moon 4 days after 1st Qtr)*
Sep 12* Chemistry in the Universe – Matthew McCue
Oct 10* Planetarium Show
Nov 14* Solar Update – Bill Edelen
Nov 29 *Saturday – Winter Star Watch – Public star party at OCC. (Moon 1st Qtr)*
Dec 12* Awards, Open Meeting

* Regular Meeting

Check us out on Facebook, search groups for (ASTRA Astronomy) and look for our logo.





The Astronomical Society of the Toms River Area Elections Ballot 2014

Election of officers shall take place at the December meeting.

Individual members shall have one vote. A plurality shall be sufficient to elect.

TERM OF OFFICERS

Office shall be effective on January 1 for a term of one year or until a successor is elected.

The officers of the organization shall be the President, the Vice President-Secretary, and the Treasurer.

The Officers shall be elected, and no person may hold more than one elected office concurrently.

a. The President shall be the primary point of contact for the organization, speak for the organization in all official matters and preside over all meetings.

b. The Vice President-Secretary shall:

- 1) Assume the responsibilities of the President in the President's absence.
- 2) Make a record of any formal actions taken by the organization.
- 3) Coordinate with the Newsletter Editor in mailing appropriate club business.
- 4) Perform as the ALCor (Astronomical League Correspondent). The ALCor communicates with the Astronomical League (AL) and periodically furnishes the AL with copies of our membership list.
- 5) Keep track of telescope equipment loans.
- 6) Keep the official version of the Bylaws and Policy documents.

c. The Treasurer shall be the club membership chairperson, shall maintain the club treasury, shall collect club dues, and shall expend funds as directed. Recurring expenditures normal to the operation of the organization are authorized. The Treasurer shall provide a written report of the year's expenditures, which shall be included in the Newsletter, published within the first calendar quarter. Separate accounting will be maintained for the Telescope Fund and it will not be used for general club operations without a vote at a regular meeting.

Please make your selections by circling the nominee of your choice, or fill in your name to self nominate.

Nominee for President: Rich Brady or **Self Nominate:** _____

Nominee for Vice-President - Secretary:
 Bob Salvatore or Sarah Waters or **Self Nominate:** _____

Nominee for Treasurer: Ro Spedaliere or **Self Nominate:** _____