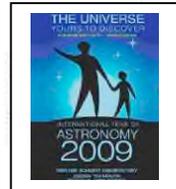




# First Light

The Newsletter of the Cape Cod Astronomical Society



April, 2009

Vol.20 No. 4

## IYA NEEDS YOU ! VOLUNTEERS NEEDED!!!

*Please consider making yourself available to help with one or more of these IYA activities.  
Please contact any Board Member to volunteer if you are not yet involved.*

**MAIN EVENT:** National Astronomy Day, May 2<sup>nd</sup>, at the Werner Schmidt Observatory  
(Coordinator: Mike Hunter.)<sup>4</sup>

- 3-6:00pm – Classroom programs (basic observing and telescopes; solar system, sun spots, deep sky objects, how the planets were discovered.)
- 7-8:00pm - Clinics on observing (beginners, intermediate, advanced.)
- 8:30 – ??pm-Observing (Backup programs will be available if skies are overcast.)

**REPRISE:** The programs developed for Nat'l Astronomy Day will be reprised in July on a date to be determined.

**SIDEWALK ASTRONOMY**<sup>5</sup>: at Community Events Throughout the Year. (Please see more information in Notes on pages 6 and 7.)

Brewster in Bloom, May 1-3 (Organizer: Ed Swiniarski)<sup>6</sup>

Chatham Spring Fling, May 16 (Organizer: Stan Rivers)

Orleans Block Party (Organizer: Peter Kurtz)

Dennis Days (Organizer: Mike Hunter)<sup>7</sup>

Harwichport Musical Stroll Nights (Jul & Aug; Org. Tom Leach)<sup>8</sup>

[New!] Truro Tercentennial, Sidewalk Astronomy during 7/16 – 7/19<sup>9</sup> (Organizer: Paul Cezanne)

[New!] Provincetown, Sidewalk Astronomy likely during Family Week, August 1-8 (Organizer: P.C.)

**SPECIAL APRIL EVENT :** Organizers worldwide have created a special event, “100 hours of Astronomy” as part of the IYA 2009 celebration.<sup>10</sup> See the footnote for more information. One part of “100hours” is a rolling Star Party taking place all day April 4-5 around the world. CCAS will participate in this global Star Party with observing at the Werner Schmidt Observatory beginning at 7:30 on Saturday, April 4; (the Dark Saturday Star Party originally scheduled for March 28 is cancelled.) Take a look at the worldwide map of events at <http://www.100hoursofastronomy.org/find-events>. The CCAS event is posted on the world map!

- **Next Monthly Meeting:** is Thursday, April 2<sup>nd</sup>, 7:30pm, at the DY Library. Program notes below.
- **Next Public Star Party:** is Saturday, April 4<sup>th</sup>, 7:30pm, at the Schmidt. Please see note on page 1.
- **Next IYA Planning Meeting:** is Tuesday, March 31, 7:00pm, at Peter Kurtz's home.
- **Next Executive Board Meeting:** is Tuesday, April 21, 7:00pm, at the Snow Library.

## **Bright New Stars:**

We like to welcome new members in our Society in this section of First Light each month. If you are a new star and have not yet been so recognized, or have new information for us (background, astro equipment preferred, interests, etc.) on yourself or someone else, please let us know (email [info@ccas.ws](mailto:info@ccas.ws))

## **Thoughts on First Light**

Thanks to Paul Cezanne, Tom Leach, and Jon Greenberg for contributions to this issue.

“First Light wants YOU!”

## **CCAS Events**

Please note the special star party on April 4<sup>th</sup> and the cancellation of the March 28<sup>th</sup> event.

Thanks to Mike Hunter for a most informative presentation on telescope maintenance at our March meeting. Mike emphasized frequent maintenance is not needed and can indeed, be detrimental. He also explained the types of cleaning tools, chemicals and techniques that are appropriate, discussed collimation procedures in detail for specific telescope types, and discussed proper use of lubricants and fasteners in telescope mechanisms. Mike demonstrated cleaning a mirror using a mirror from a 13” Dobsonian telescope for the demo.

Our next general meeting will be held on Thursday, April 2<sup>nd</sup> at 7:30pm in the DY library. Bill Boyd, one of our founding members, will present “Birth of an Observatory,” the story of the birth of the Cape Cod Astronomical Society and the Werner Schmidt Observatory from being a gleam in someone's eye to the dedication of the Schmidt at the Dennis-Yarmouth Regional High School.

### **Upcoming Speakers:**

On May 7th, Dr. Tim Barker, Department of Physics, Wheaton College will speak on "Visual Astrophysics". Learn how observers can connect what they see through small telescopes to the physics of what's happening in these objects. The use of filters by amateurs to reduce sky brightness and see nebulae more clearly will be included in the discussion. Dr. Barker heads an impressive program at

Wheaton where over 2,000 undergraduate students have had experience using one of the 8 Schmidt-Cassegrain telescopes on their observing deck.

On June 4<sup>th</sup>, Tom Leach, CCAS vice president, fresh back from his visit to the Franklin Institute in Philadelphia, will speak on the exhibit "Galileo, the Medici, and the Age of Astronomy". Tom will highlight information from a presentation to be given by the visiting Director of the Institute and Museum of the History of Science in Florence at the Franklin on April 2<sup>nd</sup>. That presentation will be part of the USA kickoff of the worldwide “100 hours of Astronomy” celebration. <sup>10</sup> The presentation will showcase Galileo's accomplishments, his relationship to the ruling Medici family, his discoveries, and his overall impact on astronomy, physics, math and the evolution of the telescope. The talk and exhibit at the Franklin which Tom will attend celebrates the 400th year anniversary of Galileo's contributions to astronomy.

On July 2nd, Hugh Blair-Smith will present his experiences working with NASA on Apollo, the Space Shuttle, and the current Lunar Reconnaissance Orbiter. Hugh's specialty was the embedded computers required for inertial navigation and other functions on these projects.

Highlights of the Feb 5<sup>th</sup> CCAS Business Meeting are available in the minutes of Secretary Stan Rivers. Click on on the “Minutes” button at [www.ccas.ws](http://www.ccas.ws) or go to (<http://www.ccas.ws/minutes/ccasminutes030509.html>).

**Would you like to serve as an Officer of the Society on the Executive Board?** Know someone who might be willing that you would like to recommend? We vote for officers at our July meeting. Please ask for information and/or volunteer nominees to any member of our nominating committee: Mike Hunter (Chair), Gary Derman, Jon Greenberg.

## **Outreach to Students**

Planning continues to schedule student observing sessions in the spring semester for classes/clubs from 4C's, D-Y and Nauset Regional High School. A very successful Star Party took place on March 25 with 6 guests (two students, two DY faculty members, two parents) participating. We studied

Comet Lulin, Saturn and moons, and the minor planet Ceres among other targets. We have scheduled a visit to Mashpee to talk about astronomy with third to eighth graders of the Boys and Girls Club of Cape Cod on May 8<sup>th</sup>. That visit will be followed by a Star Party at the Schmidt.

Any members wishing to become involved in these initiatives please contact Peter Kurtz at [info@ccas.ws](mailto:info@ccas.ws)

### Executive Corner

The Board did not meet in February. The next scheduled meeting is planned for Tuesday, April 21 at Snow library.

### From the Dome

...from Mike Hunter, Observatory Director

“Three cheers! Our 16” telescope has come back “early” from refurbishing at Meade and is reinstalled in the Dome. Mike Hunter, Werner Schmidt, Tom Leach, Bernie Young, and Bill McDonough reinstalled it on March 16 and Mike and Peter aligned it without incident and took a tour of a variety (Saturn and moons, Comet Lulin, galaxies) of targets on the wonderfully clear and quiet night of March 17th. The scope functioned without defect that night and can be considered ready for visual (eyepiece) use. CCD camera capabilities will be worked up soon. Thanks to Werner and the Foundation for arranging for this refurb and to all who participated in getting the scope shipped out, back, and reinstalled.

As always, “Private” group or individual observing sessions at the Werner Schmidt Observatory may be scheduled by contacting observatory Director Mike Hunter at [mamhunter@yahoo.com](mailto:mamhunter@yahoo.com).

### Foundation News...

...when we have input from the Foundation...

**Reminder:** CCAS has both 8” and 14” Dobsonian telescopes for loan to members. Currently, Tom Leach is using the 14” for outreach in Harwich. If you wish to borrow one of these ‘scopes, contact [info@ccas.ws](mailto:info@ccas.ws)

### April Observing:

This month will provide the best viewing of Mercury for 2009 for northern hemisphere observers. Beginning on April 5<sup>th</sup>, Mercury, magnitude -1.7, is separated from the

sun by 6° and sets 30 minutes after the sun. It gets better and better night to night after that culminating on April 26<sup>th</sup> when Mercury, now magnitude 0.4(!), reaches greatest eastern elongation, separated from the sun by 20° and setting almost *two hours* after the sun.

**Curious Crescents:** Venus, magnitude -4.7, is very close (6°) to the moon on April 22<sup>nd</sup>; indeed there is a daytime occultation for observers in many parts of the northern hemisphere *except* the east. This curiosity deserves a predawn look even though no occultation for us: on the 22<sup>nd</sup>, the high-surface brightness Venus 18% crescent will be brighter and easier to see than our own 5% crescent waxing moon. Take a look. Which crescent is brighter? Remarkable given how much farther is Venus than our moon!

## Mooncusser’s Almanac and Monthly Alert<sup>1</sup>

By Peter Kurtz  
**APRIL, 2009**

∥

| Object                       | Apr 01<br>(EDT)      | Apr 15<br>(EDT) | Apr 30<br>(EDT) |
|------------------------------|----------------------|-----------------|-----------------|
| <b>Sun</b>                   | R 06:22<br>S: 19:06  | 05:59<br>19:21  | 05:38<br>19:37  |
| <b>Moon</b>                  | R: 10:18<br>S: 01:53 | 01:08<br>09:50  | 10:35<br>01:24  |
| <b>Mercury<br/>(evening)</b> | R: 06:32<br>S: 19:12 | 06:33<br>20:46  | 06:22<br>21:25  |
| <b>Venus<br/>(predawn)</b>   | R: 05:28<br>S: 18:37 | 04:37<br>17:12  | 03:59<br>16:22  |
| <b>Mars<br/>(predawn)</b>    | R: 05:25<br>S: 16:38 | 04:54<br>16:39  | 04:21<br>16:39  |
| <b>Jupiter<br/>(predawn)</b> | R: 04:20<br>S: 14:33 | 03:32<br>13:50  | 02:39<br>13:03  |
| <b>Saturn<br/>(all nite)</b> | R: 16:44<br>S: 05:43 | 15:44<br>04:46  | 14:42<br>03:46  |
| <b>Uranus<br/>(predawn)</b>  | R: 05:45<br>S: 17:30 | 04:52<br>16:38  | 03:54<br>15:43  |
| <b>Neptune<br/>(predawn)</b> | R: 04:36<br>S: 15:07 | 03:42<br>14:13  | 02:44<br>13:15  |
| <b>Pluto<br/>(predawn)</b>   | R: 01:15<br>S: 11:11 | 00:19<br>10:16  | 23:20<br>09:16  |

### Moon Phases, April, 2009

**First QTR** Thursday, April 2nd at 10:34am EDT  
**Full Moon** Thursday, April 9th at 10:36am EDT  
**Last QTR** Friday, April 17th at 9:36am EDT  
**New Moon** Friday, April 24th at 11:23pm EDT

**Use the moon to find Jupiter in broad daylight:** at noon on April 19<sup>th</sup>, the (31%) waning crescent moon will be only 2° separated from Jupiter at noon. See if you can see Jupiter, magnitude -2.2 without visual aids or with binoculars at that time using the moon as a “finder” for the planet.

**Saturn’s Moons:** Saturn continues to provide the main planet show in the evenings of April. Look up the positions of the moons of Saturn for each night and time using charts such as those published in the April issue of Sky and Telescope magazine, page 56. Get out your telescope, look at Saturn, and draw charts of the positions of the moons just as Galileo did 400 years ago. Do the moon positions you see match the chart in Sky and Telescope?

**Use Mars to help you find Uranus:** If you don’t mind rising early, do so the morning of April 15<sup>th</sup>. 8° to the right of blazing Venus, faint Mars, magnitude 1.2, sits just 0.5° below magnitude 6 Uranus. Try binoculars.

**The Dwarf Planet Ceres,** magnitude 7.3 in Leo, rides on the lions’s back all during April and you should be able follow it with binoculars and plot its motion against the stars from night to night during the month. <sup>11</sup>

**The Lyrid meteor shower** peaks at 6am on April 22<sup>nd</sup> with an expected rate at peak of 20 meteors per hour. While not the most intense of showers, this may be worth getting up a bit early for on the 22<sup>nd</sup> since there will be essentially no moonlight. Or take a look anytime during the evening... the radiant, in Lyra, rises a bit after 8pm.

While moving more slowly now and becoming dimmer as it gets farther away, **Comet Lulin (C2007/N3)** is still a satisfying moving target along the ecliptic in Gemini, convenient to evening viewing. An S&T finder chart for April and May is available online. <sup>12</sup> If you haven’t seen

Lulin yet, and want to, now is your last chance; Lulin won’t return to our part of the solar system for more than a thousand years.

**2**

**Libration and Declination Tables for the Moon**

| APRIL            |                  |
|------------------|------------------|
| Max Longitudinal | Min Longitudinal |
| 4/10 (4.6°)      | 4/22 (-6.2°)     |
| Max Latitudinal  | Min Latitudinal  |
| 4/10 (6.6°)      | 4/25 (-6.5°)     |
| Max Declination  | Min Declination  |
| 4/1 (26.8°)      | 4/14 (-26.7°)    |

**1,3**

**Minima of Algol visible after dark at Cape Cod:**

[Only minima actually timed near or after sunset thru pre dawn at Cape Cod are noted.]

| APRIL, EDT |                 |
|------------|-----------------|
| 2:45am     | Tuesday, Apr 7  |
| 11:34pm    | Thursday, Apr 9 |
| 8:24pm     | Sunday, Apr 12  |

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**THE DAY GALILEO CHANGED THE UNIVERSE, A TWO PART VIDEO**

...available online from Astronomy Magazine. Don’t miss it. At the following two URL’S:

- <http://www.astronomy.com/asy/default.aspx?c=a&id=7879>
- <http://www.astronomy.com/asy/default.aspx?c=a&id=7978>

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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.**

- .....A Project Idea?
- .....A Photo?
- .....A Piece of Club History?
- .....A Short Profile on Yourself: New or Old Members!?

## A TALE OF TWO TROLLEYS....

Members Tom Leach and Jon Greenberg sent in these two pictures. See if you can figure out which picture shows

- the trolley that moves our 14" Dobsonian telescope in and out of a Harwich marsh and
- the "trolley" that moves the humongous radio scopes at the VERY LARGE ARRAY of the National Radio Astronomy Observatory near Socorro, New Mexico.

13



Perhaps the CCAS Foundation might consult with the National Radio Astronomy Observatory for a tutorial on how to move really big telescopes around a multi square mile grid... or it might be more pertinent to ask Tom Leach how he built the Dob trolley.

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## OUR PHOTO OF THE MONTH: M42, THE ORION NEBULA, BY PAUL CEZANNE

Paul posted this photo along with many other variations on his website as one of the results of his "first time playing with Deep Sky digital photography with and without image processing." Well if this is what he can do "first time", we will not want to miss what he might accomplish with future efforts.



Stack of 11 two minute exposures taken with a Canon 40D modified with the removal of its internal IR filter, taken at ISO 800 through a Burgess 1278 5" f8 achromatic telescope with a Baader Semi-Apo (minus violet) filter. Image processing using Photoshop. This and more at: <http://notthepainter.com/2009/03/orion-with-some-processing/>

**Also of Interest:** M42 is nursery for new star formation. A highlight in this photo is the four stars of the Trapezium. These bright stars in the trapezium are young but powerful, each one shining with the brilliance of 100,000 Suns. They are also massive, containing 15 to 30 times as much material as the Sun. **Why is it** that in star formation, sometimes we get giants and sometimes

much lesser stars? There is a thought-provoking recent article in Astronomy Online<sup>14</sup> which discusses current research by the Harvard-Smithsonian Center for Astrophysics (CfA) into the factors that influence how many and what sizes of stars are produced in star birth environments. Check it out. Something to mull over the next time you're enjoying the trapezium.

**Let's go wandering with binoculars:** Sometimes it's good to just wander around in the sky when observing. Three of the most beautiful sights in the sky are currently available and easy to find for wandering binocular observers. Three especially beautiful groupings that "go on forever" in binoculars are found using Regulus in Leo as a starting point: move counterclockwise from Regulus in to Coma Berenices; "Berenices Hair" lies above and to the left of Leo in the east. Move from there much farther counterclockwise to the Double Cluster between Perseus and Cassiopeia in the north. Finally, run farther counterclockwise to the northwest and enjoy "Subaru" (aka, the Pleiades.) Wander and enjoy!

### **Resources for Observing:**

Telescope for sale: A Meade 4" Schmidt-Cassegrain telescope, model #2045, is for sale by a Harwich resident: Focal Length 1000mm, 12v DC; both large tripod and table tripod, four eyepieces, Barlow lens, power adapter. In great condition since hardly ever used. Asking \$500.

Anyone interested please notify your First Light editor and he will provide you contact information for the seller.




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### **NEXT MONTH: "WHITHER OPPORTUNITY?"**

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#### **[Notes and References continued from last page:]**

- 7) August 8 at Ezra Baker School on Route 28.
- 8) Tom is also working on opportunities for the Harwich Port Musical Stroll Nights. These are scheduled to occur on two dates in July as well as August 8 and Aug 22. The rain dates are the Wednesdays following the scheduled stroll. There was some interest expressed by the Chamber of Commerce for CCAS participation in their Fall for Harwich which occurs from September 10 through Columbus Day.
- 9) Truro celebrates its Tercentennial 1609-2009 this summer with an "Opening Ceremony" on May 3, "Mid-July Main Event" July 16-19, and a "Closing Ceremony" on November 28 including birthday party and dance.
- 10) <http://www.100hoursofastronomy.org/program>
- 11) S&T Finder chart for Ceres for April: <http://www.skyandtelescope.com/observing/objects/asteroids/35387769.html>
- 12) Finder for Comet Lulin after March 14: [http://media.skyandtelescope.com/documents/Comet\\_Lulin\\_Mar14.pdf](http://media.skyandtelescope.com/documents/Comet_Lulin_Mar14.pdf)
- 13) The Very Large Array, one of the world's premier astronomical radio observatories, consists of 27 radio antennas in a Y-shaped configuration on the Plains of San Agustin fifty miles west of Socorro, New Mexico. Each antenna is 25 meters (82 feet) in diameter. The data from the antennas is combined electronically to give the resolution of an antenna 36km (22 miles) across, with the sensitivity of a dish 130 meters (422 feet) in diameter. For more information, see the overview of the VLA at <http://www.vla.nrao.edu/> <http://www.vla.nrao.edu/genpub/tours/virtual/> provides a virtual tour including pictures of the VLA and the scope movers.
- 14) <http://www.astronomy.com/asy/default.aspx?c=a&id=7957>

## Cape Cod Astronomical Society

|                      |                  |  |
|----------------------|------------------|--|
| President            | Gary Derman      | 508-240-0984                                   |
| Vice President       | Tom Leach        | 508-237-9291                                   |
| Secretary            | Stanley Rivers   | 508-945-6126                                   |
| Treasurer            | Kelvin Parkinson | 508-385-5982                                   |
| Observatory Director | Michael Hunter   | 508-385-9846                                   |
| First Light Editor   | Peter Kurtz      | 508-255-0415                                   |
|                      |                  | <a href="mailto:info@CCAS.ws">info@CCAS.ws</a> |

## Cape Cod Astronomical Foundation

|                      |                |              |
|----------------------|----------------|--------------|
| Chairman             | Werner Schmidt | 508-362-9301 |
| Vice Chairman        | Michael Hunter | 508-385-9846 |
| Director R&D         | Bill McDonough | 508-771-0471 |
| Secretary            | Ed Swiniarski  | 508-896-5973 |
| Treasurer            | Pio Petrocchi  | 508-362-1213 |
| Observatory Director | Michael Hunter | 508-385-9846 |
| Observatory          |                | 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.



### Reference Information:

- 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 2007*, and other sources. The *Observer's Handbook, 2007 and 2008*, 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-January 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  $\gamma$ -Andromedae to Algol's west, mag 2.1, and  $\epsilon$ -Persei to its east, mag 2.9.
- 4) Mike Hunter met with Ken Jenks, Principal of DY High School to seek arrangements and approvals. Mr. Jenks enthusiastically endorses our plan and has assured us of the availability of three classrooms and restrooms for the May 2 activities daytime and evening as well as for the July reprise.
- 5) Sidewalk Astronomy Events: Teams will set up observing equipment and "show and tell" stations at Community Events on Cape Cod during the year. Daytime sessions will feature sunspot viewing when possible and will "point" to evening observing events when and where they can be arranged. OK's have been achieved for most of the events noted on page 1; some are still to be approved/scheduled.
- 6) Ed Swiniarski is coordinating CCAS participation in Brewster in Bloom May 1-3, 2009. It is expected that we can set up at Drummer Boy Park on the evening of May 1 and for May 2 deploy a station during the daytime to possibly include solar viewing. May 2<sup>nd</sup> is National Astronomy Day and an afternoon and evening event is also scheduled at the DY campus.