



# First Light

The Newsletter of the Cape Cod Astronomical Society



September, 2013

Vol. 24 No. 9



**Nova Delphinus 2013**; even though it might be very slowly weakening, you can see the Best Nova in 30 years directly overhead in Prime Time at Cape Cod!  
( ...see story beginning page 6)

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**Next Monthly Meeting:** is Thursday, September 5th at 7:30pm. Tim Barker, Professor of Astronomy at Wheaton College will speak on “**The Use of Filters in Visual and Photographic Observations**”. Public welcome. Please join us.

**Reminder: The 2013 Dues Cycle began July 1. If you have not yet participated, please bring your check to the September meeting or mail to CCAS, 34 Ridgewood Rd. Orleans MA 02653.**

**Reminder:** The last summer Thursday evening Star Party takes place on August 29<sup>th</sup> at 8:30pm at the Observatory; once a month “Quarter Moon Saturday” Star Parties will begin on September 14 at 7:30pm.

**In this issue:** Please pay Dues / New Member / Upcoming Speakers / Pre-meeting Workshops / Member Art Exhibit / Membership Info on Website / Evening Sky / Pre-dawn sky: Mars steals honey; warm-up to Comet ISON / Star-hopping to Nova Del 2013 /

**Coming Next Month:** Comet ISON: phenomenon or phlop? Either way, it will be fun to track and watch!

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## **Bright New Stars:**

We are pleased to welcome Joyce Burchsted of South Dennis to membership in CCAS. Joyce joined CCAS on August 14<sup>th</sup>. See lives full time on Cape. Like many of us, she “owned a small telescope years ago and enjoys watching events in the sky and picking out the constellations.” Welcome to CCAS, Joyce.

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 might 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.**

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***Reminder: The 2013 Dues Cycle began July 1. As of now, 30 of 40 members are paid up (does not include 18 active members who are “permanent”, spouses, students, etc.)***

***If you have not yet participated in paying dues this annual cycle, please bring your check to the 9/5 meeting or mail to CCAS, 34 Ridgewood Rd. Orleans MA 02653. Let's get this completed by end September if possible!***

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## **CCAS News Items and Current Events:**

### **CCAS Meetings:**

Mike introduced the membership to the idea that beginning in September, a Workshop will take place at 7pm before each meeting where members can discuss topics of interest. (Ed: Topics might range from technical (how to clean your telescope mirror) to procedural (what would be the best way to plan and organize our little workshops.) If you have a suggestion for a workshop topic, please let Mike or any Board member know.)

Many thanks to Dr. Colin Bischoff, a postdoc at the Harvard-Smithsonian Center for Astrophysics for his excellent and engaging report on “**Observing the Origin of the Universe from the South Pole**” at our August meeting.

This topic one might figure to be a metaphor, but no, it’s not; observe the origin of the universe from the South Pole is exactly what he and his colleagues did and do. Colin reviewed how one gets to the South Pole (about 40 hours from Boston by way of New Zealand on more than three airplanes, the last having skis.) He then introduced Cosmic Microwave Background radiation (triggered

during the earliest stages of the Big Bang), the concept of “Inflation” (a massive expansion of the universe in 10<sup>-31</sup> seconds very early in the Big Bang), and how experiments he and colleagues are doing with the Keck Array are looking for a special kind of microwave polarization that will add strong support for the “Inflation” theory. Please see the Minutes of our meeting (reference below) and this website for more information and/or a copy of Colin’s “slides”:

[http://bicep0.caltech.edu/~cbischoff/ccas\\_20130801.pdf](http://bicep0.caltech.edu/~cbischoff/ccas_20130801.pdf)

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The presentation topic for our **September meeting** will be of great interest to astrophotographers and anyone inclined to getting into that hobby. Tim Barker, Professor of Astronomy at Wheaton College will speak on “**The Use of Filters in Visual and Photographic Observations**”. Please join us.

**“Telescope and Equipment Night at CCAS”:** At our **meeting on October 3<sup>rd</sup>**, The staff of the Schmidt Observatory and others in the Society will demonstrate and comment on various kinds of scopes and other astro equipment. You will have the opportunity to discuss the equipment with each presenter. If you have a telescope or other equipment of interest that you might like to demonstrate or discuss, please let us know at [info@ccas.ws](mailto:info@ccas.ws) and we will work you into the plans.

At our **November Meeting**, Bernie Young will teach us about an Islamic astronomer of the middle ages, Mīrzā Muhammad Tāraghay bin Shārukhan, better known as **Ulugh Beg**. Ulugh Beg was a Timurid ruler as well as an astronomer, mathematician and sultan who lived and worked at the beginning of the 15th century. Ulugh Beg founded an observatory in 1424, the Ulugh Beg Observatory in Samarkand. It was considered by scholars to have been one of the finest observatories in the Islamic world at that time and the largest in Central Asia. Ulugh Beg made important improvements in the “instruments of astronomy” at the time. For sure we can look forward to Bernie highlighting some of these advances. For more information, Bernie or Peter can send you a pdf file of an article on Ulugh Beg that published recently online in the Journal for Occultational Astronomy, No.2, April-June 2013 (available online only to members or IOTA, the International Occultation and Timing Association; Bernie is a member for CCAS.)

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Thanks to Mike Hunter, our Program Chair, for lining up these special topics and speakers; we also thank Colin, Professor Barker, and Bernie for agreeing to present.

Program planning is in progress to confirm speakers and topics for our meetings in December and thereafter.

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 Mike. For sure he will follow up.

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

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#### **Pre-meeting Workshops:**

Prior to regular beginning time for our September meeting at 7:30, members are invited to convene at the first monthly “workshop” planned to take place beginning at 7pm each meeting night. The Executive Board has agreed that we need to carve out more time at our monthly meetings for member discussion and interaction. Come to our first “workshop” for general give-and-take to include whatever you might like to talk about. If we can’t get to your topic this month, it could become next month’s focal point.

The focus for this month’s workshop will be “Books on Astronomy of Interest to Amateur Astronomers” Come learn about printed resources that might be of interest to YOU. If you have titles and authors, or better can actually bring the book, please come ready to share information on YOUR favorite astronomy books. If you have ideas for main discussion topics for “workshops” at future meetings, please send same to any member of the Executive Board. Thank you. Look forward to seeing you at 7pm on the 5th.

#### **Minutes:**

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/ccasminutes080113.pdf>

#### **From the Dome:**

The last summer Thursday evening Star Party takes place on August 29th at 8:30pm at the Observatory.

**Quarter-Moon Saturday Star Parties:** From September thru May, we will have one regularly scheduled Star Party each month at 7:30pm on the Saturday when the moon is closest to being “First Quarter; i.e. about 7 days old.

When the moon is near its First Quarter, the terminator (i.e. the “line” dividing light from dark on the moon’s surface) is favorable for viewing sunlight or shadow on the sides of craters. This time is also favorable for observing the dark side of the moon occult (cover) stars in the sky beyond it. The Quarter-Moon-Saturdays for the coming season are (“age” of the moon in days in parentheses for each Saturday given):

Sept 14 (9.9), Oct 12 (8.6), Nov 9 (7.1), Dec 7 (5.7), Jan 11 (11.1)\*, Feb 8 (9.5), Mar 8 (7.8), Apr 5 (6.2), and May 3 (4.6). On Jan 4, the moon is only 4.1 days old but

as Jan. 4 falls during the holiday season, the Jan. Star Party will be on the 11<sup>th</sup>

**As always, “Private” group or individual observing sessions at the Werner Schmidt Observatory may be scheduled by contacting Observatory Director Joel Burnett at [Joelburnett@comcast.net](mailto:Joelburnett@comcast.net) 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. If you wish to borrow one of these ‘scopes, contact [info@ccas.ws](mailto:info@ccas.ws)**

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#### **Member Announcement:**

Dakota De Smet, a member of CCAS, requested we provide members this notice about her upcoming September art show:

The paintings of Dakota De Smet will be featured in the main gallery room at the Brewster Ladies Library during the month of September. These paintings should be of interest to CCAS members: some 10 paintings image the universe. There is also another group based on the daytime sky, seascapes, etc., some 50 paintings in all.

There will be a reception for Dakota and friends at the library on Friday, September 13th from 4 - 7pm.

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#### **Progress on the New Website:**

During August the following improvements were made to our website to invite and help users apply for membership, and help them contact the club and its leaders.

The CCAS brochure was also edited to refer readers to the website for more information on contacts and membership matters. The next printing of the brochure will reflect these improvements.

During August, a new button was added to the new Home Page: **Become a Member**. “Become a Member” invites readers to join CCAS, overviews the dues schedule, tells how to send new member applicant information to the Society by either email or post, and inquires about interests of the applicant.

The **About Us** page now includes the names of Officers of the Society with invitation to contact officers at [info@CCAS.ws](mailto:info@CCAS.ws)

The **Contact Us** button now reads **Contact Us (email or**

[post](#)) and provides both the email and post addresses.

...Website improvement is a slow work in progress.

## **September Observing:**

Please see resources at *Astronomy Magazine*, September, pp 36-43 and *Sky and Telescope*, September, pp 43-58, and Reference 5 for good guides to the September sky.

Mooncussuer's Almanac and Monthly Alert <sup>1</sup> SEPTEMBER 2013			
Object	Sept. 1 (EDT)	Sept. 15 (EDT)	Sept. 30 (EDT)
<b>Sun</b>	R: 06:07 S: 19:13	06:21 18:50	06:37 18:24
<b>Moon</b>	R: 02:46 S: 16:46	16:14 02:33	02:32 15:52
<b>Mercury (tough eve)</b>	R: 06:43 S: 19:36	07:51 19:27	08:44 19:09
<b>Venus (evening)</b>	R: 09:29 S: 20:42	09:59 20:22	10:32 20:06
<b>Mars (predawn)</b>	R: 02:57 S: 17:40	02:47 17:12	02:36 16:39
<b>Jupiter (predawn)</b>	R: 01:26 S: 16:28	00:42 15:41	23:52 14:50
<b>Saturn (evening)</b>	R: 10:58 S: 21:39	10:09 20:47	09:17 19:52
<b>Uranus (evening)</b>	R: 20:23 S: 08:58	19:26 08:00	18:26 06:58
<b>Neptune (evening)</b>	R: 18:55 S: 05:45	17:59 04:47	16:59 03:46
<b>Pluto (evening)</b>	R: 15:46 S: 01:23	14:51 00:27	13:52 23:28

### **Observing Highlights for the Month:**

#### **Evening Sky:**

**Do** follow the brightness of Nova Delphinus 2013, (pictured on page 1 of this *First Light* early in its life when it was about mag 4) by accessing AAVSO's Light Curve Generator every few days and then, knowing the brightness to expect for your observation, go find the nova and record your own estimate of its brightness. If you want, you can even report your observation to AAVSO and see it on the next light curve you generate. Nova Del is located overhead below Cygnus in Prime Time this month and, expected to be a "slow" nova, should be a rewarding observing experience for many weeks to come.

Please see the article beginning on page 6 to learn more about the nova and how to find it with binoculars.

Evening bright planet viewing this month is limited to **Venus** and **Saturn** in the western sky.

However, as was true in August, you can have a good time viewing the **blue gas planets** during evenings all this month:

- Mag 7.8 **Neptune** reached opposition August 26 and appears just as nice in September as it did then. Even better, the blue planet lies higher in the evening sky now. At midmonth, you can find this outer world nearly 30° high in the southeast around 9 p.m. local daylight time. It peaks nearly halfway to the zenith above the southern horizon shortly before midnight.
- Trailing one constellation and about two hours behind Neptune, (also) blue mag 5.7 **Uranus** lies against the backdrop of Pisces the Fish. Mag 5.7 is visible without optical aid for some gifted folks on a dark night with "good seeing." Can you see it? In mid-September, it appears in the eastern sky by mid-evening and climbs highest in the south around 2 a.m. local daylight time. For sure you can spot the planet through 7x35 or better binoculars even in less than perfectly dark skies

Although this ice-giant world won't reach opposition until October 3, it glows just as bright (magnitude 5.7) this month as it will at its peak. Likewise, it looks the same through a telescope during September as it will at opposition. At moderate magnification under steady sky conditions, the planet's 3.7"-diameter disk shows up easily, as does its distinct blue-green color. For more information about observing Uranus, Neptune, and their moons, see "Prime time for Neptune and Uranus" in the August issue of *Astronomy*, page 80.

#### **Evening Sky:**

Normally we don't spend much time on the pre-dawn sky in *First Light* but we have two reasons for doing so this month:

- **Mars Gathers Honey: Jupiter** and its moons are a pre-dawn treat all month but are not the main reason to get out of bed early. But get up early and grab your binoculars or scope to view a spectacular passage of bright mag 1.6 **Mars** up to and through M44, the beehive and its bees 9/7- 9/9.

On the morning of Saturday, 9/7, Mars is approaching the northwest side of the asterism, on Sunday you will find it *inside* the beehive looking for honey, and on Monday you will see it leaving the hive on the south side with its urns full of honey. If you have the equipment, this is a *great* photo-op.

- The second reason to get up early some mornings in September is to practice and begin looking for **Comet C/2012 S1 (ISON)**. Estimated to be at mag 12.1 on 9/1 and mag 10.9 by month's end, you should be able to spot it in a medium to large scope at least by month's end. ISON spends September very close to Mars. So, if you are out to see Mars in the beehive, look for ISON. Use the finder chart at our Reference 5 or see the article on ISON in the September *Astronomy*, page 50. If you want to try ISON this month, do so early in the month since later the waning moon at dawn will interfere.

There has been a lot of hype about ISON. Will it be a phenomenon or a phlop? Next month, be sure to read the feature article on this subject we are planning for the October *First Light*.

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Anyone having an interest in monthly **Libration and Declination Tables for the Moon<sup>2</sup>** during this month please contact your editor for information or sources.

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#### Moon Phases, September, 2013

New Moon	Thursday, Sept. 5 <sup>th</sup>	at 7:36am EDT
First QTR	Thursday, Sept. 12 <sup>th</sup>	at 1:08pm EDT
Full Moon	Thursday, Sept. 19 <sup>th</sup>	at 7:13 <sup>th</sup> EDT
Last QTR	Thursday, Sept. 26 <sup>th</sup>	at 11:55pm EDT

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#### Minima of Algol<sup>1,3</sup>, September:

Algol, a variable double star in Perseus, shines normally at mag 2.1 but once every 2.87 days dims to mag 3.4. The dimming is caused by the dimmer of two self-orbiting stars eclipsing the brighter as viewed from earth.

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These are dates and times for evening occurrences of the Minima of Algol at Cape Cod during September:  
September 18 at 10:23pm and September 21 at 7:12pm.

Using binoculars or a small telescope, try to begin viewing two to three hours before the minima to watch the dimming and two to three hours after the minima to watch the brightening. This month, you should be able to watch both the dimming and brightening on September 18<sup>th</sup> but because the minimum is so early on the 21<sup>st</sup>, likely you will be able to follow only the brightening that evening.

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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**

## Nova Delphinus 2013:

\*How long will it take to brighten? \*What does its light curve look like?

\*How can I find it with binoculars? \*How long will it stay bright?

...by Peter Kurtz

This is a story about an unusual occurrence in the night sky, the travails of finding that special phenomenon using the ancient and soon-to-be lost art of "star-hopping", and the fun of recording visual observations of brightness, reporting results to AAVSO, the American Association of Variable Star Observers, and observing your own data on a light curve with that of contributors worldwide.

I was at a routine Thursday night CCAS Star Party at The Schmidt on August 15<sup>th</sup>, the night we first heard reports of the discovery of a new nova by Japanese amateur astronomer Koichi Itagaki. Itagaki first saw the nova at 2pm EDT on August 14<sup>th</sup>. The photo<sup>7a</sup> on page 1 of this *First Light* shows the new nova, Nova Delphinus 2013, in all its glory. This photo was taken from Singapore by one Justine Ng on August 18<sup>th</sup> when the nova was about mag 5. A visitor to our Star Party on the 15<sup>th</sup> had alerted us to the news and later than night Bernie Young and colleagues found and observed the nova with our 16" scope and visually judged its brightness (about 10pm EDT) to be about mag 6.

When I got home I decided that I wanted to find the thing myself and follow it for as many days as it remains of interest.

We will depend on Bernie, Joel, and colleagues to find our new nova now and again with the 16" Go-To scope at The Schmidt, and, with luck, *measure* varying brightnesses photometrically. But what I report here is the fun and tribulations of doing this "low tech." As long as the nova stays sufficiently bright (and that is the expectation) and you have at hand one good pair of binoculars and the tools I will develop with you below, you too can follow the brightness of the nova over many days and, if you like, report *your* visual observations to AAVSO.

OK. Some information on the nova.

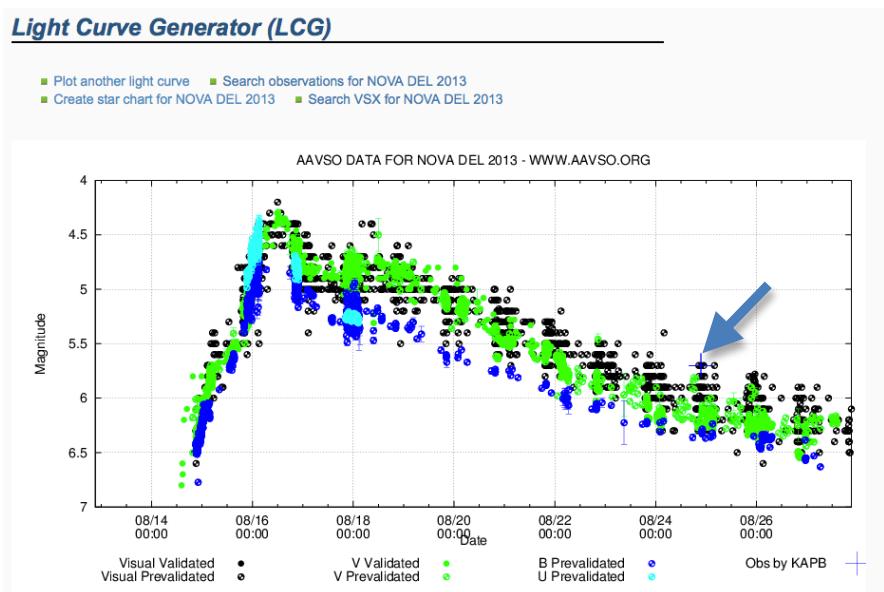
- What is a nova? S&T online<sup>7b</sup> covers it nicely:

A classical nova happens in a special kind of tightly-orbiting binary star system: one where a relatively normal star pours a stream of hydrogen onto the surface of a companion white dwarf.

When the layer of fresh hydrogen on the white dwarf's surface grows thick and dense enough, the bottom of the layer explodes in a runaway hydrogen-fusion reaction — a hydrogen bomb in the shape of a thin shell roughly the size of Earth. The underlying white dwarf remains intact, and as new hydrogen builds up, the process may repeat in a few years to tens of thousands of years.

S&T online also points out that the basis star system was 17<sup>th</sup> magnitude before "going nova" so it brightened roughly 100,000 fold to its August 16<sup>th</sup> peak of about 4.2.

- How does the brightness of a nova vary over time? Here's the Light Curve (through 8/27).<sup>7c</sup> Is the brightness stabilizing at about mag 6.3?



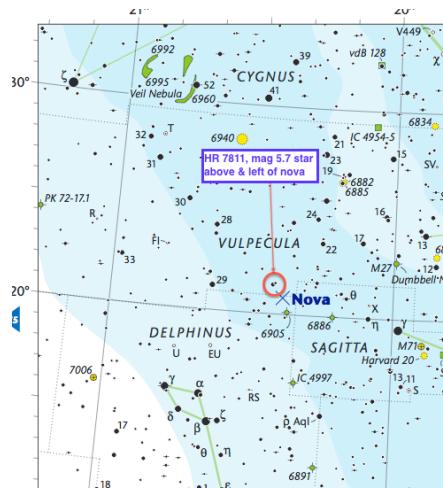
- As of August 25, AAVSO thinks there is a good possibility it will be a "slow" nova, which means it might stay near naked-eye visibility for 150 days or more. In an online article<sup>7d</sup>, AAVSO also speculates that it might even do some erratic brightening anytime so it is worth following carefully. They also speculate we might still be talking about Nova Del as late as next summer!
- In another online<sup>7e</sup> article first available on August 16, AAVSO noted that Nova Del is one of the top novas recorded in modern history:

Now that it has reached magnitude 4.4 visual, Nova Del is eligible for the nova Hall of Fame. There are only 29 recorded novae that have peaked brighter than this, (and Nova Del may not be done yet.) The article goes on to list the top 35 in order from brightest to faintest.

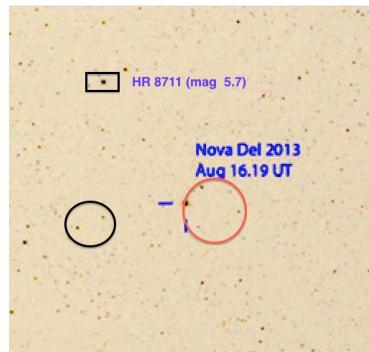
- OK. Let's find the nova. If you have a Go-To scope, find it at RA 20h 23min 30.73 sec; DEC +20 d 46min 04.1 sec.

But with binoculars, we must find it "the old fashioned way!" We made our observation about 9:40pm on a beautifully clear and moon-free time on Saturday, August 24.

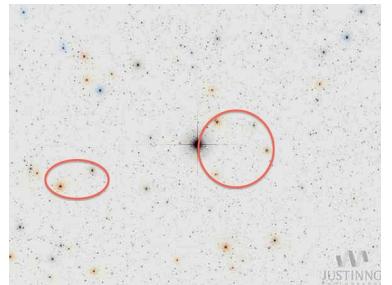
How to find the nova with binoculars? We used two pairs of binoculars: first, 7x26s, to find the nova; then 15x70s mounted on a tripod to study it. Where to look? Well for sure, with back-yard equipment the nova is not going to jump out at you as it does in Ng's photo! We need to study both photos and finder charts.



A) Corner of S&T Finder Chart<sup>7f</sup>  
...shows key mag 5.7 Finder Star HR7811  
See text.



B) Color-inverted photo from S&T<sup>7b</sup>  
...also shows Finder Star HR7811, "Pair" and "ET"  
See text.



C) Color-inverted Ng photo<sup>7a</sup>  
...shows "Pair" and "ET"  
See text.

Here's how we found the nova and how we know we found the nova:

- We show here (A) a corner of a full area star chart from S&T online<sup>7f</sup>. The chart as shown is oriented using equatorial coordinates. A custom alt/az chart we made using Sky Safari Pro on an iphone having "Horizon Down" for our location on Cape Cod looks similar to the chart pictured here but is oriented with Delphinus at the bottom rather than a bit to the left. So hopping from the bright mag 3.2 "wing-end" star  $\zeta$ -Cyg (top left in chart above) to our first "hop" star, mag 5 32-Vul was a move to the right in reality which would be a move down and right on the chart you see it here. To be clear, in this account, we will follow our star-hopping using moves as they can be seen on the equatorial chart we see here; i.e.,  $\zeta$ -Cyg to 32-Vul is a "down and right move".
- Using our 7x26 (7° FOV) "bird" binoculars, we moved from  $\zeta$ -Cygni to 32-Vul and then down and right as shown on the chart above to 31-Vul, 30-Vul, and 28-Vul, then down to the bright (mag 4.8) 29-Vul, then over to mag 5.7 HR 7811, SAO 88664, highlighted with a box on the finder chart above and on the photo image B. B is a color-invert of a photo of the nova which appeared in the article by S&T.<sup>7b</sup> More on images A, B, and C in a moment.
- As you can see in A and B above, you can confirm when you are at HR7811 because there is a close mag 7 companion star, V399 a bit to the right.
- Now here's a problem. With our little binoculars we can see the key finder star HR7811 but maybe not some faint key stars visible in the photo on page 1, specifically (see the photo) the "pair" of stars to the left of the nova and

the equilateral triangle of stars “ET” to the immediate right of the nova. As detailed in Reference 7g, those faint stars have the following magnitudes (left to right): 7.9, 9.0, 8.1 (top of triangle), 9.0 (right side of triangle) and 9.8 (lower left side of triangle). We may not be able to see any of these close-by dim stars in binoculars except maybe the 7.9 and 8.1 “pair” stars on the left. Even so, we need to do some work to enable us to bring a star we *can see* with our binoculars, our key reference star, HR7811, into the big picture with the faint stars visible only in the photograph.

- To marry HR7811 with the faint stars in the photo, we use all three images A, B, and C above. Image A is our big finder chart showing HR7811 near the nova. Image B is a color-inverted image of a photo of the nova shown in the S&T article in Reference 7b which *does* show our finder star HR7811 *and also* our faint “pair” and “ET” stars. Image C is a color-inverted image of the Ng photo, which has both the “pair” and “ET” stars but not our key finder star. While we can’t see our main finder star HR7811 in Ng’s photo (it is out of field) we can see both the “pair” and the “ET” in images B *and* C. So the B photo showing HR7811 ties S&T’s finder chart key star HR7811 to the stars in the photo on page 1.
- There was the nova where it should be, below and a bit right of our finder star HR7811.
- We came took up our 15x70 binoculars having a 4.4° FOV for close-up study of the nova and its fainter surrounding stars. All OK.
- Estimating Brightness: Reference 7h shows how to generate a pertinent AAVSO Comparison Star Chart. Such a chart looks like a finder chart but instead of having star names, it shows only star magnitudes. The nova Comparison Star Chart shows nearby stars from mag 4.8 to 8.0. We decided when we viewed the nova on August 24<sup>th</sup> that it was the same magnitude as our main finder star, HR7811, namely mag 5.7.
- We reported our observation to AAVSO and you can see it on the Light Curve pictured here as the point with a crosshair (arrow). Obviously, we saw the nova a bit “brighter” than many other observers did; but at least one other observer was as exuberant as we were! [Please contact me if you are interested in learning how to register with AAVSO and report observations.]
- We will follow the nova as long as it remains of interest and we have clear nights. We will report future observations to AAVSO and provide update Light Curves now and then in future issues of *First Light*.

One final note: if you have a detailed star chart, we found one star in Sky Safari Pro which has coordinates very close to those of the nova. You can use this star as an alternative to searching for the coordinates of the nova itself. That star is:

New TYC 1643-2389-1 a mag 11.18 star very near (a bit above) the position of the nova.

Star: RA 20 23 59 Dec 20 48 21

Nova: 20 23 31 20 46 4

Both this star and the nova are to the left of our “ET” as shown in the photos.

***GET OUT YOUR BINOCULARS (OR ‘SCOPE) AND FIND, TRACK, AND REPORT ON OUR NOVA!***

## **Cape Cod Astronomical Society**

President	Michael Hunter	508-385-9846
Vice President	Stanley Rivers	508-945-6126
Secretary	Charles Burke	508-394-9128
Treasurer	Peter Kurtz	508-255-0415
Observatory Director	Joel Burnett	508-221-7380
First Light Editor	Peter Kurtz	508-255-0415 <a href="mailto:info@CCAS.ws">info@CCAS.ws</a>

Mailing Address: A. P. Kurtz, CCAS Treasurer, 34 Ridgewood Rd,  
Orleans MA 02653

## **Cape Cod Astronomical Foundation**

Chairman	Werner Schmidt	508-362-9301
Vice Chairman	Michael Hunter	508-385-9846
Director of R&D	Bernie Young	508-394-1960
Secretary	Ed Swiniarski	508-896-5973
Treasurer	Pio Petrocchi	508-362-1213
Observatory Director	Joel Burnett	508-221-7380
Observatory Phone Line		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 γ-Andromedae to Algol's west, mag 2.1, and ε-Persei to its east, mag 2.9.
- 5) Here is the web address for Astronomy Magazine's "The Sky This Month" online for September:  
<http://www.astronomy.com/News-Observing/Sky%20this%20Month/2013/07/Bejeweled%20evenings.aspx>  
See also S&T resources online at <http://www.skyandtelescope.com/>
- 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> :  
for Saturn's moons: <http://www.skyandtelescope.com/observing/objects/planets/3308506.html>
- 7) References for our story on the Nova Delphinus 2013:
  - a) Ng's Photo: <http://www.nbcnews.com/science/spectacular-nova-star-explosion-visible-naked-eye-6C10962844>
  - b) S&T online article on the nova: <http://www.skyandtelescope.com/observing/home/Bright-Nova-in-Delphinus-219631281.html>
  - c) AAVSO Light Curve Generator. <http://www.aavso.org/lcg> Enter the name of the star (NOVA DEL 2013), the number of days you want plotted (count back to August 13 from the present date), refresh the current date with a click, and "Plot Data". If you have submitted points, the plot will mark your datapoints if you provide your AAVSO id (you can use mine, "KAPB", and ask for "Crosshairs.")
  - d) AAVSO: a "slow" nova? <http://www.aavso.org/whats-store-nova-del-2013>
  - e) AAVSO: "top 30" <http://www.aavso.org/nova-del-2013-makes-top-30>
  - f) Finder chart from S&T: [http://media.skyandtelescope.com/documents/Nova\\_in\\_Delphinus\\_PSA64.pdf](http://media.skyandtelescope.com/documents/Nova_in_Delphinus_PSA64.pdf)
  - g) Details on the stars in "Pair" and "ET(equilateral triangle) near the nova:  
"Pair": HD194631, SAO 88671, mag 7.9 and HD 352196, SAO88659, mag 9.0  
"ET": an equilateral triangle with top at about 11 o'clock (HD 194113, SAO 88610, mag 8.1), star at right (3 o'clock, HD 351956, SAO 88584, mag 9.0) and star at 8'oclock (HD 352087, mag 9.82)
  - h) AAVSO Comparison Star Chart: Go to <http://www.aavso.org/vsp> and ask for "NOVA DEL 2013" and down under "Advanced Chart Options" supply the ID: 12508BUL and hit "Plot Chart."