



First Light

The Newsletter of the Cape Cod Astronomical Society



October, 2013

Vol. 24 No. 10



Many of you will know what this is. If so, in most cases you know it because you have seen it almost exactly like this looking through a good telescope. That's why this image strikes home. Please see our story beginning on page 6 to find out more about this topic.

Next Monthly Meeting: is Thursday, October 3rd, at 7:30pm: “Telescope and Equipment Night at CCAS.” At this very special meeting, the staff of the Schmidt Observatory and others in the Society will conduct a “hands-on” demonstration with commentary and will answer questions on various kinds of telescopes and other equipment used either at our Observatory or at home. 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 October meeting or mail to CCAS, 34 Ridgewood Rd. Orleans MA 02653.

Reminder: The next once-a-month “Quarter-Moon-Saturday” Star Party takes place on October 12th at 7:30pm.

In this issue: / New Member / Hilda Whyte / [Please Pay Dues](#) / Upcoming Speakers / Sean Gonsalves' Column / Update on Comet ISON / Neptune and Uranus / a Penumbral Eclipse / A Visit With the Sun / New Capabilities at the Schmidt / What Can I See? /

Bright New Stars:

We are pleased to welcome Kristina Burton of Mashpee to membership in CCAS. Kristina joined at our September meeting. Welcome aboard, Kristina! If you can find the time, please send us a note at info@ccas.ws letting us know a bit about yourself and past experiences and interests in amateur astronomy.

We regret to inform the membership that we have lost one of our brightest stars. Hilda Whyte, a Cape Codder since 1985 and a longtime member of CCAS, died September 12th. Hilda was a very active and vibrant presence in our club. We will miss her a lot. Hilda's obituary can be accessed at Cape Cod Online: <http://www.capecodonline.com/apps/pbcs.dll/article?AID=/20130921/OBITS02/309210317>

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:

Jim Mitchell's Earth and Space Class Views the Sun at Werner Schmidt Observatory

This was a very special visit. Please see story beginning on page 5.

Reminder: The 2013 Dues Cycle began July 1. As of now 37 of 61 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:

Our September meeting was preceded by a thirty-minute workshop discussing "books of astronomy", i.e., those books useful in teaching about or introducing techniques and equipment or useful as references for amateur astronomers. Several members brought some favorites; a

successful enterprise.

There will be ***no*** workshop preceding our October meeting since pre-meeting time will be devoted to members setting up equipment for "**Telescope and Equipment Night at CCAS**"

A workshop will be planned for time preceding our November meeting.

Many thanks to Professor Tim Barker of Wheaton College for his most informative and entertaining talk at our September meeting, **Use of Filters in Visual and Photographic Observations**. Professor Barker used both slides and hands-on techniques to teach how filters can be used in both visual observing and astrophotography to enhance and improve the images we seek. First he demonstrated how simple plastic diffraction gratings split visual white light (or other more specific light sources) into component parts. (In the case of white light, a rainbow of colors from blue to red results.) Each of us had our own grating to see how this really works. He then explained how filters of varying kinds can block unfavorable light wavelengths (such as light coming from city light pollution) and pass to our eyes or cameras mainly those wavelengths key to seeing detail in our observing targets. Professor Barker put various filter types in front of his light sources so we could see, with our "own" diffraction gratings, which wavelengths of light were blocked or passed with each filter. He went on to explain how astronomical *spectroscopy* is used to identify elements present in distant astronomical objects by the wavelengths of light those targets send our way. Please visit this link for more information: <http://csep10.phys.utk.edu/guidry/violence/spectroscopy.html>

Kudos to Sean Gonsalves, columnist for the **Cape Cod Times** for his excellent article "Seeing Stars" published Sunday, September 8, 2013. Sean was present at our September meeting for Professor Tim Barker's presentation on filters, and spoke briefly with several members of the Society. Sean also met with Bernie Young the day after the meeting for further briefing and a look at our Observatory and its equipment. Sean's column provided an introduction to and advertisement for amateur astronomy and CCAS. We thank him for his time and talent. Check out the article at <http://www.capecodonline.com/apps/pbcs.dll/article?AID=/20130908/NEWS/130909782&template=printart>

"Telescope and Equipment Night at CCAS" At our very special meeting on October 3rd, Observatory Staff and others in the Society will conduct a "hands-on" demonstration with commentary on the various kinds of telescopes and other equipment used for observing the

night sky either at our Observatory or at home. 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 before Tuesday, October 1st. and we will work you into the plans.

Bernie Young's presentation on **Ulugh Beg** will be postponed from the November meeting to December.

We are pleased to announce that Professor Tim Barker of Wheaton College will be back with us at our meeting in November. We learned recently that Professor Barker will have access to **moon rocks (Apollo program collections)** for a time and will be able to bring them to us November 7th for viewing and discussion. A very special opportunity!

At our **December Meeting**, Bernie Young will teach us about the Islamic astronomer of the middle ages, M'irzā Muhammad Tārāghay bin Shāhrukh, better known as **Ulugh Beg**. Ulugh Beg was a Timurid ruler as well as an astronomer, mathematician and sultan who lived and worked at the beginning of the 15th century. Ulugh Beg founded an observatory in 1424, the Ulugh Beg Observatory in Samarkand. It was considered by scholars to have been one of the finest observatories in the Islamic world at that time and the largest in Central Asia. Ulugh Beg made important improvements in the "instruments of astronomy" at the time. For sure we can look forward to Bernie highlighting some of these advances. For more information, Bernie or Peter can send you a pdf file of an article on Ulugh Beg that was published recently online in the Journal for Occultational Astronomy, No.2, April-June 2013 (available online only to members of IOTA, the International Occultation and Timing Association; Bernie is a member for CCAS.)

Chris Cook, local photographer and astrophotographer extraordinaire, will hold a **workshop on astrophotography** at our Observatory for our meeting on Thursday JANUARY 9TH. **NOTE THE DATE CHANGE.**

Thanks to Mike Hunter, our Program Chair, for lining up these special topics and speakers; we also thank upcoming speakers 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 or to info@ccas.ws. For sure he will follow up.

[We are looking for speakers for our meetings in](#)

[February and May 2014. Please let us know if you have any leads...](#)

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/ccasminutes090513.pdf>

From the Dome:

The next "Quarter Moon Saturday Star Party takes place at The Schmidt on October 12th at 7:30pm.

Once again, please don't miss the story later in this issue on the visit of a DY High School class to the dome on Sept 20th.

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

October Observing:

Note: Many special observing events will be taking place on the nights that DY students visit The Schmidt Observatory *during October*. Please see more information of some of those observing events in our story beginning on page 5.

Update on Nova Delphinus 2013. We plotted a Light Curve for the nova on 9/26/13 using the AAVSO Light Curve Generator utility online. The decreasing in brightness from a maximum of 4.25 on "explosion day + 1", August 15, is continuing but at a slower and slower rate. Indeed, this one is a "slow" nova. Here are indicator magnitude data (in parentheses) from the 9/26 Light Curve: 8/16 (4.25), 9/1 (6.6), 9/16 (7.7), 9/26 (8.5). The nova is still easily visible with optical aid and dimming only very slowly. We will follow up on this again.

Please see resources at *Astronomy Magazine*, October, pp 36-43 and *Sky and Telescope*, October, pp43-58, and Reference 5 for good guides to the August sky.

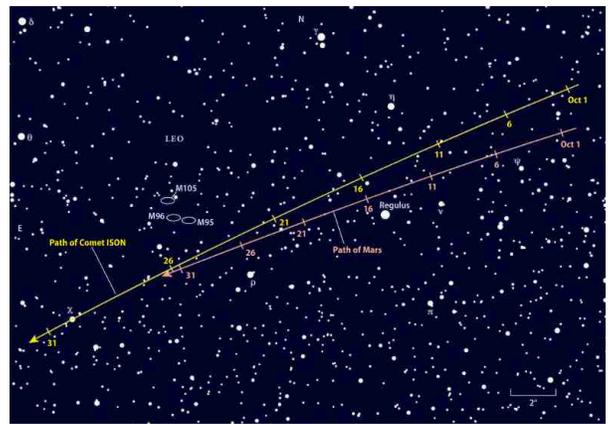
Mooncusser's Almanac and Monthly Alert¹ OCTOBER 2013

Object	OCT. 1 (EDT)	OCT. 15 (EDT)	OCT. 31 (EDT)
Sun	R: 06:38 S: 18:22	06:53 17:59	07:12 17:36
Moon	R: 03:31 S: 16:23	16:04 03:46	04:19 15:52
Mercury (evening)	R: 08:47 S: 19:08	09:06 18:44	07:27 17:37
Venus (evening)	R: 10:34 S: 20:05	11:01 19:56	11:22 19:56
Mars (predawn)	R: 02:35 S: 16:36	02:24 16:03	02:09 15:24
Jupiter (predawn)	R: 23:49 S: 14:46	23:00 13:56	22:00 12:55
Saturn (evening)	R: 09:14 S: 19:48	08:27 18:57	07:33 17:59
Uranus (evening)	R: 18:22 S: 06:54	17:25 05:56	16:21 04:50
Neptune (evening)	R: 16:55 S: 03:42	15:59 02:46	14:55 01:42
Pluto (evening)	R: 13:48 S: 23:24	12:54 22:29	11:52 21:27

So What's with Comet C/2012 S1 ISON?

Here is some information pertinent to observing the comet in October:

- Yes, you will have to get up in the dark; and you will have to find a relatively low eastern horizon; but if you are willing, you can see ISON this month.
- As you can see in the October observing chart at right (in Leo, note the star Regulus) ISON tracks very closely with mag 1.6 Mars in the predawn sky for most of the month: within 2° of Mars at month's start, then closer at month's end until it begins to accelerate toward the sun. It is within 1° of Mars in the period 10/16 – 10/19.
- ISON is expected to be mag 10.9 on Oct 1, mag 8 by end month, so should be easily visible with a 3" scope or 70mm binoculars at the beginning of the month; and with "bird" binoculars (e.g., 7 x 35's) by end month.



Horseshoe between ISON and Mars in Leo during October Regulus is bright star near center (Reference 5)

- For more information, please consult the special November issue of *Astronomy* "Comet ISON Blazes into Glory", stories on ISON in the October issue of *Astronomy*, p 4, p7, p50, and Google S&T's skypub.com/ison.

Observing Highlights for the Month:

- October is the second month in a row to make sure you look for **Neptune** and **Uranus** in the prime time sky. Both should be easily visible with good binoculars. Neptune leads Uranus moving east to west by about 90 minutes. Midmonth, at 9:30pm EDT, mag 7.8 Neptune is 37° altitude in the south with mag 5.7 Uranus following in the southeast at 42° altitude. Uranus is at opposition on October 13. Neptune was at opposition in late August but is still spectacular and easy to find.
- While you're out in the sleepy and chilly predawn looking for ISON near the horizon, take a break and enjoy the much "easier" and brighter **Jupiter** and the antics of its moons. See Reference 6 and the Jupiter moon and moon events charts in October's *Astronomy*, p 41, and *S&T*, p 51 and p52. There is a rare *triple shadow* event shortly after midnight (12:32 to 1:37 am EDT) on October 12th.
- From the perspective of Cape Codders, there will be a faint partial penumbral eclipse of the full moon the night of Friday, October 18th, "peaking" at 7:50pm EDT. You should be able to see a faint shadowing on the southeast limb beginning at about 7pm and ending about 8:30pm.

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.

These are dates and times for *evening* occurrences of the Minima of Algol at Cape Cod during October:
Wednesday, October 9th, 12:04am (watch the dimming from 10pm on the 8th), Friday, October 11th, 8:53pm (watch from 7 – 11pm) and Monday, October 14th, 7:42pm (watch 6 – 10pm.)

Using binoculars or a small telescope, try to begin viewing two to three hours before the minima to watch the dimming and 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, 2013

New Moon Friday, October 4th, at 8:35pm EDT

First QTR Friday, October 11th, at 7:02pm EDT

Full Moon Friday, October 18th, at 7:38pm EDT

Last QTR Saturday, October 26th, at 7:10pm 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**

A Visit with the Sun...

Jim Mitchell's Earth and Space Class Views the Sun at Werner Schmidt Observatory

....by Peter Kurtz

On Friday, September 20th, Jim Mitchell's D-Y High School Earth and Space students had a class session at our observatory to view the sun using both a properly and safely filtered 16" telescope for viewing sun spots and our Coronado Solarmax II60 Hydrogen α solar scope for viewing, in living color, prominences and texture in the sun.

Bernie Young was assisted by Mike Hunter, Henry Ricci and Jim Carlson in hosting 20 students from the E&S class.

Jim's Earth and Space class is enrolled to the maximum with 25 students this year. This class is an intelligent and lively group including students from an earlier honors physics class and others. Jim was especially pleased that two underclassmen having an interest in astronomy asked to be included in the session and were able to visit during their lunch period.

The exchange of emails between Jim and Bernie leading up to this event provides some highlights about new and improved capabilities at The Schmidt:

- The Solarmax sun scope is now mounted piggyback on the big 16" Schmidt-Cassegrain scope up in our dome where there is protection from the wind and the capability for computer controlled tracking. Tracking keeps both the filtered main scope and its Solarmax "rider" on-target as the earth turns during observing. Bernie noted that a larger and more advanced solar telescope is on order and will arrive this winter. That new scope will be mounted on the 16" and the present solar scope then can be used at an outside viewing location.
- Bernie has been shaking down a new color video camera and the E&S class visit was the first time he used it to record video of the sun. The camera and its control program are "internet ready" and when the installation of a fiber optic cable from the main school building to the observatory is completed, we will be able to upload live video to the internet via NASA's Night Skies Network or our own networks.

Following is an extract from the very enthusiastic email Jim sent to Bernie and others recapping his views of this event. (Thank you, Jim, for your infectious enthusiasm!)

...from Jim Mitchell:

- What a great day for observing the sun and a good experience for my 20 students! The one hour length in the middle of the day worked well. In that one hour we:
 - received safe viewing instructions and saw sunspots through the telescope set up outside
 - experienced the big dome telescope and viewed active prominences (and other features) through the solar telescope
 - saw various photos (galaxies, star clusters...) and video recordings (comet, lunar surface, star occulted by asteroid..) taken in the past as well as use of light intensity graphs during occultations (a good warm-up for variable star concepts that the students will learn for night-viewing in October)
 - learned facts about the sun and its features while the group looked at recorded sun video (taken earlier today) played on the large flat-screen TV.
 - learned about the CCAS meetings, brief history of the Observatory, and public "Star Parties" throughout the year.
- It's great to see all the new technologies coordinated for today's presentations. Nice Job! Please thank the other volunteers Mike, Jim C, and Henry for their contributions. The visit occurred at the perfect time in my course when we are studying the sun. Also, thanks for accommodating the two visiting underclassmen.

What's next?

Jim and Bernie are aiming at October 8th and 10th to hold evening observing events at The Schmidt. Students will be expected to attend either session allowing for other commitments. These events will be held rain or shine as are the Society's off-season monthly Star Parties since there is a wealth of video and demonstration capability now at the Dome which provides for "virtual star parties" in the event of clouds and such. Students can also engage in indoor projects such as digitizing video to enhance or analyze images, etc.

October 8th offers the special opportunity to observe the changing brightness of the variable star Algol, β -Persii, during the session; Algol dips in brightness from "usual" magnitude 2.1 to magnitude 3.3 every 2.87 earth days; the dimming takes about 2 hours as does the brightening. On October 8th, the minimum takes place at 12:04am (10/9) so the dimming part of the cycle will be available for viewing from about 9:30 pm until midnight that evening. Good comparison stars are γ -Andromedae to Algol's west, mag 2.1, and ϵ -Persei to its east, mag 2.9.

The alternate night, October 10th, offers a different opportunity. That night offers four opportunities to view/record the leading dark edge of the moon occulting ("snuffing out") variable stars having multiple components; that is always a phenomenon worth witnessing.

Julia Sigalovsky, another D-Y teacher with whom Bernie has worked and planned, will bring her class to The Schmidt on October 11th which is another evening having a Minimum of Algol. On the 11th, the minimum takes place in Prime Time at 8:53pm which will allow for viewing either during the dimming or brightening periods.

October 8, 10, 11, and 12 (Quarter-Moon-Saturday public Star Party): a very busy time at The Schmidt!

Kudos to the teachers and staff of the D-Y Science programs and member of the Werner Schmidt Observatory Staff, especially Jim Mitchell and Bernie Young, for conceiving, planning, and executing such a wonderful collaboration bringing the *real and living* night sky to our young science students; maybe a few years hence, one or more of these students might become Director of our Observatory!

What can you Really See?

....by Peter Kurtz

Modern technology has created one significant obstacle to recruiting new fans into amateur astronomy:

Before ever looking at the night sky through binoculars or a telescope, the average person has seen many spectacular photographic images of the night sky on TV or in the popular literature. So the first time a person visits an observatory and looks through a telescope, he/she might be very much underwhelmed.

Often so much that the visitor is very disappointed. "Is that all there is?"



If you have seen this view (Reference 7) of M42, the Orion nebula, or one like it, how disappointing when you come to the observatory and look through a very capable telescope to only see the modest and faint black and white image shown on page 1.

“We might have stayed home and watched “Survivor” on TV!

One approach to minimizing disappointment in “less than spectacular images” in a telescope (everything is relative, isn’t it?) is to explain and demonstrate to visitors and students early on *what kind of images they can expect to see*. Hubble photos are not the place to start.

The place to start may be **collections of expert sketches** made by amateur astronomers at the eyepiece. The image of M42 on our first page is a **sketch** found in a collection of eyepiece sketches by graphic artist Jeremy Perez (reference given below.) I first found this sketch in a seminal essay on this subject by Glenn Chaple, “Heavenly Sketches,” in this month’s issue of *Astronomy*, p 16. Please go read that article after you finish here!

For what it’s worth, the sketch shown on page 1 is almost identical to what saw on a clear December night looking at the Orion nebula through our 18” Dob. Rarely have I seen anything more beautiful... black and white... but unforgettable!

Chaple makes the point that we need to “adjust expectations” when we invite folks to look through our telescopes. To this end, having available a good collection of well made sketches for “show and tell” just might be very helpful.

Below are some good references where we can find good sketches to suggest to ourselves and all our visitors what we can expect to see before looking in the eyepiece. If we can properly adjust expectations, the quality and quantity of “Wow’s” will increase, the wonder and awe of making personal contact with the immensity and beauty of the universe will run deeper in our visitors, and return visits to the observatory for sure will be promoted.

Here are some of the best references for astro-sketches from Chaple’s essay:

- A five-page article “How to sketch deep-sky objects” written by Brandon Doyle (*Astronomy*, January, 2012)
- One of the best internet sites is *Belt of Venus* (<http://www.beltofvenus.net>), the creation of graphic artist Jeremy Perez. Click on “Astronomical Sketch Gallery” and then select categories such as: Messier Object Sketches, Double Star Sketches, Binocular Sketches, etc. In most cases, Perez includes with the sketch details on the scope used, it’s aperture, eyepiece size and type, magnification and field of view. Perez’ M42 sketch is at: <http://www.perezmedia.net/beltofvenus/archives/000325.html>
- See also a gallery of sketches at www.Astronomy.com/sketches
- Visit the websites of Michael Vlasov (<http://www.deepskywatch.com> ; click on Astronomical Sketches), Mark Portuesi (<http://www.jotabout.com/portuesi/astro>) Bill Greer (<http://www.rangeweb.net/~sketcher> ; click on links at bottom of main page).
- Visit the Astronomy Sketch of the Day (ASOD) website, <http://www.asod.info>). Besides the “sketch du jour” ASOD offers an archive of hundreds of eyepiece drawings dating back to March 2007.
- Want to learn more about how to create astro-sketches? Chaple’s article provides several additional references which will provide this information.

Cape Cod Astronomical Society

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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 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 December 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 October: <http://www.astronomy.com/magazine/sky-this-month/2013/08/uranus-at-its-best>
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) Full color image of M42: <https://www.google.com/search?q=images+of+M42&ie=utf-8&oe=utf-8&aq=t&rls=org.mozilla:en-US:official&client=firefox-a>