

# STAR GAZER NEWS

NEWSLETTER OF THE DELMARVA STARGAZERS

March 2002

WWW.DelmarvaStarGazers.Org

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**At the February Meeting** Don Surles brought the meeting to order at 7:15 with 25 members and guests attending.

**Mid Atlantic Mirror Making Seminar-** A work group will meet at Don's home, Saturday, February 9th at 10 a.m. to prepare boxes & kits for the mirror grinding workshop. This will be boxed grinding and polishing materials for the mirror grinding projects and boxed hardware components and optics for the solar prominence scope assembly. There will be a kit for each attendee.

Steve & Bruce Swayze plan to arrive on Wednesday, February 27 for the seminar and will be leaving on Tuesday March 5th.

Monthly Meeting Tuesday, March 5  
**TELESCOPE POINTING AIDS**  
Don Surles and others

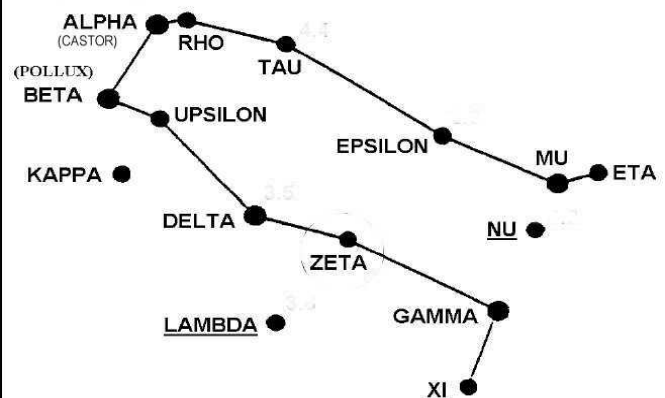
7:00 p.m. First Presbyterian Church, Smyrna

**Constellation of the Month: Gemini** (JEM-eh-nye) Unfortunately, the constellation for March had not been assigned last month so it wound up as a group venture.  
**Mythology** - The mythology was the Greek version where the twins Castor and Pollux were hatched from a single egg of the swan Leda, after her seduction by Zeus. It gets even better. Pollux was the son of Zeus, a god, and Castor was the son of Tyndareus, a mortal. Castor & Pollux had power over the winds and waves and became protectors of sailors at sea. They were raised by the centaur, Chiron, and later joined Jason and the Argonauts in search of the Golden Fleece. The twins had 2 rival cousins, Idas and Lynceus, who tricked them out of a whole herd of cattle. Castor and Pollux vowed to get even. During the fight that followed, Idas killed Castor with a spear. Pollux then chased the cousins and killed Lynceus with a single blow. Idas was about to kill Pollux, when Zeus came to Pollux's aid and hurled a thunderbolt at Idas, killing him on the spot. When Pollux asked to die, rather than be separated from his brother, Zeus relented and put them together in the sky as the constellation Gemini, the twins.

## Astronomy

The Stars of Gemini are described below:

The **Alpha** star **Castor** is a double star thru telescopes but in reality has six components. The separation of the double portion is 3 arc seconds. It is spectral class A1V at magnitude 1.98 and is 51 light years away.



**Pollux or Beta Geminorum** at magnitude 1.2 is 32 light years distant with a spectral class KOIIIb.

**Alhena, Gamma Geminorum**, magnitude 2, AOIV, is 112 light years away and is as bright as 160 suns.

**Wasat**, the **Delta** star, mag 3.5, is a slow moving F2 IV binary at 61 light years away with a K6 dwarf companion.

**Mebsuta**, the **Epsilon** star is a wide (optical) double suitable for small telescopes. The larger star is a 3rd mag supergiant G star at a distance of 1100 light years. The companion is a 9th magnitude star.

## Deep Space Objects

**M35** is an open star cluster visible in binoculars and beautiful in even modest telescopes. It is located  $2\frac{1}{2}^{\circ}$  northwest of **Eta Geminorum**.

**NGC 2392** This is the so called **Eskimo Nebula**, a greenish planetary nebula, with a bright central star.

## Film Cameras for Astrophotography

The most popular camera for celestial photography is probably the 35 mm single lens reflex. The reason is not that it takes the finest pictures, but that it is relatively light and offers the most choices in accessories and films. The requirements of Cameras used for astrophotography are almost the opposite of those used in every day applications. They are shown below:

### Manual Operation Capability-

On cold winter nights, batteries run down real quick so the camera must be capable of battery free operation.

**Removable lenses-** permit changing to lenses of different focal lengths and allow the use of T adapters for mounting the camera to the telescope.

**Bulb/Time Setting and Cable Release** allows vibration free time exposures.

**Removable Prism-**Permits direct right angle viewing of the ground glass screen for overhead objects.

**Changeable Focus Screen-** Allows focusing on faint

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nebulae; you'll want a very bright screen.

**Mirror Lockup**-this is the ability to lock the mirror in the "up" position before the shutter fires, to avoid the jarring vibration of the mirror return. Many Olympus, Nikon and Pentax cameras have this feature.

**Sturdy Tripod**- The heavy duty vibration free camcorder type tripods are good for time exposure. Don Surles brought a number of cameras he has used for astrophotography including large format cameras in the 6X6 and 6X9 cm sizes. One of the 6X6's was a Cirroflex twin lens reflex. Don also presented a slide show of 35mm vs. the larger format "super slides"; there was no comparison. The larger format slides had far more visual content. Many of the slides were impressive western landscapes. With the 35mm format, Don prefers slide film to print film because the normal printing service for color prints compensates for the dark background and produces "something" resembling a sky shot that is usually unsatisfactory. Slide film, however, is processed according to the type of film and its speed, so the printing step is unnecessary and you get what you shot. Concerning specific films, Don uses Kodak Elite-Chrome 400 for most photography. If red is what a person is looking for, and he can track accurately, Don suggests Ektrachrome E100VS (vs= vivid saturation) This is also a great film for all round use. The extra brightness in the slides and the film does a great job capturing the nebulae of our night sky.

### **Dewing & Dew removal** (Group effort)

Dew is really a very complex event where the dependent variables are temperature, relative humidity, and specific heat(s). From a practical point of view however, it's simply what happens to an object whose temperature is cooler than the ambient moisture laden air. If there's no object present, we call it fog.

The Dew Point is the temperature at which these events can occur.

Without getting into all the details, the most effective way of preventing dew is to make sure that all optical surfaces are warmer than the ambient air or the dew point. This includes objectives, eyepieces, finders and diagonals. Cover them when not in use. Doug Norton likes to keep eyepieces in warm dry towels when not in use. Some other methods of dew prevention are to delay the dew rather than prevent it. This includes dew

shields on refractors and cadadioptrics. The reflector, of course, has the biggest dew shield of all: its own tube, although Don Surles has actually reduced dewing in his 25 inch dob by lifting part of the cloth shroud, where it meets the mirror, thus permitting ventilation!

Since the scope at night is a black body radiator, its cooling down can be delayed by making it glossy & white or better yet silvering it (grin!).

### **From the President's Desk...**

February 17, 2002

Well, Winter has been mild and the Olympics are over. Springtime is coming! Have you noticed the increased brightness and warmth of the Sun? By the time you get these comments we will probably see daffodils and crocuses(croci?) in bloom. And it will almost be time to begin the Spring garden.

Are you ready for the 2<sup>nd</sup> Mid-Atlantic Mirror Making Conference? I certainly hope you have it on your agenda – March 1-3, Mallard Lodge, Smyrna, DE. Many of your fellow Star Gazers have been busy assembling the various supplies, ingredients, tools, equipment, correspondence, ie, planning and preparing, for this event. We will have 12-13 mirror makers, several web-camera hackers, and 20 prominence scope assemblers plus some of the best talents in amateur astronomy coming together for three days of REAL amateur astronomy. If you are a participant I hope to see you, early in the morning, March 1. If you plan to observe, please allow enough time to see it all and ask questions about the activities. Following on the heels of the Mirror Makers weekend we will host Delmarva Star Gaze VIII – yes, that is number EIGHT. It will begin April 10 and windup on April 14. This is the first and longest star party of 2002 in the Mid-Atlantic region. Tuckahoe State Park will again be inundated with gazers, scopes, tents, trailers, food, and amateur astronomy. Put this one on your calendar – I am sure this one will be the best Stargaze yet. We are making amateur astronomy a very popular avocation. What was once an extremely lonely hobby is becoming one of close communication via a growing number of astronomy clubs, star parties, newsletters, and the internet.

The Delmarva Star Gazers are certainly doing their share – I want to thank all those who volunteer their time and expertise to make our organization a leader in promoting amateur astronomy in the Mid-Atlantic community. Let's continue to look for ways to become THE BEST astronomy club and to become more valuable in the promotion of science and

understanding our universe. Continue to look for ways to make steps toward improvements. No one change needs to be revolutionary; evolution is easier than revolution. One phrase I remember from long ago that emphasizes the necessity of small improvements is: "continuous improvement is better than postponed perfection".

We can and should continuously improve our organization. Please continue to communicate with each other and let your amateur astronomy organization know about your ideas and energies for improving and meeting the needs of yourself and your fellow Star Gazers. You are the reason Delmarva Star Gazers exist. Your ideas and support are why we have been so successful and why you are absolutely necessary for the continued success and improvement of Delmarva Star Gazers.

See you at First Presbyterian Church, Mallard Lodge, or Tuckahoe State Park. Don...

**The Editor's Quadrant....**

**The Solar System in March**

**Mercury**- in the morning twilight will be too low in the March sky for decent viewing. **Venus** in March emerges from the western twilight as an evening star.

**Mars**-is in the western twilight sky in Aries. It continues fading in March, as its magnitude goes from 1.3 to 1.5 and the disk size goes from 4.8" to 4.4" across. Although **Jupiter** also loses magnitude in March from -2.4 to -2.2, it is still high in the southern sky and next to the moon, is the brightest object in the sky. **Saturn**, although past its opposition, remains a spectacular sight in March shining high and bright in Taurus with rings still at full tilt. Your **March**

**Skymap** on page 5 shows the 10 p.m. position of these two planets poised above the constellation Orion. Both **Uranus** and **Neptune** are coming out of conjunction with the sun in March but will be too low in the morning twilight for observing. **Pluto** in Ophiuchus is pretty high when the morning dawn approaches. On March 19th at 16h UT, the asteroid **Vesta** will pass less than 2' south of Saturn.

Clear Skies!, Frank Sheldon *f.a.sheldon@att.net*

***www.delmarvastargazers.org***

**Club Activities...**

**Club Meetings**- We meet in the First Presbyterian Church in Smyrna, DE (653-8000) on the first Tuesday of each month from 7-9 PM. From US 13, turn west at Wendy's and go one stoplight on Commerce Street; the church is on the right directly across from the Fire Hall.

**Future Meetings...**The remaining meeting dates for 2002 will be:

March 05, April 02, May 07, June 04, July 06, Picnic at Tuckahoe, August 06 to be announced, September 03, October 08, November 05, December 03

The regular meeting format includes discussion of club activities, observing highlights and an advertised presentation. We solicit suggestions for topics and presenters.

**Club Observing...** Observing is (usually) scheduled for the Friday nearest the New Moon to maximize the hours of *deepnight* without the moon in the sky.

Unless otherwise stated, the monthly observing site will be at the baseball field in the camping area at Tuckahoe State Park. The monthly observing days for the year 2002 will be: March 15, **Stargaze VIII** April 10-14, May 10, June 07, July 12, August 9, September 9, **No-Frills VII** October 2-6, November 1, and December 6. The cloud or rain date for the monthly Friday observing will be the following Saturday, but don't trust the weather man! Go outside and look for yourself or check the CNN weather link on our web page. If you still can't decide, Call Don Surles (302) 653-9445 or Lyle Jones (302) 736-9842.

**Delmarva Star Gazers Officers for 2001-2002**

**President.....Don Surles 302 653 9445**

**Vice President.....John Flynn 302 999 9882**

**Secretary.....Lyle Jones 302 736 9842**

**Treasurer.....Kathy Sheldon 302 422 4695**

**How to Join the Delmarva Star Gazers:** Anyone with an interest in any aspect of astronomy is welcome to Join.

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY, STATE & ZIP \_\_\_\_\_

E-MAIL ADDRESS (If any) \_\_\_\_\_

SPECIAL INTERESTS OR TALENTS \_\_\_\_\_

Please attach a check for \$15 made payable to Delmarva Stargazers and mail to Frank Sheldon, 20985 Fleetown Rd, Lincoln, DE 19960. Call club President Don Surles at 302-653-9445 for more info.



are pleased to announce their eight annual Star Gaze Star Party  
from April 10 through April 14, 2002

at Tuckahoe State Park near Queen Anne, MD

The format of this star party will follow that of the No-Frills event but we will have speakers **and swap tables**. The registration fee includes camping fee for the observing area. ALL NIGHT STARGAZER COFFEE, as always, will be free. Sodas and hot dogs will be available at minimal cost. Campers will be permitted to park and set up by their scopes, but there are no hookups or electricity in the observation area. **All attendees are encouraged to register in advance for this event due to limited space and growing popularity of the Star Gaze Star Party. Your badges and entrance-parking permit will be sent to you on receipt of payment.**

**REGISTRATION for Star Gaze VIIIREGISTRATION FORM**

	2-3 Days		4 Days		5 Days	
	Pre-Registration	After April 1	Pre – Registration	After April 1	Pre-Registration	After April 1
1 Person	\$20	\$35	\$25	\$40	\$30	\$45
2 Persons	\$35	\$50	\$45	\$60	\$50	\$65
Family (3 or more)	\$50	\$65	\$55	\$70	\$60	\$75

**Make check payable to *Delmarva Stargazers***  
**Mail to Lyle Jones 230 N. Bradford St., Dover DE 19904 (302) 736- 9842**

Name \_\_\_\_\_ What Day Will You Arrive? \_\_\_\_\_

Evening/ Weekend Phone \_\_\_\_\_

Address \_\_\_\_\_ City \_\_\_\_\_

State \_\_\_\_\_ Zip Code \_\_\_\_\_

Automobile License number \_\_\_\_\_

Number in your party \_\_\_\_\_

Attendee #2 \_\_\_\_\_ Attendee #3 \_\_\_\_\_

Attendee #4 \_\_\_\_\_ Attendee#5 \_\_\_\_\_

Attendee #6 \_\_\_\_\_ Attendee#7 \_\_\_\_\_

**Use TABLE above to calculate Registration Fee(s). TOTAL ENCLOSED \_\_\_\_\_**

## Moondark for March: An Environmental Optical Delay

Fog. Cape Henlopen School District: two-hour delay. No AM kindergarten. Technically speaking, a total scattering of light off droplets of water suspended in the air reducing visibility to zero. A good chance to write about atmospheric optics.

I've touched upon this topic, also known as environmental optics, on a number of occasions in the past, usually highlighting one particular aspect, such as rainbows, twilight glows or solar sights. There's much, much more though, including most everything under the Sun. Blue skies result from Rayleigh scattering short wavelengths of light preferentially off air molecules. This scattering is the same reason that sunsets are red. Add some volcanic aerosols or dust, and watch the display of fiery oranges and strange purple glows. And with just the perfect circumstances for refraction, the last bit of the Sun departs with the elusive green flash.

Optics in the outdoors is a big topic. Mainstream physicists have sections on their leather-bound journals devoted to it, but such papers are an odd fit at best. Atmospheric phenomena can be dissected in highly technical detail and explained by geometrical optics, electromagnetic theory and wave mechanics. The result is either arcane mathematics or reams of numbers from a computer models. Such an understanding helps, but doesn't always lead to a better appreciation of the grandeur of the sky.

The authors of several, now almost classic books, show a proper balance of physics, aesthetics and enjoyment of these phenomena. My favorite is: *Light and Color in the Outdoors* by M.G.J. Minnaert (1974, available as 1993 translation). Robert Greenler's *Rainbows, Halos, and Glories* (1980, a new edition is available) is also a great resource. Finally, Aden and Marjorie Meinel, professional astronomers at Kitt Peak, have written their reflections in *Sunsets, Twilights, and Evening Skies* (1983).

Because we have little or no ability to detect polarized light (take off your sunglasses if you have them on), we lack a true appreciation for it. To correct this shortcoming in our visual experience, there are two good books with plenty of photos and experiments to try for yourself: G.P. Können's *Polarized Light in Nature* (1985 translation, Cambridge) and David Pye's *Polarised Light in Science & Nature* (2001, Institute of Physics).

Atmospheric phenomena reflect the same physical principles that telescope makers must battle: differential refraction in lenses, scatter off dusty optics, and diffraction from secondary spider vanes. These are big trouble to the telescope builder and observer pushing the limits of what can be seen. But in the same sky, we see colorful sundogs, glories and red rainbows at sunrise. So they do have an up-side.

Even better, these phenomena are likely the easiest to photograph and often the most colorful pictures you can take of the sky. Unlike prime-focus deep-sky astrophotography, there is no polar alignment, no tedious eyepiece guiding, nor any reciprocity failure to contend with. A point and shoot camera, hand-held, real film or digital, will do just fine. The secret, if there is one, seems just to be in the right place at the right time, camera in hand.

Now the fog has lifted, and it's clearing already. Hmm... now cloudy again. Anyway, the forecast looks good for tonight, so I'll keep my fingers crossed. Meanwhile, time to get the kids off to school.

One of Doug's New Year's resolutions is to always keep his camera handy to photograph atmospheric phenomena. Moondark is written by Doug Miller, published [on the web](#), and printed in the [Delmarva Star Gazers' Star Gazer News](#). Please address comments and suggestions to [dcmiller@dmv.com](mailto:dcmiller@dmv.com). This document was last revised on 9 February 2002. *All text and images copyright © 2002 Douglas C. Miller, All Rights Reserved. This material may not be reproduced in any form without prior permission.*



*Ice crystals form a sundog...*



*A glory above the Gulf of Maine...*



*Heiligenschein around the author  
in New Zealand...*



*The blue sky at 90° from the Sun is  
polarized....*



*Red rainbow, sunrise at Uluru,  
Red Centre, Australia....*