Star Gazer News

Newsletter of the Delmarva Stargazers
www.delmarvastargazers.org

From the Prez…

Happy Holidays! 2011 has past by very quickly. One of my New Year's resolutions for 2012 is to spend more time observing and perhaps build a couple of scopes. Hopefully my resolutions will be fulfilled!

Our club's Christmas Party went well. The turkey was good and ham was excellent. The mashed potatoes were a little lumpy but I can't complain because I did the mashing! Doreen Riley's broccoli salad was as good as always. We had some surprise with Vaughan Nickerson and Dick and Audrey Gardner attending. We even had Cal Estrada attend for the first time. The white elephant gift exchange was fun with our usual wacky gifts. We even recycled some gifts from last year. What more could you want?

For main talk for the night for our December meeting was Don Surles discussing telescope making. He started with a short presentation on why make your own scope. He had some examples of focusers, spiders, and diagonal and mirror cells. Don made a very good argument on why to build your own scope. Don had Bill Hurting bring in his scope that he made. Bill ground a 10 " mirror at last year's mirror making event and put the scope together in time for our fall No-Frill star party. Bill's new built scope was probably the reason why we got rained out! Nevertheless, Bill did some very nice wood working on his scope and tube color was nice shade of red.

Jerry Truitt did "Object of the Month" which was the M45 (Pleiades/Seven Sisters). He presented the information on the stars in the open cluster and some mythology as well as who first recognize

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With the New Year,
It's time to send in your dues !
See pg. 2 for instructions on paying your dues,
or better yet, come to the next meeting on Jan 3rd

Upcoming Events:

Meeting !	**Jan 3rd**	**7 PM**	**Smyrna Church**
Observing !	**Jan 20th**	**Dusk**	**Eq. Cntr. or Blackbird**

the open cluster. This talk was short but very informative.

Our next month meeting will either have, if everything can be work out, a presentation by Joe Morris on observing at dark sky sites or a presentation on digital setting circles (past, present and future).

Tim Milligan is doing January's "Object(s) of the Month."

Plan to attend our next meeting onJanuary 3, 2012.

Remember that club dues ($15) are due in January 2012.

Please fill out the attached membership form below and send it with your dues.

The restrooms and showers plans at Equestrian Center are moving slowly forward. The new pavilion will need a new septic system. The system for the club house is not adequate for both the club house and new pavilion. The Center is working through the permitting of the system now. I am still hopeful that we will have the new facilities for our spring star party. Stay tuned for next month update.

While Cherie and I were at Yellowstone last September, I purchased a bookmark that gave advice from the night sky and thought that I would end with it.

See the big picture
See a star
Keep looking up
Don't be afraid of the dark
Stay full of wonder
Expand your horizons
Turn-off the lights
By Lian Shamir

'Til next next year!

How to Join the Delmarva Stargazers: Anyone with an interest in any aspect of astronomy is welcome

NAME_____New_____Renewal_____

ADDRESS_____

CITY, STATE & ZIP_____

E-MAIL ADDRESS (If any)_____

Do you need the newsletter snail mailed to you (Y/N)?_____

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

Ok, Christmas is over and Santa brought you that new Department store telescope you always wanted.

You dying to try out the telescope, below are some helpful hints to increase the fun at the eyepiece:

- Don't expect super magnification. Some scopes with a 2 inch dia. lens will claim 650x magnification. Realistic expectation is 50x magnification for each inch of the telescope's main lens or mirror. A 2 inch refractor can go to about 100x. a 6 inch reflector can go to about 300x.
- Don't start with the maximum power (magnification). It's easier to start looking with low power, and increasing power after locating the object.
- Align – align – align. Did I mention Align? Alignment comes in two forms: alignment of optics and alignment of finder scope.

  Alignment of Newtonian telescopes is critical to viewing. Collimating tools are needed to insure the primary mirror, diagonal mirror, and the eyepiece are aligned to the best optical path. Poor alignment will give poor viewing and lead to frustration. This is a daylight task.

  Alignment of the finder scope during daylight is very helpful later in the night. It's no fun if the telescope is looking in one direction and the finder is looking elsewhere. Before sunset, point the telescope at a distant tree, telephone pole, or other object and adjust the finder scope onto the same object.
- You need to let the telescope cool down for an hour or more to lose heat. Taking a scope from your warm home and putting it outside will cause thermals inside your scope until it equilibrates with the ambient temperature.
- Now that your scope is cool, you may actually need to add a little heat to optics to prevent dew. Dew heaters will keep the optics slightly warmer than the surrounding air, keeping dew off the glass.
- Not all nights are equal. The atmosphere can also have thermals, dust, clouds, rain, leading to poor viewing.
- Don't just look through the eyepiece for a second and conclude the viewing is bad. Keep your eye at the eyepiece for a few minutes. You may have brief moments when conditions improve. Bob Bunge taught me this when observing Mars.
- Can't find the faint fuzzies? You need to practice the art of averted vision. When you stare straight at an object, the central part of your retina you are using has more cones for color and definition, but it not the best for night use. Averting you eyes to use the retina area outside the central core utilizes areas with more rods, which are more sensitive to light.
- Know what you are looking for while viewing. Many objects are dim, and don't actually look like the Hubble photos. A lot of online photos are color enhanced, and may also combine visible, ultraviolet, infared and other wavelengths.
- Join a local club. Astronomy clubs are helpful, and a wealth of knowledge.

This is just a small list of helpful hints. Got hints of your own? Send to dmsg_pjr@yahoo.com for a future issue.

Your 2011-2012 Officers

Office	Officer	Phone	email
President	Lyle Jones	302-736-9842	worm1647@comcast.net
President-elect	Chuck Jennings		
Secretary	Michael Lecuyer	302-284-3734	mjl@terpacis.org
Treasurer	Kathy Sheldon	302-422-4695	memomsheldon@comcast.net
Past President	Jerry Truitt	410-885-3327	Truittjs@Atlanticbb.net

Dawn Takes a Closer Look

By Dr. Marc Rayman

Dawn is the first space mission with an itinerary that includes orbiting two separate solar system destinations. It is also the only spacecraft ever to orbit an object in the main asteroid belt between Mars and Jupiter. The spacecraft accomplishes this feat using ion propulsion, a technology first proven in space on the highly successful Deep Space 1 mission, part of NASA's New Millennium program.

Launched in September 2007, Dawn arrived at protoplanet Vesta in July 2011. It will orbit and study Vesta until July 2012, when it will leave orbit for dwarf planet Ceres, also in the asteroid belt.

Dawn can maneuver to the orbit best suited for conducting each of its scientific observations. After months mapping this alien world from higher altitudes, Dawn spiraled closer to Vesta to attain a low altitude orbit, the better to study Vesta's composition and map its complicated gravity field.

Changing and refining Dawn's orbit of this massive, irregular, heterogeneous body is one of the most complicated parts of the mission. In addition, to meet all the scientific objectives, the orientation of this orbit needs to change.

These differing orientations are a crucial element of the strategy for gathering the most scientifically valuable data on Vesta. It generally requires a great deal of maneuvering to change the plane of a spacecraft's orbit. The ion propulsion system allows the probe to fly from one orbit to another without the penalty of carrying a massive supply of propellant. Indeed, one of the reasons that traveling from Earth to Vesta (and later Ceres) requires ion propulsion is the challenge of tilting the orbit around the sun.

Although the ion propulsion system accomplishes the majority of the orbit change, Dawn's navigators are enlisting Vesta itself. Some of the ion thrusting was designed in part to put the spacecraft in certain locations from which Vesta would twist its orbit toward the target angle for the low-altitude orbit. As Dawn rotates and the world underneath it revolves, the spacecraft feels a changing pull. There is always a tug downward, but because of Vesta's heterogeneous interior structure, sometimes there is also a slight force to one side or another. With their knowledge of the gravity field, the mission team plotted a course that took advantage of these variations to get a free ride.

The flight plan is a complex affair of carefully timed thrusting and coasting. Very far from home, the spacecraft is making excellent progress in its expedition at a fascinating world that, until a few months ago, had never seen a probe from Earth.

Keep up with Dawn's progress by following the Chief Engineer's (yours truly's) journal at http://dawn.jpl.nasa.gov/mission/journal.asp. And check out the illustrated story in verse of "Professor Starr's Dream Trip: Or, how a little technology goes a long way," at http://spaceplace.nasa.gov/story-prof-starr.

This article was provided courtesy of the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

This full view of the giant asteroid Vesta was taken by NASA's Dawn spacecraft, as part of a rotation characterization sequence on July 24, 2011, at a distance of 5,200 kilometers (3,200 miles). Credit: NASA/JPL-Caltech/UCLA/MPS/DLR/IDA

Editor's Note: for a video of Vesta's Rotational Imagery follow this link:

http://dawn.jpl.nasa.gov/multimedia/vesta_full_rotation_movie.asp

It's Observation Time !

Auriga is a constellation in the northern sky. Its name is Latin for 'charioteer' and its stars form a shape that has been associated with the pointed helmet of a charioteer. It was one of the 48 constellations listed by the 2nd century astronomer Ptolemy, and remains among the 88 modern constellations today. Its brightest star is Capella.

ε Aurigae and ζ Aurigae are peculiar binary stars. The orbital period of ε Aurigae is approximately 27 years, with an eclipse duration of about 18 months. The visible companion is a bright, older star (previously thought to be a bright F-class supergiant). The type of the other star is not known. ζ Aurigae has a period of 970 days, the primary is a K-class supergiant and the secondary is a B-class main sequence star. Both these systems present a rare stage of binary evolution, as the components are in a short and active evolutionary stage.

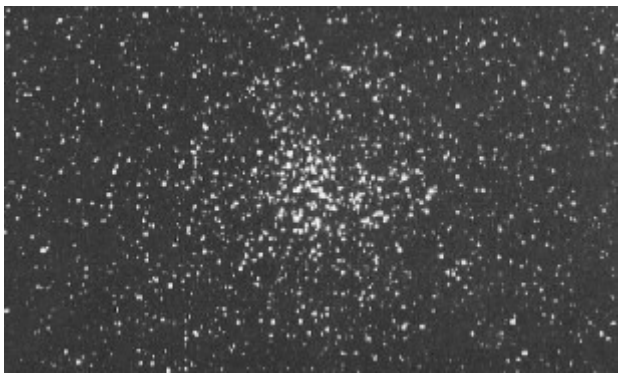
The galactic anticenter is located about 3.5° to the east of β Aurigae. This marks the point on the celestial sphere opposite the location of the galactic core; hence, this region marks a less extensive and less luminous part of the dust band that forms the spiral arms of the Milky Way.

Auriga has many open clusters and other objects because the Milky Way runs through it. The three brightest open clusters are M36, M37 and M38, all of which are visible in binoculars or a small telescope in suburban skies. A larger telescope resolves individual stars. The clusters are about 4100, 4400, and 4200 light years distant, respectively. Their apparent visual magnitudes are 6.3, 6.2, and 7.4, respectively.

On Page 8 is a skymap of Auriga and the surrounding area. I've listed some items to look for in increasing difficulty. Go out early, Auriga will be overhead by 11PM. Big glass, filters and maybe some astrophotography will be needed to see some items. If you find these items quickly, please get out your sky atlas – there's lots more to find and view.

Things to look for:

M36 - Discovered by Giovanni Batista Hodierna before 1654. Rediscovered by Le Gentil in 1749. Observed by Messier on September 2, 1764. "In the night of September 2 to 3, 1764, I have determined the position of a star cluster in Auriga, near the star Phi of that constellation. With an ordinary [non-achromatic] refractor of 3 feet & a half, one has difficulty to distinguish these small stars; but when employing a stronger instrument, one sees them very well; they don't contain between them any nebulosity: their extension is about 9 minutes of arc. I have compared the middle of this cluster with the star Phi Aurigae, & I have determined its position; its right ascension was 80d 11' 42", & its declination 34d 8' 6" north."



M37 - Discovered by Giovanni Batista Hodierna before 1654. Independently rediscovered by Charles Messier on September 2, 1764. "In the same night [September 2 to 3, 1764], I have observed a second cluster of small stars which were not very distant from the preceding, near the right leg of Auriga & on the parallel of the star Chi of that constellaiton: the stars there are smaller than that of the preceding cluster: they are also closer to each other, & contain a nebulosity. With an ordinary [non-achromatic] refractor of 3 feet & a half, one has difficulty to see these stars; but one distinguishes them with an instrument of greater effectivity. I have determined the position for this cluster, which may have an extension of 8 to 9 minutes of arc: its right ascension was 84d 15' 12", & its declination 32d 11' 51" north."

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M38 - Discovered by Giovanni Batista Hodierna before 1654. Independently rediscovered by Le Gentil in 1749. Observed by Messier September 25, 1764. "In the night of September 25 to 26, 1764, I have discovered a cluster of small stars in Auriga, near the star Sigma of that constellation, little distant from the two preceding clusters: this one is of square shape, & doesn't contain any nebulosity, if one examines it with a good instrument: its extension may be 15 minutes of arc. I have determined its position: its right ascension was 78d 10' 12", & its declination 36d 11' 51" north."

Simeis 147 (also known as Sharpless 2-240 and the Spaghetti Nebula) is a supernova remnant in the constellations of Taurus and Auriga. The nebulous area is fairly large, with an apparent size covering around 3 degrees, and is approximately 3000 light years away, and covers an area of around 41.9 parsecs (137 ly), and is approximately 40 000 years old.

Westbrook Nebula is an aspherical protoplanetary nebula. It is being formed by a star that has passed through the red giant phase and has ceased nuclear fusion at its core. This star is concealed at the center of the nebula, and is ejecting gas and dust at velocities of up to 200 km/s. The nebula is named after William E. Westbrook, who died in 1975. This nebula began to form about 200 years ago, and primarily consists of molecular gas. The outer part of the nebula is the result of interaction between rapid bi-polar outflow and the gas that was ejected when the star was passing through its asymptotic giant branch phase. The lobes are inclined about 24° to the line of sight. The energy being radiated from the nebula consists of scattered light from the star at the core, light being emitted from a compact HII region surrounding the star, and energy from the shock-excited gas in the lobes. The core star is believed to be of spectral class B0 and has 12,200 times the solar luminosity.

IC 405 - the Flaming Star Nebula, or Caldwell 31, is an emission/reflection nebula in the constellation Auriga, surrounding the bluish star AE Aurigae. It shines at magnitude +6.0. Its celestial coordinates are RA 05h 16.2m dec +34° 28′. It surrounds the irregular variable star AE Aurigae and is located near the emission nebula IC 410, the

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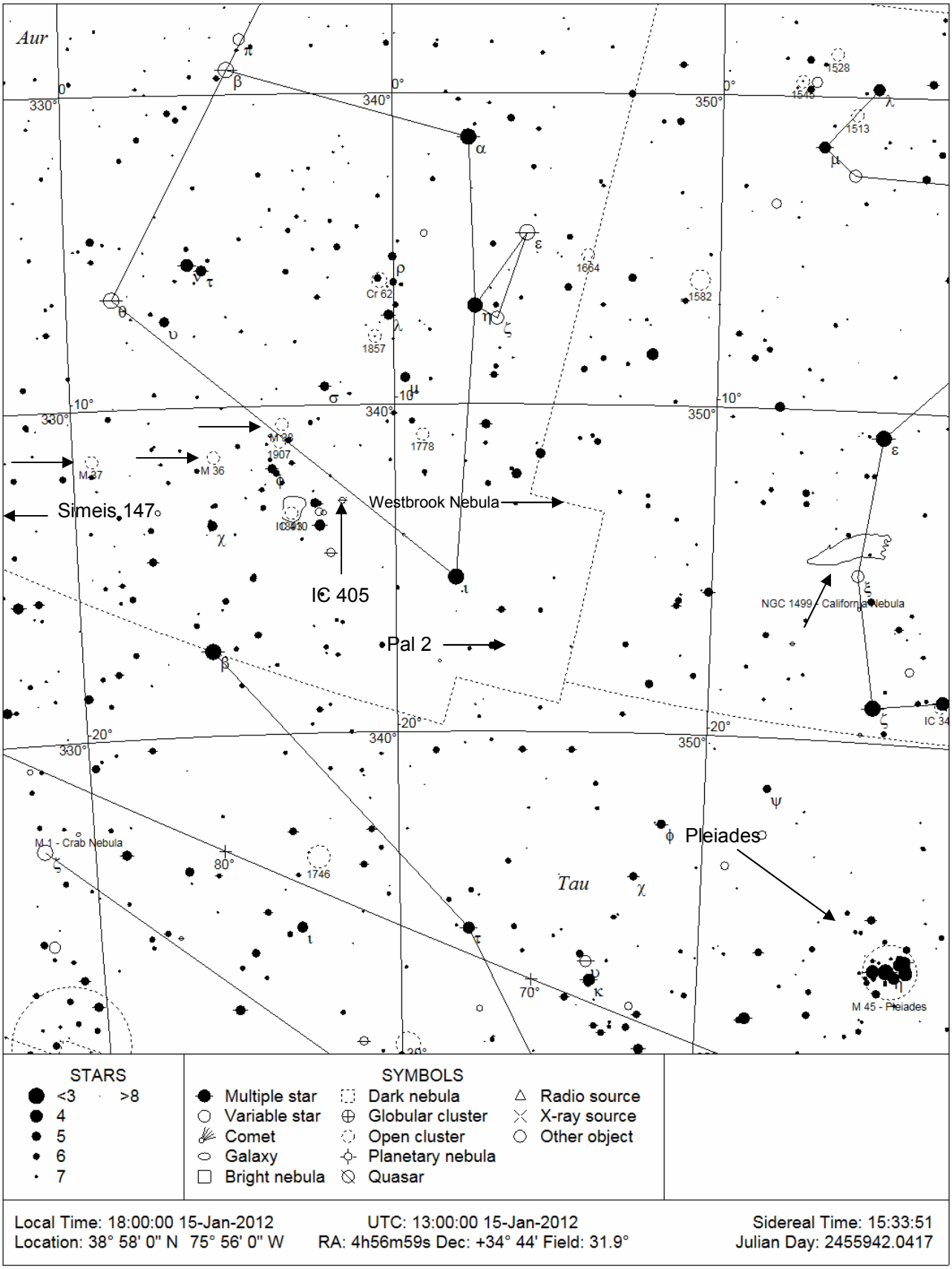
open cluster M38, and the naked-eye K-class star Hassaleh. The nebula measures approximately 37.0' x 19.0', and lies about 1,500 light-years away. It is believed that the proper motion of the central star can be traced back to the Orion's Belt area. The nebula is about 5 light-years across.

Pal 2 - Discovered by A.G. Wilson in 1955, it is a distant globular cluster near the Galactic anti-center. You're gonna need glass bigger than 18 inch.

The California Nebula (NGC 1499), discovered by E. E. Barnard in 1884, is an emission nebula located in the constellation Perseus.I know, it's not in Auriga, but if you're into astrophotography, it looks neat ! It is so named because it appears to resemble the outline of the US State of California on long exposure photographs. It is almost 2.5° long on the sky and, because of its very low surface brightness, it is extremely difficult to observe visually. It can be observed with a H-Beta filter (isolates the H-Beta line at 486 nm) in a rich-field telescope under dark skies. It lies at a distance of about 1,000 light years from Earth.

If it's too cold for you to drag out your scope, then just go out and look at the Pleiades and the Orion Nebula, both are eyeball visible even in urban settings.

Now there's tons of fun out there, so put down this newsletter, turn off the PC, TV, Ipad, smartphone, put on your long-johns, grab your scope and get out there and observe ! Do it ! **Go !**


Aur
Tau
Simeis 147
Westbrook Nebula
IC 405
Pal 2
NGC 1499 - California Nebula
Pleiades
M 1 - Crab Nebula
M 45 - Pleiades
M 36
M 37
Cr 62
1857
1664
1582
1907
1778
1528
1513
1746
IC 5130
IC 34
STARS
<3
>8
4
5
6
7
SYMBOLS
Multiple star
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Comet
Galaxy
Bright nebula
Dark nebula
Globular cluster
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