



First Light

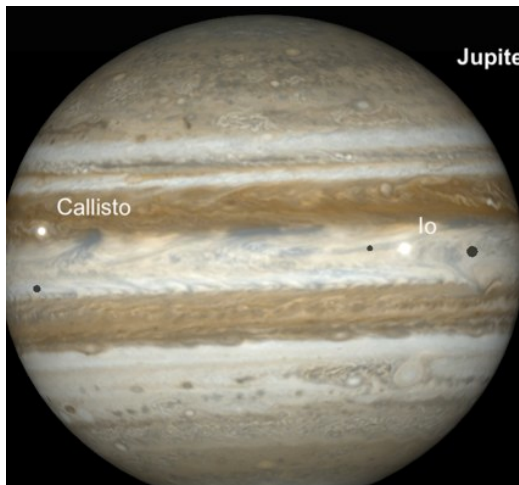
The Newsletter of the Cape Cod Astronomical Society



January, 2015

Vol. 26 No. 1

Happy New Year !!



Start the New Year right by planning with the Staff of The Schmidt Observatory to watch the shadows of *three* of Jupiter's moons cross the planet a bit after midnight on Saturday, Jan 24, 2015! If you can only take one look, observe at *1:40am* to see the amazing sight at left (image is "true".) From left to right on the surface of Jupiter: Callisto above the shadow of Europa, Callisto shadow, Io, Io's shadow (not shown: Europa to left of the planet.) If the "seeing is good" all three shadows should be visible using our 16" or 18" scopes; the moons themselves will be tougher to see against the planet's surface.

The earlier view at 10pm on Friday: Ganymede is far far to left, Europa, then Callisto, then Io lined up at lower left of the planet; ingress: Callisto Shad at 10:11, Io Shad at 11:35, Io at 11:55, Callisto at 1:19am, Europa Shad at 1:28am; Io's shadow, the first to go, leaves at 1:52am.

Enjoy !!

Next Monthly Meeting: is Thursday, January 8th at 7:30pm. Mike Hunter, CCAS member and past president, will speak on **Choices: Some Intended, Some Unexpected**...a look at the choices unpaid astronomers are faced with in viewing/imaging the sun and sky...and the consequences, known and unknown, of those choices. Public welcome.

Reminders The next "Quarter Moon Saturday" Star Party takes place at The Dome on January 24th at 7:30pm. Public welcome.

In this issue: Shadows and Moons Transit Jupiter / New Member / Need Help at the Dome / Sign up for AmazonSmile / Participate in Exoplanet Discovery and Characterization / Be among the First to See a New "Algol" dim / Reflector Telescope for Sale

Bright New Stars:

We wish to welcome Lee Johnson of South Dennis to membership in CCAS. Lee and his daughter became acquainted with us at a recent Quarter Moon Saturday Star Party. Welcome to CCAS, Johnsons!

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 might have new information for us (background, astro equipment preferred, interests, etc.) on yourself or someone else, please let us know (email info@ccas.ws).

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

CCAS News Items and Current Events:

Dues:

If you have not yet paid your dues for the 2014-2015 cycle, [please bring your check to the January 8th meeting](#) or mail to: CCAS, 34 Ridgewood Rd., Orleans, MA 02653. Thank you.

President:

We have yet to find a member to serve as CCAS President since the end of Mike Hunter's term. If you know of anyone who might consider serving in this position, please let one of the current officers know.

We need Help at The Dome:

At our December meeting, Mike Hunter asked for more folks to get involved in activities at The Werner Schmidt Observatory.

In particular, support staff are needed to take maintenance responsibility for various observatory instruments (e.g., multiple cameras and telescopes), work with visitors, assist at star parties, etc.

Help is also needed in staffing star parties and meetings for students at the Dome; without more help, we must turn down requests from school districts and other groups who would like to visit the observatory.

Bernie and Joel also could use help keeping up with occultations; we have a special opportunity as we are one of the easternmost observatories in the US.

We also need help managing acquisition of donated 'scopes, managing 'scope loan-out programs, and assisting members

and the public in finding/buying telescopes.

If anyone can help, please contact Mike Hunter directly or send an email to info@ccas.ws Thank you.

The Cape Cod Astronomical Foundation is now participating in the AmazonSmile program (<http://www.smile.amazon.com>) so please go to this amazon login page and sign up. Going forward, 0.5% of the price of all your Amazon purchases will be donated to the Cape Cod Astronomical Foundation when you are a signed up participant.

CCAS Meetings:

Many thanks to Dr. Jorge I. Zaluaga, Fulbright Visitor Scholar, Harvard Smithsonian Center for Astro Physics, for his entertaining and most informative talk "What Makes a Habitable World?" at our December meeting.

Dr. Zaluaga is Assistant Professor of Physics at the University of Antioquia, Medellin, Colombia.

By now, most of us know that there is a "Goldilocks" zone in the orbits of planets around stars that have the right combination of distance from the star to provide temperatures where life as we know it might be possible. Conditions permitting the existence of liquid water are also thought necessary for life. A key point, one not known to most of us prior to hearing this talk, is that only planets having a magnetic field can retain an atmosphere and liquid water, and at the same time be in the "Goldilocks" Zone. On earth, the shifting of tectonic plates is responsible for the magnetic fields that help retain our atmosphere. Is life possible only on planets having moving tectonic plates?

At our meeting on January 8th Mike Hunter, CCAS member and past president, will speak on **Choices: Some Intended, Some Unexpected**...a look at the choices unpaid astronomers are faced with in viewing/imaging the sun and sky...and the consequences, known and unknown, of those choices. Public welcome.

Recently joined member Jim Lynch will present "**Acoustics and Astronomy, with a small dose of Salt Water**" at our meeting on February 5th. Jim is a Senior Scientist at the Woods Hole Oceanographic Institution and Editor-in-Chief of the Journal of the Acoustical Society of America. Jim says, "This should be a fun talk, and hopefully show the group a few different looks at things!" We look forward to it, Jim!

Reminder:

Mike Hunter (or his delegate) “hosts” a Dutch-treat dinner gathering for members and friends on each CCAS meeting night (before the meeting) at the South Yarmouth Hearth & Kettle restaurant at 5:45pm; (the meetings begin at 7:30 at D-Y.) The speaker for each meeting is always invited.

Please join the group to dine and talk about all things interesting, including astronomy, [this January 8th](#). The H&K is at 1196 Rte 28, South Yarmouth, about a half mile west of the Station Avenue/Main Street intersection with Rt. 28 (stop light).

Effort continues to find a speaker and topic for our meetings for March and thereafter.

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 Charlie, Gus, or Peter or to info@ccas.ws . For sure we will follow up.

[Please let us know if you have any leads...](#)

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

Minutes:

The minutes of our December meeting are on our website; click on the “Minutes” button at www.ccas.ws or go to <http://www.ccas.ws/minutes/ccasminutes120414.pdf>

From the Dome:

Once-a-month “Quarter Moon Saturday” Star Parties continue this month. Each event begins at 7:30pm. These gatherings are usually held on the Saturday closest to the date of the First Quarter Moon. All events are open to the public. Here is the schedule:

[Schedule for Monthly Quarter Moon Saturday Star Parties for 2014-2015:](#)

1st QTR Moon Date	Star Party Saturday
26 Jan 15	24 Jan 15
25 Feb 15	21 Feb 15
27 Mar 15	28 Mar 15
25 Apr 15	25 Apr 15
25 May 15	23 May 15
24 Jun 15	20 Jun 15

As always, “Private” group or individual observing sessions at the Werner Schmidt Observatory may be scheduled by contacting Observatory Director Joel Burnett at Joelburnett@comcast.net 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

Opportunity to Participate in Exoplanet Discovery and Definition:

Bernie Young requested that this notice be published:

“Video recordings of the lunar occultation of K2 binary stars including light curve determinations”

For immediate release: Nov 14, 2014

Professor James Lloyd of Cornell has sent out a Call for Observations.

The Kepler spacecraft mission was designed to look for exoplanets in the area of Cygnus. A failure of a reaction motor stabilizing the spacecraft might have doomed the mission. However, engineers determined they could use the pressure of sunlight to stabilize the spacecraft when it was pointed at the ecliptic. Mission Kepler2 was born.

Lloyd explains "...if there is an unknown or poorly known binary in a system that has an exoplanetary transit, the light from that binary dilutes the transit depth. Since the inferred size of the planet is measured from the transit depth, this results in errors in the planet size, in some cases leading to mistaking a diluted eclipsing binary for an exoplanet." We can help detect binaries by observing lunar occultations.

Dave Herald of IOTA further explains "...a lunar occultation will not result in the detection of an exoplanet. However a lunar occultation can detect close binary systems – and this will have a direct effect on the interpretation of the data from Kepler2.

"What is being asked of us is to make video recordings of lunar occultations of K2 target stars, and obtain a light curve.

"Personally, I think this is an exciting opportunity to become involved in exoplanet detection!"

When the Kepler2 fields are defined, Herald will modify the program "Occult" which we use to identify occultations of interest. Then we will see what we can contribute."

Bernie

January Observing:

Please see resources in the January issue of *Astronomy Magazine*, pp 36-43, and *Sky and Telescope*, pp 43-58, and Reference 5 for good guides to the sky. See p 41 in *Astronomy*, and p 52 in the *S&T* and also reference 6 for positions of the moons of Jupiter for January. Details for

special phenomena of Jupiter’s moons for January can also be found on p 53 of the *S&T*.

Without question, there are two special observing opportunities at Cape Cod in January: the first is the [multiple moon and shadow transits on Jupiter](#) during the night of January 23-24 mentioned on page 1; the second is [the possibility of observing the self-eclipsing of a double-star system for the first time ever!](#) Here’s some information on this second opportunity:

We all know about Algol; a bright (mag 2.1) star in Perseus that dims every 3 days. Algol is a double star and the regular dimming depends on the smaller component moving in front of the brighter. Schedule for evening occurrences of the Dimming of Algol for January at Cape Cod is given below.

An article in the January issue of *Sky and Telescope* (page 50) introduces a similar mag 4.3 (naked-eye-visible but easily studied with binoculars) binary system which has orbiting components which can self-eclipse. However, in this new system, the two components exist so far away from one another that one eclipsing the other from the point of view of earth is an *extremely rare event*.

Astrometrist Matt Muterspaugh of Tennessee State University writes that we may have an opportunity in January to see this system dim by self-eclipsing *for the first time ever!*, most likely during the period 1/23 -1/24. The binary system, the α (brightest) star in Comae Berenices is well above the horizon just after midnight each night in January.

AAVSO, The American Association of Variable Star Observers is coordinating a worldwide observing campaign for the special event. Hopefully members of our Observatory Staff will organize a viewing from the Schmidt to include some precision photometry. If so, society members will be notified by email.

But “Citizen Astronomers” armed only with a pair of binoculars can look for this dimming using a star comparator chart prepared by AAVSO (see references on page 6) and report their backyard observations online for inclusion in the campaign database.

This could be a wonderful starter project for Jim Mitchell’s astronomy students at the D-Y High School either “at home” or participating with CCAS staff at the Schmidt.

If anyone decides to engage in this opportunity, please let *First Light* know about your experience....

Key *S&T* and AAVSO references are given on page 6:

- The *S&T* article... includes the AAVSO comparator stars chart;
- AAVSO’s website for the campaign;
- AAVSO’s manual for photometry using a DSLR camera.

From the *S&T* article: “If observers this time record an eclipse, Alpha Comae Berenices will become the longest period normal eclipsing binary star ever observed.”

Minima of Algol^{1,3}, January:

Algol, a variable double star in Perseus, shines normally at mag 2.1 but once every 2.87 days dims to mag 3.4. The dimming is caused by the dimmer of two self-orbiting stars eclipsing the brighter as viewed from earth.

There are *three* evening occurrences of the Minima of Algol at Cape Cod during convenient evening hours in January: Wednesday, Jan 7th, at 8:56pm; Tuesday, Jan. 27th, at 10:42pm; and Friday, Jan. 30th, at 7:31pm.

Using binoculars or a small telescope, try to begin viewing two to three hours before the minima to watch the dimming and up to two to three hours after the minima to watch the brightening.

Mooncusser’s Almanac and Monthly Alert¹ JANUARY 2014			
Object	Jan. 1 (EST)	Jan. 15 (EST)	Jan. 31 (EST)
Sun	R: 07:07 S: 16:20	07:05 16:34	06:53 16:54
Moon	R: 13:48 S: 03:53	02:13 12:23	14:10 04:29
Mercury (evening)	R: 08:10 S: 17:19	08:07 18:09	06:29 16:50
Venus (evening)	R: 08:16 S: 17:36	08:16 18:11	08:04 18:51
Mars (evening)	R: 09:26 S: 19:41	08:59 19:43	08:24 19:44
Jupiter (all nite)	R: 19:35 S: 09:33	18:32 08:34	17:19 07:26
Saturn (predawn)	R: 03:58 S: 13:48	03:09 12:57	02:12 11:58
Uranus (evening)	R: 11:25 S: 00:03	10:30 23:09	09:28 22:08
Neptune (evening)	R: 09:59 S: 20:53	09:05 20:00	08:03 18:59
Pluto (in sun)	R: 07:07 S: 16:39	06:14 15:46	05:13 14:45

Declination Tables for the Moon² during this month please contact your editor for information or sources.

Moon Phases, January, 2014

Full Moon, Sunday, January 4th, at 11:53pm EST

>>>>Moon also at perihelion; **very high tides**<<<<<

Last QTR Tuesday, January 13th, at 4:46am EST

New Moon Tuesday, January 20th, at 8:14am EST

First QTR Monday, January 26th, at 11:48pm EST

“Quarter Moon Saturday” Star Party: January 24th

Meade 5” Saturn Reflector Telescope for Sale:

This email came in to info@ccas.ws during December. Anyone having an interest in the Autostar Go To ‘scope, please contact Mr. Robertson directly. Likely a very good “starter ‘scope.” Thank you.



Subject: Meade telescope

From: Dale Robertson <sbdaler@gmail.com>

Date: Tue, December 09, 2014 8:21 am

To: "info@ccas.ws" <info@ccas.ws>

I have a Meade Saturn telescope that I would like to sell. Could you suggest the best place to advertise it. I have all of the accessories including the original box.

Thank you for any help you can offer.

Best regards,

Dale Robertson

**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.**

Cape Cod Astronomical Society

President	Position is Open	
Vice President	Charles Burke	5083949128
Secretary	Gus Romano	7819294770
Treasurer	Peter Kurtz	5082550415
Observatory Director	Joel Burnett	5082217380
<i>First Light</i> Editor	Peter Kurtz	5082550415

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

Cape Cod Astronomical Foundation

Chairman	Werner Schmidt	5083629301
Vice Chairman	Michael Hunter	5083859846
Director of R&D	Bernie Young	5083941960
Secretary	Ed Swiniarski	5088965973
Treasurer	Pio Petrocchi	5083621213
Observatory Director	Joel Burnett	5082217380
Observatory Phone Line		5083984765

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 K12 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 January 2007/January 2008 *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 "The Sky This Month" online for January: <http://www.astronomy.com/magazine/sky-this-month/2014/11/jupiters-marvelous-moons> See also S&T resources online at <http://www.skyandtelescope.com/>
- 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>
- 7) References for the dimming of α -Comae Berenices event January 23 – 24:
The website for the project is aavso
 - S&T article: "Vigil for a Unique Stellar Eclipse", January, 2015 issue; page 50.
 - AAVSO's website for the campaign: <http://www.aavso.org/observing-campaign-alf-com>
 - AAVSO's manual for photometry using a DSLR camera: <http://www.aavso.org/dslr-observing-manual>