



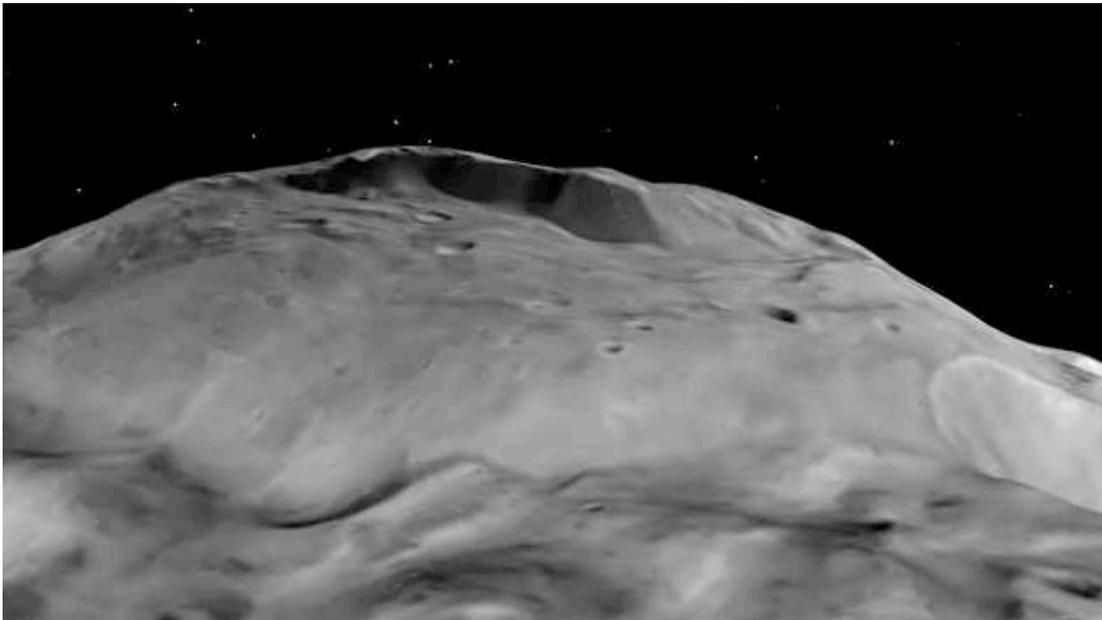
# *First Light*

The Newsletter of the Cape Cod Astronomical Society



October, 2011

Vol.22 No.10



*Do you know what this is? See clip on page 5  
for the answer and a web address for a very special video!*

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**Update on Dan Burbank's Flight to and Stay on the International Space Station:**

Most of you know that Dan Burbank is a Coast Guard officer with Cape connections who happens to be a life member of CCAS and also a currently active USA astronaut (Shuttle Flights STS-106, September, 2000; STS-115, September, 2006). In the July *First Light* we noted he had worked with Tom Leach to have some CCAS apparel sent up to the ISS on a Russian Soyuz freighter in August so that when he was scheduled to arrive himself on a later flight at the ISS in September, he might sport a CCAS cap or t-shirt during his six months stay on the satellite. Well, events have changed the schedule. Welcome to the post Shuttle era! The freighter, "Progress M-12M" was lost at launch on 24 August when there was an engine malfunction five minutes into the launch. This has postponed Dan's Soyuz flight, Soyuz TMA-22, originally scheduled for September, to November 12. Please see more information on our page 5. Too bad about the CCAS hats and shirts, somewhere in Siberia! Best wishes to Dan for a smooth ride in his preparations for November!

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**Next Monthly Meeting:** is Thursday, October 6<sup>th</sup> at 7:30pm in the D-Y Library. Observatory Director Mike Hunter and associates will present: "What's Happening at the Schmidt", a look at of new directions and capabilities evolving at the Dome.

**In this issue:** Burbank Flight / Portrait of a Double Asteroid / 64% Dues Paid / Jupiter Season Continues /  
The Orionid Meteor Shower / Best Comet of the Year / Dawn Spacecraft Profiles Vesta

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## **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)).

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

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## **CCAS and Related Events:**

Many thanks to Tom Lynch, President of CCAS, Harbormaster for the Town of Harwich and great buff of all history of Cape Cod, especially anything involving “going down to the sea in ships,” on his riveting presentation of the life and times of the lightships, **Sentinels of Nantucket Sound**, at our meeting on September 1. From before 1860 through 1969, over time, a hundred or more lightships were anchored at many key locations from Long Island Sound past the “elbow of the Cape” and well out to northeast of Cape Cod to provide a “path” for shipping traffic through and past the treacherous shoals in those waters. If you missed the talk, never fear, some group, if not us, will ask Tom for a reprise. Meanwhile, you can learn a lot of the story by visiting Tom’s historical article at <http://www.vsa.cape.com/~harharb/lightships.html>

You won’t want to miss the feature presentation for our monthly meeting on Thursday, October 6<sup>th</sup>, at 7:30pm. If you haven’t participated in observing at the Schmidt Observatory in a while, we can practically guarantee you will want to very soon after listening to Observatory Director Mike Hunter and other members of the Observatory Staff bring you up to date on: **“What’s Happening at the Schmidt”**, a look at new directions and capabilities evolving at the Dome. Topics covered will include opportunities for public and private star parties, new capabilities involving still and video cameras (including the ability for folks with disabilities to see what’s in our scopes from the lower level of the Dome,) new equipment and techniques for recording images (including occultations of stars by asteroids and the moon,) and a demonstration of “virtual star parties” that will stand in for the real thing when clouds drive an observing group inside.

And, once more, thanks to Tom who continues to put together great programs of speakers for our meetings.

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 Program Chairman. For sure he will follow up.

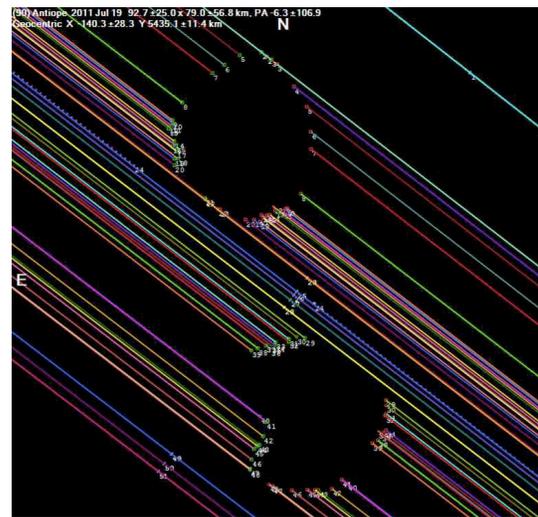
Or, even better, volunteer to give a talk yourself!

**Note on a special occultations:** Bernie Young has spoken briefly at recent meetings on recent successes in recording occultations of bright stars by the moon in prime time.

If you don’t yet have an interest in this subject, maybe you will after viewing an article on the web which we ran across in a regular email newsletter from *Sky and Telescope*:

“Antiope Occultation Yields Double Bonanza”<sup>4</sup>

Here’s an event which took place at about 3am last July 19<sup>th</sup> involving a relatively dim (mag 12.5) asteroid blinking out the bright (mag 6.5) star LQ Aquarii (SAO 165285.) This event was observed and recorded simultaneously by more than 50 observing posts spread apart more than 200km in such a way that a “map” of the blinkouts recorded from the different locations paints a clear picture of the silhouette(s) of the asteroid. Yes, it is plural! The blinkout map clearly



shows that Antiope is a double asteroid!

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The minutes of our August meeting 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/ccasminutes090111.pdf>

## **SPECIAL NOTICE!!!!**

**2011-2012 Dues were Due July 1, 2011**

**As of September 24, 28 (64%) of those 44 members not exempted from dues (life members, spouses, etc.) HAVE made their payments.**

**Thank you very much!**

**You other 16 folks, PLEASE send in your dues. You can make your payment either by bringing to the October meeting or mailing directly to CCAS at PO Box 207 Harwich Port MA 02646.**

**Thank you.**

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## Executive Corner

The new Executive Board plans to meet for the first time in October.

## From the Dome...

...by Peter Kurtz for Mike Hunter

This month, we'll leave it to Mike and members of the Observatory Staff to bring us up to date on new directions and capabilities evolving at the Dome at the October monthly meeting. See writeup on page 2.

However, we do wish to point out here that once-a-month "**Dark Saturday**" *Star Parties* at The Schmidt will begin on October 29<sup>th</sup>, 7:30pm. Please see the schedule, and weather cancel protocol, available in the "green box" on our website. The dates (Saturdays closest to the New Moon or moved to accommodate Thanksgiving and Christmas) are:

Oct 29 Dec 15 Feb 18 Apr 21  
Nov 17 Jan 21 Mar24 May 19

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)

## October Observing:

### **Observing Highlights for October, 2011 at Cape Cod:**

Please consult the October Issues of *Sky and Telescope* (pp 43-55), *Astronomy Magazine* (pp 36-43), and *Astronomy Magazine Online* (5) for more information on these highlight topics and others.

This month: Jupiter at its best, the Orionids, two bright asteroids, a good comet, and more...

## Planets:

The great "**Jupiter and Galilean Moons**" show continues in prime time this month. The mag -2.9 gas giant rises at 7:36pm on 10/1 and an hour earlier by mid-month; it reaches opposition and almost its brightest for the season after midnight on October 29. Because it is so close and bright, this is the month to study the planet, its bands, its red spots, and the motions and antics (appearing, disappearing, occulting) of its main moons. Io and its shadow are a good example, crossing Jupiter beginning at 11:44 p.m. EDT October 4, 1:29 a.m. EDT October 12, and 11:22 p.m. EDT October 27; on the 4th, the shadow begins crossing the jovian disk 37 minutes before the moon; on the 12th, 28 minutes before; and on the 27th, just 3 minutes before.

Resources for Jupiter and its moons: if you don't have Gas Giants, the ipod app for moons of Saturn and Jupiter discussed in the April, 2011 *First Light*, please see the October *S&T*, p 47; October *Astronomy*, p 37, or the interactive resource online at reference 6 for positions of Jupiter's moons for any date and time. A chart of special eclipses, occultations, and transits is given in the October *S&T*, p54; a table of transit times for the great red spot in October is given on p55 in the same issue.

The distant gems Uranus and Neptune reside in adjacent constellations, each within easy reach through binoculars if you know where to look this month. **Neptune** (mag 8) rises two hours before sunset on October 1 so is well up for viewing with binoculars or telescope when it gets dark. **Uranus**, mag 5.8, almost visible without optical aid, just past opposition last month (9/25), rises 2.5 hours before sunset at month's beginning and is also well positioned for observing after dark.

**Saturn** moves from behind the sun to become a morning star viewable just before dawn beginning end of October.

**Pluto** can be observed in Sagittarius. You must look early after dark since it gets very low in the Cape Cod sky by about 9pm as the month proceeds; very much a challenging telescope find this month.

### **A Meteor Shower, Two Asteroids, and a Good Comet:**

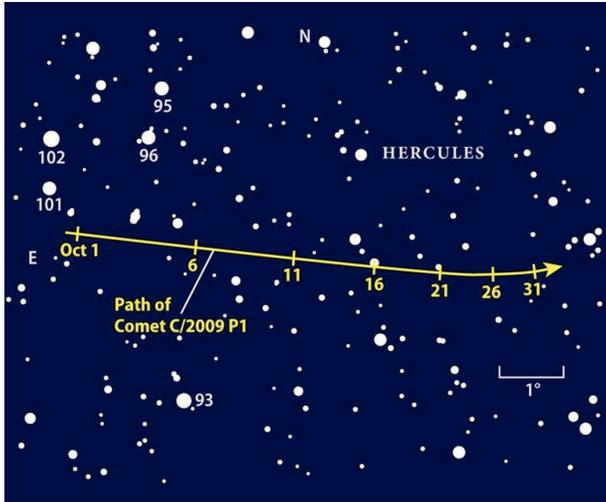
**The Orionid meteor shower** peaks the night of October 21/22 but must compete with a waning crescent Moon. The shower can produce up to 20 meteors per hour under favorable conditions, although 2011 won't be optimal because of the moon. Best time to watch will likely be between 10pm and 1 am after the radiant rises but before the moon appears.

Although mag 7 asteroid **Vesta** is not very high in the Cape Cod sky, October will be another good month to observe it in Capricorn. (See if you can see the orbiting spacecraft Dawn!!) If you consult the finder chart in our Reference 7, you can see that Vesta, having completed its hairpin turn in

September, is back on its normal west to east course in October.

Mag 8 **Ceres** continues its readily observable trip in October, now in Aquarius. Finder chart: Reference 7.

As forecasted for some time now, pleasingly bright (now mag 7) **Comet C/2009 P1 (Garradd)** provides a continuing observing treat during October. Having rushed through Vulpecula, Sagitta, and into Hercules in September, its motion in October becomes much more deliberate and stately: this month it moves slowly, well up in the evening sky in western Hercules. The comet is a reliable binocular



[ Path of Comet C/2009 P1 (Garradd) from ref 5.]

and telescope target as it, so far, continues to brighten. By month's end it really slows to a crawl; at that time it is travelling through space at nearly the same speed and in the same direction as Earth, so its position relative to the background stars changes little. Enjoy watching it "slow down" during the month. Will it get brighter during the month, stay the same, or begin to dim? See reference 8 for a very bullish story about Garradd and a finder chart tracing it past the Hercules keystone from now to February.

The **Moon** will take center stage for many backyard observers October 8 when astronomers celebrate International Observe the Moon Night. That evening, the waxing gibbous Moon lies midway between the positions of Neptune and Uranus. Groups around the globe have planned events for this night. For more details, visit [www.observe-themoonnight.org](http://www.observe-themoonnight.org).

### Moon Phases, October, 2011

**First QTR** Monday, Oct. 3<sup>rd</sup>, at 11:15pm EDT  
**Full Moon** Tuesday, Oct. 11<sup>th</sup>, at 10:06am EDT  
**Last QTR** Wednesday, Oct. 19<sup>th</sup>, at 11:30pm EDT  
**New Moon** Wednesday, Oct. 26<sup>th</sup>, at 3:56pm 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.

### Moocusser's Almanac and Monthly Alert<sup>1</sup> By Peter Kurtz October 2011

Object	Oct. 1 (EDT)	Oct. 15 (EDT)	Oct. 30 (EDT)
<b>Sun</b>	R: 06:37 S: 18:23	06:52 18:00	07:11 17:37
<b>Moon</b>	R: 11:45 S: 20:57	19:33 10:19	12:17 21:45
<b>Mercury (evening)</b>	R: 06:47 S: 18:32	07:53 18:25	08:58 18:21
<b>Venus (early eve)</b>	R: 07:40 S: 18:55	08:15 18:41	08:55 18:33
<b>Mars (late nite)</b>	R: 01:24 S: 15:59	01:11 15:28	00:53 14:50
<b>Jupiter (evening)</b>	R: 19:36 S: 09:18	18:37 08:15	17:28 07:01
<b>Saturn (-----)</b>	R: 07:28 S: 18:57	06:41 18:06	05:48 17:08
<b>Uranus (evening)</b>	R: 18:06 S: 06:14	17:09 05:16	16:05 04:11
<b>Neptune (evening)</b>	R: 16:45 S: 03:22	15:50 02:26	14:46 01:22
<b>Pluto (early eve)</b>	R: 13:29 S: 23:13	12:35 22:18	11:33 21:16

## More Information on Dan Burbank's Flight to and Stay on the ISS:

This picks up from the clip on page 1.

Here is a leading resource and more information on the story of the failure of the freighter Soyuz Progress M-12M:  
( [http://en.wikipedia.org/wiki/Progress\\_M-12M#Launch\\_failure](http://en.wikipedia.org/wiki/Progress_M-12M#Launch_failure) )

“It was the first failure of a Progress spacecraft since launches began in 1978, and the third consecutive orbital launch failure worldwide, following the failures of Ekspress-AM4 and Shijian XI-04 less than a week previously. On 9 September, the FKA announced that the loss was caused by a blocked fuel duct, which caused the engines to shutdown prematurely. The failure was not expected to have any immediate effect on the [in place] crew of the International Space Station, as the outpost is well stocked with reserves of food, water and oxygen. The spacecraft was insured for three billion Rubles (US\$103 million). As a precaution, the launch of a GLONASS satellite on a Soyuz-2-1b/Fregat, which had been scheduled for 26 August, was delayed.

Here is the reference suggesting that Dan's project flight, Soyuz TMA-22 will be postponed until November 12:  
[http://en.wikipedia.org/wiki/Expedition\\_29](http://en.wikipedia.org/wiki/Expedition_29)

This article also contains a few clips on the mission two of which we copy here:

Expedition 29	
	
Mission insignia	
Number of crew	6 (planned)
Launch site	Baikonur Cosmodrome, Kazakhstan
Launch craft	Soyuz TMA-02M, Soyuz TMA-22
Start	September 16, 2011 (UTC)



Dan Burbank is front row, right.

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## Dawn Spacecraft Reaches Orbit Around the Asteroid Vesta; Spectacular Photos and Videos Available:

The “Dome” on page 1 is a photo taken from The Dawn spacecraft, launched from earth in September, 2007. Dawn arrived and began its survey orbit of the asteroid Vesta in July. Data from its cameras after a 20 day “survey orbit” are just now becoming available. The clip on page 1 is a highland on the north side of Vesta taken from a video modeling the surfaces of the asteroid from images from the orbiting spacecraft. Beginning in September, Dawn will move down closer to the 500km wide asteroid and begin taking pictures which will lead to a very accurate High Altitude map having much more detail than the survey phase. After one year, Dawn will move on the even larger asteroid, Ceres. For a complete overview of the Dawn mission and current news see: <http://dawn.jpl.nasa.gov/> The website for the video from which our still frame was taken is available at: <http://www.jpl.nasa.gov/video/index.cfm?id=1020>

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**A PORTION OF THIS PAGE IS INTENTIONALLY LEFT BLANK TO REMIND ALL MEMBERS THAT THERE IS ALWAYS PLENTY OF ROOM IN *FIRST LIGHT* FOR YOUR CONTRIBUTIONS**

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## Cape Cod Astronomical Society

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Treasurer	Peter Kurtz	508-255-0415
Observatory Director	Michael Hunter	508-385-9846
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## Cape Cod Astronomical Foundation

Chairman	Werner Schmidt	508-362-9301
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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.

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### 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) Story on Antiope occultation: <http://www.skyandtelescope.com/community/skyblog/observingblog/129541438.html>  
The shown chord profile is from: [http://www.asteroidoccultation.com/observations/Results/Data2011/20110719\\_AntiopeProfile2.gif](http://www.asteroidoccultation.com/observations/Results/Data2011/20110719_AntiopeProfile2.gif) Land maps of the various observing locations can be found at: <http://www.asteroidoccultation.com/observations/NA/2011Meeting/Antiope.htm>
- 5) Here is the web address for Astronomy Magazine's online "The Sky This Month" online for October: [http://www.astronomy.com/News-Observing/Sky\\_this\\_Month/2011/08/Glorious\\_Jupiter\\_reigns\\_all\\_night.aspx](http://www.astronomy.com/News-Observing/Sky_this_Month/2011/08/Glorious_Jupiter_reigns_all_night.aspx)
- 6) S&T's interactive Java utility for showing the positions of Jupiter's main moons for any date and time: <http://www.skyandtelescope.com/observing/objects/planets/3307071.html>
- 7) Ceres and Vesta charts from May to December from S&T: <http://www.skyandtelescope.com/observing/objects/asteroids/122249184.html>. The finder chart for Vesta for September can be found in the September issue of Astronomy, p43, or online at reference 5.
- 8) A profile on Comet Garradd through February: <http://www.skyandtelescope.com/observing/highlights/128836743.html>