



# First Light

The Newsletter of the Cape Cod Astronomical Society



August, 2008

Vol.19 No. 7

## Bright New Stars

Our Bright New Star for August is not really a “new” star but he is nevertheless very much a star. Special thanks to Jon Greenberg for the excellent contributions and leadership he provided the Society as President over the last two years. Thank you, Jon!

We wish to invite recently joined members not yet introduced as “Bright New Stars” to send an email to the [info@ccas.ws](mailto:info@ccas.ws) email address letting us know a little more about themselves: background, astro equipment preferred if any, and interests.

## Thoughts on First Light

This month we have a most informative Member Profile from Greg McCauliff.

All members, please keep the trend going.

“First Light wants YOU!”

Suggested areas: Member Profiles, “Light Side” articles about members, astronomy resources, favorite observing targets or techniques, astrophotography and photos, special observing experiences you have had.

## CCAS Events

We are pleased to look forward to a presentation on celestial navigation by CDR Robert A. Walsh, Director of Center for Maritime Training at the Massachusetts Maritime Academy at the CCAS meeting on August 7th. CDR Walsh will overview use of the stars in navigation, review how sextants are used, and show us “lab sessions” of cadets working on celestial navigation on training cruises.

Election of Officers: The following slate of officers for CCAS was approved by a show of hands vote at our meeting on 10 July: President: Gary Derman; Vice President: Tom Leach; Secretary: Betsy Young; and Treasurer: Kel Parkinson. The vote was held immediately after the membership approved a proposal to change the

Society Bylaws to require that the term of office be one year (rather than two) from August 1 through July 31.

Many thanks to the new slate for agreeing to serve.

Special thanks to Larry Marschall for his most entertaining and informative presentation to the Society on July 10<sup>th</sup> reviewing earlier sky survey techniques and events and focusing on plans and progress toward the ultimate (to date) sky survey tool: The Large Synoptic Survey Telescope. Professor Marschall’s presentations are always special events for CCAS. We very much hope he will be able to follow up on a passing suggestion he made: that next year he might be able to provide a presentation on the discoveries of Galileo. 2009 marks the 400<sup>th</sup> anniversary of his first discovery of mountains on the moon and, a bit later, his discovery of the moons of Jupiter.

## Executive Corner

Our new president, Gary Derman, called the Executive Committee to meeting on July 15<sup>th</sup>. Items deliberated include the following:

- Proposal to amend the bylaws to have the term of office for new officers to begin immediately following election.
- Proposals to make changes to the format/timing of monthly meetings to allow time to better recognize non-member guests and allow a little more time for discussion of Society business.
- Proposals to invigorate member activities and their contributions to the community. One proposal suggests inviting members of the Society to engage in one or more Group Projects... such as a former project repeating a historic protocol to measure the size of the earth.
- Mechanics to improve the completeness of email lists to ensure that all members having email do in fact receive First Light thereby.
- Ensure that our website always has the most current version of the Society bylaws.
- EC meetings will take place at 7pm on the evening

of the 3<sup>rd</sup> Tuesday of each month with important results to be published in the following First Light.

- Tom Leach was appointed Program Chairman.

## From the Dome

... this from Mike Hunter, Director of the Schmidt...

The summer star parties are alive and well. July 2 saw over twenty first-time visitors. There were so many people that an accurate count was not possible. We created two separate groups, each filling the dome room floor and stairs, who observed with the 16". Others stayed outside with the 18". Mike, Matt, and Greg, who were the staff for the evening, had their hands full. Three additional society members pitched in. July 16 attendance was twelve visitors and nine members.

The typical number of members attending this summer's star parties has been about seven. That's fourteen percent of our membership. I know that The Schmidt does not house the LSST (Large Synoptic Survey Telescope); however, we do have the 18" Obsession and the small 16" Meade. Small? When was the last time you looked through even a 14". Come on folks, let's get out to The Schmidt on these summer Wednesday nights!

There has been a change in the star party format. In addition to viewing various, semi-randomly selected objects, each star party has a few special planned targets. These targets usually change weekly. We have two ongoing target programs that will continue for some weeks, moon phase permitting.

The first is to observe Pluto. Being at magnitude 13.9, Pluto is very close to the limit for the 16". Mike Hunter and Jim Carlson had its place in the sky located late on July 2. They even saw the two 12.5 mag. stars that formed a very small triangle with Pluto. Alas, no Pluto. Maybe next week. Will you be there?

The second activity is to see how far back in time we can see with the 16". The first target is the quasar 3C273 at approximately 2.5 billion light years. 3C273 is the first quasar to be identified and the brightest. At approximately 12.8 mag. (magnitude varies), this one is doable. Our first attempt was canceled by the full moon on the 16th. Again, maybe next week. Just think, a photon that was emitted over two billion years ago hits your eyeball and wow!

Finally, rumor has it that Tom Leach's big green banner is hanging on the parking lot fence at DY High School. And, so far he has not had to ask for forgiveness. Have you seen it?

Weather permitting, Wednesday evening Star Parties will continue until end August on the following dates: July 23, 30; August 13, 20, 27. Each Star Party will begin at 8:30pm. Cancellations will result in the "Star Party Box" on

the main page of the CCAS website being turned red (cancellation) not later than 6pm.

"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 Foundation Officers...

### Moocusser's Almanac and Monthly Alert<sup>1</sup>

By Peter Kurtz  
AUGUST 2008

Object	Aug 01 (DST)	Aug 15 (DST)	Aug 31 (DST)
<b>Sun</b>	R 05:35 S: 19:58	05:50 19:40	06:06 19:15
<b>Moon</b>	R: 06:00 S: 20:09	19:02 04:49	07:13 19:25
<b>Mercury (early eve)</b>	R: 05:49 S: 20:15	07:12 20:24	08:16 20:05
<b>Venus (early eve)</b>	R: 06:49 S: 20:45	07:23 20:31	08:01 20:11
<b>Mars (early eve)</b>	R: 08:56 S: 21:40	08:46 21:04	08:35 20:23
<b>Jupiter (evening)</b>	R: 18:25 S: 03:37	17:25 02:36	16:19 01:29
<b>Saturn (early eve)</b>	R: 07:58 S: 21:18	07:11 20:27	06:18 19:28
<b>Uranus (evening)</b>	R: 21:40 S: 09:20	20:44 08:22	19:39 07:16
<b>Neptune (evening)</b>	R: 20:28 S: 06:52	19:32 05:55	18:27 04:50
<b>Pluto (evening)</b>	R: 16:52 S: 02:53	15:56 01:56	14:53 00:52

### Moon Phases, August 2008<sup>1</sup>

<b>New Moon</b>	Friday, August 1 at 6:12am DST
<b>First QTR</b>	Friday, August 8 at 2:20pm DST
<b>Full Moon</b>	Saturday, August 16 at 5:16pm DST
<b>Last QTR</b>	Saturday, August 23 at 7:49pm DST
<b>New Moon</b>	Saturday, August 30 at 3:58pm DST

## More on August Observing:

**Dance of the Planets at sundown:** Venus continues to move away from the sun this month and finally, after a long absence, becomes again an “evening star”. On August 13<sup>th</sup>, and for the rest of the month, it will be worth a trip to a Bay beach to look to the west to see the dance of **Saturn, Venus, Mercury, and Mars**. On the 13<sup>th</sup>, 20 minutes after sunset, look at the tight pair **Saturn-Venus** (separation about 0.5°) 5° above the horizon with **Mercury** just below and to the right at 3.5° off the horizon. **Mars** will be to the upper left about 12° above the horizon. Should be a good show for photography with a zoom lens and a quick look or two with telescope or binoculars.

The **Venus/Mercury** pair creep toward **Mars** and increase separation from the sun each evening until the end of the month when **Saturn** becomes lost in the sun. On 8/31, at sunset, the **Venus/Mercury/Mars** trio are together in a 5° small scope or binocular field about 11° above the horizon.

is minuscule but their combined surface area is quite large, so they reflect a lot of sunlight. In fact, if it could be condensed into a single point, the zodiacal light would handily outshine all the planets, including even Venus. If you are up early for whatever reason, look for the zodiacal light anytime from mid August through mid



October. Please let First Light know if you are successful seeing the Z-light this coming viewing season.

### Libration and Declination Tables for the Moon<sup>2</sup>

AUGUST	
Max Longitudinal	Min Longitudinal
8/4 (6°)	8/18 (-5°)
Max Latitudinal	Min Latitudinal
8/9 (7°)	8/23 (-7°)
Max Declination	Min Declination
8/25 (28°)	8/11 (-28°)

### Have you seen the Zodiacal Light?

The zodiacal light, under optimum conditions, is a beautiful glow above and preceding sunrise in the autumn for northern hemisphere observers. When optimum (minimum haze, minimum moon, at times of year (spring and fall) when the ecliptic is at a steep angle relative to the horizon)

it can look much like the image<sup>3</sup> pictured below. For us, in the autumn predawn, the light arm-shaped light image bends to the right following the ecliptic as shown in the picture at right. The opposite is true in the spring: the glow is observed after sunset and bends to the left as you move up from the horizon.

The zodiacal light is the combined glow of countless tiny particles (debris from comets and asteroid collisions) that orbit the Sun. Like the dust in an unswept room, their mass

### Minima of Algol visible after dark at Cape Cod:<sup>1,4</sup>

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

AUGUST	
05 22 (pm)	Wednesday, Aug. 20

The **Perseid meteor shower** peaks near dawn on August 12<sup>th</sup>. Perseus, a circumpolar constellation, rises higher and higher a bit east of north as the evening progresses on August 11<sup>th</sup> so there should be a good population of meteors out of the radiant most of the night. The show will be somewhat attenuated by the 86% full moon but the moon will be on the opposite side of the sky from the radiant most of the night. Best shower viewing will be predawn on the 12<sup>th</sup>.

### Mars Landers Watch:

Since landing, Phoenix has “seen” ice under its feet, dumped “soil” into its laboratory for analysis and found that chemical elements and pH in that Martian soil all are much similar to analogous items on earth. We will review the accomplishments of Phoenix and update the status of the Opportunity rover next month.

## How I became a “backyard” Astronomer

By Gregory McCauliff

While out for a walk on a winter night when I was a teenager living on Long Island, I noticed a group of bright stars that roughly formed a rectangle in the southern sky. Within the rectangle was a smaller group of stars that reminded me of a kite with a long tail. Little did I know at the time that this was the constellation of mighty Orion. Sometime later, I found a star guide in the local library, and realized that I had “discovered” Orion.

Occasionally I visited the Hayden Planetarium, and enjoyed the star shows and the exhibits of amateur telescopes and meteorites. When I was 16, I answered an ad from Jaeger’s Optical in Popular Science magazine for a lens kit to build a refractor telescope. I thought it would be interesting to find out more about these fascinating stars with the aid of a telescope. So I built a basic alt-azimuth refractor and enjoyed the view. One of my younger brothers and I enjoyed using the scope, especially when looking at Jupiter. I definitely had developed an interest in telescopes.

As time passed, involvement with school, military service and employment, left little time to pursue astronomy. Finally one day in the mid-1970s, I saw another ad from Jaeger’s Optical, this time for a 6” mirror kit, which I purchased and used to make an alt-azimuth reflecting scope. With this scope I learned more about celestial objects I read about in star guides. A few years later, in the 1980’s I made another 6” Dobsonian-style reflector, with a few add on attachments. Then in the 1990’s, I rebuilt the reflector following the design presented by Richard Berry, in his book, “Build Your Own Telescope”. I decided I wanted to use the scope both as originally intended on an Alt/Az mount, and also as an equatorially mounted telescope. This led me to build a wooden equatorial mount. The experience gave me an appreciation for the advantages of equatorial mounts. Making wooden telescopes turned out to be a great source of relaxation for me. Below are pictures of the original scope and revisions with two mounts.



Greg’s original 6” Reflector Scope



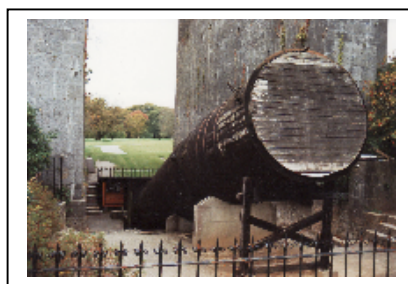
Rebuilt version on Alt-Az Mount



... and on Equatorial Mount

I joined the local astronomy club, at the State University in New Paltz NY. There were two observation sites, and many interesting guest speakers. I made a few trips to the Stellafane Amateur Telescope Makers convention in Springfield, VT and found it inspiring to see the homemade telescopes, and talk with the people who made them. While at Stellafane, I met Dennis di Cicco, and Scott Houston (since passed away), from *Sky and Telescope*. I took a course in astronomy from Bob Berman, contributing editor for *Astronomy*, and visited his home observatory, near Saugerties, NY.

While on vacation in Ireland, in 1992, I visited the site of what had been the largest telescope in the world, in the mid-19<sup>th</sup> century. An amateur astronomer and engineer, named William Parsons, the Earl of Rosse, built the scope. It was 8’ in diameter and 56’ long and made of wood. Only the tube with the mirror box remained when I was there. It was quite impressive to see.



Remains of the 72-Inch Reflector, Built in 1845 by William Parsons

In more recent years, local amateurs have rebuilt the telescope.

Interest in homemade telescopes has decreased, since the cost of commercially made telescopes has come down considerably. Yet, building your own scope can be fun and rewarding, and not too difficult.

In conclusion, I suggest that we continue to pursue our individual interests in astronomy, whatever they may be: attending astronomy club meetings, observing, reading about the latest discoveries, cosmology, astrophysics, space travel, etc. We should enjoy the hobby and the company of other amateur astronomers.

---

The Following Three Articles are summaries of three articles which appeared in Astronomy Magazine Online during June. In the view of your editor, they are important enough to be highlighted here.

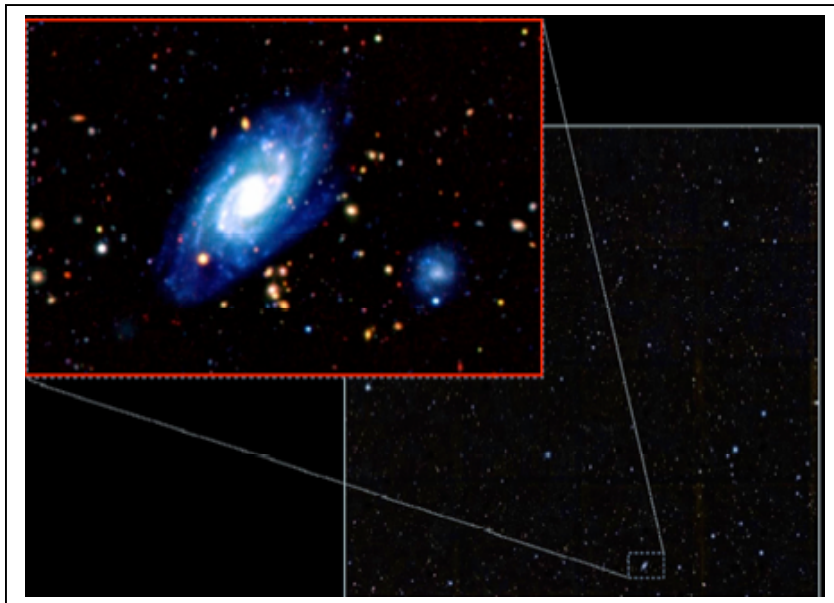
---

### **How big is big? How far away can we see?<sup>5</sup>**

In an area the size of four full moons, a scope in England has imaged 100,000 galaxies which were formed 13 billion light years away only a billion years after the big bang.

UK astronomers have produced the most sensitive infrared map of the distant universe ever undertaken. Combining data over a period of 3 years, they have produced an image containing over 100,000 galaxies over an area four times the size of the full Moon. Some of the first results from this project were presented by Sebastien Foucaud from the University of Nottingham on April 4, 2008 at the RAS National Astronomy Meeting in Belfast.

Due to the finite speed of light, these observations allow astronomers to look back in time over 10 billion years, yielding images of galaxies at the time of the universe's infancy. The image is so large and so deep that thousands of galaxies can be studied at these early epochs for the first time. By observing in the infrared, astronomers can now peer further back in time, since light from the most distant galaxies is shifted towards redder wavelengths as it travels through the expanding universe.



The large gray box on the central to right side of the picture is the large area imaged by infrared, the largest such survey ever accomplished in the infrared. Expanding out a small fraction of this UKIDSS UDS field (small gray box lower right), the zoom shows a relatively nearby spiral galaxy. Many of the faint red objects in the background are massive galaxies at distances of 10 billion light-years and farther. JAC/UKIRT

"I would compare these observations to the ice cores drilled deep into the Antarctic," says Foucaud. "Just as they allow us to peer back in time, our ultra-deep image allows us to look back and observe galaxies evolving at different stages in cosmic history, all the way back to just 1 billion years after the Big Bang".

## **Objects now called Plutoids**

Almost two years after the International Astronomical Union (IAU) General Assembly introduced the category of dwarf planets, the IAU, as promised, has decided on a name for transneptunian dwarf planets similar to Pluto. The name plutoid was proposed by the members of the IAU Committee on Small Body Nomenclature (CSBN), accepted by the Board of Division III, by the IAU Working Group for Planetary System Nomenclature (WGPSN) and approved by the IAU Executive Committee at its recent meeting in Oslo, Norway .

Plutoids are celestial bodies in orbit around the Sun at a distance greater than that of Neptune that have sufficient mass for their self-gravity to overcome rigid body forces so that they assume a hydrostatic equilibrium (near-spherical) shape, and that have not cleared the neighborhood around their orbit. The two known and named plutoids are Pluto and Eris. It is expected that more plutoids will be named as science progresses and new discoveries are made.

Astronomy Online, June 11, 2008<sup>6</sup>

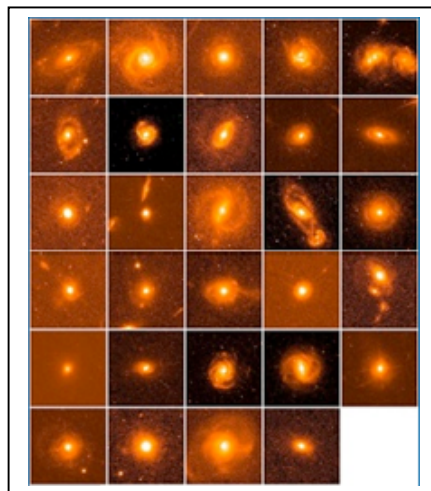
---

## **Hubble images detail galactic "mergers and acquisitions"**

Astronomers believe the big galaxies we see nearby were built up by mergers with many smaller systems when the universe was young. On June 2, at the American Astronomical Society meeting in St. Louis, a group led by Michael Brotherton at the University of Wyoming released new Hubble Space Telescope images that show the process in detail. Their images and studies indicate that mergers in massive galaxies first trigger starbursts, which gradually fade out, and then fuel the mergers of the donor galaxies' central black holes into a new central black hole, which turns on a quasar. The quasar blows away the dust obscuring the starburst, but it also effectively blinds astronomers to detailed study of the underlying galaxy.

Brotherton and his colleagues reason that there should be transition galaxies in which the fading starburst and the quasar can be seen at the same time. In the late 1990s, he found a candidate for one of these objects. Its spectral signature indicated the presence of both a quasar and a starburst, already 400 million years old. Brotherton dubbed the object a "post-starburst quasar" and imaged it with the Hubble Space Telescope. The images revealed an object that was clearly the result of galaxy mergers. The group has cataloged a collection of images of 29 such cases from the Hubble scope. All originate at least 3.5 billion light-years away, and each image is about 120,000 light-years in diameter.

Astronomy Online, June 5, 2008<sup>7</sup>



The Hubble Space Telescope's Advanced Camera for Surveys snapped these red-light images of 29 post-starburst quasars. All objects are 3.5 billion light-years away, and each image is 10" — or about 120,000 light-years — on a side. NASA/ M.Brotherton (Univ. of Wyoming)

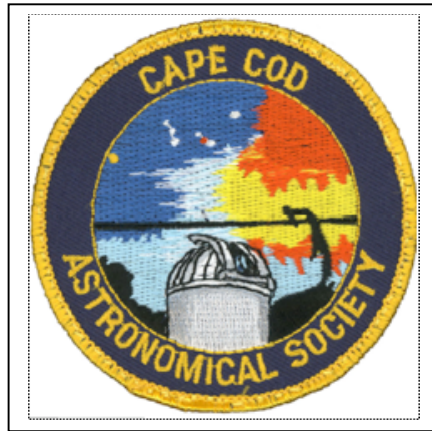
## Cape Cod Astronomical Society

President	Garu Derman	508-240-0984
Vice President	Tom Leach	508-237-9291
Secretary	Betsy Young	508-255-8448
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	508-895-5973
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, no charge 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) S&T's Observing Web page: <http://www.skyandtelescope.com/observing/home/16987266.html>
- 4) 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.
- 5) Astronomy Online: <http://www.astronomy.com/asy/default.aspx?c=a&id=6794>
- 6) Astronomy Online : <http://www.astronomy.com/asy/default.aspx?c=a&id=7061>
- 7) Astronomy Online : <http://www.astronomy.com/asy/default.aspx?c=a&id=7051>