



First Light

The Newsletter of the Cape Cod Astronomical Society



October, 2015

Vol. 26 No. 10



SUPER, FULL, AND TOTAL ECLIPSE!

Dear Members and Friends of CCAS,

Here's hoping you had a good experience with our recent lunar eclipse.

If you did, please write a short essay on your experience and send in an email to:

info@ccas.ws Please include a few photos if available.

*We will include all submissions in the upcoming **First Light** issue or issues.*

Thank you

Our Next Monthly Meeting: is Thursday, October 1st, at 7:30pm in the D-Y High School library. This night is "Telescope and Equipment Show and Tell" for all members and Friends of CCAS. Bring your telescopes, binoculars and other equipment of interest including special items for astrophotography. Need help with your 'scope? Bring it. Telescope not working? Discuss it with a colleague. Several telescopes and other equipment from The Schmidt Observatory will be on display and for discussion. Telescopes available for loan (and some for "Give Away") will be included. As always, public is welcome.

Reminder: The next "Quarter-Moon-Saturday" Star Party (public welcome) is Saturday, October 10th at 7:30pm. We are also continuing once-a-month "New-Moon-Saturday" "work and discuss" evenings for *Staff and CCAS Members only* in October. Please see more information on both these opportunities with near term schedules on page 4.

In this issue: [Opportunities for Outreach by CCAS Members Abound](#) / Student Outreach Alive and Well / Monthly Member Work Sessions at the Schmidt continue / Planets Line Up in the Predawn Sky! / End of the 2015 Saturn show /

Bright New Stars:

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:

Outreach to Students at Dennis-Yarmouth High School:

Students are back at D-Y High School and CCAS members are already engaged in collaboration with D-Y staff in introducing students to The Schmidt Observatory, the night sky, and our sun during the day. Planning for special student projects has begun. Please see the overview beginning on page 3.

Outreach to Cape Cod Educational Organizations:

It's pretty clear that CCAS members' outreach to introduce amateur astronomy to students at the High School is alive and well. Outreach elsewhere in the community...not so much.

We need to see what we can do as a club to do equally well in reaching out to other organizations. Beginning on page 6 of this issue, we summarize several requests that have come in to info@ccas.ws over the past several months asking for CCAS members to help with astronomy programs being planned by community groups other than D-Y.

Please look at the invitations on page 6 and ask yourself: *"What can I do to help?"*

Are we serious about our mission to introduce astronomy to our neighbors? Thank you.

The 2015-2016 **Dues cycle** began at our July meeting. Dues for most folks are \$30/year. We need this money to pay our bills and support our Observatory! Please bring your check to the next meeting or mail right away to: CCAS, 34 Ridgewood Rd. Orleans MA 02653. Thank you.

Thank you all for a very good response this time around. We still have several active members who are more than a year in arrears. Please, everyone, "get current" as soon as possible.

The Cape Cod Astronomical Foundation is now participating in the AmazonSmile program (<http://www.smile.amazon.com>); 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 new member John Carlisle, for his most lucid and entertaining introduction to "**Celestial Navigation**" given at our meeting on September 3rd. John comes to us well equipped to teach this subject: years of experience at sea, and past and current (Massachusetts Maritime Academy) engagement in teaching CN.

John explained an "old school" subject (these days Celestial Navigation is very often supplanted by worldwide use of GPS systems) in a very engaging "old school" way: No slides; no computer; no big screen TV!

Carlisle taught us meridians, tropics, triangulation, etc. and the use of sextant readings with trigonometry and/or published tables. His main tool: a shiny white globe ("He has the whole world in his hands!") and erasable colored markers. For more information, please read Gail Smith's excellent Minutes of Meeting; the web address for her minutes is provided below.

"Telescope Night" at the CCAS October Meeting: As we have done in past years, every so often we have a "Telescope and Equipment Showcase" as the subject for a CCAS monthly meeting. This year we will have this "show and tell" session at our meeting on October 1. The session will include not only 'scopes and binoculars but other equipment of interest including special items for the astrophotography arena. Key CCAS telescopes, some available for loan from The Schmidt, will be available for browsing. Members are invited to bring their own 'scopes or binoculars. Finally, you may also offer your own equipment for loan or sale at this session. Public is welcome. Y'all bring your 'scopes too!

Professor Tim Barker, Professor Emeritus of Astronomy at Wheaton College, has informed us that he hopes to be able to give a talk at our meeting on November 5th on the **Apollo program**. If all goes as planned, he will be able to bring some **actual samples from the moon** on loan from NASA, to the meeting. Stay tuned.

As of this writing, we are looking for a program for December. The topic and speaker for the December meeting will be announced next month.

Looking ahead, we are pleased to announce that **Professor Larry Marschall** of Gettysburg College, astronomer, teacher and always an excellent speaker, will speak to us in March on *Comets' Tails-an Update on the Rosetta Mission*. More information when available.

Reminder:

Gus Romano (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! 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 (traffic light).

Mike Hunter, CCAS President, is our Program Chairman. Please contact Mike or info@ccas.ws if you have any leads on speakers for upcoming meetings after November.

Members, *PLEASE* participate in the effort to recruit good speakers to present programs in astronomy and related sciences at our meetings.

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

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

Minutes:

The minutes of the September meeting are on our website; click on the "Minutes" button at www.ccas.ws or go to <http://www.ccas.ws/minutes/ccasminutes090315.pdf>

From the Dome:

Outreach to Students at Dennis-Yarmouth High School:

Students are back at DY High School and CCAS members are already engaged in collaboration with DY staff in introducing students to The Schmidt Observatory, the night sky, and our sun during the day. We are also planning special student projects.

Following is an extract of an email sent to us by Jim Mitchell, Earth and Science Teacher at DY.

The initial program for students this year were two sessions for daytime solar observing, Thursday and Friday, September 17-18.

Some comments from emails from Bernie Young, Director of Research at The Dome, are interspersed with Jim's remarks:

1) Sun-viewing and Orientation at Observatory.

Thanks (to Bernie) for today's sessions (30 students total). Students were very positive about the experience. Some explicitly said that they had never looked through a telescope before, that it was something they had always wanted to do. What a great experience to see that large solar flare today.* Students were impressed with what they saw, including the many telescopes and media technology at the Observatory.

*Bernie added this comment in an email: We had a spectacular feature on the sun Thursday and Friday, Sept 17 and 18: a hedgerow prominence. At 160,000km across, it is the most interesting feature we have seen yet in our solar scopes. A photo taken by a guy in Buffalo is already available on the TV [in the lower level of The Schmidt] in

the "solar system/sun" photos folder.

2) Student projects.

I am so glad to hear that Warren [Mumford] and yourself are available to mentor some students again this year. Last year was a great experience and well received by my students. I have more honors students than last year, up from 10 to ~14. I'm glad that mentoring students again for analyzing Observatory data is an option again this year. I'd like to build on last year's projects and consider other ideas as well. I'm open. *Perhaps other staff and club members have ideas.* We'll talk.

3) Star parties for my students.

I'd also like to schedule some evening star parties perhaps three during the last 3 weeks of October. I have a class on Tuesdays. Friday sports involve athletes and the band. So that leaves Mondays, Wednesdays, and Thursdays that I would consider scheduling star parties.

Perhaps we should schedule star parties on evenings of "special events" such as occultations; particularly if student projects involve such viewing. In which case, we should identify projects sooner than later.

Bernie volunteered the following comment in an additional email: I have a list of 6-7 projects I think might be appropriate for your students. I hope to polish them up the week.

CCAS Members: There are many good things happening in these programs. Please consider helping. Contact Bernie directly if you can help or notify us at info@ccas.ws and we'll pass your interest along. Thanks to all working with the students!

"Winter" Schedule of "Quarter-Moon-Saturday" Star Parties Continues:

Want to know what a "Quarter-Moon-Saturday" Star Party is? Our website ("Star Parties and Activities Info" button) describes it this way:

From September thru June, we will have one regularly scheduled Star Party each month at 7:30pm – 9:30pm on the Saturday closest to the date of First Quarter Moon (about 7 days old).

When the moon is near its First Quarter, the terminator (the line dividing light from dark) is favorable for viewing sunlight or shadow on the sides of craters. This time is also good for observing the dark side of the moon occult (cover) stars in the sky beyond it as it moves in its orbit.

The continuing schedule for "Quarter-Moon Saturday Star Parties" thru January is given on the next page. All events begin at the Dome at 7:30pm on the following evenings and end at 9:30pm: Public always welcome.

Saturday October 17th
 Saturday November 21st
 Saturday December 19th
 Saturday January 16th

FOR MEMBER ONLY:
“New-Moon-Saturday” Work Sessions at the Schmidt
Continue:

Starting time is always 7:30pm:

Saturday October 10th
 Saturday November 14th
 Saturday December 12th

These meetings, held on the Saturday night each month closest to the New Moon, are to provide a regular opportunity for CCAS members to work on projects at the Dome and/or to become better acquainted with our equipment and more involved with Dome activities and operations.

If you are a CCAS Member, and not yet involved at the observatory, this is your opportunity to join in, have fun, and share stargazing and learning about observing and using our equipment with the Observatory Staff.

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. Contact info@ccas.ws if you wish to borrow one.

October Observing:

Observing Resources:

Please see resources in the October issue of *Astronomy Magazine*, pp 36-43, and *Sky and Telescope*, pp 41-59, and Reference 5 for good guides to the sky. See *AM*, p41, *S&T*, pp 50 and 51 reference 6 for positions of the moons of Jupiter and Saturn and special phenomena of the moons of Jupiter this month.

Highlights in the Night Sky for October:

The *Astrologers* should have great fun this month since for much of the month, three or more planets *line up* in the predawn sky. This *must portend* some cataclysmic event of

some kind for at least someone, somewhere!

But, we, being astronomers *rather than astrologers*, will look forward to viewing these lineups as the scientific and aesthetic wonders that they are. No portents!

Only one downside: *these are predawn events!* But sunrise is getting later and later (6:27am on the Cape on Oct. 1st) so it shouldn’t be too hard to get up early to see these phenomena on at least some of the mornings in October.

Moocusser’s Almanac and Monthly Alert¹ OCTOBER 2015			
Object	Oct 1 (EDT)	Oct. 15 (EDT)	Oct. 31 (EDT)
Sun	R: 06:37 S: 18:23	06:52 18:00	07:11 17:37
Moon	R: 20:53 S: 10:49	09:22 19:37	21:15 11:32
Mercury (sun, predawn)	R: 06:29 S: 18:06	05:19 17:25	06:15 17:16
Venus (predawn)	R: 03:02 S: 16:24	03:01 16:07	03:15 15:48
Mars (predawn)	R: 03:42 S: 17:10	03:31 16:35	03:18 15:55
Jupiter (predawn)	R: 04:18 S: 17:24	03:37 16:36	02:48 15:39
Saturn (early evening)	R: 11:03 S: 20:51	10:14 20:00	09:19 19:02
Uranus (“all nite”)	R: 18:43 S: 07:38	17:46 06:40	16:42 05:34
Neptune (“all nite”)	R: 17:08 S: 04:07	16:13 03:11	15:09 02:07
Pluto (evening)	R: 14:11 S: 23:39	13:16 22:45	12:14 21:42

Here are highlights of these lineups:

- The lineups started in September. So on the first of the month in October, at 6am, 37 minutes before sunrise, looking east, you will see a lovely line up of **Venus** above **Mars** above **Jupiter**; the three are almost equally spaced (like ships in a convoy) fairly high in the sky; Jupiter, the lowest, is at altitude 18° at 6am.
- By October 8th, Mars and Jupiter have moved a bit toward the horizon away from Venus, little Mercury is visible near the horizon about 90 minutes before sunrise, and, the waning crescent moon is moving progressively toward the horizon past the three from day-to-day (above Venus on the 8th, between Jupiter and Mercury on October 10.)



From Oct *S&T*, p 46. Looking east on Oct 11.

- By October 11th (30 minutes before sunrise), the moon has almost disappeared and Mars and Jupiter are getting closer and closer to one another: only separated by 3° on the 11th; and on October 17th, *they are separated by less than 0.3°!*

Evening Viewing:

Saturn and its moons are getting very low in the evening sky. The planet and its moons are only altitude 13° one hour after sunset on the first of the month; that day Saturn sets at 8:51pm) Look early to see the end of 2015's Saturn show..

Our "Mooncusser's Almanac" shows the distant planets are all nicely placed for evening viewing with a good telescope (*Come to the Dome!*) this month.

Pluto, mag 14, the toughest of the three to see. is at altitude 24° on October 15th at 7:30 pm, 90 minutes after sunset for us, and is above the horizon until 10:30pm.

On that same mid-month evening, **Neptune**, mag 7.9, is nicely visible all night, highest in the sky (38° altitude) at convenient 9pm.

Finally "bright" **Uranus**, mag 5.7 (can you see it with your naked eye?) transiting at 12:16 that night (alt 55°), is already 35° high in the east at 9pm.

Minima of Algol^{1,3} October:

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 two convenient evening occurrences of the Minima of Algol this month: Tuesday, October 13th at 1:01am EDT and Prime Time, Thursday, October 15th, at 9:50pm EDT.

Using binoculars or a small telescope, try to begin viewing two to three hours before the minima to watch the dimming (record magnitudes now and then by comparing Algol with neighboring constant magnitudes) and up to two to three hours after the minima to watch the brightening.

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

Moon Phases, October, 2015

Last QTR, Sunday, October 4th, at 5:06pm EDT
New Moon, Monday, October 12th, at 8:06pm EDT
First QTR, Tuesday, October 20th, at 4:31pm EDT
Full Moon, Tuesday, October 27th, at 8:05pm EDT

Outreach to Cape Cod Educational Organizations:

It's pretty clear that the work CCAS members do to introduce amateur astronomy to students at the High School is alive and well. We need to see what we can better do as a club in reaching out to other organizations. Since July, several requests, two of them very recent, have come in to info@ccas.ws asking for CCAS members to help with astronomy programs being planned by Cape Cod educational groups.

Please look at the four invitation listed here... and ask yourself.... "What can I do to help?"

Are we serious about our mission to introduce astronomy to our neighbors?

[Please note: the first two of these opportunities are *urgent*; one program planned for [October 3](#); the next for [October 9](#)!]

Item 1: This is an announcement only: a program members might enjoy attending; no help needed on this one.

John Wrigley of the Mass Audubon's Long Pasture Wildlife Sanctuary sent this email announcing a program to be given there on [Saturday, October 3rd](#), 7-9pm: *Autumnal Astronomy*. The link following provides a nice overview of the program.

This is Josh Wrigley over at Mass Audubon's Long Pasture Wildlife Sanctuary. I'm writing to you about a program that we have coming up on October 3rd here at Long Pasture. An astronomer from Boston is coming down to lead a family-oriented stargazing program.

Here's a link:

http://www.massaudubon.org/get-outdoors/program-catalog#program:sanctuary=28:program_code=41475

Would you mind posting this link to your webpage and running an announcement to your members? That would be a great help in getting out the word. If you know of any other contacts I might be able to reach out to, please let me know.

Item 2: Help needed for Astronomy Program planned for October 9th at Yarmouth Port Library:

This opportunity was mentioned by Joel Burnett at our September meeting. No response yet.

Someone please respond! If you can help, please contact Judith directly at her email address and copy info@ccas.ws Thank you.

From: Judy O'Brien [mailto:judyobie@gmail.com] **Subject:** Speakers for programs

The Yarmouth Port Library hopes to have a program on Astronomy, preferably on *Friday, October 9th*, in the afternoon. I know that your members are volunteers, but I am not sure if anyone does programs at other locations.

I have been to the observatory several times and [suggested this program because there are many local people who are not aware of this wonderful resource in our area](#). If there is a good speaker who can show slides of celestial events, the programs are free to the public and run for an hour (with time for questions and answers). We also serve refreshments.

Could you please let me know if this is something that the Society does and, if not, suggestions for others to contact. We plan to have appropriate books available for patrons who would like to learn more about astronomy.

Item 3: Help needed by Sturgis West Student to start up a High School Astronomy Club:

This opportunity was mentioned at our July meeting, *now twelve weeks ago!* and originally posted in the *July First Light*.

Someone please respond!

CCAS received a very interesting email from a student at Sturgis (West) Charter School on June 10th. Elaine Kearney is planning to start an astronomy club at her school and is seeking advice, counsel, and support from us. She is also looking for telescopes her club might soon use. We have sent Elaine's request to several CCAS members and members of the Observatory Staff asking them to contact Elaine and get involved. If anyone has an interest in supporting Elaine's startup in any way or might have a telescope to donate, please let us know by sending an email to info@ccas.ws We will put you in direct contact with Elaine.

Item 4: Help needed for January Astronomy Program at Brewster Ladies Library:

The following opportunity was mentioned at our September meeting. *Someone please respond!*

This from Nori Morganstein, Youth Services Librarian at the Brewster Ladies Library. This is now *six weeks old!* If you can help, please contact Nori directly at her email address below and copy info@ccas.ws

Subject: Astronomy Program

I was wondering if the Cape Cod Astronomical Society has ever done astronomy programs at local libraries.

The town of Brewster is having a One Book, One Community program this winter in *January*, in which we will be promoting and reading the book, *The Finest Hours*. The book centers on the Coast Guard, and the library will be hosting a month's worth of programs involving the local Coast Guard and ships.

I was wondering if the Cape Cod Astronomical Society would be able to do a program on celestial navigation and stargazing. And if not, would you know of someone who could do a program like that with us this January?

Any input would be much appreciated.

From: Nori Morganstein <nmorganstein@brewsterladieslibrary.org>

[Editor's note: Thanks to John Carlisle who had stepped up and offered to help on this. John spoke on Celestial Navigation at our September meeting. Unfortunately we just learned he will be away on the MMA training ship *Kennedy* in January and will not be available. *Please, someone else volunteer!*]

**NOTICE: NEW COPIES OF THE BROCHURE INTRODUCING CCAS AND ITS ACTIVITIES ARE AVAILABLE;
INQUIRE AT info@ccas.ws IF YOU WISH COPIES.**

Cape Cod Astronomical Society

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Cape Cod Astronomical Foundation

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The **Cape Cod Astronomical Society** meets at 7:30 pm on the first Thursday of every month in the library of the DennisYarmouth 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 January2007/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 "The Sky This Month" online for October: <http://www.astronomy.com/magazine/sky-this-month/2015/08/morning-planet-spectacle>
- 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>