



First Light

The Newsletter of the Cape Cod Astronomical Society



September, 2012

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Next Monthly Meeting: is Thursday, September 6th at 7:30pm in the D-Y Library. Dr. Dana Levy of the NY State R&D Authority will present "Biomimicry: How Advice from Nature's Success Stories can Expedite Innovation". Public welcome. Please join us.

Reminder: The last summer star party for this season took place August 30th. Planning is underway for the "off-season".

In this issue: New Member / August Star Parties / Venus and The Bees / Blue Planets / Autumnal Equinox / The Mermaid

Bright New Stars:

We wish to welcome Jonathan Booraem of Harwich to membership in the Cape Cod Astronomical Society. Jonathan joined in July and has a Jason Constellation 3" refractor 'scope mounted on an equatorial mount. Welcome, Jonathan!

We like to profile new members in our Society in this section of *First Light* each month. If you are a new member and have not yet been so recognized, or have new information for us (background, astro equipment preferred, interests, etc.) on yourself or someone else, please let us know (email info@ccas.ws).

PLEASE CONSIDER SUBMITTING AN ITEM OR ARTICLE FOR PUBLICATION IN *FIRST LIGHT*.

CCAS News Items and Current Events:

CCAS Meetings:

Thanks to David Kraft, Professor of Mathematics & Physics, University of Bridgeport, Bridgeport CT, for his most informative presentation **Albert Einstein. Person of the Century** at our August meeting. Many of us know key contributions of Einstein and his prolific mind such as the relationship between mass and energy in nuclear fission or his general and specific theories on relativity. But few of us knew all the science and technology benefits that came from Einstein's seminal thought on many topics. Dr. Kraft considers AE to be the Person of the Century because of all of the things that have come out of his theories. Photonics,

GPS, and Spintronics came out of AE's Special Theory of Relativity. AE's stimulated emission-laser led to our understanding of the principle of the laser. One third to one half of our GDP is touched by the laser. The General Theory of Relativity predicted black holes, gravitational lensing, and gravitational waves. A very nice synthesis of the facts of AE's life with the significance of his contributions woven in throughout.

We are pleased to announce that Dr. Dana Levy of the NY State R&D Authority will present "Biomimicry: How Advice from Nature's Success Stories can Expedite Innovation" at our meeting on 6 September. Dr. Levy is the Program Manager for Manufacturing Technology Development & On-site Power Applications in the R&D Group at NYSERDA. Biomimicry, a problem-solving approach at the intersection of biology and engineering, is now coming of age. It refocuses us from thinking about what we can extract from Nature, to what we can learn from and value in Nature. Biomimicry seeks to copy time-proven streamlined shapes, materials, or processes found in Nature. It is a rapidly growing "brainstorming" process that inventors are using to create new technologies. It has given us efficient windmill blades shaped like whale flippers, new anti-microbial/disinfectant-free materials for sanitizing based on the texture of shark skin, and specially constructed wetlands that filter and purify water using processes that Nature has already perfected. The presentation will include other success stories and review current research.

Members, ***PLEASE*** participate in the effort to recruit good speakers to present programs in astronomy and related sciences at our meetings. Please send any ideas or contact information to Mike Hunter, our Program Chairman. For

sure he will follow up.

Or, even better, volunteer to give a talk yourself!

Minutes:

The minutes of our August meeting are on our website; click on the "Minutes" button at www.ccas.ws or go to <http://www.ccas.ws/minutes/ccasminutes080212.pdf>

From the Dome:

Peter Kurtz and Joel Burnett sent in these two summaries of the first two Star Parties of August:

Star Party August 9th: 8 guests. We easily aligned the 16" on Vega and Arcturus before dark. Scope was well behaved. Looked at a several sets of double stars during dusk (too much light for deep fuzzies) and watched a SPECTACULAR eight minute fly-over of the ISS. About 9:00pm the clouds began to win. Bernie showed some of his occultation videos on the big TV and we viewed a collection of astro NASA videos from Peter's iPad.. Highlights were Dan Burbank's video of Comet Lovejoy from the ISS followed by his commentary "on camera" while in the ISS; (it was spooky to see Dan up in the spacecraft on TV just a few minutes after watching this later flyover of the ISS from the ground)... and a very up-to-date simulation of the landing of the Mars Rover Curiosity which had taken place the previous Sunday (August 5th.)

Star Party August 16th:

We had Gail Smith leading us and running the 16", Mike Hunter leading discussions using his iPad on the big screen in the lower room followed by an outdoor laser-guided sky tour and Ed "Light Switch" Swiniarski driving the 8" Meade. Lee Labarre and his daughter Michelle brought a Celestron. Werner and Greg brought a mount called an Ioptron Minitower and Joel used the 18", picking out targets of Saturn, the M13 Hercules cluster, the Albireo double in Cygnus, and the Alcor/Mizar double in Ursa Major; he had some help from Larry Brookhart with finding Andromeda in the murk. Beth and Michelle also helped with groupings such as the threesome of Saturn, Mars, and Spica forming a beautiful eastward pointing arrow.

The sky was fair, the stars were twinkling, the mosquitoes were merciful, and three shooting stars were seen. Clouds were present but usually not in the way, so when 9:11pm came, we saw the ISS shining in the NNW at 10 degrees and about a mag +1 for some 3 minutes. The ISS went behind clouds as it progressed, then came back into view around 9:16 a bit brighter, about mag +0.5 at 15 degrees altitude for a couple more minutes before dimming and dropping out of sight. One of our visitors commented on how she had been so impressed seeing the ISS in Summer of 2011 at the WSO – she was beaming! I guess this will add to the memories that she and her family have of Cape Cod.

We had a spectacular turnout: Ed estimated more than 30 guests including a couple of guests from England who found us in an online travel guide (and had made inquiry through info@ccas.ws) as well as some familiar faces from last year and friends from the community. We also received about \$25 in donations this night.

Editor's Note: The sky was clear (as we understand it) for August 23 and is expected to be clear on the 30th. It is more than likely that the very successful evenings of August 9 and 16 will have been repeated in the last two events of the month by the time you read this article. Please be reminded that good things happen at star parties at the Schmidt rain (indoor videos, virtual observations of the sky and sky hopping, demonstrations, etc.) or shine. *Do plan to join us at events to be announced shortly for the off-season.*

As always, "Private" group or individual observing sessions at the Werner Schmidt Observatory may be scheduled by contacting Observatory Director Mike Hunter at mamhunter@yahoo.com or sending an email to info@ccas.ws

Our Society exists to promote observing! Help us promote this objective by asking for time at the Dome!

CCAS has both 8" and 14" Dobsonian telescopes for loan to members. If you wish to borrow one of these 'scopes, contact info@ccas.ws

September Observing:

Observing Highlights for September, 2012 at Cape Cod:

Please consult the September issues of *Sky and Telescope* (pp 43-60), *Astronomy Magazine* (pp 36-43), and *Astronomy Magazine Online* (See Ref 5) for more information on these highlight topics and others.

Venus and the Bees in the predawn sky: Venus is in (or very close to) a binocular field view of M44, the beehive cluster, for many days on either side of September 12. On that morning, a crescent moon is about 4° west of the planet, which, in turn, is about 3° west of the cluster. Best to use binoculars to see some detail of the "bees", the "half-moon" aspect of Venus (67% illuminated) and some detail on the crescent moon.

September is the last month for evening viewing of **Saturn** until next year; by end month, Saturn sets just 60 minutes after the sun.

In the solar system's outer reaches, **Uranus and Neptune** put on fine shows all night:

Neptune, the eighth planet, reached opposition and peak visibility in late August, and it remains a fine target through binoculars and telescopes all night in September. It glows at magnitude 7.8, just within range of hand-held 7x50 binoculars. Use a tripod to see it amidst fainter stars. Then use your telescope with a high-power eyepiece to see the planet's 2.4"-diameter disk and blue-gray color.

Head east and find Uranus, a much easier to see binocular (naked eye?) target at mag 5.7. It lies near the border between Pisces and Cetus and is at opposition on the 29th. Don't wait until the exact day of opposition, however; that night the nearly full moon is only 5° away from the planet.

Both Neptune and Uranus show their distinct blue or blue green color even in binoculars. So if you see that color, you likely have found your planet.

Mars, Saturn, and Spica end their gathering as a triangle near the horizon at dusk early in September. On September 1, one apex of the trio, Spica of Virgo, sets 90 minutes *after* the sun but by end month, just 10 minutes after the sun.

The autumnal equinox occurs at 10:49 a.m. EDT September 22; equinox means "equal night". To be clear, the length of day and night are equal on the date of equinox; the days have been shortening since the summer solstice and will continue to do so from now until the winter solstice in December.



Ninth-magnitude Parthenope⁵ moves through Aquarius in September, passing within 1° of the moderately bright star Tau (τ) Aquarii at midmonth. Try with binoculars from a dark sky site or a six-inch or larger telescope in less than dark skies. Mid month is best when the moon is new or near new.

In January 2011, nearly 20 amateur astronomers timed Parthenope as it occulted a background star. From these observations, astronomers determined that the asteroid is a

potato-shaped rock 93 miles across its longest dimension. Bernie Young leads similar research efforts at The Schmidt.

Moon Phases, September, 2012

Last QTR Saturday, September 8th at 9:15am EDT
New Moon Saturday, September 15th at 10:11pm EDT
First QTR Saturday, September 22nd at 3:41pm EDT
Full Moon Saturday, September 29th at 11:19pm EDT

Moonscuser's Almanac and Monthly Alert¹			
September, 2012			
Object	Sept. 1 (EDT)	Sept. 15 (EDT)	Sept. 30 (EDT)
Sun	R: 06:07 S: 19:13	06:21 18:49	06:37 18:23
Moon	R: 19:24 S: 07:43	06:16 18:14	18:23 07:35
Mercury (in sun, eve)	R: 05:22 S: 19:00	06:44 19:05	07:55 18:55
Venus (predawn)	R: 02:24 S: 16:57	02:43 16:55	03:09 16:48
Mars (evening)	R: 10:56 S: 21:21	10:49 20:50	10:44 20:21
Jupiter (late nite)	R: 23:21 S: 14:16	22:30 13:26	21:33 12:29
Saturn (early eve)	R: 10:01 S: 21:10	09:13 20:19	08:22 19:23
Uranus (evening)	R: 20:12 S: 08:35	19:16 07:38	18:15 06:35
Neptune (all nite)	R: 18:48 S: 05:31	17:52 04:34	16:52 03:33
Pluto (evening)	R: 15:34 S: 01:15	14:39 00:19	13:40 23:20

Resources for the moons of Saturn and Jupiter: If you don't have *Gas Giants*, the iPod/iPad app for moons of Saturn and Jupiter discussed in the April, 2011 *First Light*, please see the interactive resources online at reference 6 for positions of Jupiter's or Saturn's moons for any date and time.

Anyone having an interest in monthly **Libration and Declination Tables for the Moon²** during this month please contact your editor for information or sources.

Cape Cod Astronomical Society

President	Michael Hunter	508-385-9846
Vice President	Stanley Rivers	508-945-6126
Secretary	Charles Burke	508-394-9128
Treasurer	Peter Kurtz	508-255-0415
Observatory Director	Michael Hunter	508-385-9846
<i>First Light</i> Editor	Peter Kurtz	508-255-0415

Mailing Address: A. P. Kurtz, CCAS Treasurer, 34 Ridgewood Rd,
Orleans MA 02653

Cape Cod Astronomical Foundation

Chairman	Werner Schmidt	508-362-9301
Vice Chairman	Michael Hunter	508-385-9846
Director R&D	Bernie Young	508-394-1960
Secretary	Ed Swiniarski	508-896-5973
Treasurer	Pio Petrocchi	508-362-1213
Observatory Director	Michael Hunter	508-385-9846
Observatory Phone Line		508-398-4765

The **Cape Cod Astronomical Society** meets at 7:30 pm on the first Thursday of every month in the library of the Dennis-Yarmouth Regional High School in Yarmouth, Massachusetts. Meetings are open to the public. Membership dues are \$30 for adults, \$15 for students in two year colleges and part year residents, and no charge for spouses or for students in K-12 schools.

References and Notes for this issue:

- 1) Information for The Mooncussers Almanac and Monthly Observing Alerts was extracted from Sky Events, Astronomy Magazine Online (Astronomy.com), Stargazing.net's Planet Rise/Transit/Set calculator (<http://www.stargazing.net/mas/planet2.htm>), *Astronomy Magazine*, *Sky & Telescope Magazine*, *Sky and Telescope Skywatch 2011*, and other sources. The *Observer's Handbook, 2010 and 2011*, published by The Royal Astronomical Society of Canada is also an important reference, particularly for information on lunar libration and declination and the minima of Algol.
- 2) Information on how Libration and Declination Maxima and Minima can make visible parts of the moon normally hidden was reviewed in the December2007-January2008 *First Light*. Quick recap: Max Long brings to view extra right side; Min Long, extra left side; Max Lat, extra north side; Min Lat, extra south side. Max Dec puts it high in our sky during its transit; Min Dec puts it low.
- 3) Algol is an eclipsing variable star in Perseus which has its brighter component eclipsed or covered by its companion once every 2.87 earth days. When the dimmer component is not eclipsing the brighter, Algol appears typically about magnitude 2.1; when eclipsed, magnitude 3.3 The minima usually lasts about two hours with two hours on either side to bring it back to mag 2.1. Good comparison stars are γ -Andromedae to Algol's west, mag 2.1, and ϵ -Persei to its east, mag 2.9.
- 5) Here is the web address for Astronomy Magazine's online "The Sky This Month" online for September: http://www.astronomy.com/News-Observing/Sky_this_Month/2012/07/Uranus_reaches_its_peak.aspx
- 6) S&T's interactive Java utility for showing the positions of Jupiter's main moons for any date and time: <http://www.skyandtelescope.com/observing/objects/planets/3307071.html> ;
for Saturn's moons: <http://www.skyandtelescope.com/observing/objects/planets/3308506.html>

**A PORTION OF THIS PAGE IS INTENTIONALLY
LEFT BLANK TO REMIND ALL MEMBERS THAT
THERE IS ALWAYS PLENTY OF ROOM IN *FIRST
LIGHT* FOR YOUR CONTRIBUTIONS**
