The Blue Moon Observer

May, 2017

The May general meeting of the Door Peninsula Astronomical Society will be held on Tuesday,May 2 at 7 PM at the Ray and Ruthie Stonecipher Astronomy Center. The program will be "How, on Earth, Do We Measure the Universe?" presented by Steve Ransom-Jones. Astronomy Basics, by Tom Minahan, will address "Binoculars".

Door Peninsula Astronomical Society

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Notes from Our Meeting of April 4, 2017

17 members and guests

John Beck took the front as the immediate Past-President and asked for any announcements. Which got ***Gary Henklemann*** to pitch the August show which some of us will be going to, and which features those few minutes of darkness when we'll be able to see Venus and Mercury and stars all in one shot. He did a great job imitating the crowd grasping for their binocs. There is still room at Drury Inn. It's in August, and there are rooms left!

John then put on the program on the constellations: **Get to Know Your Constellations**. He outlined what we'd do: What they are … How to find them … How to use them.

What they are: the *Circumpolar Constellations* (up all year, circling our North Star), the *Zodiacal* (defining the zodiac, limited only by the imagination of the observer!) and the *Seasonal Constellations*. How to find them: Under the *Circumpolar Constellations*, he listed Ursa Major - the big bear, with pictures as imagined, Cassiopeia, Ursa Minor - the little bear, Draco, Cephus (the king - very neatly depicted) and Camelopardalis. He cautioned that the designation is not just the picture of, say, the Queen, but the whole area of the sky, with no gaps between and among them. He demonstrated

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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.

The August Sky in May

At 3 AM on May 25 (assuming clear skies) we can see the same part of the sky as we would from the same location on August 15 at 9:25 PM. How does that work?

First some basics. The earth rotates on its axis 360 degrees in 24 hours, and the axis points to the North Celestial Pole, which is close to the North Star. So in one hour the Earth has rotated 15 degrees relative to the stars. In March and April I could see summer constellations Scorpius and Sagittarius at 5 AM but not in the evenings. Orion was still visible in the evening sky but by May 25 all we'll see of Orion at 9:25 PM is the star Betelgeuse setting in the west. (Sorry, you won't see Orion until autumn.)

In winter it's dark for many hours each night; in summer it is only very dark for a few hours around midnight. In late March or early April, experienced amateur astronomers sometimes stay up all night to try to see the setting winter deep sky objects as soon as it's dark enough, and the summer ones just as they rise before it gets light. If they're lucky and skilled, they might see a whole year of deep sky objects such as star clusters, nebulae and galaxies in one night. For more information, look up "Messier Marathon".

One more basic point: constellations which are close to the North Star appear to rotate around that star throughout the year, so they are visible all year and are referred to as Circumpolar Constellations.

For this adventure I've chosen May 25 because that's the next New Moon, so moonlight won't be interfering with seeing faint objects in the night sky, and the times I mention are during "astronomical twilight", long enough after sunset and before sunrise that the sky is darkest. It turns out that at about 3 AM on May 25, the sky will be about to leave astronomical twilight although bright stars will be visible for a while later; on August 15 the sky will just be entering astronomical twilight at 9:25 PM although some bright stars will be seen earlier.

At 10:40 the constellation Auriga the charioteer will be just about to set in the north northwest end of the Milky Way. The bright star in Auriga is Capella, the goat star. Gemini will be visible low in the sky at 10:40 PM but the horizon will nibble away at the twins until only the two bright stars Castor and Pollux remain; they'll set about 1:30 AM. Leo will be an easy find at 10:40 but loses its brightest star, Regulus, about 2:15 AM.

On May 25, the Andromeda Galaxy will be visible all night but the constellation Andromeda will not be completely above the horizon until 11 PM, then remain so for the rest of the night. About an hour later the entire Great Square of Pegasus will clear the horizon and remain up the rest of the night. Use your star chart to see where to look for the Andromeda Galaxy if you brought your binoculars. Figure out how to use 3 stars in Cassiopeia as an arrow to point to beta

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DPAS BOARD

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John J. Beck, Immediate Past President and Editor
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Gary Henkelmann, ALCOR*

Jim Maki, Curator

Mike Egan, David Lenius, and Jacque 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.

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the planisphere, a very useful "tool", which also shows the whole sky. And then the *Zodiacal Constellations*: pausing at the bolded names below because that's where John gave us the times of best viewing – when they are "up" in the sky. I just noticed that there are thirteen of them, and I expected twelve! They are all there, however: Capricorn (by birthdate, mine!), Aquarius, Pisces, Aries, **Taurus**, **Gemini**, Cancer, **Leo**, Virgo, Libra, **Scorpius**, Ophiuchus (there's the one I don't know) and **Sagittarius**. The famous "Teapot" is the heart of Sagittarius, and due south on a summer day, and with binoculars, easy to see clusters of stars, like steam coming from the pot. Then came the *Seasonal Constellations:* Orion, Cygnus, Lyra, Auriga, Pegasus and Andromeda. When we left the building, there was water in the air, so only some of what John spoke about was "up", but just up, and toward the west-southwest, was Orion: my favorite, and on the way to becoming what we can't see in the summer, heading toward the west.

Dessert time! And with hosts Steve and Lana providing wonderful cupcakes, chocolate and vanilla, with a ton of cream atop and sprinkles and cherries , to help wish her, Lana, a happy birthday on April 10! Thank you both for the treats.

Dave Lenius opened the main event with Part 3 of Stephen Hawking's series **Genius**, this one entitled ***Why Are We Here?*** He asked the questions that defined the program: why are we here? Do we control our own destiny? He had three volunteers again, Eric, Kelly and Ahmed, to pursue the questions and their answers. Again, he posed the question in an unusual setting: this time it was a dinner for three, with plates spinning atop the table, with nothing underneath them and nothing above. It was Kelly who triggered off the "answer", putting her knife under her plate and watching it crash … to be followed by more searching and the discovery of electro-magnets underneath. Just obeying one 'law" of the universe: not magic, just a magnet. And this was the law of nature that Newton had come to under

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Astronomy Quiz

1. According to IESNA classification, a semi-cutoff light fixture can have up to _____% upward light.
2. The mnemonic “Oh, be a fine girl. Kiss me” is a tool to remember what sequence?
3. On a clear night in summer you look toward the teapot asterism which is part of the constellation Sagittarius. You look at the “spout” with binoculars, then scan up along the Milky Way and encounter a colorful emission nebula.The one closest to the spout is M___, also called _____.
4. An apochromatic optical system, such as in a high-end refractor focuses_____ wavelengths to the same plane.
5. Who was the person who is responsible for developing the letter classification of special types of stars referred to in question 2?

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an apple tree: the same law that dictated the apple’s falling and the Moon’s falling: the same law covered the apple and the Moon.

Next was a demo of determinism involving an olive perched on the rim of a Martini glass (I have to tell you, they broke dozens of glasses, spilling the content: I most sincerely hope the liquid inside each glass was just water!) and the challenge was to use a large ball, some distance away, on a rope, where the challenges were to have the rope at exactly the same place when released, held there by magnets, such that the tip of the olive’s holder was *just* tipped into the martini - no breakage, demonstrating that nature does the same thing time and again - play the cards right, and you have the answer. Like clockwork. Is it then determinism?

The question was whether there is free will or determinism. Are we free to make our own decisions? Or do we respond as a fixed machine in a fixed universe? This time the scenario was a small castle, and the volunteers were groping for “electrons” (big balloons) with blindfolds on. Hawking introduced the thought of Werner Heisenberg in 1927 and the uncertainty principle. How he got there and what he did with it, I don’t remember and couldn’t write his process down (the room was too dark!) but I do know that the uncertainty principle ruled the day. It ended with people looking like the volunteers (masks did the trick) and moving one step right or left, totally at random, and there was a measurable distance in time of the decision to move one way or the other. “Spontaneous” decisions are not so spontaneous after all. And, according to his theory, the position and the velocity of an object cannot be measured exactly at the same time. Heisenberg’s theory also included a “many worlds” component, and everything that could happen does happen in another universe. I was glad when the lights went back on and the realization that the universe is what we see.

Mike Egan

Viewing Nights

May 27	Nov 18
Sept 23	Dec 16
Oct 21	

Poetry Corner

I wandered lonely as a cloud
That floats on high o'er vales and hills,
When all at once I saw a crowd,
A host of golden daffodils;
Beside the lake, beneath the trees,
Fluttering and dancing in the breeze.
Continuous as the stars that shine
and twinkle on the Milky Way,
They stretched in never-ending line
along the margin of a bay:
Ten thousand saw I at a glance,
tossing their heads in sprightly dance.
The waves beside them danced; but they
Out-did the sparkling waves in glee:
A poet could not but be gay,
in such a jocund company:
I gazed—and gazed—but little thought
what wealth the show to me had brought:
For oft, when on my couch I lie
In vacant or in pensive mood,
They flash upon that inward eye
Which is the bliss of solitude;
And then my heart with pleasure fills,
And dances with the daffodils.

William Wordsworth

August Sky from page 2

Andromedae and how to jump from that to a star midway between beta and the galaxy, or how to use the Great Square of Pegasus to get your bearings. If sky conditions are favorable, the galaxy should spread across the entire field of view of your binoculars.

Scorpius and Sagittarius will be up all night. If you have binoculars, use a star chart to find several globular clusters, the Lagoon Nebula, the Trifid Nebula and others in the area. It's exciting if you've never spotted them in binoculars before. Catch them before they go away in the fall. When you view the teapot asterism in Sagittarius, you're looking toward the center of our Milky Way galaxy.

You may have heard the expression, "Follow the arc to Arcturus, drive a spike to Spica." Arcturus is fortunately circumpolar, so you can do that all year. (The arc refers to the handle of the big dipper.) Spica, on the other hand, will drop below the horizon by about 4 AM so it's still up but very low by our 3 AM chosen end time. Arcturus is the brightest star you'll see this night.

The lonely star Fomalhaut, the only bright star in the southern constellation Piscis Austrinus, is due south in November with no other bright stars nearby. During our chosen all-nighter, Fomalhaut will be in the east but will not rise until about 2 AM.

If that seems like a stingy list, I only mention some brighter constellations and stars visible over that time period. Keep in mind that many old favorites are circumpolar or nearly so, so will be up all that night. Examples include Ursa Major (the asterism is The Big Dipper), Ursa Minor (The Little Dipper), Draco (the dragon), Cygnus the swan flying along the Milky Way (also called the Northern Cross), Cassiopeia, Hercules the archer (spotted by the keystone pattern) and Lyra the harp. Lyra contains Vega, the second brightest star this night and one of the three making up the Summer Triangle with Deneb (the tail of Cygnus) and Altair in Aquila the eagle. Meanwhile the Milky Way will appear to rotate counter-clockwise over the night.

So bundle up, grab your binoculars and a star chart, a red light or a flashlight with an un-inflated red balloon stretched over it so that you can read your star map, find a dark site away from light pollution, and enjoy three months of constellations in one night.

John J. Beck
Door Peninsula Astronomical Society

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

CHECK OUT THE COMING EVENTS ON PAGE 6

Astronomy Quiz Answers

1. A semi cutoff light fixture can direct up to 31% of its light output upward.
2. OBAFGKM is the sequence of star color temperature classes from hottest to coldest. For example, the cool red supergiant star Betelgeuse in Orion is a class M star.
3. An achromatic system focuses two wavelengths to the same plane; an apochromatic system focuses at least 3 thus minimizing chromatic aberration and sharpening the image.
4. Anne Jump Cannon (1863-1941)

Coming Events

Our June Regular Meeting will include our annual elections and business meeting. in addition to programs. Although most business is carried on by the Board, elections and approval of Bylaws revisions will take place at the June regular meeting. Watch for a draft of the proposed bylaws update.

May 19, 2017 has been selected as our Astronomy Campus cleanup day. We will meet at the Ray & Ruthie Astronomy Center at 9 AM and expect to be joined by members of the Master Gardeners to do some weeding, planting and general building and grounds maintenance. Everyone is welcome to pitch in. A pair of gloves is a good idea; rakes, etc. are optional. You're welcome to bring beverages and snacks if you like.

Our annual night under the stars at Birch Creek will be Wednesday, July 26 after the performance, weather permitting, with a backup date of the 27th in case of clouds.

Members will bring telescopes, binoculars and laser pointers to Whitefish Dunes State Park on Saturday, August 19 for the Candlelight Walk.

Keep in mind that DPAS will be hosting **NCRAL in 2018**. Plans are already well underway. Details to follow. There will be plenty of opportunities for members of DPAS to participate in the planning and execution of this important event.

DPAS' Trip to the Great Total Solar Eclipse on August 17, 2017 is rapidly approaching, and we've had a great response from our members. We are currently expecting at least 24 participants to show up at the St. Peters Drury Inn, and still have room on our expanded block of rooms for many more. 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.