

STAR GAZER NEWS

NEWSLETTER OF THE DELMARVA STARGAZERS

February 2002

WWW.DelmarvaStarGazers.Org

Volume 9 Number 8

Aary Meeting

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

2nd Annual Mid Atlantic Mirror Making Sememar

Our 2nd Mirror making seminar is all set for March 1-3, 2002. This year, we have added a project to assemble a solar prominence scope under the supervision of the developer Dave Groski. Doug Miller will assist those wishing to understand the basics of hacking a webcam for

astro photography. Assistance in mirror grinding,

Monthly Meeting Tuesday, February 5

Film Cameras

Don Surles and others

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

polishing, figuring and testing will be provided by Steve and Bruce Swayze of Swayze Optical and several experienced mirror makers from Delmarva Star Gazers. See Club Web page for more details.

Constellation of the Month: Orion (oh-RYE-un)

This constellation was presented by Ron Tatman.

Mythology - Almost every culture has lore surrounding Orion. Ron chose the Egyptian Mythology which, if nothing else, is the oldest and most intriguing. In the Egyptian mythology, Orion is Sahu and represents the incarnation or soul of Osirus, *King of the Dead*. Always accompanying the constellation Orion is the star Sirius who represents the soul of Isis. Isis, the second most important deity is the sister/consort of Osirus and the *Protector of the Dead*. This mythology played an important part in the life of the Pharaoh Khufu and the great pyramid. The ancient Egyptians believed that Osirus and Isis were embodied in the constellation Orion and the star Sirius, respectively. Khufu wanted to make sure he joined these deities when he died. When he had the great pyramid built, it was oriented with the cardinal points of the compass (i.e. North, South, East, & West) as were most important edifices of the time. In addition to this, shafts were constructed from the burial chambers to the northern and southern walls of the pyramid. The angle of elevation of the southern shaft was 44° and would show the place of the gods in Sirius or Orion's belt in transit. The angle of elevation of the northern shaft was 31° and led to the pole stars. Since the pole stars would never rise nor set and were always visible, they were deemed indestructable. None of these shafts were straight enough to actually see the stars from the

burial chambers but they could provide access for Khufu. **Astronomy**-Ron took an equally innovative approach to the astronomy portion. Since Ron has an interest both in radio astronomy and the birth of stars, he discussed the role of radio telescopes in studying star formation, so much of which occurs in Orion and the great nebula. Paradoxically, star formation begins in a bitter cold environment ($10\text{-}20^\circ\text{K}$) which causes interstellar gases and dust to become molecular and group together. Carbon monoxide (CO) and Hydrogen (H_2) are the most comt the Janumon compounds in these molecular clouds. To radio astronomers, the CO is the guide to structure and motion, since CO resonates at specific frequencies and produces radio waves which can be studied. The deep cold also causes clumping. This clumping continues with ever increasing densities and star formation begins. Since these dense clumps emit no visible light, we need Infra Red and Radio Telescopes to study them. These clumps form cores of 10^4 solar masses. The cores then fragment into new clumps of 10-50 solar masses. These fragmented clumps then form protostars in a process that takes 10 million years. As the protostars warm, they become infra red sources. A number of these protostar candidates have actually been found by the Hubble telescope in the Orion Nebula. Once the protostars begin to burn hydrogen, they form strong stellar winds along their axis of rotation. These winds may be collimated into a bipolar outflow which is readily *seen* with radio telescopes. This stage of the star's development is called the T-Tauri phase named after the original spectral G type prototype. It is characterized by strong stellar winds, high surface activity and variable light curves. T-Tauri stars are found surrounded by the dust and gases that spawned them. The trapezium star cluster in the Orion Nebula is



Southern Portion of the Trapezium Star Cluster

such an example. Since T-Tauri stars are transitional, they are not guaranteed full starhood. Depending on their mass, they can become a g-type star like our Sun or they

can fizzle out as a Jupiter type brown dwarf eventually degenerating to a lifeless black dwarf. Ron concluded his presentation with the usual stats on

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the important stars and objects in Orion.

Program- The Mason Dixon Line

Bob Mentzer presented this program which dealt with and led to the survey and creation of the Mason Dixon line. The problem first arose in a conflict between the Penn family of Philadelphia and the Calvert family of Maryland. In 1653, King Charles I had given George Calvert what was then the Colony of Maryland. 50 years later, Charles II gave William Penn the colony which would later become Pennsylvania as well as land containing what we now call the Delmarva Peninsula. Confusion arose many years later when it was discovered that the boundaries didn't match, particularly the southern border of Pennsylvania which was supposed to be the 40th parallel.

In 1750 the British court ruled that the boundary between Maryland and southern Pennsylvania should be a line 15 miles south of the southern boundary of Philadelphia. The 2 families agreed to have the new boundary surveyed, but had to go to England to find surveyors up to the job.

Enter Charles Mason and Jeremiah Dixon in 1763. Mason was an astronomer from the Greenwich observatory and Dixon, a skilled surveyor. Before taking on their major task, it was necessary to survey the north-south line on the Delmarva peninsula that divided the Penn and Calvert lands. After that, they located the point 15 miles due south of Philadelphia. At this point Bob brought us up to speed on the state of the art in 1763 for measuring celestial angles. Since there would be no horizon lines available, the angle measuring was done using a 6 foot zenith sector. The zenith sector is analogous to a plumb bob with a telescope measuring a star's declination from the zenith.

For example, if the star delta Perseus was over the 40th parallel at a certain time and it measured 1° declination with the zenith sector, your distance from the 40th parallel would be 1° or 67 miles.

Back in Greenwich under ideal conditions, the accuracy of measurement was 1/10 of an arc second but the accuracy of their zenith sector was only .2 arc seconds .

Since the beginning of their east-west line would be west of Philadelphia, they had to begin their measurements to the east of the east-west line. The exact point was in the middle of Mr. Alexander Bryan's plantation house, and an observation post was built in his front yard. From there the survey moved west following the line of latitude 39 degrees, 43 minutes and 17.6 seconds North. Bob then reminded us that the shortest distance between 2 points on earth is a great circle whereas latitude lines on earth are not the shortest distance. A great circle is the line formed on earth, by the intersection of a plane passing thru the earth's center. This means that a great circle line superimposed on a latitude line will actually cross the longer curved latitude line twice. The survey consisted of making star measurements with the zenith sector every 12 miles while making constant corrections to convert the great circle survey lines to latitude lines.

Surveying in the wild forests was difficult and slow and not without all kinds of pit falls. One of the most dangerous was the Indians, particularly the Shawnees, near the western end of the line. To avert this danger, the group hired 14 Iroquois as escorts. The Iroquois prestige and influence among the Indian nations kept the party safe from the more hostile tribes to the west. However at a point 36 miles short of the 233 mile goal, the Iroquois escort told them to go no farther and on October 9, 1767, the survey was finished. The horizontal black bar on the map below is the final Mason Dixon line. The vertical line is the border between Delaware and Maryland and is called the *Transpeninsular Line*.



Bob Mentzer concluded his presentation discussing how symbolic the Mason Dixon line was to become, especially in terms of Slavery and Freedom and even in

the American Civil War almost a hundred years later.

From the President's Desk...

January 19, 2002 Well, how much Enron stock did you have in your portfolio? Have you done all your K-Mart shopping? Where is Osama? Where will Ashcroft's and

Rumsfeld's terrorists attack next? What kind of attack will it be? Is Arthur Andersen your accountant? Do you have any of those choking vodka pretzels? Are the Taliban prisoners in Guantanamo being mistreated or treated to a Caribbean vacation? How's your love life????? Filed your TAXES? Where is your snow shovel? Jeez!! We could all lose our minds if television ruled. Fortunately it only 'entertains' us with news and Hollywood's interpretation of history and the future or what could possibly happen sometime somewhere by somebody in an Ashcroft fantasy future. However, we are amateur astronomers and we KNOW there are UNIVERSE forces that have not and will not be influenced by anything anyone currently on Earth has done or will do. So, we have a type of life governor that provides us with a teflon shield from the everyday flotsam spewing through our TV's, computers, newspapers, and the movie screen. We are realists; we understand the sun will rise tomorrow morning and five, fifty, a hundred or five hundred years from now the most

important, critical news stories of today will not command even a paragraph in the history books of tomorrow. So, we go about our daily activities doing the best we can for family, self, and community and we ignore those things that are outside our realm of control and we are happier for having done so. So much for current events; leave them to the politically gifted.

Now to astronomy. This is the time when we should all go out and look for the winter sky jewels. Saturn's rings are "wide open", ie, Saturn is tilted so that we have a superb view. And Saturn is overhead so that we are looking through a minimum of atmosphere. Jupiter is also a jewel; it is about as close to us as it gets and is overhead. You must look at the Orion Nebula before it reaches the meridian; it is high in the early evening sky and is much prettier to me before it reaches the southwestern portion of the sky. Is naked eye

astronomy your preference? Then look for the Winter Hexagon. Start with Capella (Auriga), go to Aldebaran (Hyades), then to Rigel (Orion), to Sirius (Canis Major), then to Procyon(Canis Minor), to Pollux (Gemini), and back to Capella. Once you see the Hexagon, it will be as easy as the Teapot in Sagittarius. Binocular viewing is superb because the winter sky is so transparent and because the winter Milky Way (just to the east of Orion through Auriga) is high above the horizon. Get your star charts or planisphere, bino, scope, warm clothes, gloves, and boots, a hot drink, etc, go out and see for yourself. Be sure to see all the bright sights of the winter sky 'cause the dim, dull, galaxy loaded spring sky is coming and will shove the winter sky to the west and into the sun's glare.

Are you ready for the Mid Atlantic Mirror Maker's Workshop? I hope so because we are gearing up for a fantastic weekend of amateur astronomy.

Check out our website for details. We have twelve mirror makers and twenty prominence scope makers plus the best talent in our hobby to guide us through the process. And we have Delmarva Star Gazers as hosts for the event so you know we will have some excellent food!

Following the MAMMW is the first five-day star party on the East Coast. Delmarva Star Gaze VIII will begin Wednesday, April 10 and end Sunday, April 14. Make plans now. Get your taxes filed so you can stargaze without the burden of April 15 spoiling your time under the Tuckahoe skies.

Have you considered serving as an officer of Delmarva Star Gazers? Now is the time to make plans for the next election. Nominations for officers will be taken at the May meeting and voting occurs during the June meeting.

Please give this some consideration; it is a commitment but it can be very rewarding.

We will begin our ninth year in April. Do you have a concept of what this organization should or could be five or ten years from now? We need energetic leaders to continue what has been a wonderful journey so far.

We have evolved into an organization that many people find very comfortable. The Delmarva Star Gazers must

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 Fleatown Rd, Lincoln, DE 19960. Call club President Don Surlis at 302-653-9445 for more info.

continue to evolve 'comfortably'; but we must continually sharpen our skills and interests so that our offering accommodates as many amateur astronomers as possible. That's where each of us has a responsibility to improve Delmarva Star Gazers.

Have you shared your hobby with a friend, neighbor or child? If not, why not? Be assured that everyone will not become 'hooked' on astronomy but you will not know unless you offer to share. Who knows what kind of influence a view of Saturn, Jupiter, the moon, or the sun will have on your guest! Go for it; you will be rewarded greatly when the newbie utters that "WOW!"

Our first Saturday Morning Astronomy breakfast was a great success. We had approximately twenty-five folks attend. Tom Brennan provided a comprehensive presentation on "Life in the Universe" thanks, Tom. Ron Zink and Lyle Jones did a great job cooking a breakfast of eggs, sausage, bacon, grits, biscuits, sausage gravy, fruit, coffee, etc. Thanks, Ron and Lyle. Also, many, many

First Astronomy Breakfast was held on Saturday morning at 9:30 a.m. January 12 at the First Presbyterian Church in Smyrna. The program was *Are we Alone?* and explored the possibilities of Extraterrestrial Life. The speaker was Astronomy Instructor Tom Brennan.



thanks to the volunteers who helped clean up the kitchen. We will do this again; stay tuned for more details. K-Mart is now only \$1.25 per share. Remember the stock market advice "buy low, sell high"? This could be an opportunity to buy low; a lonely opportunity! Why not go for the 'Blue Light Special' So much for this month. See you at the Church or Tuckahoe. Don....

The Editor's Quadrant....

The Solar System in February

Mercury- appears as a morning star on February 10th about 10 degrees to the right of where the sun will rise, never getting more than 5 degrees above the horizon.

Venus comes out of conjunction with the Sun as a morning star in February but won't be very visible until late in the month and even then it will be too low for most viewers to see.

Mars- in the southwestern twilight sky in Pisces, continues fading in February as its magnitude goes from 1

to 1.3 and the disk size goes from 6" to 5" across.

Although **Jupiter** loses magnitude in February from -2.6 to -2.4 it is still high in the southern sky and next to the moon the brightest object in the sky. **Saturn**, although past its opposition, remains a spectacular sight in February shining high and bright in Taurus with rings at full tilt. Your **February Skymap** on page 5 shows the 10 p.m. position of these two planets poised above the constellation Orion. Both **Uranus** and **Neptune** are in conjunction with the sun in February and will not be observable. Also forget **Pluto** in February as it is still lost in the morning twilight. 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 meeting dates for 2002 will be: February 05, 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: February 8, 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