



# First Light

The Newsletter of the Cape Cod Astronomical Society



June, 2011

Vol.22 No. 6

Editorial



### ***“All the Stars in the Night Sky” by Nick Risinger***

*The image you see here is just a tickler; it cannot do justice to the real thing. Please read on to learn how to find and interactively enjoy browsing around in this composite collection of the “entire night sky”*

*Nick Risinger, an amateur stargazer, left his job to undertake the quest to photograph as many as 20 million stars along with faint dark and emission nebulae and star clusters, all without a telescope. He travelled more than 60,000 miles to complete what must be the most beautiful “naked eye” sky survey ever compiled. 37,400 exposures across more than 600 uniformly spaced patches were stitched together into a 5000 megapixel image you can browse on the web; posted online just the third week of May. The detail of his work is astonishing. It includes stars far past the limit of visual detection. And it includes faint nebulae like Barnard’s Loop in Orion, the rich glow of the southern Milky Way, and the thick dust clouds through the constellations Scutum and Sagittarius. And in case you get lost amongst all these stars, Nick includes in the interactive version outlines of the constellations so you know where you’re looking.*

Here is the website for the interactive version: <http://media.skysurvey.org/interactive360/index.html>

Thanks to the “One Minute Astronomer”<sup>4</sup> for bringing this to our attention.

---

*For more than a year now, a theme from ancient times or an editorial has occupied this beginning space in First Light. To date, the topics were all chosen or composed by the First Light Editor. Perhaps you might have a theme or editorial position related to astronomy which you might enjoy sharing with others in this space. If so, please send to us.*

---

**Next Monthly Meeting:** is Thursday, June 2<sup>nd</sup> at the D-Y Library. Werner Schmidt Observatory Director Dr. Michael Hunter will present “**Practical Astrophotography Using Digital Single Lens Reflex Cameras.**” Don’t miss Mike’s guidance on this subject! (Please see the moving banner and the “tail of the rocket” on our website’s home page for more information on future speakers and topics.)

---

**In this issue:** Learn SLR Astrophotography! / June is **Dues** month! / Solstice / Comet / Observing opportunity: Asteroid to occult more than 39 stars! / Finally, a selection of articles and resources of general interest.

---

### **Bright New Stars:**

We like to profile new members in our Society in this section of *First Light* each month. If you are a new member and have not yet been so recognized, or 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)).

---

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

Thanks to Bernie Young for his introduction to opportunities to watch the asteroid Ganymed occult various stars beginning this month. Please see page 4.

---

### **CCAS and Related Events:**

Many thanks to Gregory Skomal for his engaging and informative presentation on Shark Tracking Techniques at our May meeting. Dr. Skomal, an accomplished marine biologist, underwater explorer, photographer, aquarist, and author, explained for us the three main approaches to tracking sharks and other marine life with the goal of learning about their habits and habitat. These are: (1) attaching tags to the shark's fin and reporting later finds (yields information on life span, growth, and location of find); (2) acoustic telemetry using a transmitter attached to the shark that allows researchers to follow the precise movements of the shark for up to five days (gives insight into the daily movements in a limited area and habits of the shark, including distances traveled and depths reached for short term periods); and (3) satellite based tracking. In (3), tags with data storage capability and transmitters are attached to the sharks. These tags eventually pop off the shark and the stored information is sent to a satellite. While expensive, method (3) provides detailed information over a long period on depths traversed and (since day/night lengths vary with position) some information on location over time. Greg also reviewed recent and current work on tagging and tracking Great White Sharks frequenting Chatham's Lighthouse Beach area in recent years.

On June 2<sup>nd</sup>, our own Dr. Michael Hunter will present "**Practical Astrophotography Using Digital Single Lens Reflex Cameras.**" Mike is the Director of the Werner Schmidt Astronomical Observatory in South Yarmouth, MA. He has an extensive background in the use of computer driven "go to" telescopes and understands the pitfalls and application of DSLR cameras with these units. If you ever considered imaging at this scale you should not miss Thursday night's program.

On July 7<sup>th</sup>, past CCAS president Gary Derman will present: **Mirror Grinding, Configuring and Testing an 8" Telescope.** Forty years ago, Gary ground and polished an 8" f/6.6 mirror accurate to better than 5 millionths of an inch and built a Newtonian telescope. Join us as he describes how anyone can achieve a similar result without the need for expensive equipment. Gary will discuss grinding, polishing, figuring, and testing of the parabolic mirror as well as construction of the telescope and an equatorial "pipe" mount.

At our meeting on August 4<sup>th</sup>, Ed Ting will discuss **Making use of a Webcam in Astrophotography, What You May not Know.** Ed publishes one of the most comprehensive telescope review websites on the internet. Inside, you'll find reviews of over 100 telescopes, eyepiece reviews, a beginner's advice column, feature articles, and lots more! His telescope review website has become a very popular resource for amateur astronomers interested in upgrading equipment and for the novice looking to buy his first scope.

Thanks again to Tom Leach, who continues to put together great programs of speakers for our meetings. Speakers for the CCAS Lecture Series are now fully scheduled through our June meeting!

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

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

---

The **minutes** of our May meeting prepared by our Secretary Charlie Burke, are on our website; click on the "Minutes" button at [www.ccas.ws](http://www.ccas.ws) or go to <http://www.ccas.ws/minutes/ccasminutes050511.pdf>

---

### **SPECIAL NOTICE!!!!** **2011-2012 Dues are Due June 30, 2011**

**Members: Please plan to make your payment either by bringing to the June or July meeting or mailing directly to CCAS at PO Box 207 Harwich Port MA 02646.**  
**Thank you.**

---

### **Executive Corner**

Members of The Executive Board exchange ideas by email and phone on a continuous basis and now and then formally convene by conference call. Anyone wishing to

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

**From the Foundation... and Dome...**

... when we have input...

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) or sending an email to [info@ccas.ws](mailto:info@ccas.ws)

**Our Society exists to promote observing!  
Help us promote this objective by asking for time at the Dome!**

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

**June Observing:**

Please see the June issues of *Astronomy Magazine*, pp 36-43, and/or *Sky and Telescope*, pp 43-49, for good overviews of sky highlights for June. Please also see reference 5 for the web address for *Astronomy's* online edition of "The Sky this Month" for June.

Highlights for June include the following:

- June 21 is the longest day of the year. The summer solstice occurs at 1:16pm, beginning the time of shortening of days and gradual movement of the sun toward the south to culminate at the winter solstice. Also beginning at the summer solstice, the sun rises more and more toward east... eventually rising south of east; and sets more and more westerly... eventually setting south of west.
- Saturn and its moons continue their special seasonal appearance in the evening skies this month.
- Pluto, the asteroid Vesta, Neptune, and Uranus, are all, from west to east, denizens of the southern constellations Sagittarius, Capricorn,

and Aquarius during the summer months. In June, you need to wait until after midnight for these objects to rise but come August all will be low in the southern sky in Prime Time. Something to look forward to.

- Comet coming!: Comet C/2009 P1 (Garradd) mag 8, rises in Aquarius after midnight in June. But C/2009 P1, expected to be the brightest comet this year, rises earlier and earlier, moving northward and brightening as the summer proceeds. By the fall it is expected to be mag 6, a binocular target in Hercules, high in the sky at Prime Time viewing. Watch it move and brighten during the summer. How bright will it get? Check reference 5 for the June/July finder chart. By July 1 it will be in Pegasus continuing to rise earlier, brighten, and move north.

Mooncusser's Almanac and Monthly Alert <sup>1</sup> By Peter Kurtz June 2011			
Object	June 1 (EDT)	June 15 (EDT)	June 30 (EDT)
<b>Sun</b>	R: 05:08 S: 20:08	05:05 20:16	05:09 20:19
<b>Moon</b>	R: 04:59 S: 20:03	20:06 05:12	04:41 19:40
<b>Mercury</b> (in sun 15th)	R: 04:30 S: 18:58	05:15 20:37	06:36 21:36
<b>Venus</b> (predawn)	R: 04:09 S: 18:20	04:06 18:52	04:15 19:22
<b>Mars</b> (predawn)	R: 03:52 S: 17:59	03:26 17:56	03:01 17:52
<b>Jupiter</b> (predawn)	R: 03:11 S: 16:32	02:23 15:51	01:31 15:06
<b>Saturn</b> (evening)	R: 14:46 S: 02:41	13:51 01:45	12:53 00:46
<b>Uranus</b> (> midnite)	R: 02:10 S: 14:23	01:15 13:30	00:17 12:32
<b>Neptune</b> (near midnite)	R: 00:52 S: 11:35	23:57 10:39	22:57 09:39
<b>Pluto</b> (evening)	R: 21:36 S: 07:23	20:39 06:26	19:39 05:26

## Moon Phases, June, 2011

**New Moon** Wednesday, June 1<sup>st</sup>, at 5:03am EDT  
**First QTR** Wednesday, June 8<sup>th</sup>, at 10:11pm EDT  
**Full Moon** Wednesday, June 15<sup>th</sup>, at 4:14pm EDT  
**Last QTR** Thursday, June 23<sup>rd</sup> at 7:48am EDT

Anyone having an interest in monthly **Libration and Declination Tables for the Moon**<sup>2</sup> or **Dates and Times for the Minima of Algol**<sup>1,3</sup> during this month please contact your editor for information or sources.

## SPECIAL VIEWING/RESEARCH OPPORTUNITY FOR CCAS MEMBERS:

1036 Ganymed is a near-earth asteroid (NEA), which, at 32 km diameter is the largest known of its class. At mag 11.2 in June, it is expected to become as bright as mag 8 this fall. A rock this big now and then will noticeably pass in front of a star.

Please enjoy this article submitted to First Light by Bernie Young providing an introduction to opportunities we might find in June and beyond to watch Ganymed pass in front of many, many stars. Bernie has also created a brief document, "Plan for Ganymed Viewing Session 1", which overviews warm-up work needed to make us ready to use our SBIG CCD camera on the Observatory's 16" GoTo Scope to study the asteroid and pertinent stars and later, Ganymed occultation opportunities.

Please contact Bernie if you'd like to participate in any aspects of this opportunity or would like to see a copy of the "warm-up" document.

### **1036 GANYMED CALL FOR OBSERVATIONS**

...submitted by Bernie Young.

This is an edited version of an item which appeared April 13 2011, on the Yahoo Group website of the International Occultation Timing Association (IOTA) :

This year sees a favorable apparition for (1036) Ganymed, a near-earth asteroid (NEA) which at 32 km diameter is the largest known of its class. The object is expected to become as bright as 8th magnitude in October and November.

This presents an opportunity to characterize this asteroid. In particular, it may be possible to produce a combined shape and ephemeris solution of the asteroid using a large number of occultation chords, light curves, and astrometry of the asteroid and the stars to be occulted. Radar observations are also expected to take place at opposition near the end of the year.

In support of this effort, we would like to issue a call for observations of as many of these occultations as possible and also the astrometry of Ganymed and the target stars. A list of predictions is provided (in the online article) along with the geographical regions from which the occultation can be observed. Currently, the uncertainty in most of the occultation paths is of the order of the path itself; i.e. it is reasonably good given the relatively small size of the asteroid.

The predicted occultations are short, 1-4 sec in duration, and the flux drop is typically about a magnitude. The durations become longer and the flux drop smaller as the asteroid approaches the Earth in the autumn. For these reasons, video or drift scan observations are preferred over the visual method. Also, please note that the predictions will be refined as time passes so be sure to check the latest predictions before setting off on a trip to observe an occultation. Hopefully, this call will result in a sufficiently critical mass of observations for a dedicated publication.

Clear Skies and Good Luck!

Apostolos Christou, Jan Manek, Steve Preston (of IOTA)

### **About 1036 Ganymed:**

1036 Ganymed is an Amor type asteroid: its perihelion is between 1.0 and 1.3. It approaches the orbit of the earth but does not cross it. Its perihelion is 1.233 AU (solar focus, therefore 0.233 from earth at closest approach. Semi-major axis is 2.662 AU and eccentricity 0.537. This makes it an Amor III asteroid, a main belt asteroid with high enough eccentricity to bring it near earth. The orbital period is 4.34 years and rotational period 10.31 hours. On May 25, 1036 Ganymed at magnitude 11.81 was visually

in reach of our 16" SCT and 18" Dob. It will reach its brightest at magnitude 8.30 on October 29.

The Werner Schmidt Observatory lies just outside the current path predictions but within the 1-sigma uncertainty for observing one occultation for the event coming **on June 18 at 05:59 UT (1:59 am EDT)** when the east edge of path is expected to run through east Sandwich. Anyone with a telescope and video camera which accepts RCA audio and video inputs can "go remote" along the path, making a video recording which can be analyzed later.

However, we can observe the asteroid, measure its intensity, and make astrometric measurements along its path **on any night**, independent from and in preparation for occultation events.

I have corresponded with Tolis Christou who suggests the following preparatory work:

- one observation of the asteroid per month for now, and once every two weeks at opposition will make a good set of data for the asteroid.
- one night of observations per star of interest (about 39 stars will be occulted during this orbit) would constitute a good set of data for each star. The 4 meter focal length of our 16" and 9 micron camera with software processing have a limiting resolution of 0.1 arcseconds which is quite good, but actual "seeing" will be less accurate. The 18" could also be used by pre-pointing to some recognizable star at a tabulated time and allowing the target to drift through the field of view. Fortunately, the altitude will be high and air mass minimal. As usual, clear skies would be helpful.

---

### **Invitation to Participate:**

Anyone able to video tape the occultation west of East Sandwich is encouraged to let me know; I can post it so someone from out of state planning to observe can pick a spot that gives the most broad coverage.

Anyone wanting to participate from the WSO, either in the occultation of June 18 or astrometry measurements anytime in the next 6 months is encouraged to let me know too. There are opportunities any evening, and there is no chance we can cover all 39 stars that will be occulted during this pass of Ganymed.

### **More Information**

Path predictions, finder charts, and other useful information for the June 18 occultation event:

[http://www.asteroidoccultations.com/2011\\_06/0618\\_1036\\_25136.htm](http://www.asteroidoccultations.com/2011_06/0618_1036_25136.htm)

Ephemeris for tracking 1036 Ganymed on a day by day basis (you can use the WSO code **106** for your location):

<http://ssd.jpl.nasa.gov/sbdb.cgi?sstr=1036+Ganymed>

More about asteroids: Wikipedia articles 1036 Ganymed, asteroid, amor asteroid.

Bernie Young

---

## **Stories and Resources of Interest from June issues of *S&T* and *Astronomy*:**

The June issues of *Sky and Telescope* and *Astronomy* are rich in informative and interesting articles. Please look for the following articles:

*Sky & Telescope*, June Issue:

- AAVSO, the American Association of Variable Star Observers celebrates its 100<sup>th</sup> anniversary with a special new sky survey. (page 34) See also the *S&T* story below.
- The Lunar Reconnaissance Orbiter, LRO, spent mid-December, 2010 shooting a complete mosaic of the Moon's Earth-facing hemisphere with its Wide Angle Camera. Each of the 1300 image strips used to create this 560-megapixel map were recorded at a similar illumination angle to reveal and highlight topographical features "as if

each feature on the moon was photographed at sunrise or sunset". The super topography mosaic can be viewed interactively at [http://wms.lroc.asu.edu/lroc\\_browse/view/wac\\_nearside](http://wms.lroc.asu.edu/lroc_browse/view/wac_nearside) Don't miss it! (Article, page 50.)

*Astronomy*, June Issue:

- "Songs of the Night" a great article by Glenn Chaple which provides source references for "sky" music from Vangelis, Gustav Holst (*The Planets*), and others. (page 15)
  - "A Century of Variable Star Observing" by David H. Levy. A wonderful history of the organization with many period photos of old scopes and observatories. (page 44)
- 

**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**

## Cape Cod Astronomical Society

President	Tom Leach	508-237-9291
Vice President	Paul Cezanne	508-487-1456
Secretary	Charles Burke	508-394-9128
Treasurer	Peter Kurtz	508-255-0415
Observatory Director	Michael Hunter	508-385-9846
<i>First Light</i> Editor	Peter Kurtz	508-255-0415

[info@CCAS.ws](mailto:info@CCAS.ws)

Mailing Address: PO Box 207 Harwich Port MA 02646

## Cape Cod Astronomical Foundation

Chairman	Werner Schmidt	508-362-9301
Vice Chairman	Michael Hunter	508-385-9846
Director R&D	Bernie Young	508-394-1960
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.

---

### References and Notes for this issue:

1) Information for The Mooncussers Almanac and Monthly Observing Alerts was extracted from Sky Events, Astronomy Magazine Online (Astronomy.com), Stargazing.net's Planet Rise/Transit/Set calculator (<http://www.stargazing.net/mas/planet2.htm>), *Astronomy Magazine*, *Sky & Telescope Magazine*, *Sky and Telescope Skywatch 2011*, and other sources. The *Observer's Handbook, 2010 and 2011*, published by The Royal Astronomical Society of Canada is also an important reference, particularly for information on lunar libration and declination and the minima of Algol.

2) Information on how Libration and Declination Maxima and Minima can make visible parts of the moon normally hidden was reviewed in the December2007-January2008 *First Light*. Quick recap: Max Long brings to view extra right side; Min Long, extra left side; Max Lat, extra north side; Min Lat, extra south side. Max Dec puts it high in our sky during its transit; Min Dec puts it low.

3) Algol is an eclipsing variable star in Perseus which has its brighter component eclipsed or covered by its companion once every 2.87 earth days. When the dimmer component is not eclipsing the brighter, Algol appears typically about magnitude 2.1; when eclipsed, magnitude 3.3 The minima usually lasts about two hours with two hours on either side to bring it back to mag 2.1. Good comparison stars are  $\gamma$ -Andromedae to Algol's west, mag 2.1, and  $\epsilon$ -Persei to its east, mag 2.9.

4) "One Minute Astronomer" <http://www.oneminuteastronomer.com/>

5) Here is the web address for Astronomy Magazine's online "The Sky This Month" online for June:  
[http://www.astronomy.com/News-Observing/Sky this Month/2011/04/When worlds align -- twice.aspx](http://www.astronomy.com/News-Observing/Sky%20this%20Month/2011/04/When%20worlds%20align%20--%20twice.aspx)