



First Light

The Newsletter of the Cape Cod Astronomical Society



March, 2013

Vol.24 No. 3

Think We Have Little New to Learn About Operating Our Meade 16”?



Think Again!

We are Learning More and More Every Day about how Better to Align our Big Scope and Make It More Reliable in “Go To” tasks.

Please see story beginning on page 3.

Next Monthly Meeting: is Thursday, March 7th at 7:30pm in the D-Y Library. Former CCAS president, Gary Derman, will present a program called “**Where is that star?**” While the story on optimizing alignment of our 16” on page 3 deals with “How to do it,” Gary’s talk will explain “How it Works Inside.” So please come to our meeting; you will leave understanding a good deal more than you did about both “How’s”. Public welcome. Please join us.

Reminder: The next “Half-Moon Saturday” Star Party is scheduled for March 16th. More information on page 4.

In this issue: Contributions to CCAF / Optimizing our Scopes / Report on Student Star Party / Ceres will occult a star / *This month: Possibly Brightest Comet in Six Years!* / Special Jupiter Moons Phenomena / Saturn Arrives / Spring Deep Sky Targets / Vernal Equinox / Moon Bigger than Car / John Huth Book on Navigation / S&T Storage Boxes

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).

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

CCAS News Items and Current Events:

Thanks to Gail Smith for her donation to the Cape Cod Astronomical Foundation during February to honor recently deceased CCAS former president and astronomy teacher Jon Greenberg.

Once again, donations to the Foundation are always welcome and are critical to our ability to continuously modernize equipment and protocols that let us enjoy the sky and conduct astronomy research and teaching projects.

Be sure to check out “FROM THE DOME” later in this issue for stories related to our front page photo and also an excellent review of a visit by Eddy Elementary School 5th Graders to the WSO on Feb 1.

Note: A second group of students from Eddy Elementary School and accompanying parents will visit The Schmidt Observatory Friday, March 1 beginning at 6pm. *Once again any members who would like to assist the Observatory Staff that night, please contact Joel or Peter.*

CCAS Meetings:

Many thanks to Observatory Staff Member and Club Treasurer Peter Kurtz for his presentation, “**How to Enjoy Fast and Slow Variable Stars**” at our meeting on February 7th. Peter presented an extensive summary of what defines a variable star, how their brightness is evaluated and what kinds of variable stars are known to exist. He described the physical aspects of Intrinsic (Pulsating Stars) and Extrinsic variable stars. He demonstrated the use of data systems available from the American Association of Variable Star Observers (AAVSO) and explained how any individual ‘backyard’ astronomer can observe the change in brightness of a variable star, and submit those observations for inclusion in the AAVSO data set on that star. He discussed how to acquire ‘comparison charts’ of stars with known brightness so the state of brightness of the variable star

being observed can be estimated. Peter also explained how well binoculars work in observing variable stars.

For the March meeting, former CCAS president, Gary Derman, will present a program called “**Where is that star?**” If you ever wondered how today's go-to telescopes know where to point to find a sky object or how planetariums can present the sky as it appeared from 2,000 years ago to 2,000 years from now, this talk is for you. Don't worry. You will not have to deal with complex equations. We will talk about what the mathematics is doing, but only in terms that everyone will understand.

At our meeting on April 4th, Joel Burnett, Director of The Schmidt Observatory and colleagues will present an update on “The State of the Observatory”. The presentation will include an overview on recent improvements in equipment, procedures and capabilities, notes on recent gatherings at the Dome, and research topics.

Recently joined member Harvey Patachnik will speak on “Design and Building of a Home Observatory” at our May meeting.

Mark your calendars: Larry Marschall, Professor of Physics associated with Gettysburg College, will speak on “**Wrong Way Planets and Other Strange Solar Systems**” at our meeting on July 11th. Dr. Marschall is the author of two books on astronomy: *GALILEO'S NEW UNIVERSE* and *PLUTO CONFIDENTIAL* and has taught courses in astronomy, physics, and science writing at Gettysburg. Whatever Dr. Marschall brings to CCAS is always interesting and informative.

Program planning is in progress to confirm speakers and topics for our April and June meetings.

Thanks to Mike Hunter, our Program Chair, for lining up these special topics and speakers; we also thank Peter, Gary, Joel, Harvey, and Dr. Marschall for agreeing to present.

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 February meeting are on our website; click on the “Minutes” button at www.ccas.ws or go to <http://www.ccas.ws/minutes/ccasminutes020713.pdf>

From the Dome:

Think We Have Little New to Learn About Operating Our Meade 16”?

Think Again!

We are Learning More and More Every Day about How Better to Align our Big Scope and Make It More Reliable in “Go To” tasks

This rhetorical question and the photo on page 1 are prompted by some really interesting information Bernie Young sent in an email to members of the Observatory Staff on February 19th. We think all members will find it very much of interest.

First Bernie enumerated some “advances in the art” that were achieved at a recent Dome work session:

* Did you know... The 16" has a square search feature one can use if the target star doesn't show up in the eyepiece during alignment or Go To's. You can then center the target as usual. Bernie tried it, and it works.

* Bernie examined an improved Hartman mask for focusing. Go To a bright star like Sirius, hang the mask over the open end of the telescope, and observe two images with six diffraction rays merge as you focus. That technique helped in work to...

* Set the parfocal rings on the 9mm and the 20mm eyepieces. One can now switch between the 9mm, the 20mm, and the 12mm reticle eyepiece with all three being “in focus” as you move from one to another. The current setup up also accommodates parfocal insertion of the Stellacam II video camera.

*Bernie pointed out in his email that we should “train” the altitude and azimuth drives on the 16” every few months so the Autostar software can accommodate for mechanical backlash. Bernie did this once over 15 minutes, but reports one should be able to accomplish the task in half that time after some experience.

The punch line here is that extracting the finest possible performance of the equipment in our Dome is a continuous task, which is not only important, but fun in the doing. Bernie plans continuing sessions in this area. *Please contact him if you would like to share in future challenges in this area.*

Projects immediately at hand include “calibrating the sensors”, and perfecting how to use the precision alignment feature on the scope.

And Bernie points out, that if you participate in any future equipment or use improvement sessions “along the way, there is ample time for viewing your favorite targets.”

Thanks to Bernie for all he does for the Observatory and the club.

Second Visit of Eddy Elementary School Fifth Graders to the WSO

Thanks to Joel Burnette, Director of our Observatory for sending in this great outreach story.

On February 1st 2013, we were more than a little concerned about cloudy weather blocking our opportunity to share the night sky with some forty participants, which included twenty Eddy Elementary School 5th graders, their parents and chaperones. We planned to hold two sessions with half the guests in each and running for 60 minutes per group.

We optimistically pressed forward with Bernie Young arriving at the dome at 5:00 pm to begin aligning the Meade 16” Lx-200 Schmidt-Cassegrain telescope. Lee LeBarre came with iPad and the Sky Safari app in addition to the 20 x 80 Orion binoculars on a stable Monfrotto tripod.

With fingers crossed for clearing skies we awaited our guests led by Patsy Marchant, the Eddy Science Curriculum Coordinator. By 6:00 pm our first session began... indoors. The frigid temperatures did not hamper Lees’ discussion of the Ursa Major Constellation with Dubhe and Merak pointing to Polaris the North Star. As additional constellations were reviewed, targets for the night’s discussions and viewing were developed.

Mercifully, the skies cleared about 45 minutes later and the eager students and parents were treated to views of the Pleiades(M45), the Orion Nebula (M42), Jupiter and its moons. I discussed types of nebulae, specifically honing in on planetary nebulae like the Ring Nebula (M57)and the Cat’s Eye Nebula (NGC 6543)as well as Supernovae remnant nebulae like the Crab Nebula (M1). Bernie concluded describing asteroids, how and why we earlier recorded asteroid 1746 Brouwer occulting a binary star member, and NASA’s Dawn probe to Vesta and Ceres. At 7:00 pm our first session visitors departed with brochures and wishes of seeing one another again soon.

The 7:30 pm session began with the remaining guests and clear skies, so we pointed out constellations with our laser pointers and enjoyed binocular views until we hurried in to the warmth of the indoors. The rest of our program included telescope viewing of the double stars Polaris & Mizar/Alcor, the Trapezium in the Orion nebula (M42), and the Pleiades. We ended with a viewing of the “37” open star cluster NGC 2169 in Orion. At 8:30 pm with our time over, the clouds were returning.

We had a delightful peek into our galactic neighborhood through our two-hour window between Cape Cod cloud banks. What fun to share our time with equally delightful neighbors in our terrestrial neighborhood – the students and families of Eddy Elementary School in Brewster!

Special note to Cape Cod Astronomical Society members: We have two more sessions, 6pm and 7:30pm, planned with Eddy Elementary School’s students on March 1st. More events are being requested and scheduled with other organizations as well. If you would like to assist by presenting a topic, demonstrating how to operate a piece of equipment, or would like to learn a bit more yourself, please contact the WSO Director, Joel Burnett, by e-mail to info@ccas.ws.

Reminder:

The next “Quarter-Moon-Saturday Star Party will take place Saturday **March 16th** beginning at 7:30pm. Remaining dates this winter season are:

Mar. 16	April 20
May 18	June 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

March Observing:

Thanks to Bernie Young for sending us this notice about an early evening occultation of a faint star by the big asteroid Ceres.

Occultation of 11.7 magnitude star by Ceres:

On **March 25, 2013** at 23:30:28 UT (6:30:28 EDT) the asteroid (1) Ceres at magnitude 8.5 will occult an 11.7 magnitude star in the constellation Auriga. This will occur 30 minutes past sunset and will last for 46.4 seconds. There is a 100% probability that we will be in the shadow.

So far, our colleague in Chelmsford and another fellow in the Canary Islands are the only others who have declared their intention to observe this event.

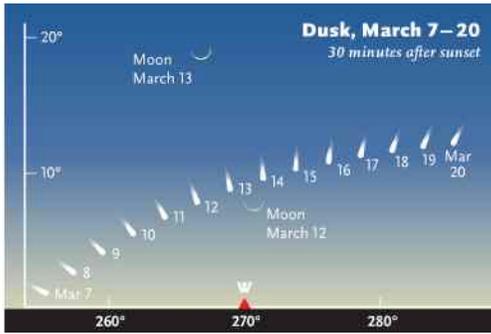
I have begun work on aligning the 16” telescope to improve our chances of finding Ceres, and we have a month to get ready. What makes this more challenging is that the asteroid is the brighter object. If it weren't so close to sunset this would be a slam dunk.

Anyone who wants to take up the challenge is welcome to join me in the preparation and or the event.



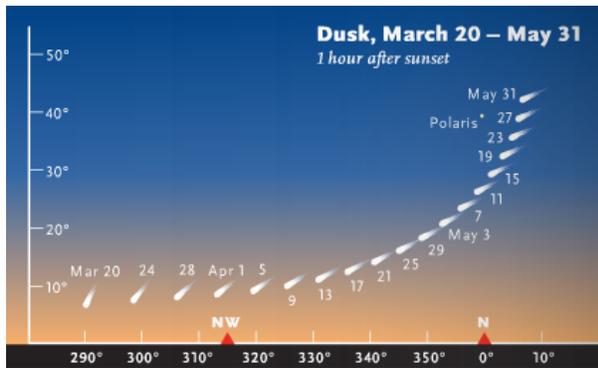
Comet C/2011 L4 (PANSTARRS) THIS MONTH!!

- Possibly the brightest comet in six years. Find an observing site that has a very low horizon in the west. Beginning about March 5th when it will barely be above the horizon at sunset for Cape Codders... and continuing for most of the month, PANSTARRS should be very bright low in the west just after sunset. You might need to wait until a few days later to see it as it separates itself from the sun. PANSTARRS might be bright enough to see with



...Image from March S&T

the naked eye and for sure with binoculars; but use binoculars early in the month since until later you will be searching for it at twilight. It should be at its brightest on about the 5th but stay bright enough for binoculars well into March and maybe beyond as it separates itself from the sun climbing higher in the sky each night after sunset.



...Image from March S&T

- If the comet develops a long tail, March 13 will be a night to treasure. The waxing crescent Moon should then lie in line with the gas tail. [See the special article on viewing PANSTARRS in the March issue of *Astronomy Magazine*, p 60.
- While you are looking to the west near the horizon after sunset during March, keep your binocular-assisted eyes out for Uranus and Mars. On March 10th, the former is about 15° above the horizon at sunset at mag 6 and brighter Mars (mag 1.2), tougher to see because so close to the sun, is 7° above the horizon at sunset.

During March, Jupiter continues to be the star of the night sky. There are at least three opportunities this month to see “special events” involving the motions of the Galilean moons:

- March 1. Ganymede’s shadow begins a run across the planet beginning at 8:46pm EST.
- March 2/3. The moon Io begins a run beginning at 10:04pm EST followed by its

own shadow, easier to spot, which starts its run at 11:22pm.

- Study Jupiter the night of March 26/27. Beginning at dusk, Jupiter appears to have only one moon: Callisto lies far west of the Planet. Find out details as to “where have all the other moons gone” in the following references:

[References for Jupiter and its moons, March, 2013: The March issues of *Astronomy Magazine*, p 41 and *S&T*, page 52, gives the positions of Jupiter’s main moons at any date and time during the month. Dates and times for observing Jupiter’s Great Red Spot are also given on page 52. A chart on page 53 of the *S&T* issue lists the times and dates during the month for special phenomena of the moons (exemplified just above.)**ONLINE:** 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.]

- Spectacular Saturn and its moons arrive again for evening sky observing this month (rises at 10:22pm EDT on March 1) rising higher in the sky each night as the month progresses. We will have the pleasure of both big planets in the evening sky for the next many weeks.

Minima of Algol: What better way to introduce yourself to the wonder and fun of observing variations in the brightness of “variable” stars than watching the dimming or re-brightening of the star Algol during a prime time occurrence of its dimming about once every three days.

This month, a minimum of brightness (mag 3.3 from mag 2.1) is reached at 7:58pm EST on Thursday, March 7th; minima also occur 12:43am EDT on Thursday, March 28th, and in prime time at 9:32pm EDT, Saturday, March 30th.

Explore Spring's Best Deep-Sky Objects:

Don't miss the article by the Editor of *Astronomy Magazine*, Michael Bakich, on best Deep Sky targets in the spring sky. (March *AM*, pp 50-55.) Key: there are two pages on targets for binoculars and small scopes (e.g., Beehive Cluster, M 44, Coma Berenices,) two pages on targets for medium telescopes (e.g., Owl Nebula, M97), and two pages on targets for large telescopes (e.g. M108, a barred spiral galaxy.)

Mooncusser's Almanac and Monthly Alert¹
MARCH 2013

Object	March 1 (EST)	March 15 (DST)	March 28 (DST)
Sun	R: 06:14 S: 17:31	06:51 18:47	06:24 19:05
Moon	R: 21:59 S: 08:19	08:48 22:54	00:02 09:35
Mercury (dawn)	R: 06:09 S: 18:02	05:58 17:09	05:29 16:40
Venus (predawn)	R: 06:05 S: 16:53	06:52 18:27	06:33 19:06
Mars (early evening)	R: 06:43 S: 18:22	07:12 19:22	06:36 19:22
Jupiter (all nite)	R: 10:01 S: 00:49	10:11 01:02	09:16 00:11
Saturn (predawn)	R: 22:22 S: 08:57	22:25 09:01	21:18 07:55
Uranus (evening)	R: 07:16 S: 19:38	07:23 19:47	06:22 18:49
Neptune (early evening)	R: 05:57 S: 16:46	06:04 16:53	05:02 15:53
Pluto (early evening)	R: 02:58 S: 12:37	03:04 12:44	02:01 11:41

Anyone having an interest in monthly **Libration and Declination Tables for the Moon**² during this month please contact your editor for information or sources.

The **vernal equinox** takes place at 7:02am EDT on Wednesday, March 20th. On this day hours of daylight and darkness are nearly exactly the same.

Moon Phases, March, 2013

Last QTR Monday, March 4th at 4:53pm EST
New Moon Monday, March 11th at 3:51pm DST
First QTR Tuesday, March 19th at 1:27pm DST
Full Moon Wednesday, March 27th at 5:27am DST

Potpourri

Becoming Expert at Understanding the Night Sky is Apparently a Gradual Process....



...sent to *First Light* by Caroline Pittman, of Chapel Hill, NC, granddaughter of the Editor
 ...from Ryan Pequin's comic "Three Word Phrase", <http://threewordphrase.com/amazing.gif>

The Lost Art of Finding Our Way

At the January, 2009 meeting of CCAS, John Edward Huth, Donner Professor of Science in the Physics Department at Harvard University gave CCAS a wonderful lecture on how ancient peoples used star rise and set locations, sun altitudes and rise/set positions at various times of year, and birds, currents and wave turbulences, (among other “simple” tools) to navigate thousand mile trips at sea.

Professor Huth contacted First Light recently to let us all know that he has recently published a book on this same subject. Your editor has a flyer John sent which offers the following information about the book.

Long before GPS, Google Earth, and global transit, humans traveled vast distances using only environmental clues and simple instruments. John Huth asks what is lost when modern technology substitutes for our innate capacity to find our way.

Encyclopedic in breadth, weaving together astronomy, meteorology, oceanography, and ethnography, **The Lost Art of Finding Our Way** puts us in the shoes, ships, and sleds of early navigators for whom paying close attention to the environment around them was, quite literally, a matter of life and death.

Haunted by the fate of two young kayakers lost in a fog bank off Nantucket a few years ago, Huth shows us how to navigate using natural phenomena—the way the Vikings used the sunstone to detect polarization of sunlight, Arab traders learned to sail into the wind, and Pacific Islanders used underwater lightning and “read” waves to guide their explorations.

Huth reminds us that we are all navigators capable of learning techniques ranging from the simplest to the most sophisticated skills of direction-finding. Even today, careful observation of the sun and moon, tides and ocean currents, weather and atmospheric effects can be all we need to find our way.

Lavishly illustrated with nearly 200 specially prepared drawings, Huth’s compelling account of the cultures of navigation will engross readers in a narrative that is part scientific treatise, part personal travelogue, and part vivid re-creation of navigational history. Seeing through the eyes of past voyagers, we bring our own world into sharper view

Belknap Press Read more about the book at <http://www.hup.harvard.edu/catalog.php?isbn=9780674072824>

This book deserves a look by all CCAS members and friends who have an interest in pre-modern techniques of navigation including how to navigate by the stars, positions of the sun, planets, and moon.

S&T Magazine Shelf Magazine Holder Boxes Available:

Kegan Berner <westwind101@hotmail.com> notified CCAS that he has six S&T Magazine holder boxes (S&T logo on the box spines) available for anyone interested. FREE. Please contact Kegan if you have an interest.

**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	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	Joel Burnett	508-221-7380
<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 of R&D	Bernie Young	508-394-1960
Secretary	Ed Swiniarski	508-896-5973
Treasurer	Pio Petrocchi	508-362-1213
Observatory Director	Joel Burnett	508-221-7380
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 March:
<http://www.astronomy.com/News-Observing/Sky%20this%20Month/2013/01/Comet%20fever%20strikes.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>