



First Light

The Newsletter of the Cape Cod Astronomical Society



February, 2014

Vol. 25 No. 2

Bright Young Stars Visit The Schmidt...



Observatory Staff Members Joel Burnett, Bernie Young, Gail Smith, Warren Mumford, and Peter Kurtz welcomed two groups each of about 5 precocious 5th graders, and accompanying parents and teachers to The Schmidt Observatory on Friday, January 24. Kudos to Joel and their very enthusiastic Science Curriculum Leader, Patsy Marchant, for making this happen. We had clear (and very cold, ~10°F!!) skies and heard many “Wows!” while viewing Jupiter and its moons, Uranus, the Pleiades, and a very spectacular Orion nebula among other great targets. We look forward to another group from Eddy coming Friday, January 31.

Next Monthly Meeting: is Thursday, February 6th, at 7:30pm: the staff of our Observatory will conduct an open-house: “A Visit to the Schmidt- the Werner Schmidt Observatory” for all CCAS members and guests. 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 February meeting or mail to CCAS, 34 Ridgewood Rd. Orleans MA 02653. Thanks to all who are paid up!

Reminder: The next once-a-month “Quarter-Moon-Saturday” Star Party takes place on February 8th at 7:30pm.

In this issue: /Eddy Astronomers / Dobson and CCAS / Upcoming Programs / a New Supernova / Jupiter “line up” / Mars is back / Mercury on ice / Better Streetlights for Cape Cod /

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*.

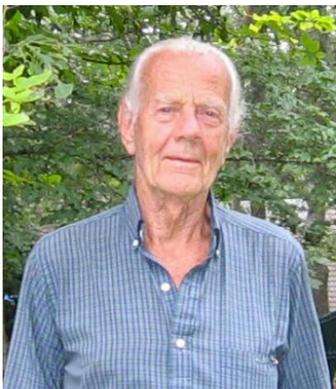
CCAS News Items and Current Events:

Eddy Elementary School Fifth Graders visit The Schmidt on January 24th and 31st:

Please see the story and photo on page 1.

John Dobson, Amateur Telescope-making Pioneer, Dies Jan 15, 2014 at 98:

Nearly every amateur astronomer knows that John Dobson founded SFSA, San Francisco Sidewalk Astronomers, invented a simple, inexpensive, and revolutionary alt-az mount for reflecting telescopes, and spent much of the second half of his life teaching the world how to build simple, inexpensive, and very high quality reflector telescopes using his designs and building techniques. Older CCAS members know that on at least two different visits to our club more than ten



years ago, Dobson introduced us to his 'scopes and techniques and actually assisted CCAS members in polishing mirrors and building some of the home-made scopes we still have at The Schmidt. Thanks to permanent CCAS member Jim Carlson for sending *First Light* this photo of Dobson taken in the backyard of former CCAS president Dan Gould, now deceased, during one of Dobson's visits to us. Dobson often stayed

at Gould's house when visiting Cape Cod. Indeed, CCAS members had "up-close-and personal" encounters with a giant in the field. Thanks, Jim, for your input.

Please see Reference 7 for S&T's brief biography on John Dobson

CCAS Meetings:

Many thanks to Warren Mumford, recently joined CCAS member, physicist, and experienced amateur astronomer and educator, for his excellent presentation **A Bit about Orbits** at our meeting on January 9th. Warren introduced us to those elementary principles of physics that allow us to understand and predict the motions of orbiting heavenly bodies. He began with an overview of Kepler's Laws of Planetary Motion (*the orbits are ellipses with the sun at one focus; *a line joining a planet to the sun sweeps out equal areas of the ellipse in equal times; *the period of an orbit squared is proportional to the cube of the semi-major axis) which lead directly to mathematical expressions used to calculate orbits. He then reviewed principles of physics developed by Isaac Newton, which culminate in his law of Universal Gravitation which delineates the forces which cause an apple to drop or the moon to stay in a permanent orbit about the earth. A nice simulation of "Newton's cannon" showed us how too little force results in a projectile which falls to earth, just the right amount, puts it in orbit, and too much sends it off into space.

The rest of the presentation highlighted several more modern cosmological concepts such as the idea that a black hole must exist at the center of the Milky Way and other galaxies.

The staff of our Observatory will conduct an open-house: "**A Visit to the Schmidt- the Werner Schmidt Observatory**" for all CCAS members and guests for our meeting on February 6th. The Schmidt is heated but do wear warm footwear. New capabilities will be highlighted, and, who knows, it might even be clear enough to do some observing! Public welcome.

Observatory Director Joel Burnett and Observatory Research Director Bernie Young will give the annual "**State of the Observatory**" presentation at our March 6th meeting in the D-Y library. The presentation will highlight key events and improvements in equipment and capabilities at The Schmidt over the past year.

CCAS members Larry Brookhart, (Harwich Observatory Director), and Gus Romano will present "**The Harwich Observatory**" at our April 4th meeting. Larry has been developing an observatory at the Harwich elementary school (now part of the Monomoy Regional School District) for several years; Larry and Gus will update us on capabilities and activities.

At our May 1 meeting, Peter Kurtz will present "**Highlight Capabilities of the (\$2.99!) Sky Simulation**

Program and Telescope Control Program ,Sky Safari"; Mike Hunter will discuss a special aspect of using this powerful app: **"The Use of Sky Safari Pro and SkyFi in the Acquisition and Evaluation of Astrophotographs"**. As always, public welcome.

Thanks to Mike Hunter, our Program Chair, for lining up these special topics and speakers; we also thank the many participants over the next several months 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 August and later meetings in 2014. Please let us know if you have any leads...

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

Reminder: The 2013 Dues Cycle began July 1. As of now 43 of 62 members (70%) expected to have paid 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 February meeting or mail to CCAS, 34 Ridgewood Rd. Orleans MA 02653. Thank you.

Minutes:

The minutes of our January meeting are on our website; click on the "Minutes" button at www.ccas.ws or go to <http://www.ccas.ws/minutes/ccasminutes010914.pdf>

From the Dome:

The next "Quarter Moon Saturday" Star Party takes place at The Schmidt on February 8th, at 7:30pm. Future dates are: March 8th, April 5th, May 3rd and June 7th.

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

February Observing:

New Type I Supernova Discovered in "The Cigar":

On January 21st a group of astronomy students discovered a new Type Ia Supernova, now named SN 2014J, in M82, the "Cigar" galaxy near the cup of the Big Dipper. As of this writing, it has brightened to better than magnitude 10.5 and the shape of the Light Curve (see Reference 8b) suggests brightening may continue. A type Ia Supernova takes place when a white dwarf star explodes after accumulating matter sufficient to bring its density to instability.

WSO staff tried to "see" the new Supernova in M82 during our Star Party with the visitors from Eddy Elementary School on January 24th. Since the "seeing" was borderline, we could not be sure whether or not we were seeing SN 2014J against the background of the galaxy. We will take another look sharpshooting to our target using its equatorial coordinates (AAVSO: epoch 2000; RA 09 55 42.15; dec +69 40 25.8) at our 2nd Star Party with Eddy visitors this Friday... or later as weather dictates.

If they haven't already, for sure Bernie Young and colleagues will be using our newly developed video photometric capabilities to *measure* changes in brightness in SN 2014J over the next several weeks. Folks can also contribute their own data to AAVSO's light curve for the supernova by making *visual* observations at various times and dates recording its apparent brightness contrasted with the brightness of nearby companion stars of known brightness. Use AAVSO's "Plot Charter" to get a chart of companion stars (www.aavso.org/vsp Enter SN 2014J and click "Plot Chart")

Please see Reference 8a for more information on SN 2014J.

Observing Highlights for February:

Please see resources in February’s *Astronomy Magazine*, pp 36-43 and *Sky and Telescope*, pp 43-58, and Reference 5 for good guides to the February sky. See p 41 in *Astronomy*, and p52 in *Sky and Telescope*, and also reference 6 for positions of the moons of Jupiter for February; timings for special phenomena of the moons of Jupiter (shadow transits, occultations, etc.) and timings for "the great Red Spot" of Jupiter can be found on pp 51-52 of *Sky and Telescope*.

Mooncusser’s Almanac and Monthly Alert ¹			
FEBRUARY 2014			
Object	FEB. 1 (EST)	FEB. 15 (EST)	FEB. 28 (EST)
Sun	R: 06:52 S: 16:56	06:35 17:13	06:16 17:29
Moon	R: 07:42 S: 19:08	17:52 06:38	05:36 16:46
Mercury (eve then dawn)	R: 07:39 S: 18:30	06:19 17:22	05:13 15:41
Venus (pre-dawn)	R: 04:44 S: 14:55	04:08 14:14	03:52 13:57
Mars (late night)	R: 22:44 S: 10:03	22:04 09:16	21:18 08:28
Jupiter (all night)	R: 14:13 S: 05:19	13:12 04:20	12:19 03:27
Saturn (late night)	R: 01:12 S: 11:20	00:20 10:27	23:29 09:36
Uranus (evening)	R: 09:14 S: 21:44	08:21 20:52	07:31 20:03
Neptune (early eve)	R: 07:53 S: 18:44	06:59 17:51	06:09 17:03
Pluto (pre-dawn)	R: 04:58 S: 14:34	04:04 13:40	03:14 12:50

Jupiter and its Moons continue to be the star performers in our February sky. Almost any night you can study the planet, its rings, its “red spot” and the line up and antics of its moons. If you can, be sure to see the straight lineup of all four Galilean moons almost exactly equidistant from each other and the planet on February 24th.

Mars returns to evening viewing this month after a long absence from the evening sky. It rises as a red disk 9” wide at mag 0.2 on February 1st and grows to diameter 11.6” at mag -0.5 by end month. Mars will continue to grow and brighten over the next many months.

PHOTO-OP: Finally, let’s not overlook a special

appearance of little pink **Mercury** on the first day of February. Mag -0.4 Mercury will be a full 11° above the horizon thirty minutes after sunset that evening, nicely positioned between the horizon and the sliver of a very young moon. You should be able to see Mercury with the naked eye but if not, easily with binoculars. Just look under the crescent moon. Don’t dawdle; Mercury will be nicely positioned only for the next several evenings as it will gradually get closer and closer and eventually too close to the sun to view.

Once again, Try Cape Cod Bay from Rock Harbor; if the shallows have frozen and the ice is all jumbled up at sunset, you might capture a spectacular ice scene under your view of Mercury and the young moon.

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

Algol, a variable double star in Perseus, shines normally at mag 2.1; but once every 2.87 days, it 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 are three *evening* occurrences of the Minima of Algol at Cape Cod during February: Friday, February 14th, at 11:55pm; Monday, February 17th, at 8:44pm, and Thursday, February 20th, at 5:34pm.

Using binoculars or a small telescope, try to begin viewing two to three hours before the minima to watch the dimming and up to 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, February, 2014

- New Moon Thursday, January 30th, at 4:39pm EST
- First QTR Thursday, February 6th, at 2:22pm EST
- Full Moon Friday, February 14th, at 6:53pm EST
- Last QTR Saturday, February 22nd at 12:15pm EST

**Good Progress Being Made Against Light Pollution
with Better Streetlights Cape-Wide:**

Thanks to Ed Swiniarski for sending this note to *First Light*:



I want to inform you of something interesting. For some time I have been working with Cape Light Compact on improving streetlights. In Brewster we are now replacing all of our streetlights with 3800K LED's. It turns out that almost every town on the Cape and Martha's Vineyard are replacing their lights. 80% have opted for lights in this range. Some commercial areas still want 5500-6000K lamps. However that still results in nearly 15,000 streetlights converted to LED's of around 4000K. *Also they are shielded to direct the light to the ground. This should over time reduce, or curtail, light pollution in the visible range above the ground and as a consequence improve the darkness of the local night sky for star gazers*

Please see Reference 9 for more information on this project.

**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 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 January2007-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 February: <http://www.astronomy.com/magazine/sky-this-month/2013/12/venus-shines-brilliantly> (from the February issue) 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) Web address for Article on John Dobson: http://www.astronomy.com/news/2014/01/astronomy-popularizer-john-dobson-dies?utm_source=SilverpopMailing&utm_medium=email&utm_campaign=ASY_News_Sub_140124_Final&utm_content=
- 8) a) S&T Story on SN 2014 J: <http://www.skyandtelescope.com/observing/highlights/Bright-Supernova-in-M82-241477661.html>
b) AAVSO Light Curve for SN 2014 J as of 1/28/14: http://www.aavso.org/lcg/plot?aid=000-BLG-310&starname=SN+2014J&lastdays=10&start=&stop=2456686.33401375&obscode=&obscode_symbol=2&obstotals=yes&calendar=calendar&forcetics=&grid=on&visual=on&uband=on&bband=on&v=on&pointsize=1&width=800&height=450&mag1=h
- 9) Information on Better Streetlights: <http://www.capelightcompact.org/ee/commercial-industrial-programs/ledstreetlights/>