



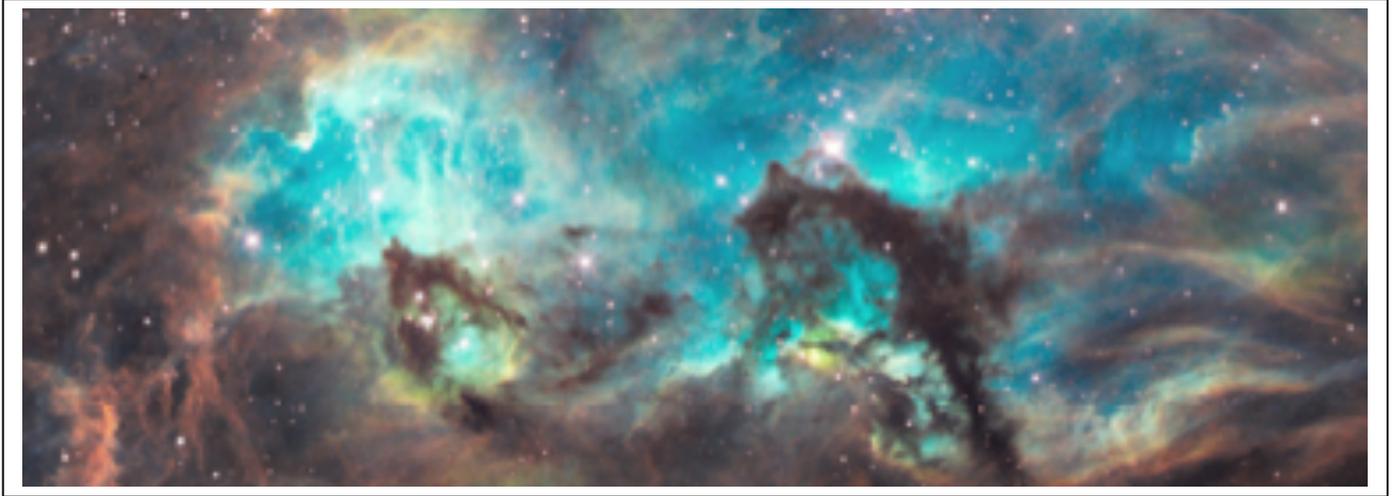
First Light

The Newsletter of the Cape Cod Astronomical Society



October, 2008

Vol.19 No. 9



With SM4, the Shuttle Mission to repair the venerable Hubble Telescope slated to launch October 10, First Light thought it appropriate to open this issue with this spectacular picture taken recently from the Hubble scope. During Hubble's 100,000th orbit around the Earth in August, it peered into a small portion of the nebula near the star cluster NGC 2074. The region is a firestorm of raw stellar creation, perhaps triggered by a nearby supernova explosion.⁶

Announcement:

Older Homemade Newtonian Available

Gerald Evenden of North Falmouth sent in this invitation to info@ccas.ws :

... came across my father-in-law's home-built 6" Newtonian which was probably built in the late '40s or early '50s. Our son, Muir, did some cleanup on it and may have had the mirror resilvered (aluminized) 20 years ago... ..would like to find a good home for it. Someone who would appreciate the good ol' days of amateur efforts, fix it up and give it a good home... ..the only downpayment is the gasoline to come to N. Falmouth and pick it up.

Anyone interested in this scope or knowing someone who might be, please contact First Light Editor or email info@ccas.ws and we will put you in contact with Mr. Evenden.

Bright New Stars:

Once again, we wish to invite recently joined members not yet introduced as "Bright New Stars" to send an email to the info@ccas.ws email address letting us know a little more about themselves: background, astro equipment in use, if any, and interests.

Thoughts on First Light

Thanks to many members for contributions this month: minutes of our EC meeting from Betsy Young, "From the Dome" from Mike Hunter and (Foundation News) some special information from Werner Schmidt on future options for maintenance and improvement of our 16" telescope.

Thank you, members!
"First Light wants YOU!"

CCAS Events

Many thanks to Dr. Richard Porter for his wonderful presentation on the Development and Use of the Thermometer from Galileo to the Space Shuttle at our meeting on September 4th.

We are pleased to look forward to a program by Gary Derman on "Sky Pointing" at our meeting on October 2. The presentation will describe the logic (without the math) of how the celestial object positions are calculated for your location and time. He will explain the distortions and position errors associated with this process. More simply stated, Gary will talk about where we should point the telescope to see an object and then how far off center might the image appear.

Highlights from September Business Meeting (extracted from Minutes submitted by Betsy Young):

Revised by-laws were approved by voice vote. Revisions approved include the inclusion of a dues fee schedule in Article III and a streamlined procedure for making amendments to the by-laws. The revised by-laws are available on our website; click on the "Membership Info" button and scroll down one page to view the by-laws.

The membership approved an honorarium for Dr. Richard Porter who spoke to us on the history of thermometry.

Please see "From the Dome" below for an Update on Star Party happenings and plans.

Executive Corner

The Executive Board met on September 16th.

Highlights:

- From time to time, the Executive Board will approve honoraria for our speakers. The first such honorarium had been approved for our September speaker by the membership at their meeting.
- Programs: We will investigate the possibility of astronaut (and life member) Dan Burbank and former Schmidt Director (and life member) Jim Carlson make presentations to the Society in the near future.
- Dues: As of our meeting date, 28 members have paid their 2008-2009 dues, 23 have not. Members delinquent on current dues are asked to submit same to our Treasurer, Kel Parkinson, ASAP.
- Future Society Meetings: The Society meeting for January 2009 will be held on January 8 rather than New Years Day; The meeting for July 2009 will be held on July 9 rather than July 2.

- There will be no meeting of the Executive Board in October, 2008. The next meeting of the Executive Board will be held the 3rd Tuesday of November, 11/ 18. No meeting in December. First meeting for 2009 will be held Tuesday evening, January 20.

From the Dome

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

The end of summer brings the end of weekly star parties and the start of monthly star parties. For September through May, the monthly star parties will be on the Saturday night closest to the new moon: "Dark Saturdays." The first such event is scheduled for dusk on September 27th. The date for October is October 25th. Check our website after noon on "Dark Saturdays" to be sure we have not had to cancel because of poor skies.

Activities this past summer: Wednesday star parties at The Schmidt and the September 10 planetary observing session at Corporation Beach gave us an opportunity to see all of the planets and half of the plutoids (Pluto) this year. Seeing Pluto was a goal set by The Schmidt staff at the beginning of summer. Society members Larry Brookhart, Jim Carlson, Mike Hunter, Peter Kurtz, Ed Swiniarski, and Bernie Young spotted Pluto at the August 27 star party.

The Corporation Beach planetary observing session on September 10 was the first off-site activity sponsored by The Schmidt. The event was announced at the Society's September 4 monthly meeting and on the Society's Yahoo group list server. In the future, new Schmidt-sponsored events other than regular Star Parties will first be announced by postings on the Society's Yahoo Group list server.

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. Mike and Peter will "teach" one session of Jon Greenberg's fall Nauset Ed course "Observational Astronomy for Beginners" at The Schmidt on October 8th.

Please see the article below from Werner Schmidt in **Foundation News** on planning future improvements for the 16" Meade telescope at our Observatory.

Foundation News...

...this from Werner Schmidt on considerations for future improvements on the 16" scope at our observatory...

Re: Observatory Equipment

As the 16" Meade telescope is the main tool and attraction at our observatory, a few comments are indicated at this

time on options for future improvements and maintenance.

We have at this time one year left in our service contract with the Meade Corporation. This has been a 5-year contract to repair our scope, always at the Meade plant in California, which means we were without the use of the 16" scope for at least a month. This has happened 2 times in the past.

We have just been informed that the Meade scope repair facility has been moved to Mexico about 3 months ago and just recently Meade moved all new scope construction equipment to Mexico. Meade's future may be in question.

A renewed service contract is under consideration, but Meade has not yet decided if they will issue any more service contracts. A new contract would probably cost more than the current \$2000 contract in view of current higher shipping costs.

At this point in time we have one basic problem with the 16" scope. Apparently we have lost the the capability of our mechanical hard stop (a Geneva Device) to limit the scope number of rotations at any time to no more than one turn. Normally, this hard stop is not needed as the internal electronics limit the turns of the scope if the scope is behaving properly. When the scope is misbehaving, it may turn several times, which causes the internal wires to disengage the 15 contact connector at the bottom of the fork. If this happens, the scope becomes inoperative. The plastic cover plate has to be removed and the wires have to be untangled so that the 15 contact connector can be reconnected. The scope then of course has to be realigned.

I have made a springloaded attachment for the 15 contact connector to hopefully prevent the disengagement of the socket connection. It has performed satisfactorily for the past 2 months and may be a permanent solution. If not, we will have to ship the scope to Meade for a reinstallation of a new mechanical hard stop.

I have obtained an 18-page report prepared by Meade for the Securities and Exchange Commission. Information in this report suggests that the future for Meade as a corporate entity may be very difficult. Much manufacturing has moved overseas and the company has had losses during the last two years. The stock price has dropped substantially.

In view of the above situation, we must consider alternatives to the Meade option for mounting our Optical Tube Assembly in the future.

Using a different mount would allow continued use our scope tube with its excellent optics, but would utilize a better drive with better electronics for a superior performance for both visual and CCD camera use. An alternative to the Meade mount could also eliminate concerns about the corporate future for our current supplier.

The mount we are considering, The Paramount, would cost about \$15,000.00 including some required ancillary additions. There are not too many mounts available as our tube weight of 150 pounds limits our choice. Custom-built mounts could easily run to \$40 or \$50 thousand.

We will do what we can to keep our current Meade equipment. A lot will depend on how well it can handle time exposures with our CCD camera and the availability of satisfactory repair facilities for our current equipment.

Werner Schmidt

Reminder: CCAS has both 8" and 14" Dobsonian telescopes for loan to members. Currently, Rich Kosinski has the 14" at his home; Bernie Young is making minor improvements to our 8" prior to taking it to a dark sky trip to Vermont.

October Observing:

Mooncusser's Almanac and Monthly Alert¹			
By Peter Kurtz			
OCTOBER 2008			
Object	Oct 01 (DST)	Oct 15 (DST)	Oct 31 (DST)
Sun	R 06:38 S: 18:22	06:53 17:59	07:12 17:36
Moon	R: 09:19 S: 19:00	18:01 08:16	10:13 18:44
Mercury (dawn)	R: 07:39 S: 18:29	05:35 17:26	05:53 17:07
Venus (evening)	R: 09:15 S: 19:34	09:49 19:25	10:26 19:25
Mars (pre-dusk)	R: 08:18 S: 19:07	08:12 18:36	08:06 18:03
Jupiter (evening)	R: 14:20 S: 23:30	13:30 22:41	12:35 21:48
Saturn (pre-dawn)	R: 04:36 S: 17:35	03:49 16:44	02:54 15:45
Uranus (evening)	R: 17:34 S: 05:08	16:38 04:10	15:34 03:05
Neptune (evening)	R: 16:23 S: 02:44	15:28 01:48	14:25 00:44
Pluto (early eve)	R: 12:52 S: 22:50	11:58 21:56	10:57 20:54

Moon Phases, October 2008¹

First QTR Tuesday, October 7 at 5:04am DST
Full Moon Tuesday, October 14 at 4:02pm DST
Last QTR Tuesday, October 21 at 7:55am DST
New Moon Tuesday, October 28 at 7:14pm DST

We usually think of a “28 day moon”. This month the calendar dates for each QTR show that nicely!

Notes on October Observing

During October, **Mercury** and **Saturn** become dawn events, **Venus** scampers near the horizon after sunset, and you must rush to see **Mars**, if at all, on the horizon right after sunset. Jupiter and the planets beyond Saturn continue to be nicely placed for evening viewing. As we move into autumn, the time available in the early evening to view Jupiter and Pluto will grow shorter and shorter.

There is one alignment of bodies during October which is worthy of note: Predawn on October 26th, one should be able to observe and photograph the line up of **Spica**, **Mercury**, a day old crescent **moon**, and **Saturn** on the ecliptic at the eastern horizon. Worth a look.

During the first two weeks of October, at about 10:30 each night, see if you can follow magnitude 6.6 asteroid **Vesta** moving across the head of the whale from just above bright α -Cetus to just above γ -Cetus to the west over 12 days or so. You only know you’ve seen an asteroid when you can confirm its movement in a star field over several days. Vesta is at opposition on October 30th and peaks in brightness at magnitude 6.4 on the 27th when it is a bit west of the head of Cetus.

Libration and Declination Tables for the Moon²

OCTOBER	
Max Longitudinal	Min Longitudinal
10/24 (6°)	10/11 (-6°)
Max Latitudinal	Min Latitudinal
10/2 & 10/29 (7°)	10/16 (-7°)
Max Declination	Min Declination
10/19 (27°)	10/5 (-27°)

Finally, October marks the time when Orion and its jewel:

the Great Orion nebula begin their seasonal run. Orion rises about midnight on October 1st but by month’s end it lifts above the horizon about 9:30pm for Cape Codders.

Minima of Algol visible after dark at Cape Cod:^{1,3}

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

OCTOBER	
7:32 (pm)	Thursday, Oct 2
4:47 (am)	Tuesday, Oct 14
10:25 (pm)	Sunday, Oct 19

Items of Interest in Recent Astronomy News:

From time to time news items appear in current Astronomy media that are of special interest or significance. When this occurs, First Light will feature alerts to such news with starting references:

August 28, 2008 **Astronomers have refined the mass of the Milky Way’s central black hole** by tracking the orbits of several stars whizzing around it. The team’s pure measurement yields a mass of 4.1 million Suns with an uncertainty of only 0.6 million Suns. Stars nearby such a mass orbit really fast: One star in particular, dubbed S0-2, has been clocked at nearly 8,000 km/sec. By using simple orbital laws dating back to Isaac Newton in the 1600s, stellar velocities can be used to derive the mass of the central gravitating object.

<http://www.skyandtelescope.com/community/skyblog/newsblog/27621359.html>

After a long wait, we can expect increasing Sunspot Activity over the next year or so: For the first time in months, a significant sunspot began emerging on the sun during September. It is a fast-growing active region with two dark cores, each larger than Earth. The magnetic polarity of the sunspot identifies it as a member of new Sunspot Cycle 24. Because the year 2008 has brought so many blank suns, some observers have wondered if we are ever going to climb out of the ongoing deep solar minimum. Today’s new sunspot is an encouraging sign that the 11-year solar cycle is indeed progressing, albeit slowly. [Spaceweather News, 9/22/08 <http://spaceweather.com>]

Photos from an Enthusiastic August Star Party Guest

The day after our most eventful Star Party on August 27, info@ccas.ws received these photographs from David Parmet, a visitor from the New York area, with the note: "I just wanted to thank you all for your hospitality last night to my son Jeremy and me. We had a blast." First Light thinks this is great "Thanks" indeed. Kudos to the creators of our observatory and the idea of Star Parties there!



Note the "cup" of the Big Dipper overhead



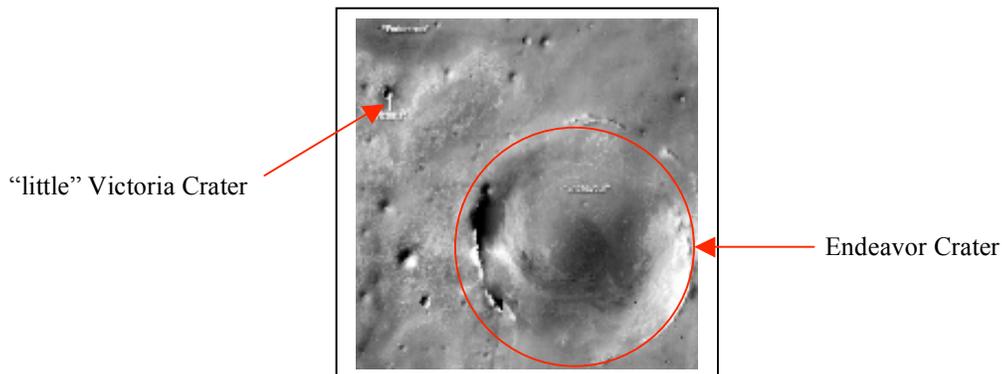
"So... where's the eyepiece?"

Whither Opportunity? What is Phoenix Digging For Now?

Phoenix landed successfully on the northern regions of Mars on May 26th to begin collecting and analyzing soil samples to confirm expectations of water on the planet. The last time (April First Light) we discussed Opportunity, the little rover that began crawling around Mars in 2004, he was stuck in Victoria crater shooting panoramas of the crater's edges from his perch some meters down the inside slope.

Well, since April, Opportunity has stumbled around a bit more in little Victoria crater continuing to look at different kinds of soil and rocks, sample the "air" and take more beautiful pictures. Having finally climbed out of Victoria crater, Opportunity has been trying to reach a "Dust Patch" between two crests of the ridge surrounding Victoria crater; during the week of September 12-18, his wheels began to slip while climbing one of the ridges.⁴

After some experimentation with continuing to try to climb the slope using varying amounts of allowed "wheel slippage", the effort was abandoned and the rover's command team on earth decided to abandon those hills and make preparations for a long (some seven miles) but hopefully more level overland trip to the neighboring Endeavor crater. The trip from Victoria to Endeavor would match all the distance the rover has traveled to date since landing in 2004. But the call of the unknown is compelling the rover science team to make the attempt. "Endeavor is staggeringly large compared to anything Opportunity has seen before," said Steve Squyres, principal investigator for the science instruments on Opportunity and its twin rover, Spirit. The destination crater,



named Endeavour, is 22 kilometers (13.7 miles) across. "I would love to see that view from the rim," Squyres said. "But even if we never get there, as we move southward we expect to be getting to younger and younger layers of rock on the surface. Also, there are large craters to the south that we think are sources of cobbles that we want to examine out on the plain. Some of the cobbles are samples of layers deeper than Opportunity will ever see, and we expect to find more cobbles as we head toward the south."

The rover team estimates Opportunity may be able to travel about 110 yards each day it is driven toward the Endeavour crater. Even at that pace, the journey could take two years. But why not go for it, and see how long the rovers can last?

Opportunity is healthy, and all subsystems are performing as expected. Based on the latest data from sol 1653 (Sept. 17, 2008), the rover has 582 watt-hours of solar power available each day. (One hundred watt-hours is the amount of energy needed to light a 100-watt bulb for one hour.)⁵

Phoenix Lander: Soil in Oven #5: What will we learn this time?

Since it landed May 26, the Phoenix lander has been working with Martian "soil" trying to dump scoopfuls into one or another of the little TGA (thermogravimetric analyzer) ovens to confirm composition of materials that can be driven out of the soil by heat. Because of some interesting morphological properties it has been difficult to get the soil samples it has lifted up to pass through mesh screens at the doors to its TGA ovens. When conclusive results are available, time and space permitting, we will summarize the results of these efforts by Phoenix in future issues of First Light.⁷

**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.



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 γ -Andromedae to Algol's west, mag 2.1, and ϵ -Persei to its east, mag 2.9.
- 4) <http://marsrovers.jpl.nasa.gov/mission/status.html#opportunity>
- 5) <http://www.universetoday.com/2008/09/22/opportunities-next-adventure-the-big-drive/>
- 6) Astronomy Online <http://www.astronomy.com/asy/default.aspx?c=a&id=7285>
- 7) Astronomy Online <http://www.astronomy.com/asy/default.aspx?c=a&id=7287>