



First Light

The Newsletter of the Cape Cod Astronomical Society



January, 2013

Vol.24 No. 1

Will our New Year Be the Year of the “Great Comet of 2013”?

[Please see story beginning on page 4.]



Image of Halley's Comet published in the New York Times 102 years ago.⁴

Next Monthly Meeting: is Thursday, January 3rd, at 7:30pm in the *Art Gallery* of Dennis Yarmouth High School [Please park in your usual spot and come in the doors you usually use; signs will be posted directing you to the Art Gallery. Lee Labarre, recently joined CCAS member and active CCAS Star Party participant, will present “**Designing, Building, and Using a Home Observatory.**” He did... and we will enjoy hearing about it. Please join us.

Reminder: [The next “QuarterMoonSaturday Star Party will be January 19th at 7:30pm. Please come!](#)

[This issue of First Light is abbreviated because of the holiday travel. Happy New Year to all!](#)

In this issue: More on New Members / Minima of Algol / Update on Comet C/2012 S1 (ISON) /

Bright New Stars:

We wish to welcome Jeffrey Cook of South Yarmouth and Jim DeFrancesco of Mashpee to membership in the Cape Cod Astronomical Society. Both Jeff and Jim joined membership at our December 6th meeting. Welcome, Jeff and Jim.

A graduate of the Naval Academy and, later, NC State, Jeff became a Navy fighter pilot and made over 500 carrier landings in F-4 Phantoms and F-14 Tomcats. After the Navy he worked for BAE Systems in Nashua NH as the Vice President for Product support. Jeff has no formal astronomical training, but is very interested in astro-physics and the evolution of the universe. Welcome to CCAS, Jeff.

Jim has a life long interest in astronomy but became active only when his wife, Sharon, gave him an 8-inch reflecting telescope for a recent birthday which started the ball rolling. He has a degree in music from Rhode Island College and a Masters in Education from Fitchburg State. Jim is currently an 8th grade algebra teacher and also is a pianist at the catholic church in Plymouth. (Editor: An early contact with CCAS took place when Jim and Sharon brought their two boys, Peter, 9, and Jacob, 7, to our October Star Party. Welcome to CCAS, DeFrancesco family!

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 Mr. & Mrs. Jarvis Hunt and Mr. and Mrs. Bill Boyd for sending in remembrance notes on Jon Greenberg.

CCAS Meetings:

Many thanks to Hugh Blair-Smith and Bernie Young for their two-part presentation "Historical Errors of Navigational Chronometry in Patrick O'Brian's Sea Stories" and "The 21st Century at the Werner Schmidt Observatory," at our meeting on December 6th.

Hugh has lectured at CCAS previously and has an extensive knowledge of navigation through his career at NASA and as instructor with the Cape Cod Sail and Power Squadron. The O'Brian stories cover the period from 1800-1815. Hugh's talk contained assertions "of which he is fairly confident but also quite prepared to hear disputed."

He noted multiple instances in which the Aubrey-Maturin sea stories misstated navigational practice, overly rated the

capabilities of chronometers available in that period in history, or overstated the accuracy of navigational techniques used. He also devoted time to explaining how early navigators used instruments such as chronometers and sextants to sail around the globe.

While we learned much from Hugh about limitations of technology for navigation in the early 19th century, Bernie's presentation offered a stark contrast with his review of new technologies in development or fully in place now at The Schmidt Observatory which are being used to do "real research." In recent months, Bernie and colleagues have acquired equipment and developed special techniques providing new research and science capabilities for our Observatory and our Society. Bernie explained capabilities and involvement in the following study areas and invited all to "get involved" in the fun and science these opportunities offer: occultations of double stars, asteroid occultations, lunar meteor impacts, asteroid astrometry, atmosphere of Pluto, Jovian extinction events, and lunar grazes.

Lee Labarre, recently joined CCAS member and active CCAS Star Party participant, will present "**Designing, Building, and Using a Home Observatory**" at our meeting on January 3rd (February 7th should Burbank need to move his talk to January from December.) Lee has built his own home observatory.

Peter Kurtz, Treasurer of CCAS, *First Light* editor, and member of the Observatory Staff will present "**How to Enjoy Fast and Slow Variable Stars**" at our February meeting. We will review the basics of recording magnitude estimates from naked eye and binocular observations of variable stars and (if you wish) reporting same to AAVSO (American Association of Variable Star Observers.) Main classes and favorite VS targets will be reviewed.

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.

Thanks to Mike Hunter, our Program Chair, for lining up these very special topics and speakers and to, Hugh, Bernie, Lee, Peter, and Gary, 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!

CCAS DUES
DONATIONS TO CCAF

Thanks to all members who are up-to-date on payment of their 2012-2013 dues.

If you are one of those who has overlooked the matter, please make your payment either by bringing to the December meeting or mailing directly to CCAS (Kurtz) at 34 Ridgewood Rd., Orleans, MA 02653. Checks should be payable to "CCAS".

Thank you.

**WOULD YOU LIKE TO DIVERT MONEY
OTHERWISE PAYABLE TO UNCLE SAM TO
HELP PAY CAPITAL AND RESEARCH COSTS
OF THE WERNER SCHMIDT OBSERVATORY?**

IF SO, PLEASE SEND YOUR CHECK, MADE OUT TO
THE CAPE COD ASTRONOMICAL FOUNDATION, TO
THE ADDRESS CITED JUST ABOVE.

Thank you.

Minutes

The minutes of our August meeting are on our website; click on the "Minutes" button at www.ccas.ws or go to <http://www.ccas.ws/minutes/ccasminutes120612.pdf>

From the Dome:

Reminder: "Half-Moon Saturday" Star Parties resume this month on January 19th

Here's the schedule for January – June (7:30 pm each nite.)

Jan. 19	Feb. 16
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

January Observing:

Resources: The January issue of *Astronomy*, pp36-43, and *Sky and Telescope*, pp43-62. Please also see reference 5.

Mooncusser's Almanac and Monthly Alert¹			
JANUARY, 2013			
Object	Jan. 1 (EST)	Jan. 15 (EST)	Jan. 31 (EST)
Sun	R: 07:07 S: 16:21	07:05 16:35	06:53 16:55
Moon	R: 20:45 S: 09:28	09:12 21:17	21:47 09:01
Mercury (dawn)	R: 06:33 S: 15:32	07:10 16:20	07:29 17:39
Venus (predawn)	R: 05:36 S: 14:52	06:00 15:10	06:14 15:42
Mars (early evening)	R: 08:37 S: 18:14	08:14 18:16	07:44 18:19
Jupiter (all nite)	R: 13:54 S: 04:41	12:55 03:41	11:50 02:36
Saturn (predawn)	R: 02:07 S: 12:44	01:16 11:51	00:17 10:50
Uranus (evening)	R: 11:04 S: 23:20	10:10 22:26	09:08 21:26
Neptune (early evening)	R: 09:45 S: 20:28	08:51 19:35	07:49 18:35
Pluto (early evening)	R: 06:44 S: 16:22	05:50 15:29	04:49 14:29

Resources for the moons of Saturn and Jupiter:

The January *S&T*, page 54, gives the positions of Jupiter's main moons at any date and time during the month. *Astronomy Magazine* for January provides similar information on page 41. A chart on page 54 of the *S&T* issue lists the times and dates during the month for special phenomena of the moons such as occultations behind the planet, reappearances, etc. Timings for "The Great Red Spot" are also given on page 54. 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.

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 is reached in prime time at 7:52pm EST on Thursday, January 3rd; minima also occur in at 9:37pm EST on Wednesday, January 23rd and also at 6:26pm EST on Friday, January 25th. Please see the text in Reference 3 for more information.

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, January, 2013

Last QTR Friday, January 4th, at 10:58pm EST

New Moon Friday, January 11th, at 2:44pm EST

Note: Moon at perigee Jan 10th. **HIGH TIDES**

First QTR Friday, January 18th, at 6:45pm EST

Full Moon Saturday, January 26th, at 11:38pm EST

Will our New Year Be the Year of the “Great Comet of 2013”?

In recent issues of *First Light*, mention has been made that there are increasing indications that a now very distant and dim comet, C/2012 S1 (ISON), might become the most spectacular comet for northern hemisphere observers since Halley’s Comet, pictured on our front page. The first of many likely articles this year on ISON can be found in the January issues of both *Astronomy* (p 57) and *Sky & Telescope* (p 57) magazines. If you are not yet a big fan of this upcoming event, here is a list of items from those articles that might stir some interest:

- Early notions based on very preliminary estimates for ISON’s orbit indicating that the comet might be 100 times brighter than our moon are likely a bit overblown. But the concept certainly generates interest!
- Right now, it is not known whether the orbit is elliptical or parabolic. If it turns out to be elliptical, more than likely this is not its first trip toward the sun. If this is the case, it should have lost fragile elements during an earlier pass and is unlikely to do so again... which promises high likelihood of a grand display this year.
- Best expectations lead to these events:
 - The comet begins 2013 at mag 15 in Gemini; certainly above the horizon in evening hours but very very dim.
 - By June it will be mag 13 still in Gemini but disappearing into the evening twilight.
 - By August, beginning to speed up, at mag 11 you should be able to find it before dawn moving toward Leo from Gemini.
 - Still accelerating, by late October it will have passed Mars and should be easily visible in Leo at mag 7 with binoculars. Mars (and the comet) should rise together about 2am in mid October; get up early and take a look.
 - Now the big show begins with both velocity and magnitude increasing dramatically into January, 2014:



- The comet should achieve naked-eye visibility as it approaches the sun; perihelion should be near Nov 28; unless you are an expert with the proper equipment, wait until mid December to really enjoy it as it starts to move away from the sun as shown in the image on the previous page.
 - After Dec 6th, the comet is racing northward into and through the area between Hercules and Bootes and by January 2014 will be passing Ursa Minor. During this time it will accelerate every day and will brighten to possibly mag -1 or -2, almost as bright as Venus. Also during this time, the tail will be growing dramatically. One source suggests that the tail could span more than 50°!
 - DO look during the cool clear mornings of December, 2013 (the chart from *S&T* on page 4 suggests how fast it is moving during the first half of December); see how long into 2014 you can spot it as it begins to fade.
- If you want to “get into” ISON as it comes closer during late summer and fall, jot some of the preceding benchmarks on your reminder or calendar devices and keep up with changes which will be published continuously during the year in primary sources and/or *First Light*.
 - One of several caveats: ISON, now 6au from the sun, likely originates in the Oort Cloud; comets originating there sometimes brighten very quickly early on as did Kohoutek and some disintegrate completely on their way to the sun. But do, please, expect the best. This *could* be the “best” comet in your lifetime!
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**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**

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The **Cape Cod Astronomical Society** meets at 7:30 pm on the first Thursday of every month usually 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.
- 4) Image first published in the New York Times in 1910; source: http://en.wikipedia.org/wiki/File:Halley%27s_Comet,_1910.JPG
- 5) Here is the web address for Astronomy Magazine's online "The Sky This Month" online for January: <http://www.astronomy.com/en/News-Observing/Sky%20this%20Month/2012/11/Jupiters%20evening%20reign.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>