

THE BLUE MOON OBSERVER

JANUARY, 2017

The Annual Dinner of the Door Peninsula Astronomical Society
Will be on Tuesday, January 3, 2017 at Stone Harbor Resort,
107 North First Avenue, Sturgeon Bay
Gathering at 5:30, Dinner at 6:30

We will be ordering dinner from the menu

Please RSVP by December 27 to

Treasurer@doorastronomy.org



Door Peninsula
Astronomical Society

Mailing Address:

P.O. Box 331

Sturgeon Bay, WI 54235

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Notes from Our Meeting

December 6, 2016

15 Members and Guests

Dave Udell opened with a reminder of our January meeting which will start with a happy hour at 5:30 and then dinner, off the menu, at 6:30 at Stone Harbor. This reminder will be after the fact, and, I expect, of happy memories by the time you read this! (The Rib Eye I had *last* year was just great ... Roger had it, too, and I'll bet he went for it again!)

Then **John Beck** presented on **Capella**, the star (stars!), and **Auriga**, its host constellation. **Capella** is Latin for she-goat, and **Auriga**, for charioteer - it takes some imagination to see what the namers saw, but that's what it is named, and it is a beautiful and bright star, the Alpha star of the constellation, and sneaking above and past our horizon to qualify for being a circumpolar star and constellation from above the 44th parallel. Capella is actually a double star 4.2 light years distant, dubbed Aa and Ab, each about 2.5 solar masses, and orbiting each other about every 104 days. They are young stars, only about 400 million years old, just 1/10 the age of our Sun. Being big and bright and young, John asked us to predict something about them: and it was that they will burn and die much sooner than our Sun. Auriga itself as a constellation has many characters associated with it, including Neptune, and four horses. The horses are seen as sea-horses, pulling Neptune's chariot.

Our break, prepared by **Jacque Axland**, was two big bowls of trifle: a banana trifle, topped with strawberries and chocolate bars and with lots of bananas. That's all I had room for, and the chocolate version looked every bit as good as the banana. Plus cookies. Thank you, Jacque! *cont. 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.

Nightowl

As the Door Peninsula Astronomical Society (DPAS) enters a new year it is appropriate to honor the legacy of the late Ray Stonecipher.

Ray was a Professor of Astronomy at the University of Wisconsin - Whitewater from 1966 to 1986. He founded the Door Peninsula Astronomical Society in 1998 and served on the Board from then until his death from cancer at age 87 on August 27, 2015.

Working with The Crossroads at Big Creek (Crossroads), the Sturgeon Bay School District, and the family of the late Leif Everson, the observatory bearing Leif's name was built and dedicated in 1997. He then directed many improvements to the observatory including adjustments to the dome, resurfacing of the primary mirror of the 14" Celestron Schmidt-Cassegrain telescope, the Paramount ME Robotic mount by Software Bisque with computer connections and software updates, a weather station, the All Sky Camera, and the Mallincam CCD video imaging system. For a time a radioastronomy system was also added under his direction.

Through his leadership, fiberoptic transmission lines connected the observatory with Sturgeon Bay High School and astronomy education was made available to high school students and their teachers.

Later additions included a telescope fitted with a hydrogen alpha filter which allows viewing of activity on our sun such as flares and coronal mass ejections and a group of permanent piers to hold parallelogram mounts for binoculars, allowing one to hand off the view of one sky object to a taller or shorter individual with the binocular remaining aimed in the same direction, a valuable teaching tool.

He guided the development and installation of a series of plaques positioned along a Crossroads trail showing in scale the relative distances of the solar system planets from the sun. Working with the Peninsula Art School and a grant from the National Endowment for the arts, the StarGarden was constructed and provides a comfortable place for viewers to see the night sky with unaided vision or with binoculars. It also provides an ideal place for amateurs to set up their own telescopes.

Leadership Door County Class of 2012, in conjunction with Ray, added an analemmatic sundial to the "astronomy campus" near the observatory. Ray created the design and provided the calculations so that a person can stand on a tile representing the current month and, with hands overhead, cast a shadow to show the time. **cont. on p. 5**



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 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.

meeting notes from page 1

The first of a public TV series named *Genius*, and featuring Stephen Hawking, remarkably “speaking” with a mechanical but pleasant voice, was cleverly done, with Hawking presenting questions to his three student assistants who had to find a way of answering them. The theme of the questions was about the universe and where it all came from.

He began with “Where did the cosmos come from?” This one he answered himself: it was created from an infinitely small, infinitely hot and dense point, and then “Where did it all begin?”. Using a 12”x12” photo from Hubble, he noted the 10,000 galaxies in it ... some of them more than 30 billion light years away. If there are 10k in a single photo, how many, he asked are there in the whole universe. The assistants imagined a 1000’ sphere around them, of which their one-foot-square picture was one frame. Using a Celestron SCT set up on an open grassy field, they walked the distance it would take to fill the scope’s view finder (I didn’t catch the power of the eyepiece they were using) , and using the distance to the scope as the radius of the sphere to calculate the number of images it would take to fill the sphere, with each image holding 10k galaxies, they came up with 125,600,000,000 observable galaxies in the universe!

Next question was to figure where all these galaxies originated. This time, they demonstrated what happens to the sound of a siren on top of an electric VW, measuring the speed and distance of the car as it passed a

measuring point, the change in sound demonstrating the Doppler effect: the higher pitch resulting from the compression of sound waves as the car approached and lower pitch from the stretching of the waves as it went away. Their math showed a speed of 138mph in 110 seconds. Applying it to the cosmos, and linking the waves to color, they found that the further away the galaxies are, the faster they are receding, the red shift, and the closer they are, the slower, the blue shift. So the next question was, if the galaxies are moving away from us and each other, there must have been a starting point. Where was it?

This one was tricky: every observation point would show galaxies moving away, as if every observation point was where the Big Bang began. This is what Penzias and Wilson at Bell Labs found when they heard the sound, the buzzing we hear between channels on the radio or the crackling “snow” on an untuned TV: the sound comes from everywhere and is actually the background radiation from the Big Bang, some 13.1 billion light years ago. He then orchestrated the use of big balloons between players on a soccer team; as the balloons expanded and pushed each other apart - his simulation was to demonstrate that it is space itself that is expanding, not the galaxies. The middle of the universe is just a matter of perception: everywhere is the center. Even you.

Four points of summary: the universe is enormous ... it is expanding ... the farthest galaxies are the fastest receding ... space itself expands.

continued on page 4



Astronomy Quiz

1. Capella is in the constellation_____.
2. The center of the universe is
 - a. The sun
 - b. A supermassive black hole
 - c. Dependent upon the observer
 - d. Non-existent
 - e. c and d are correct
 - f. None of the above is correct.
3. Which crater on the moon has the highest albedo?
4. The first exoplanet (planet orbiting a main sequence star other than our sun) was discovered in what year?
5. Pulsar PS B1919+21 was discovered by Jocelyn Bell Burnell while a student of Antony Hewish. She initially referred to the object as LGM-1. What did "LGM" stand for?

meeting notes from page 3

We may have to watch it a few more times to really catch on. Meantime, in a couple of months, we'll watch the next episode - stay tuned!

Mike Egan

Coming Events

Annual Dinner January 3
see page 1

Viewing Nights 2017

January 28

February 25

March 25

April 29

May 27

June—none*

July—none*

August 19 at Whitefish Dunes State park

September 23

October 21

November 28

December 16

* No viewing nights scheduled for June or July because it gets dark enough to see deep sky objects too late at night.

Viewing nights will begin one hour after sunset although the gate will be open and members as well as the public are welcome to arrive earlier. Late arrivals present the problem of glare of headlights as viewers' eyes are accommodated to the darkness.

We will also schedule outreach to follow one of the Birch Creek concerts again this year. These events have been very popular with students.

Program Schedule

Clearly there will be no program in January as the Annual Dinner replaces the January regular meeting. Program titles for the remainder of 2017 will be published in the February issue of the Blue Moon Observer. Plans are to alternate video programs with programs presented by members. Any member who would like to present a program is asked to contact any Board member; contact information for Board members is listed in the left column on page 3.

Poetry Corner

In darkness we see no light
 Far from urban excess
 Remote from city glow
 Spared of nightlong yard lights
 Just darkness

In darkness we see no moonlight
 Luna and Sol have retreated
 Setting in proximate time
 Hidden behind Terra
 Just darkness

In darkness we see no shadow
 No glare to assault the eyes
 No spectral human harm
 No wildlife seduction
 Just darkness

In darkness we see no light
 Clouds have lost their source
 From sun and moon and lamp
 But lo, anon they break
 Revealing myriad stars

In darkness we see lights.

Stonecipher cont. from p. 2

Ray connected DPAS with the Astronomical League, the Night Sky Network of the Astronomical Society of the Pacific, and the International Dark-Skies Association (IDA). He also provided the organizational structure for DPAS.

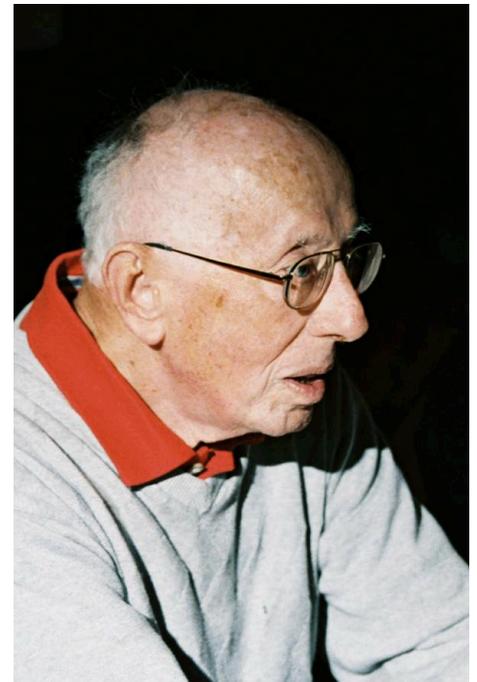
Ray provided the funds for the DPAS storage facility named the Ray and Ruthie Stonecipher Astronomy Center which also houses an inflatable planetarium and where DPAS monthly meetings are held. The planetarium has been used in outreach to school children and adult groups regardless of time of day, time of year, or weather and sky conditions.

Ray's knowledge and teaching talents provided many programs for DPAS members and guests at monthly club meetings as well as to the public at various venues including the state parks. Through his leadership and example, DPAS members have been inspired to contribute programs and other forms of outreach.

Ray worked for months and years toward obtaining a Dark Skies Park designation from the IDA for Newport State Park and currently that designation is imminent.

Ray's legacy continues not only in the memory of those of us who knew him but also through his generosity which provides for financial support of DPAS activities and needs and through a scholarship program, administered by DPAS, for students pursuing education in the sciences.

In 2009, Ray was nominated by DPAS for, and was awarded, the annual Region Award by NCRAL, the North Central Region of the Astronomical League.



Ray's legacy remains with us in every aspect of our sharing our interest in astronomy with members and the public at all age levels.



Astronomy Quiz Answers

1. Capella is in the constellation Auriga.
2. The answer is e. According to currently accepted theory, there is no center of the known universe, but any attempt to determine the center results in it being at the point of the observer, wherever that is. A supermassive black hole is assumed to be at the center of our Milky Way galaxy, but not of the universe.
3. The Aristarchus crater has the highest albedo, or brightness of reflected light.
4. The first confirmed exoplanet orbiting a main sequence star was reported in 1995. (In 1992, a planet orbiting a pulsar was announced.) Since then more than 1,000 exoplanets have been confirmed.
5. LGM stood for "Little Green Men". The name came when it was unclear as to the source of the pulsar which was discovered with radioastronomy, one conjecture being that they came from a distant civilization.

2017 Total Solar Eclipse Update

If, during the progress of a total [solar] eclipse, the gradually diminishing crescent of the sun is watched, nothing remarkable is seen until very near the moment of its total disappearance. But, as the last ray of sunlight vanishes, a scene of unexampled beauty, grandeur, and impressiveness breaks upon the view.

The globe of the moon, black as ink, is seen as if it were hanging in mid-air, surrounded by a crown of soft, silvery light, like that which the old painters used to depict around the heads of saints. Besides this "corona", tongues of rose-colored flame of the most fantastic forms shoot out from various points around the edge of the lunar disk.

Of these two appearances, the corona was noticed at least as far back as the time of Kepler; indeed, it was not possible for a total eclipse to happen without the spectators seeing it. But it is only within a century that the attention of astronomers has been directed to the rose-colored flames, although an observation of them was recorded in the Philosophical Transactions nearly two centuries ago. They are known by the several names of "flames,"

"prominences," and "protuberances."

— Simon Newcomb. 1878. *Popular Astronomy*. New York: Harper & Brothers. p. 252

There's nothing like it. Join DPAS on a field trip into the path of the 2017 Great American Total Eclipse on August 21, 2017! 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 ~~15~~ **25** (12 rooms already booked!) 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
November 29, 2016



