



First Light

The Newsletter of the Cape Cod Astronomical Society



August, 2013

Vol. 24 No. 8



*...a Spectacular Astrophoto Showing the Milky Way over the Sierra Nevada
(...by local photographer Chris Cook)⁰¹*

Next Monthly Meeting: is Thursday, August 1st, at 7:30pm. Dr. Colin Bischoff, a post-doctoral fellow at the Harvard-Smithsonian Center for Astrophysics, will speak on “**Observing the Origin of the Universe from the South Pole.**” Public welcome. Please join us.

Reminder: The 2013 Dues Cycle began July 1. If you have not yet participated, please bring your check to the 8/1 meeting or mail to CCAS, 34 Ridgewood Rd. Orleans MA 02653.

Reminder: The next summer weekly Thursday evening Star Party takes place on August 8th at 7:30pm at the Observatory; the summer weekly schedule continues on Thursdays through August 29th. Once a month “Quarter Moon Saturday Star Parties will begin on September 14 at 8:30pm.

In this issue: Please pay Dues / New Members / Kudos from a DY Teacher / 100+ at Open House / Marschall talk featured in local media / History of Astronomy articles in *AM* / A New Video Highlights Sky Simulator / Blue Planets / Perseids / Worker Bees.

Bright New Stars:

We are pleased to welcome to membership Warren Mumford of Harwich and Lee Britton, Jr. of South Yarmouth. Warren joined CCAS on June 20, 2013. Warren has a Meade LX-90 Schmidt-Cassegrain scope. Lee, a native Cape Codder, joined us at the end of July. Lee reports "a lifelong fascination with the night sky" and is looking forward to learning more about it. Lee "discovered" CCAS seeing a flier at a local library. Welcome aboard, Warren and Lee.

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:

D-Y Eighth Grade Students Viewed the Sun using our Coronado Sun Scope at the WSO June 19-21.

Although we reported briefly on this event in last month's *First Light*, all members should enjoy this extract from a "thank you" email Jim Mitchell, Earth and Space Teacher at DYHS, sent to Bernie Young:

Bernie, et. al.

Solar viewing this week has been terrific!

Seeing prominences in bright red with the new scope was captivating! Thanks, Werner and friends, for the scope! Bernie, thanks for the "11th hour" inspiration and all the work leading up to it and the time invested. The students, staff, and myself are so appreciative. What a great way to "send off" our students for the summer!

Please pass on my thanks to Charles, Mike, and Gail, for helping out Wed, Th, and Fri respectively. The "3-station" program was very effective. When I brought my students out on Thursday, it meant a lot to be directed to the sunspots scope while Jay's class was viewing prominences. We then saw the video of the comet on the new flat screen and learned about nebula's using Mike's IPAD (very effective combo). Lastly we enjoyed our views with the new scope. Jay mentioned that many 8th graders got to see the dome scope. Students learned a lot and carried away that "aha" experience we all know and love. Overall, it was a festive but relaxed and safe experience.

Jim is anticipating with enthusiasm the many opportunities D-Y students will have at The Schmidt this coming fall, as they are introduced to astronomy. Areas

of interest will include sun viewing and night sky viewing, as well as others, at the Schmidt Observatory.

Thanks, Jim, for your enthusiastic approach to helping us help DY students develop and nurture an interest in astronomy!

Big Response to Schmidt Observatory Open House on July 18th.

On behalf of the several Observatory Staff Members who supported the event, Mike Hunter volunteered this summary of a very successful Open House held at The Schmidt before the Yarmouth Fireworks Show at DYHS on July 18th:

Last night at the observatory was great; well over 100 guests visited us. Joel, Gail, Ed, and I were kept busy, no breaks. Our stock of brochures took a real big hit. While the skies were not clear for pre-fireworks sky viewing, we ran a full series of videos, including a full color one of the sun taken earlier with the new sun scope.

Good job, Joel, Gail, Ed, and Mike! We'll get on printing up some new brochures.

Reminder: The 2013 Dues Cycle began July 1. As of now, 22 of 40 members are paid up (does not include 16 active members who are "permanent", spouses, students, etc.)

If you have not yet participated in this cycle, please bring your check to the 8/1 meeting or mail to CCAS, 34 Ridgewood Rd. Orleans MA 02653.

CCAS Meetings:

Many thanks to Professor Larry Marschall of Gettysburg College for his most instructive and entertaining presentation, *Styrofoam Worlds and Wrong-Way Planets: News From the Front-Lines of the Search for Extrasolar Planets*, at our July 11th meeting.

We are fortunate that Larry often stops by to see us in July each year when he has occasion to come to Cape Cod.

Now almost 20 years old, the modern effort to find and characterize extrasolar planets continues to not only catalog more and more objects, but as techniques are discovered and improve, we are really beginning to be able to define the properties of many of the new objects we discover. Yes, we have thousands of extrasolar planets found and about 1000 reasonably characterized; yes, many are gas giants but some are rocky, read

terrestrial, and located at distances from their stars not incompatible with the presence of water (even documented to be present in some cases) and not incompatible with the possibility of living organisms.

Professor Marschall reviewed older techniques for detecting extrasolar planets: direct observation [very rare], observing reflex motion in the star [as the planet “jiggles” the star’s orbit a bit] and observing (measuring spectral shifts) very small changes as the motion of the planet causes the star’s velocity to wobble as the star moves toward or away from the earth.

But in the last few years, astronomers have begun to apply an old technique to the search for and study of extrasolar planets. This is a technique that has been used for nearly a century to document how changes in the brightness and in some instances the spectrum of light coming from orbiting variable star systems can inform us about the components of such star systems. Now, this “old” technique is being applied to the identification and even the characterization of exoplanets as they move in front of and behind their stars.

Professor Marschall then overviewed the strange and bizarre in some of the exoplanets and their orbits that have recently been observed: planets the size of Jupiter that are very close to their stars with an orbit of days rather than years like our Jupiter; “styrofoam” planets; i.e. those having very very low density; planets with highly eccentric orbits, planets with retrograde orbits, etc. Overall, a most instructive presentation.

A reporter for the Yarmouth *Register*, Conor Powers-Smith, was present for this talk and wrote a nice article for the newspaper which published 7/24 on the talk and a bit about CCAS. You can read Conor’s report at: <http://www.wickedlocal.com/yarmouth/features/x1806127763/Hunting-for-alien-worlds-in-Yarmouth>

Dr. Colin Bischoff, a post-doctoral fellow at the Harvard-Smithsonian Center for Astrophysics, will speak on “**Observing the Origin of the Universe from the South Pole**” at our meeting on August 1st. Colin received a PhD in physics from the University of Chicago in 2010, with advisor Bruce Winstein, for work on QUIET, a Cosmic Microwave Background polarization experiment based in the Atacama desert of Chile. He currently works at HSCfA on studies of the universe primarily with the Keck Array microwave polarimeter, which operates at the South Pole. At our meeting, he will present this work and its contributions to our understanding of the origins of the universe.

Tim Barker, Professor of Astronomy at Wheaton College will speak on “**The Use of Filters in Visual and Photographic Observations**” at our September meeting. More information in the next *First Light*.

“**Telescope and Equipment Night at CCAS**” The staff of the Schmidt Observatory and others in the Society will demonstrate and comment on various kinds of scopes and other equipment at our meeting on October 3rd. You will have the opportunity to discuss the equipment with each presenter. If you have a telescope or other equipment of interest that you might like to present, please let us know at info@ccas.ws and we will work you into the plans.

Thanks to Mike Hunter, our Program Chair, for lining up these special topics and speakers; we also thank Professor Marschall, Colin, and Professor Barker for agreeing to present.

Program planning is in progress to confirm speakers and topics for our meetings in October 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 Mike. For sure he will follow up.

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

Minutes:

The minutes of our July meeting are on our website; click on the “Minutes” button at www.ccas.ws or go to <http://www.ccas.ws/minutes/ccasminutes071113.pdf>

From the Dome:

The next summer weekly Thursday evening Star Party takes place on August 8th at 7:30pm at the Observatory; the summer schedule continues on Thursdays through August 29th. Once a month “Quarter Moon Saturday Star Parties will begin on September 14th at 8:30pm.

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

Special Articles in August Issue of *Astronomy Magazine*:

The August issue of *Astronomy Magazine* celebrates the

40th anniversary of the publication. We strongly recommend you view this issue to read these wonderful “40s” stories:

- “The 40 Greatest Astronomical Discoveries” (p 26) ... a virtual index and refresher on the key discoveries and players in the history of astronomy. Want to teach a class on the history of astronomy? Start here!
- “40 Greatest Mysteries of the Universe” (p32) ...these are the things we will research as we go forward.
- “Where will astronomy be in 40 years” (p38) ... likely evolution of both observing techniques and research focus over the coming years.
- “40 Years of Amateur Astronomy” (p52) ...we are living in a golden age. Look at what we learned in 40 years!
- “*Astronomy Magazine’s* Path to Stardom (p58) ... by the Editor, Dave Eicher: key events in *AM’s* 40 years; key contributors past and present.

August Observing:

Observing Tools:

Amazing New Capabilities in Sky Safari Plus and Pro:

Some years ago, we put a clip in *First Light* admiring the capabilities of apps SkySafari, SkySafari Plus, and SkySafari Pro, all exquisitely capable sky simulation apps built by a company named Southern Stars. These apps run on ipods, ipads, iphones, and mac computers as well as other platforms. Very well possibly the best sky simulation apps available at this time; you can even use this software to point your “Go To” telescope.

Southern Stars recently announced a (free) update to both SkySafari Plus and SkySafari Pro. As a honeystick for these latest editions, the company prepared an amazing video. The video follows how the software can be used to “find” a spacecraft (Cassini), to move yourself from earth to a position in space a few hundred yards behind the spacecraft in Cassini’s orbit, view Saturn, its rings and moons close up from the spacecraft (zooming in and out, panning from here to there, etc.) On one of the pans you can see earth through Saturn’s rings from the spacecraft. So take a look at earth from Cassini: travel back to earth by zooming in; see the earth tilted toward the sun (it is July after all) rotating in real time: the various continents and major cities rotate from day to night. Hit the “home” key and you’re back from Cassini orbit looking at Saturn from your backyard again.

Most amazing video. Most amazing capability. View it at:

<http://www.youtube.com/watch?v=oi8ZcDIQP7Y&list=>

[WL4_dR64YWhMDqcEcd0e_OjFiFjCcNyrHM](http://www.southernstars.com/products/skysafari/)

If you don’t have this app yet, this video may inspire you to buy it. Economical at \$14.99 - \$39.99 depending on the version. For more information, please see <http://www.southernstars.com/products/skysafari/>

Please see resources at *Astronomy Magazine*, August, pp 44-51 and *Sky and Telescope*, August, pp 43-58, and Reference 5 for good guides to the August sky.

Mooncusser’s Almanac and Monthly Alert¹ AUGUST 2013			
Object	August 1 (EDT)	August 15 (EDT)	August 30 (EDT)
Sun	R: 05:35 S: 19:58	05:49 19:40	06:06 19:15
Moon	R: 01:20 S: 15:54	14:41 00:20	01:44 16:05
Mercury (predawn)	R: 04:03 S: 18:47	04:56 19:20	06:37 19:36
Venus (evening)	R: 08:22 S: 21:28	08:53 21:08	09:27 20:44
Mars (predawn)	R: 03:19 S: 18:30	03:09 18:10	02:57 17:42
Jupiter (predawn)	R: 03:01 S: 18:07	02:19 17:23	01:30 16:32
Saturn (evening)	R: 12:51 S: 23:38	11:59 22:44	11:02 21:44
Uranus (evening)	R: 22:27 S: 11:04	21:31 10:08	20:27 09:03
Neptune (evening)	R: 21:00 S: 07:52	20:04 06:55	19:00 05:49
Pluto (evening)	R: 17:51 S: 03:28	16:55 02:32	15:51 01:28

Observing Highlights for the Month:

- The brightest planet, **Venus**, and our most interesting planet, **Saturn**, compete for our viewing as darkness falls in August. The moon and Venus will make a pretty photo op near the western horizon at dusk on August 9th about a half hour after sunset. Once all these set in late evening, the sky is bereft of bright planets until the predawn apparitions of **Mercury, Mars, and Jupiter**.
- If you have access to a pretty good telescope or strong binoculars on a tripod, August and September offer the best opportunities of the year for late evening viewing of the dimmer

but spectacular outer orbit blue planets **Neptune** (mag 7.8, at opposition 8/26; diameter 2.4”), **Uranus** (mag 5.7; at opposition 10/3; diameter 3.7”), and dim **Pluto** (was at opposition July 1; now mag 14.) Please see the excellent article in the August issue of *Astronomy Magazine* (p 80) for an in depth overview of our two blue planets.

- Likely the most impressive viewing experience of the month will be the “moonless” **Perseid Meteor Shower** peaking the nights of 8/12 and 8/13. Please see the article in August’s *S&T* (p 50) for the many enticing reasons this shower will be spectacular, *maybe the best in years*: there are peaks on each of *two* nights at maybe 120 meteors/hour; while you can see meteors all night (the radiant in Perseus rises in the northeast at about 9pm) the best shows will be both nights after midnight when the radiant is higher; the show goes on for some SIX days before and after the peak evenings; if you look on nights preceding or following the peak nights, instead of maybe

100 meteors/hours, you might see “as few” as only fifteen or so each hour. Not bad.

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.

Moon Phases, August, 2013

New Moon Tuesday, August 6th at 5:51pm EDT

NOTE: Great Perseids with no moon August 12th!!!

First QTR Weds. August 14th at 6:56am EDT

Full Moon Tuesday, August 20th at 9:45pm EDT

Last QTR Weds, August 28th at 5:35a EDT

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

Worker Bees

By Peter Kurtz

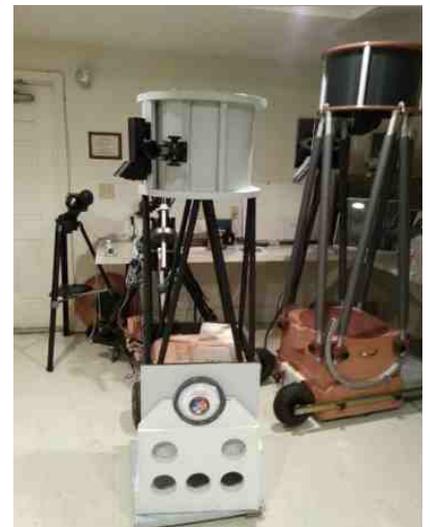
Telescopes that perform well don’t “just happen”. A lot of work goes in to maintaining the equipment we have at The Schmidt so that it will provide optimum and reliable sky observing on a regular basis. Thanks to Mike Hunter and Bernie Young for sending *First Light* these photos of our worker bees “doing their thing.” Good job, you guys! Members, please let us know if you would like to join the worker bee contingent at The Schmidt Observatory.



Mike Hunter cleaning the 16”



Mike Hunter and Bernie Young admiring the cleaned mirror on the 14”



Bernie did most of the work refurbishing the 14” Dob

Cape Cod Astronomical Society

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Cape Cod Astronomical Foundation

Chairman	Werner Schmidt	508-362-9301
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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:

01) An Astronomy Magazine Picture of the Day, (search Milky Way in the AMPotD archives. Chris Cook of East Dennis took this photo September 28, 2011 from Mammoth Lakes, CA. "This is a 180° all-sky image of the night sky from 9,300 feet (2,835 meters) in the Sierra Nevada Mountains of California near Mammoth Lakes. Our own Milky Way galaxy bisects the heavens while local trees, mountains, and distant yellow light-pollution domes from the Central Valley hug the horizon. The limiting visual mag that night was around 7.0 with some faint high clouds passing overhead." (Canon 5D Mark II DSLR, Sigma EX DG 8mm fisheye lens at f/3.5, ISO 3200, 64-second exposure)

Reference:

http://www.astronomy.com/Multimedia/Picture%20of%20Day.aspx?id={7F009B95-94B7-403E-AEBF-B133B81E6806}&page=0&category=&keywords=&utm_source=SilverpopMailing&utm_medium=email&utm_campaign=ASY_News_Sub_130628_Final&utm_content=

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 "The Sky This Month" online for August:

<http://www.astronomy.com/News-Observing/Sky%20this%20Month/2013/06/Neptunes%20summer%20surge.aspx>

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>