



First Light

The Newsletter of the Cape Cod Astronomical Society



June, 2015Vol. 26 No. 6

We all know that only Hubble can bring us images like this one⁷ of M31, the spectacular Globular Star Cluster in the constellation Hercules...



*But did you know....
.....that if you visit a CCAS Star Party at The Schmidt Observatory on June 20th or any Thursday night beginning July 9th at 8:30pm that you can see M13 **with your very own eyes** looking through one of our great telescopes... and it will look at least as good as..... **this?***



You'll see:

- A cluster of stars that is **11.65 billion** years old.
- Several thousand stars in a ball. Can you pick out individual stars?
- The light you see left that cluster 25,000 years ago; we were having our last ice age 25,000 years ago!

[....please see more on Star Parties in the Article on page 4...]

Our Next Monthly Meeting: is Thursday, June 4th, at 7:30pm. In his presentation entitled "**No Theory of Everything, Why Strings, and a Whole Lot of Inflation**" Mike Hunter will help us understand key cutting edge research areas in cosmology. The meeting will be held, as usual, in the DY High School library. Come learn about the cosmos. Public welcome.

Reminders The last "Quarter Moon Saturday" Star Party takes place at The Dome on June 20th, at **8:30 pm**. Public welcome.

In this issue: you can see M13! / Students to Observe the Sun / New CCAS dues cycle coming up / June: lots of planets / Venus Kisses Jupiter! / Many "wow's" at "Quarter-Moon Saturday" Star Party on May 23 /

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:

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.

D-Y Student Solar Viewing Schedule for June:

Bernie Young and associates are planning a special series of visits for D-Y 8th Graders to visit the Schmidt and view the sun during June.

Four groups of 12-25 8th Grade students each will visit the Schmidt for an hour or so each to observe the sun through both special solar and safety-filtered regular telescopes on the mornings of June 10th, 11th, 12th, and 15th: 4 teachers, 230 students, 15 classes, 14 periods over four days. Bernie expects there will be an 11th grade class too.

The plan is to set up the 2" H α solar scope outside, the 4" H α atop the 16" in the Dome, and install the B&W safety solar filter on the main 'scope of the 16" assembly. The 8" Celestron with safety filters will also be available.

Each session should also allow for a brief tour of the observatory and discussion of the equipment we have and the work that we do.

When and if time permits, we may attempt to take some video too.

Bernie has asked all Observatory Staff members that can to please come and help. Please let him know ahead of time if possible. Even if you are not yet a member of the Observatory Staff, and have an interest in helping with these visits, please contact Bernie ASAP (email: mailto:bjyoung716@yahoo.com) Thank you.

President:

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

CCAS Meetings:

Thanks to Bernie Young, Research Director of the Schmidt Observatory for his excellent presentation "**Astronomical Spectroscopy**" at our meeting on **May 7th**. He described the relevance of spectroscopic observations, the capabilities we want to develop at the WSO, the equipment we have or will acquire, and what we hope to do with it.

Mike Hunter, former President of CCAS and current at-large member of the Executive Committee, will help us understand cutting edge research areas in cosmology at our meeting on **June 4th**. His presentation is entitled: "**No Theory of Everything, Why Strings, and a Whole Lot of Inflation.**" Come to this meeting and you might begin to understand some important concepts in current cosmological thinking better than you do now! As always, public welcome.

Alicia Soderberg, a professional astronomer from Harvard, will speak on **Supernovas** at our meeting on July 2nd. As always, public welcome.

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 Rt. 28, South Yarmouth, about a half mile west of the Station Avenue/Main Street intersection with Rt. 28 (traffic light).

Mike Hunter, former President, and Charlie Burke, CCAS Vice-President are our Program Co-chairs. Please contact either one of them or info@ccas.ws if you have any leads on speakers for upcoming meetings after July

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!

NEW Reminder:

The 2015-2016 dues cycle begins 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 July meeting or mail to CCAS, 34 Ridgewood Rd. Orleans MA 02653. Thank you. ...and if you would like to be early, we will accept 2015-2016 dues at the JUNE meeting!

Minutes:

The minutes of the May meeting are on our website; click on the “Minutes” button at www.ccas.ws or go to <http://www.ccas.ws/minutes/ccasminutes050715>. Thanks to Nora Glass for preparing the May meeting minutes.

From the Dome:

The last **Once-a-month “Quarter Moon Saturday” Star Party** for the fall-winter-spring season takes place on 20 June beginning at 8:30pm. These gatherings are usually held on the Saturday closest to the date of the First Quarter Moon. All events are open to the public.

Looking ahead:

Beginning July 9th there will be a Star Party open to the public at The Schmidt Observatory every Thursday beginning at 8:30pm. The last such event for this summer will take place on August 27.

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 please contact <mailto:info@ccas.w>

Observing:

Please note the invitation to help Bernie Young with a program of solar observing visits by DY students in this issue of *First Light* (page 2).

Also, all please be sure to read the super report on our May 20th Star Party from Joel Burnett beginning on page 4.

Observing Resources:

Please see resources in the June issue of *Astronomy Magazine*, pp 36-43, and *Sky and Telescope*, pp 43-58, and Reference 5 for good guides to the sky. See p 41 in *Astronomy*, and p 52 in the *S&T* and also reference 6 for positions of the moons of Jupiter. Details for special phenomena of Jupiter’s moons and the movement of the “Great Red Spot” can be found on p53 of the *S&T*.

Mooncusser’s Almanac and Monthly Alert ¹ JUNE 2015			
Object	June 1 (EDT)	June 15 (EDT)	June 30 (EDT)
Sun	R: 05:08 S: 20:08	05:05 20:16	05:09 20:19
Moon	R: 18:59 S: 05:02	04:51 19:08	18:44 04:30
Mercury (in sun; dawn)	R: 05:11 S: 19:41	04:14 18:28	03:51 18:35
Venus (evening)	R: 08:21 S: 23:31	08:36 23:13	08:43 22:40
Mars (in sun)	R: 05:20 S: 20:26	05:02 20:16	04:46 20:03
Jupiter (evening)	R: 10:13 S: 00:24	09:29 23:34	08:43 22:42
Saturn (“sll nite”)	R: 19:01 S: 04:53	18:01 03:55	16:58 02:53
Uranus (predawn)	R: 02:44 S: 15:41	01:50 14:49	00:52 13:52
Neptune (late nite)	R: 01:14 S: 12:19	00:19 11:24	23:20 10:25
Pluto (evening)	R: 22:19 S: 07:51	21:22 06:54	20:22 05:53

Observing Highlights for June:

The **Summer Solstice** occurs at 12:58pm on Thursday, June 21. On this day at this moment, the sun “stands still” (sol – stice) as it stops moving north day to day making longer and longer days...and begins moving increasingly south which will lead, inevitably, to winter. This day also marks the day of the year having more hours of daylight than any other day of the year whether you live at, near, or far from the equator.

June is another month rich in opportunities to view planets and, where pertinent, their moons. You can see from our "Mooncusser's Almanac" chart that Venus, Jupiter, Saturn, and Pluto are nicely available at "prime time" in the evening sky and Neptune and Uranus available a bit later at night; only Mars and Mercury are having an "off month" this June.

Venus "kisses" Jupiter! The "big event" this month, for sure, is the near juxtaposition of **Venus and Jupiter**. Venus is well placed in the sky all month: at "greatest eastern elongation" of 45° from the sun on June 6th, it is high in the sky well separated from the sun during many hours of each day.

But the big deal this month is how close Venus gets to Jupiter as viewed from earth in the evening sky:

On Friday, June 30th at 9:30pm EDT, blazing Venus and Jupiter are separated by only 0.3° !!!

If you can't make your observation right then, the gradual approach of Venus to Jupiter through June up to the 30th will be fun to watch as will be the gradual separating of the two into July: On June 1, the separation is 20°; it gets to 0.6° on the 29th; by 9:30pm on July 1, it is 0.5°.

After about July 17th both planets are beginning to get very low in the west so you need to look gradually earlier than 9:30pm each night to watch the "separating"; for example if you look at 8:30pm on by July 24th, you will see that the separation is now up to 6°.

If you are really making a study of these phenomena, look especially at about 9:30pm the evening of July 18th: a nearly new moon passes within 1° of Venus low in the

western sky.

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

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 is one convenient evening occurrence of the Minima of Algol at Cape Cod during evening hours in June: Mpn, Monday, June 8th, at 9:18pm.

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.

Moon Phases, May, 2015

Full Moon, Tuesday, June 2nd, at 12:19pm EDT

Last QTR, Tuesday, June 9th, at 11:42am EDT

New Moon, Tuesday, June 16th, at 10:05am EDT

First QTR, Wednesday, June 24th, at 7:03am EDT

"Quarter Moon Saturday" Star Party: June 20th.

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

Feature Article:

It had been many months since a Scheduled monthly "Quarter-Moon Saturday" Star Party found exquisitely dry and clear skies. This finally was the case at our May 23rd event. Many thanks to Joel Burnett, Director of The Schmidt, for sending this enthusiastic article on our May 23rd Star Party in to *First Light*. Picking up on our comments on page 1, *Do come soon to one of our Star Parties to see M31 and other wonders and have as much fun as folks did on May 23rd!*

Star Party at WSO

Saturday 23 May 2015, 8:30-10:30pm, 'Quarter-Moon Saturday' Star Party

...by Joel Burnett

The weather and clear skies we have been eagerly anticipating since January graced us this "Quarter- Moon Saturday" Star Party! I arrived at about 8pm and found Bernie Young, our Lead staffer for the evening, already engaged with several guests; he was reviewing the plans for the evening with Observatory Staff members Hank Ricci, Ed Swiniarski, Lee LeBarre, and Mary Lou Ricci.

(Special Thanks to Bob Cole who had just handed me a donation of a gently used VCR/DVD player to use in the warm room to replace an older VCR, which lacked recording capability. Thanks Bob!)

Bernie first described an opportunity to highlight a Lunar Graze event. A Lunar Graze is a special variant when a star is being occulted by the moon. The observer's line of sight sees the star disappear and reappear along the limb of the moon between lunar mountains, valleys, craters and ridges. The line of sight path for

a Graze Event is a very short and narrow track of land or water. As it happened, unfortunately, the true precise track for Saturday's Graze was north of us in the Cape Cod Bay. We had a "near miss": from our position on the ground. Looking at MallinCam camera images from the 16" telescope on the TV in the warm room, we could see the edge of the moon drift past (but not "put out") our 4.3 magnitude star (SAO 1345SA5). This is real science: an occultation was *predicted* but, because of our location on the ground, we didn't see it. The experience allowed us to demonstrate "how science works" (or sometimes doesn't) for lunar occultations for the high school students and other guests.

To learn more about lunar occultations, you can visit the International Occultation and Timing Association at their website <http://www.occultations.org/>.

Hank and I entertained guests with the 18" telescope with the shroud installed giving better viewing than we expected. We do have light pollution problems from nearby lights on the high school campus buildings... (DYHS is presently planning work to install a shutoff switch for the lights for us when we need darker skies for our observations.)

There was lots to see this night:

- We showed Venus at mag -4.2, 57% illuminated appearing as a "First-Quarter Venus"!
- Later we studied the bands of Jupiter and the dances of its well-separated moons.
- The newest planet on the evening scene this late spring was Saturn rising low in the east.

By contrast, Lee LeBarre and son Russell set up his 20 x 80 binoculars on a tripod to view the moon yielding delightful views.

Mike Hunter arrived with his daughter Andrea from Michigan. They came with yet another donation -- this from the wife of our dear friend, the late Jon Greenberg: a 10" Meade Schmidt-Cassegrain telescope.

We discussed constellations and sky motion together while Russell pointed out yet another "shooting star" and Lee kept finding earth satellites moving overhead.

Bernie discussed and pointed out an Iridium flare -- the reflection of sun from a specially designed satellite that makes a flash brighter even than Venus.

With the sky being so clear, we used the opportunity to do some deep sky hunting:

- We found some old familiars like M57 the Ring Nebula,
- M3, a Globular Cluster and
- M104, the Sombrero Galaxy; ...then went in search of new territory.

In an article in the March, 2015 *Sky and Telescope*, page 20, author Ted Forte wrote "Deep Sky Spring", an article about deep sky observing targets to look for in the spring sky. Ideas from this article led us to:

- Hunt edge-on galaxies, beginning with mag 11.1 NGC 3190 in Leo; we found a surprise companion, NGC 3193.
- Next up was mag 9.8 NGC 3628, which is the edge-on galaxy of the familiar Leo Triplet group, which also includes M65 and M66.
- Finally, we looked at the mag 9.8 NGC 4490 Cocoon Galaxy adjacent to mag 11.9 galaxy NGC 4485. This pair has an angular separation of 41', merely footsteps away from the mag 4.3 double star Chara in the constellation Canes Venatici.

More than 20 guests came out to have a spectacular night of viewing at the Werner Schmidt Observatory. We are looking forward to seeing *you* and loads of new folks this spring and summer to share a few oohs, aahs and laughs as we delight in the night sky together.

[Thanks, Joel, for a spectacular write-up for a spectacular evening!](#)

Cape Cod Astronomical Society

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Vice President	Charles Burke	5083949128
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Cape Cod Astronomical Foundation

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

The **Cape Cod Astronomical Society** meets at 7:30 pm on the first Thursday of every month in the library of the Dennis Yarmouth Regional High School in Yarmouth, Massachusetts. Meetings are open to the public. Membership dues are \$30 for adults, \$15 for students in two year colleges and part year residents, and no charge for spouses or for students in K12 schools.

REFERENCES AND NOTES FOR THIS ISSUE:

- 1) Information for The Mooncussers Almanac and Monthly Observing Alerts was extracted from Sky Events, Astronomy Magazine Online (Astronomy.com), Stargazing.net's Planet Rise/Transit/Set calculator (<http://www.stargazing.net/mas/planet2.htm>), *Astronomy Magazine*, *Sky & Telescope Magazine*, *Sky and Telescope Skywatch 2011*, and other sources. The *Observer's Handbook, 2010 and 2011*, published by The Royal Astronomical Society of Canada is also an important reference, particularly for information on lunar libration and declination and the minima of Algol.
- 2) Information on how Libration and Declination Maxima and Minima can make visible parts of the moon normally hidden was reviewed in the January 2007/January 2008 *First Light*. Quick recap: Max Long brings to view extra right side; Min Long, extra left side; Max Lat, extra north side; Min Lat, extra south side. Max Dec puts it high in our sky during its transit; Min Dec puts it low.
- 3) Algol is an eclipsing variable star in Perseus which has its brighter component eclipsed or covered by its companion once every 2.87 earth days. When the dimmer component is not eclipsing the brighter, Algol appears typically about magnitude 2.1; when eclipsed, magnitude 3.3 The minima usually lasts about two hours with two hours on either side to bring it back to mag 2.1. Good comparison stars are γ Andromedae to Algol's west, mag 2.1, and ϵ Persei to its east, mag 2.9.
- 5) Here is the web address for *Astronomy Magazine's* "The Sky This Month" online for June: <http://www.astronomy.com/magazine/sky-this-month/2015/04/venus-meets-jupiter-at-dusk> 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) This image, taken by the Advanced Camera for Surveys on the Hubble Space Telescope, shows the core of the great globular cluster Messier 13 and provides an extraordinarily clear view of the hundreds of thousands of stars in the cluster, one of the brightest and best known in the sky. Just 25 000 light-years away and about 145 light-years in diameter.

NOTICE: NEW COPIES OF THE BROCHURE INTRODUCING CCAS AND ITS ACTIVITIES WERE PRINTED DURING FEBRUARY; INQUIRE AT info@ccas.ws IF YOU WISH COPIES.