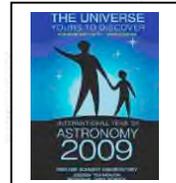




First Light

The Newsletter of the Cape Cod Astronomical Society



October, 2009

Vol.20 No. 10

- **National Astronomy Day, Saturday, October 24:** CCAS will participate in the worldwide celebration of “Galilean Nights” featuring a Star Party at the Dome preceded by a special demo and discussion session out on the lawn, beginning at 5:30pm. We will have an opportunity to learn more about and discuss various kinds of telescopes and other observing equipment prior to the Star Party. This event is posted on the worldwide “Galilean Nights” website. No Thursday Star Party on 10/22. More information below.
- **All Members: please update your dues!** We have found that dues mailings from several members have taken a very long trip (maybe even disappeared?) because some are using an out-of-date postal addresses for the Society. The correct and current address is: CCAS PO Box 207 Harwich Port MA 02646
- **New Schedule for Public Star Parties (supercedes last month’s notice):** *Until further notice, Fall Star Parties, with the exception noted above, will take place on THURSDAYS at 7:30pm; on meeting nights, the Star Party will follow the meeting. More information below in “From the Dome”.*
- **Next Monthly Meeting:** is Thursday, October 1st at the DY Library. Program notes below. Per the new schedule for Star Parties, and skies permitting, a Star Party will follow this meeting.
- **Feature Story This Month:** Bernie Young checks out the Observatory at UNH.

Bright New Stars:

At our meeting early in September, Larry Brookhart acquainted us with a Bright New Star he knows very well. Larry informed us that his younger daughter, Allison, qualified for and sang the Star Spangled Banner at the Red Sox game at Fenway on July 13th. Thank you Larry, for sharing with us that special star event and photos taken that night by your father.

We welcome Robert Milne of South Yarmouth (a year-rounder now for one year) to CCAS. Robert participated in recent meetings and Star Parties and became a member at the September meeting. He previously belonged to the Syracuse Astronomical Society. Robert owns two pairs of binoculars, a Canon IS 10x309 also used for wildlife watching and Orion Vistas 10x50 and also two small Orion scopes: a short tube 80mm refractor and a 102mm Mak-Cass.

We like to welcome new members to 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).

Many thanks to contributors to this issue: Tom Leach, Mike Hunter, Werner Schmidt, and Bernie Young.

PLEASE CONSIDER SUBMITTING AN ITEM OR ARTICLE FOR PUBLICATION IN FIRST LIGHT.

CCAS Events

Former CCAS President Gary Derman gave a most informative presentation entitled “Einstein’s Telescope” at our last meeting. His talk was inspired by a recent book by author Evalyn Gates. Gary described in detail the effects and uses of gravitational lensing.

This effect is formed when the light from a very distant bright source is “bent” around a massive object between the source object and the observer. It is sometimes called the Einstein ring. The effect can cause a single object to appear as multiple objects. The phenomenon allows us to “see” distant objects or other causes of light “bending” we otherwise could not. The concepts of dark matter and dark energy and their relationship were also discussed.

The minutes of our September meeting prepared by Charlie Burke, our Secretary, are on our website; click on on the “Minutes” button at www.ccas.ws or go to <http://www.ccas.ws/minutes/ccasminutes090309.pdf>

CCAS is “on the web” for the worldwide “**Galilean Nights**” celebration. Our Saturday overview of telescopes and observing equipment followed by Star Party on the fall National Astronomy Day, October 24 (see announcement on page 1) is listed on the Galilean Nights catalog of worldwide events for the October 22-24 period. Check us out at http://www.galileannights.org/register_confirm.html

Many thanks to Tom Leach, Program Chairman, and those persons who have agreed to speak, for the following outstanding programs for the upcoming months:

At our upcoming meeting on October 1st, Robert Brookhart will speak on aspects of missile tower development during the space race in the 1960's. John Kennedy said "We choose to go to the moon not because it is easy but because it is hard." As a structural steel detailer Brookhart worked in California on plans and drawings that led to the Apollo moon shot tower(s) at Cape Canaveral including requisite escape plans for astronaut safety. His work in steel design also got him involved in the Atlas missile silo program.

At our meeting on November 5th, Ryan Mann will talk about Dendrochronology, the study of annual growth rings in trees. Much like ice cores, carbon-14 dating and sediment cores, the layering system in trees can unlock clues into what is going on and what has happened in the past depending on environmental conditions. During the winter of 2008, Mann performed analyses on several core samples in an attempt to correlate data on weather patterns with spacing of annual rings in cedar trees found in Waquoit bay.

Ryan Mann is a graduate of UMASS Amherst and is currently Outreach & Stewardship Coordinator for the Harwich Conservation Trust. The Trust is a non-profit land trust organization founded in 1988 by citizens concerned with the rapid pace of development threatening the fragile natural resources of Harwich. The Trust permanently protects natural areas by receiving land donations, holding conservation restrictions on properties, and purchasing land throughout Harwich. The Trust is not affiliated with town government.

Members, **PLEASE** consider participating in the effort to recruit speakers to present programs in astronomy and related sciences. Please send any ideas or contact information to Tom Leach, our President and Program Chairman. For sure he will follow up.

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

Executive Corner

The new Executive Board has been exchanging ideas by email and phone on a continuous basis and will soon formally convene by conference call. Anyone wishing to

offer an item to the agenda, please contact Tom, Paul, Peter or Charlie.

All Members please update your dues!

Please be reminded that the target for paying 2009-2010 dues was the end of June. As of September 23, 26 of our 50 active members renewed their dues this cycle; 24 members have not yet updated. Of these, 12 paid dues last year in the period October to December. Those that can, please try to get on the summer-summer cycle.

Please bring your check or cash to a meeting and give to Peter Kurtz or mail to the Society address: CCAS PO Box 297 Harwich Port MA 02646. Thank you. .

From the Dome

More Information on the Change in Schedule for Fall Star Parties; **Special Program for National Astronomy Day,** **Saturday, October 24:**

As noted on page 1, until further notice, weekly Star Parties ,with the exceptions noted below, will take place on Thursdays at 7:30pm.

As usual, any Thursday the weather looks questionable, check the green box on the website after 5:30 pm: if we have cancelled the box is turned red.

if skies are clear on the first Thursday of the month, the CCAS meeting night, Star Parties will begin after the meeting in the library, usually about 9:00pm. So there will be a Star Party on October 1 if it is clear.

There will be a special program for National Astronomy Day, Saturday, October 24th. Beginning at 5:30pm, there will be an overview of telescopes and observing equipment followed by a Star Party. No Star Party on the preceding Thursday.

We will have multiple telescopes and other observing equipment set up on the lawn outside the dome. The purpose of this event is to provide members and the public an opportunity to see and discuss a broad range of observing equipment. Bring your own telescope or binoculars if you wish to share and discuss its use. The 5:30 session and tours of the dome will take place on the 24th rain or shine. Bring your friends and neighbors.

This event is part of the worldwide celebration “Galilean Nights” and our celebration of the International Year of Astronomy, 2009.

Bernie Young and Ed Swiniarski have been working diligently for several months to line out, prove out, and

October Observing:

develop procedures for the nascent Go To capability of our wonderful Obsession 18" Dobsonian telescope. September yielded several "Aha's" and "Eureka's" culminating in good Go To performance of the scope in initial trials. A key problem had been loose connections in a circuit board fuse. A temporary fix is in place; eventually a resoldering may be required.

There is no problem with the DC Power Pack we use for the 18" and also the Celestron 8"; earlier in our struggles we thought maybe the Power Pack was cutting in and out. It is fine.

A Go To option for the Obsession will provide boost in observing effectiveness for both members and visitors at our weekly Star Parties and other ventures.

Progress has been made in setting up and lining out our 4" Televue refractor on its new Losmandy mount and dolly. Please see the update from Werner Schmidt below.

Reminders:

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.

Foundation News...

Thanks to Werner Schmidt for this update:

Parts for the Losmandy mount imaging assembly are still being delivered. Our 4" Televue refractor and CCD camera with accessories will be mounted on the Losmandy. The whole will be moved in and out of the Observatory on a "Wheeley Bar" cart. The Wheeley Bar with its 5 inch wheels has been received and has been installed. This will enable us to move the mount either with or without the telescope and camera assembly through the doorway without having to lift it. Due to the dimensions of the Wheeley Bar and the design of the Losmandy mount, we have had to increase the size of the concrete pad from 4x4 to 5.5x5.5 feet. This does not present a problem. The concrete pad construction is scheduled for late September, possibly September 25th. When the pad is ready, we will begin working outside with the new assembly which eventually will be controlled and monitored from inside the Observatory.

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

NASA's LCROSS spacecraft and its Centaur carrier rocket, part of the traveler package that includes the Lunar Reconnaissance Orbiter (which takes pictures of things as small as footprints left from Apollo missions on the moon) will slam into the Moon at 7:30 am EDT on October 9th. This is a planned collision, only one chance to strike a permanently shadowed and presumably water-rich crater floor near the lunar south pole. If successful, analysis of ejecta will shed light on water storage at the moon's poles. An image showing the target crater Cabeus A, lunar latitude 81° is given on page 6.) .

Do you wish to try to see this event in your telescope? If the impact kicks up ejecta, wet or dry, the temporary plume might be visible even in amateur 'scopes. The timing of this event, however, favors amateurs and professionals west of us who will still be in darkness. For us at the Cape, the 70% waning gibbous moon will be visible at celestial azimuth 257° at about 50° altitude but against, unfortunately, a dawn sky lit by the sun which rises 30 minutes earlier. See the story at reference 4 for more information.

More Debris from Halley's Comet: While we must wait about 50 years to next see the comet itself, every year we can see its debris from earlier passages. This year we will see Halley's debris on days centered on dawn on October 21 when earth runs into particles left by the comet. Look to the southeast for meteors moving from near Betelgeuse in Orion. Professionals expect the meteor rate to be unusually high this year, up to 30 per hour at peak. This year is also especially favorable for a good show since the only 3 day old crescent moon sets near 7pm early that same evening: favorable not just on the 21st but for a good period. If you miss the peak time evening of the 20th/21st, look for Orionids anytime on days either side of October 21.

October Planets, Comets, and Asteroids:

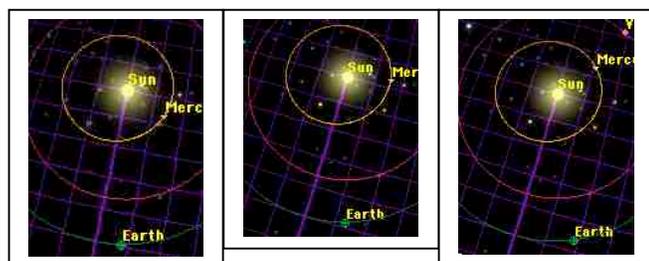
... the early morning sky:

Mars comes again: For many months now, Mars has been waiting in the wings making only dim cameo appearances in the early morning sky. Beginning with the start of October when the Mars/sun/earth angle is 90°, it is poised to become more interesting as it runs toward earth on the inside track. From 1 October, magnitude only 0.79, apparent diameter only 6", it will grow gradually, as it becomes again an evening planet. We will see it largest at its opposition date (earth-sun-Mars angle of 0°) January 29, 2010. On that date it rises at 4:37pm and shows magnitude -1.3, apparent diameter 14", fully twice as big as at the beginning of October.

One needn't wait for opposition for a reason to look at

Mars. From October 30th through November 3rd, visible in the dawn sky, magnitude 0.5 Mars will pass from northwest to southeast right through the beautiful **Beehive Open Cluster, M44**. Take at least two looks any morning during this period; using a good telescope at medium power over an hour or so, it should be possible to watch Mars change position relative to any of the many bright stars of the cluster.

Early October marks the the apex of **Mercury's best morning apparition in 2009** for northern hemisphere observers.



October 1
(25% crescent)

October 6
(half)

October 14
(82% lit)

Mercury rises 45 minutes after Venus in early October both well before sunrise. The small planet brightens steadily from magnitude 0.4 (0.25 lit crescent) on October 1 to -0.4 (0.5 lit "half") on October 5/6 when at greatest elongation (separated from the sun by 18°) to a blazing -1.0 (82% lit) on October 14th. Information on Mercury pairings during October follows.

Saturn comes away from the sun early this month and on Thursday, October 8th with blazing **Venus** somewhat above, it makes a tight (0.3° separation) pair with bright **Mercury** the latter two rising a full 1.5 hours before the sun. A special photo opportunity. On the 16th, Saturn and Venus, very close to one another with Mercury just below, will form an equilateral triangle with and 7° north of a sliver crescent moon. Another great photo op.

Saturn's rings begin to reappear this month having been fully edge on when the planet was "in the sun" end September.

Please note on page 6 the beautiful and unique photo of Saturn taken by the Cassini orbiter in August when the planet was at "equinox", something that permits special views (or nonviews!) of the rings every 15 years or so.

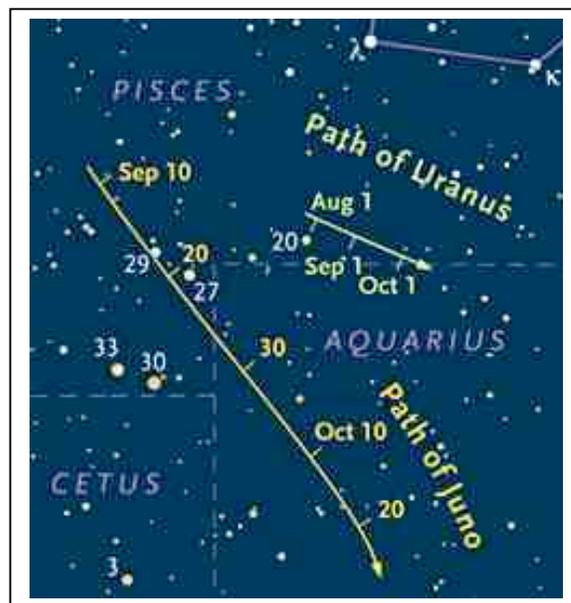
Since you have left bed early to see Mars and Mercury, take a magnitude reading on the slowly dimming variable star epsilon Aurigae while you are up. For more information on this phenomenon, see the story on page 3 in the August issue of First Light.

... Prime Time: the evening sky:

From west to east in the evening sky, the wonderful parade of **Jupiter** (m -2.6), **Neptune** (7.9) and **Uranus** (5.7), in line on the ecliptic, continues in October. NOW is the time to take a look.

There is more. Slightly south of the ecliptic between Jupiter and Neptune sits the faint (mag 11.9) comet **22P/Kopff**, and, a bit south of Uranus, asteroid **Juno** (mag 8).

While not in the group just described, a brighter comet, **C/2006 W3 (Christensen)**, mag 8 and brightening, is in Aquila in October. Don't miss it. See reference 5 for an introduction to C/2006 W3.



Finder Chart for Juno and Uranus⁶

The finder chart for comets 22P/Kopff and C/2006 W3 (Christensen) can be found at reference 7.

Here's an update for October on the always entertaining **motions of the moons of Jupiter**. Fewer words but at least as much fun as September: the positions of the moons of Jupiter over each day in October are given in a table in the October issue of Sky and Telescope, page 47. Want to know when moons disappear behind or have shadows pass in front of Jupiter during October? Try S&T page 58.

But here's a new wrinkle discussed nicely by Alan MacRobert on page 56 in the same issue of S&T: **What about moon A occulting moon B?** ...or having its shadow eclipse moon B? Please consult MacRoberts' chart: Io occults Europa on three dates (10/7, 10/17, and 10/24) during prime evening hours in October; Ganymede occults Io on two dates (10/22 and 10/29) and Europa on two dates (10/23 and 10/30; all dates for Eastern Daylight Times).

Mooncusser's Almanac and Monthly Alert¹

By Peter Kurtz

OCTOBER, 2009

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Object	Oct 01 (EDT)	Oct 15 (EDT)	Oct 31 (EDT)
Sun	R 06:38 S: 18:22	06:53 17:59	07:12 17:36
Moon	R: 16:53 S: 04:19	04:14 16:19	16:04 05:13
Mercury (predawn)	R: 05:13 S: 17:46	05:39 17:35	06:56 17:31
Venus (predawn)	R: 04:29 S: 17:30	05:02 17:16	05:40 16:59
Mars (predawn)	R: 00:04 S: 15:04	23:45 14:36	23:20 13:59
Jupiter (evening)	R: 16:17 S: 02:21	15:21 01:25	14:19 00:25
Saturn (predawn)	R: 05:35 S: 18:04	04:48 17:12	03:54 16:14
Uranus (evening)	R: 17:45 S: 05:30	16:49 04:32	15:45 03:27
Neptune (evening)	R: 16:31 S: 02:57	15:35 02:01	14:32 00:57
Pluto (early eve)	R: 13:05 S: 22:58	12:10 22:03	11:09 21:01

Moon Phases, October, 2009

Full Moon Sunday, Oct 4th at 2:10am EDT

Last QTR Sunday, Oct 11th at 4:56am EDT

New Moon Sunday, Oct 18th at 1:33am EDT

First QTR Sunday, Oct 25th at 8:42pm EDT

Anyone having an interest in monthly **Libration and Declination Tables for the Moon²** or **Dates and Times for the Minima of Algol^{1,3}** during this month please contact your editor and the information or sources will be provided.

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.

Feature Article:

Bernie Young Stops by the University of New Hampshire Observatory for Lecture and Star Party

Thanks to Bernie for providing this interesting story on a trip to the north.

On Saturday, September 19, 2009, I traveled to the University of New Hampshire for the second annual Holly Young Invitational Volleyball Tournament, and a visit to the University of New Hampshire Observatory for a lecture and Star Party. First stop on the way was River's Photo Shop in nearby Dover to pick up some things for the Evenden 6" Newtonian I'm rebuilding. Turns out they quit selling astronomical equipment a year and a half ago. Bah humbug.

Next stop was a daytime reconnaissance run to the UNH observatory. It was there, where it was supposed to be, served by a large parking lot.

After the afternoon volleyball match, I walked a block to the physics building for an International Year of Astronomy lecture *The Evolving Universe: Origins of the Elements*. This talk was very similar to one Mike Hunter presented on May 2nd celebrating the spring National Astronomy day.

There were 13 people present, counting the organizer who introduced the speaker, Prof James Connell of the UNH Physics Dept. A revolving digital slide show served as a warm-up act. Several of the slides were of the observatory equipment and celestial images made. I came away from the afternoon session with some ideas (Please see below).

The talk explained a selection of slides, many downloaded from various sites. I got to ask three questions and came away with some ideas

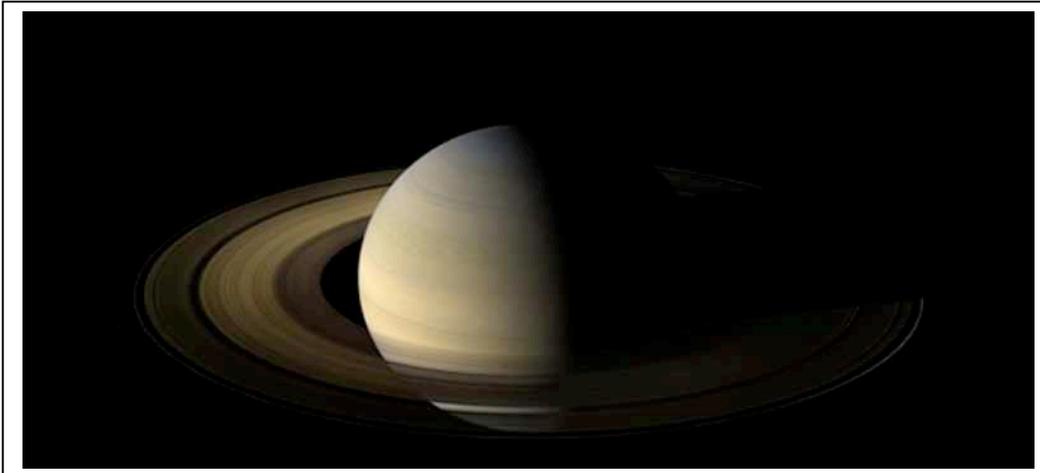
Off to the observatory at 7pm. It's about a mile off campus, away from all lights. I needed my flashlight to find the path. There were already about a dozen cars and I started the second row. The dome is 15' in diameter on a 24' concrete pad. The sill is

higher than ours, limiting viewing altitude. The floor is only slightly above grade. A 14" Celestron Schmidt-Cassegrain (f/10) is mounted on a Losmandy G11 mount like the one we just bought for our 4" refractor. Most viewing was done with a 32mm eyepiece giving about 111 magnification. A laptop link displays what you ought to see... an interesting idea. I signed in as a representative from the Schmidt.

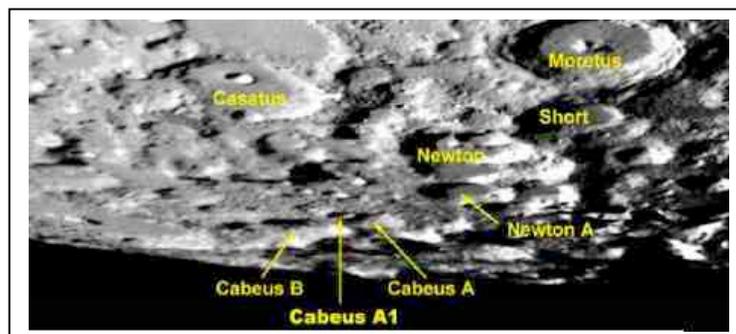
They had already viewed Jupiter and were working through the dark fuzzies: Dumbbell, Wild Duck, Saturn nebula, etc. Then it was back to the Jovian moons to see any changes in positions. I left after seeing Uranus. We had seen Uranus at the WSO last week, but in the dry, 46°F NH air, away from the lights, it appeared somewhat better as a small bright disk within a large circular cloud, like I imagine a comet head-on would look. I would be glad if someone can explain that to me. Drove back home (3hrs.)

Some thoughts:

- The observatory has posted a bulletin board back in the physics building showing the latest skymap (my favorite) and some interest-provoking celestial images. We might try the same thing in the halls of DY. We might also add something on the outside of the WSO for passers-by (Editor: maybe a glass enclosed bulletin board with images, skymaps, schedules, etc.?)
- I liked the idea of the automated revolving slide show being projected prior to the main afternoon presentation. We could try that at our monthly meetings. We also might try such a revolving presentation on our website (which incidentally drew high praise from a visitor to the WSO last week). That would be an easy way for a viewer to cover a lot of material without much effort. Another interesting idea: the observatory has business cards with star party schedule and contact info.



...A photo taken August 11th from the Cassini orbiter at the time of a Saturn "equinox", an event that takes place only twice each orbit of Saturn, every 29.4 earth years. Because the sun is "edge on", the rings tend to "disappear"; but the angle permits astronomers to study irregularities in the plane of the rings as tall as our Rocky Mountains. See story in Reference 8.



Crater Cabeus A1: Little Crater Targeted for Big Splash. See if you can see it on October 9th! (Story, p 3)

Cape Cod Astronomical Society

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Treasurer	Peter Kurtz	508-255-0415
Observatory Director	Michael Hunter	508-385-9846
First Light Editor	Peter Kurtz	508-255-0415

info@CCAS.ws

Mailing Address: PO Box 207 Harwich Port MA 02646

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.

Cape Cod Astronomical Foundation

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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



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) Story on S&T Online, <http://www.skyandtelescope.com/community/skyblog/newsblog/59090432.html>
- 5) <http://transientsky.wordpress.com/2009/09/01/in-the-sky-this-month-september-2009/>
- 6) <http://www.skyandtelescope.com/observing/home/59623762.html>
- 7) Finder chart for 22P/Kopff and C/2006 W3 (Christensen). <http://cometchasing.skyhound.com/> Try after October 1 to get October charts.
- 8) <http://www.astronomy.com/asy/default.aspx?c=a&id=8647>