

THE BLUE MOON OBSERVER

APRIL, 2017

The April general meeting of the Door Peninsula Astronomical Society will be held on Tuesday, April 4 at 7 PM at the Ray and Ruthie Stonecipher Astronomy Center. The program will be the video program "Genius" by Stephen Hawking. Astronomy Basics will be lead by John J. Beck.



Door Peninsula Astronomical Society

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Notes from Our Meeting: March 7, 2017

14 Members and Guests

Dave Udell opened with an announcement, that he will be moving out of the area and that this will his last meeting as President of the DPAS. We will sorely miss Dave's enthusiasm, his direction, his endless grin. Thank you, Dave, for your years of creative service to us all.

Dave Lenius then addressed *Astronomy for Beginners* - or, more precisely, "astronomy buying tips". Where to start: the naked eye, Sky and Telescope or Astronomy magazines, binoculars: 7x50 or 7x35 (cheap binocs are better than cheap telescopes). What are they good for: light gathering! Telescopes: their primary function - even *more* light gathering, more powerful: 7x50s produce twice the light that do 7x35s. A 12" Schmidt-Cassegrain

delivers 144 times the light to your eyes. There are different types of scopes:

- Refractors: objective lens at one end and an eye-piece at the other, with the potential for the best images
- Newtonian-designed reflector. That's *the* Isaac Newton, offering the cheapest of 3 designs. Elements: parabolic mirror at one end, focus mechanism and eye-pieces are toward the front.
- Schmidt-Cassegrain: mirrors and lenses, compact tubes, most compact, very popular, most subject to dew because air is trapped inside (the scope should be left outside for a while to balance the temperatures).
- *continued on page 3*



Who We Are

DPAS is a local club and chapter of the Astronomical League. We are also a club member of the International Dark-Sky Association and the Night Sky Network, teaching arm of the Astronomical Society of the Pacific. We meet on the first Tuesday of every month, with rare exception. Meetings are held at the Ray & Ruthie Stonecipher Astronomy Center unless otherwise announced. We operate and maintain the Leif Everson Observatory which houses a 14" Celestron Schmidt-Cassegrain telescope on a sophisticated tracking mount controlled by computer, a weather station housed in the observatory with current readings shown on our web site:

www.doorastronomy.org

The StarGarden near the observatory is used for viewing the sky with unaided vision, binoculars and members' telescopes. There are also binocular mounts set in concrete which allow viewers of different heights to view an object through the same binocular.

The Ray & Ruthie Stonecipher Astronomy Center, shown on the right at the top of this page, provides for storage, projects, meetings, warm-up and toilet facilities. It also houses a StarLab, an inflatable planetarium with a sophisticated projection system. The planetarium is available for group presentations.

An Analemmatic Sundial was dedicated on October 20, 2012.

The "astronomy campus" as described here is reached by taking Utah Street east to the stop sign and turning left through the gate onto Stargazer Way. Set your GPS to 2200 Utah.

Orion's Nebula

Up high and proud in December's sky is the magnificent constellation Orion. The best that the winter sky has to give us! Three bright stars, Alnitak, Anilam and Mintaka, all in a row, define his belt, and hanging from this belt are several stars that would be the scabbard for his sword. The middle one is blurry. AmerIndians referred to it as "the fuzzy star." This is the great Nebula in Orion. Here's a picture:

The reason for its fuzziness is that it is not a simple star: it is an enormous expanse of gas, 1400 light years distant (at 5.8 trillion miles a year!) and some 20 light years across. In fact, it has enough gas to make more than 100 stars and is always in the process of making them.

The Hayden Planetarium of *The American Museum of Natural History* in New York City, put on a program in the late winter of 1977, named "*The Star Factory*". I went to it, and it changed the way I saw the sky. It was the first time I heard that we, you and me and all us and our pet dogs and everything, is made of stardust. Every atom in our bodies, iron, calcium, oxygen, was created in the heart of a star and distributed throughout the universe in those titanic stellar explosions in the finale of the struggle between the contraction of gravity and the immense heat of expansion called

super-novas. Seeds of possibility are blown throughout space.

Even our own Sun started this way: it is a second, maybe even a third, generation star. And how do we know this? Spectroscopy. Spectroscopy reveals the patterns of hydrogen, helium, carbon ... all the way through the elements. Old stars are almost entirely hydrogen, with some helium. The ash of the burning of hydrogen is helium, and then helium burns and so on, right across the periodic table.

In a small telescope and in the heart of the Nebula is a formation called "the Trapezium". Four bright stars, just babies as stars go, maybe 50,000 years old (our Sun is about 5 billion years old), full of energy, and with all their youthful ebullience, they are blowing away the embryonic gas which gave them birth, making that gas glow such that we, 1400 light years away, can see the glow that their youthful energy gives to what had been their stellar womb. You'd think we'd have a more exciting name than M-42!

A few weeks after the program, and hoping for some warmer weather, I left the City on St Patrick's Day, March 17, heading south on the Jersey Pike to my sister and brother-in-law's place in Jacksonville, North Carolina, some 700+ miles away. He was an ENT and she a nurse on the Marine base there.

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DPAS BOARD

David Udell, President
president@doorastronomy.org

Thomas Minahan, Vice President and Board Secretary

Susan Basten, Secretary, Treasurer and Membership Chairperson
treasurer@doorastronomy.org

John J. Beck, Immediate Past President and Editor
editor@doorastronomy.org

John W. Beck, Webmaster

Gary Henkelmann, ALCOR*

Jim Maki, Curator

Mike Egan, David Lenius, and Jacqu Axland, Members at Large

Ray Stonecipher, in spirit

*ALCOR is the acronym for Astronomical League Correspondent.

In addition, Barbara Henkelmann serves as the DPAS Archivist.

The business of the DPAS is largely conducted at the Board meetings to leave the general meetings open for programs. The Board meetings are scheduled for 4 PM on Monday, 8 days prior to the following general meeting, at the Astronomy Center.

meeting notes from page 1

Looking for a telescope: have realistic expectations of what you'll be able to see: Dave demoed a galaxy - small as a peanut/occupying the entire field of view.

A question came up: how Newton got to refracting? Dave thought the answer was in the parabolic lens, and its ability to focus all of the light's colors into one image.

Then came the break: pears stewed in a syrup with spices (cloves and cinnamon come to mind). By John. Delicious, as always.

For the main topic of the evening, **Dave U, Humans on Mars**. (The topic was suggested by Claire Minahan - Dave asked for other suggestions from the membership) Dave outlined the Status of Plan:

- Who? Who's planning to go?
- What? What is involved?
- Where? Where on Mars
- Why - why go?
- When - the big question.

So: who, what, where, why and when??

- Who - everybody! Governments and government space programs (NASA, ESA, Chinese, UAE). Plus private companies: Space X and Mars One - 2012 - Josh Luther spoke with us about Mars One: they want to televise the trip as a reality show!

- What? Well, getting to Mars is hard, and being in a craft for 7-8 months is really hard on the body. 3 hours a day of exercise are needed to keep from losing too much muscle mass, and it's hard psychologically, too. [An aside, there's a fascinating little book out named Packing for Mars by Mary Roach, that details in a humorous way some of the hardships.] Factors of the trip include how long you plan to stay - "it's not just planting the flag and heading home". Water, food, fuel are all part of the carry-with or find/make-while-there equation.

- Where on Mars do you go? As of February 10, NASA had narrowed the next Rover mission to three sites: Columbia Hills, the Gusev Crater, the Jezero Crater and NE Syrtis. (You won't find them on your copy of a local map).

- Why go to Mars? Well, up close and personal is the way to find if there is life on Mars and if it's like Earth's life. If there is life, then it impacts everything ... including the question if it is indigenous to Mars or from elsewhere. Another reason is to become a two-planet species! Sounds exciting ... but! Questions like climate change, cosmic impacts and the development of synthetic biology and natural biology, including *continued on page 4*



Astronomy Quiz

1. What is the most common type of galaxy in the known universe?
2. Light from the Sun takes how long to reach Earth?
3. What is the largest known galaxy?
4. The most massive known star in the universe is _____.
5. What kind of nebula is typically blue in color?
 - A. Emission
 - B. Reflection
 - C. Dark
 - D. Planetary
6. The volume of Jupiter is over _____ times the volume of Earth.
7. Proxima centauri is about _____ parsecs from Earth.
8. One parsec is about equal to _____ light years.
9. The Great Debate, whether there were universes beyond the Milky Way Galaxy, was between Harlow Shapley and _____.

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- the question of whether we can engineer an environment on Mars. Can we make an environment that can host human beings? And the answer to questions like what happened to Mars? In its early history 4.6 billion years ago, we know it was like Earth, with lakes, rivers and an ocean: can whatever happened there happen to Earth?
- When will there be humans on Mars? The surprising (to me) best case scenario is 2030! Just 13 years. Earth and Mars have to be situated just so at the start of the mission. There's so much to be done!! We are like Magellan - explorers!

Mike Egan

Viewing Nights 2017

- April 29
- May 27
- June—none*
- July—none*
- August 19 at Whitefish Dunes State park
- September 23
- October 21
- November 28
- December 16

*Except for a viewing night to follow a Birch Creek performance, viewing is not scheduled in June and July because it gets dark so late.

Barns Are Painted Red Because of the Physics of Dying Stars!

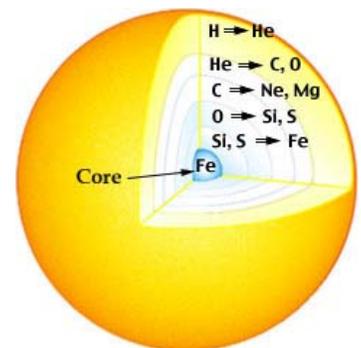
This interesting connection was posted on smithsonian.com on May 13, 2013 by Rose Eveleth and based on an explanation by Yonatan Zunger

Barns were painted red for decades because red paint was the least expensive color by far, and barns require a lot of paint.

Why is red paint so inexpensive? It's because the pigment, red ochre with the chemical formula Fe2O3, is very abundant on Earth. And that abundance was provided to Earth by dying stars.

The main energy source for stars the size of our sun is the fusion of hydrogen to helium. As stars near the end of their lives, if they are sufficiently massive they begin to collapse, causing a rise in temperature sufficient to fuse helium into elements with higher atomic numbers, that is, more protons and neutrons per atom. When that number reaches 56, the most stable element with that number is iron.

If the star is sufficiently massive, when it no longer supports fusion it collapses and momentarily becomes supermassive, causing it to blow off elements into space in all directions. The most abundant element in that process is iron.



Orion continued from page 2

It was cold. Under my jeans I had on long underwear and under that was a Queen-size set of nylons (quite warm, though I prayed not to have an accident!) I still kept my knees hugged to the side of my CB550 engine. I finally lost the snow line just south of Richmond, Virginia. Riding a cycle a good distance is an experience of oneself: alone, vulnerable, surrounded as I was in darkness by the time I turned east off of I-95 onto what is now 70E over to Kinston, and then due south on 258: pitch black, two lanes, not even a pair of another seeker's

headlights to keep me company, and just a hundred or so miles to go as I remember, when I lifted my head and there it was: Orion's Nebula, bright, beautiful, and making the stuff that one day could be somebody else, due south and magnificent. I have never felt more energized, more connected, more at one with the universe than that moment. I wanted to look longer and say something stupid, like "Hi, Mom!"

The cold in my bones dissipated and I was conscious of that core of life in me that burned just like those stars. Of that stellar dust, life is made!

Some morning soon, plan to go outside at maybe 5:30 or so on a crisp morning. If you look south and then up, you'll see Orion and its Nebula. Of such we are made. (Then go get a cup of coffee and celebrate life!) We are, indeed, the universe become conscious of itself.

Mike Egan

Door Peninsula Astronomical Society

The preceding article was published in the Peninsula Pulse in March and used by permission of the Peninsula Pulse and doorcountypulse.com.





Astronomy Quiz Answers

1. Spiral
2. Eight minutes
3. M87 in the constellation
Virgo
4. Eta carinae
5. Reflection
6. 1300
7. 1.3
8. 3.26
9. Edwin Hubble

Coming Events

NCRAL (annual meeting of the North Central Region, Astronomical League) this year is to be held April 21-23, hosted by the Rochester Astronomical Society. Details are available at: https://ncral.files.wordpress.com/2016/12/northern_lights_winter_2017.pdf

Received 3/24/17:

“Registrations for the 2017 NCRAL conference at Eagle Bluff Environmental Center in Lanesboro, MN have exceeded our wildest expectations. We have over 65 attendees registered. Since we still have a few “shared” rooms available we have decided to leave the registration period open until next Thursday (March 30th). If you would like to register before that time please do so at <http://ncral2017.rochesterskies.org/>.”

Clear skies,

John Attewell, Ph.D.
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Keep in mind that DPAS will be hosting NCRAL in 2018. Details to follow. There will be plenty of opportunities for members of DPAS to play a role in the planning and execution of this important event.

Solar Eclipse Field Trip

DPAS’ Trip to the Great Total Solar Eclipse is rapidly approaching, and we’ve had a great response from our members. We are currently expecting 24 participants to show up at the St. Peters Drury Inn, and still have room on our expanded block of rooms for many more. If you have been thinking about it, but haven’t made up your mind and need encouragement, read the article below.

We will gather in the St. Louis, MO area at the St. Peters Drury Inn, 170 Mid Rivers Mall Circle, St. Peters, MO 63376, where DPAS has reserved a block of deluxe rooms on a self-reserve first come-first served basis for the evening of Sunday, August 20, 2017. Our group rate begins at \$140 and includes many amenities, including hot breakfasts and evening food and beverages. Book online at:

<https://www.druryhotels.com/Reservations.aspx?groupno=2286923>, or call 1-800-325-0720

Gary Henkelmann is coordinating the event for DPAS, so contact him at alcor@doorastronomy.org with any questions about lodging or to arrange possible ride-sharing to and/or from the St. Louis area. You can also leave a message at (920) 824-5323.

Poetry Corner
The Messier Marathon
*A sestina**

We search in Pisces for a most elusive galaxy
M seventy four is in a galaxy group (but not a cluster)
We strain soon after twilight with averted vision
The marathon has commenced as afternoon gives way to night
And if we catch this DSO as soon as twilight's fading light
Allows, before it sets below the west horizon, it's a wonder!

Can we capture a galaxy in Cetus? we wonder
M seventy seven is a dim and distant galaxy
Home of an active galactic nucleus, part of whose light
Is hidden by galactic dust. Some viewers cluster
About a giant Dob, a boon indeed this time of night
As that mighty light bucket snares DSO's with direct vision

Two down already, now with unaided vision
We glimpse the Andromeda Galaxy, that celestial wonder
Then two companions through a 'scope; the cloudless night
Has just begun. We turn to locate another nearby galaxy
M33, then to Perseus with just our eyes to see the Double Cluster
A thrill through hand-held binoculars which transmit sufficient light

A Messier Marathon is held when there's no light
From even crescent moon to dim our vision
Much later we meet the challenge of the Virgo cluster
Of galaxies; A visitor is filled with wonder
As a veteran amateur hops from galaxy to galaxy
In the Virgo and Coma clusters by the middle of the night

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So many galaxies captured and confirmed by midnight
Some were tests of patience; time for something light
We choose an easy target, not another galaxy
One clearly visible without averted vision
“Who doesn’t like this circumpolar DSO?” I wonder
In Hercules, in jest it bears my name, the Great Globular Cluster

The next is also not a galaxy and not a cluster
A planetary nebula in Lyra, lurks all night
A visitor would check the focus, stare again and wonder
Is this a star? This tiny spot resolves into a tiny donut of light
Fifty seven in Messier’s catalog , the Ring Nebula strains his vision
’Til dawn we’ll log many more Messier’s, but not one more galaxy.

We cluster for the Messier Marathon, some of the most fun in the galaxy
One special night each year challenges our knowledge, charts and vision
We wonder if we can log all hundred ten before dawn’s light.

John J. Beck

*A sestina is a poetry form without meter or rhyme but with a specified order of end words. The same 6 end words are used in each 6 line stanza and in the three lines of the *envoi*, the final three lines.

**DSO = deep sky object