



THE BLUE MOON OBSERVER

JUNE 2019 VOLUME 21, NUMBER 6



Door Peninsula Astronomical Society

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www.doorastronomy.org

Meeting Notes	page 1
Who We Are	page 2
Book review	page 2
Outreach	page 2
NSN Article	page 3
DPAS Board	page 3
New Members	page 4
Astronomy quiz	page 4
Radio Astronomy	page 4
Poetry Corner	page 5
Elections	page 6

The June general meeting of DPAS will be held at 7 PM on Tuesday, June 4, at 7 PM at the Ray & Ruthie Stonecipher Astronomy Center. John J. Beck will present the Apollo 10 mission leading up to the 50 year celebration of the first lunar landing. Following refreshments, the Great Courses lesson "Galaxies and Clusters" will be shown.

Notes from the General Meeting of the DPAS, May 7, 2019 @ 7 pm.

Attendance: 30.

President *pro tem* John J. Beck welcomed all and made the following announcements: Moon viewing scheduled for the evening of July 20 to celebrate the 50th anniversary of the first moon landing and walk by Neil Armstrong and Buzz Aldrin. Transit of Mercury on November 11. Viewing with members of the DPAS and the Northern Door Astronomical Society at Newport State Park the evenings of August 23, 24 & 25. Spring clean-up at the Astronomy Center has been moved to Friday, May 10 @ 9 am - Thanks volunteers! Announcement from Coggin Herringa: The theme of the Door County Libraries Summer Read program this year is Space. She has received a grant from the Wisconsin Space Grant Consortium to finance Planetarium Shows at various schools and other locations around the county. A schedule was distributed and a sign-up sheet provided. DPAS will receive \$50 for each show. Dr. Beck then explained about the Library Telescope lending Program; for solar viewing to accompany the Planetarium shows please bring an instrument with a proper solar filter.

flights tested space walks and docking. Two men in a capsule about the size of a VW bug and the longest Gemini flight was 14 days! The Apollo program was designed from the start to put men on the moon and therefore they needed a heavy lift rocket with 1.5 million pounds of thrust! The Saturn rocket was created by a team led by Werner von Braun. The first stage had eight (8) H-1 engines powered by a type of kerosene jet fuel - burns for 155 secs to an altitude of 30 miles. The second stage was called S-4 and was powered by Oxygen and Hydrogen. Amazingly all 9 Saturn test launches were more or less successful. Later test launches sent up satellites and in one test called Project Highwater they sent up a heavy load of water and exploded it 60 miles up. Kaboom! We even saw the video they took. Testing out an Apollo-shaped cone, the Pegasus satellite was placed into orbit to measure micro-meteor density in space. FYI: there is one complete and unused Saturn on display at the Kennedy Space Center in Florida.

Apollo 5 was the first to launch a lunar module into Earth orbit. NASA had a giant vacuum chamber in which they tested the command and lunar modules extensively to make sure they didn't leak! The Nova rocket was the Moon booster created to fire the command-lunar
continued on page 2

Tom Gwilym presents: Apollo Test Flights 1-6. The previous Gemini



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 16" Ritchey-Cretien telescope on a sophisticated tracking mount controlled by computer, and a new Maksutov-Cassegrain telescope for planetary viewing. A weather station is housed in the observatory. Current weather readings are 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 the same object through the same binocular.

The Ray & Ruthie Stonecipher Astronomy Center provides for storage, projects, meetings, warm-up and toilet facilities. It also houses a Digitalis inflatable planetarium with a sophisticated projection system. The planetarium is used 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. Or you can set your GPS to 2200 Utah.

meeting notes from page 1

module towards to Moon - actually where the Moon will be in 2 & 1/2 days when the spacecraft gets there. The unsung hero, according to Tom G. and many others, was John Houbolt. He came up with the Lunar Orbit Rendezvous (LOR), the scheme to dispatch a lunar landing to the surface and return to lunar orbit to rendezvous with the command craft which will return the astronauts to Earth. To get all this hardware into space, the first stage Saturn V was developed - still the biggest rocket ever so far. Built by Boeing, the upper stages were built by Rocketdyne, North American Aviation and Douglas Aerospace. Efforts to parachute the 1st stage back for reuse failed and they ditched the idea.

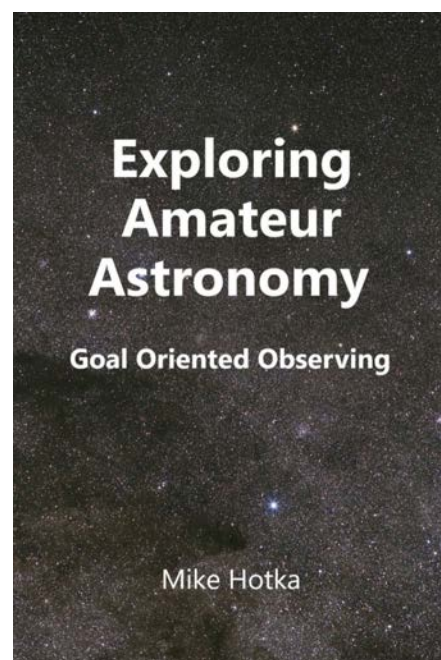
Some interesting facts about the early Apollo launches: Apollo 9 2nd stage was sent into a heliocentric orbit. The lunar module bottom and top was built by Grumman. The command and service modules were built by American Aviation. Columbia, the Apollo 11 command module, is on tour and is currently at Seattle's Museum of Flight. They used the Saturn V test launches to also test the giant movers used to transport the rockets to the launchpad. Only 2 test flights of the Saturn V before Apollo 8 to lunar orbit. Tom showed an old Walter Cronkite live on CBS broadcast of the Apollo 4 test launch. Apollo 6 was a near-disaster - some rockets shut down and the 3rd stage failed to re-ignite. Tom then shared a photo of he and his brother when they were very young, and he is donning a spaced helmet and EVA pack. A space nerd back then as well. Really an amazing amount of detail about the testing of some of the biggest rockets ever made. He really knows his stuff.

Tom Gwilym continued his one-man show to share some astrophotos taken with his set-up at home: An apo-chromatic refactor mounted to a concrete pier using an ASI 294 1-shot color camera. Says he is still

learning to process images on a computer. Great images of M51 the Whirlpool galaxy, M81 Bode's galaxy, M101 the Pinwheel galaxy, M106, NGC 2903 and the Virgo Cluster. He also showed drone video of his backyard and observatory. After refreshments provided by Krista & David Ott, the new planetarium was inflated and guest enjoyed a few quick tours of its capabilities. Thanks to Dave Lenius and Tom Gwilym for getting it up and running!

Thanks to Tom Minahan for taking and reporting these minutes.

Ed



The above book cover is of a book recently reviewed by the DPAS board. It is written for members of the Astronomical League, which DPAS members are, about how to approach the AL clubs and earning rewards. Below is a review of that book published elsewhere.

Want to complete more Observing Programs?

Have you ever wanted to start and complete more of the Astronomical League's observing programs but just didn't know how? Mike Hotka's new book, *Exploring Amateur Astronomy – Goal Oriented Observing*, will not only help you start more *continued on page 5*

DPAS BOARD

John J. Beck, President *pro tem* and Editor
editor@doorastronomy.org

David Lenius, Vice President

Thomas Minahan, Outreach Coordinator

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

Jacque Axland, Membership Chairperson and Recording Secretary of the Board

John W. Beck, Past President and Webmaster

Dennis Sundin, Member at Large

Tom Gwilym, Member at Large

Jim Maki, Member at Large

Steve Ransom-Jones, Member at Large

Ray Stonecipher, in spirit.

Gary Henkelmann, on leave from the Board.

Barbara Henkelmann serves as the DPAS Archivist.

Coggin Heeringa serves as acting school coordinator in the absence of that board position.

The business of the DPAS is largely conducted at the Board meetings to leave the general meetings open for programs. The Board meetings are held at the Astronomy Center at 7 PM on Monday, 8 days prior to the following general meeting.

Members of DPAS are invited to attend Board meetings.

Jupiter Shines in June By David Prosper

Jupiter stakes its claim as the king of the planets in June, shining bright all night. Saturn trails behind Jupiter, and the Moon passes by both planets mid-month. Mercury puts on its best evening appearance in 2019 late in the month, outshining nearby Mars at sunset.

Jupiter is visible almost the entire evening this month. Earth will be between Jupiter and the Sun on June 10, meaning Jupiter is at opposition. On that date, Jupiter rises in the east as the Sun sets in the west, remaining visible the entire night. Jupiter will be one of the brightest objects in the night sky, shining at magnitude -2.6. Its four largest moons and cloud bands are easily spotted with even a small telescope.

What if your sky is cloudy or you don't have a telescope? See far more of Jupiter than we can observe from Earth with NASA's Juno mission! Juno has been orbiting Jupiter since 2016, swooping mere thousands of miles above its cloud tops in its extremely elliptical polar orbits, which take the probe over 5 million miles away at its furthest point! These extreme orbits minimize Juno's exposure to Jupiter's powerful radiation as it studies the gas giant's internal structure, especially its intense magnetic fields. Juno's hardy JunoCam instrument takes incredible photos of Jupiter's raging

storms during its flybys. All of the images are available to the public, and citizen scientists are doing amazing things with them. You can too! Find out more at bit.ly/JunoCam

Saturn rises about two hours after Jupiter and is visible before midnight. The ringed planet rises earlier each evening as its own opposition approaches in July. The Moon appears near both gas giants mid-month. The Moon's tour begins on June 16 as it approaches Jupiter, and its visit ends on June 19 after swinging past Saturn.

Mercury is back in evening skies and will be highest after sunset on June 23, just two days after the summer solstice! Spot it low in the western horizon, close to the much dimmer and redder Mars. This is your best chance this year to spot Mercury in the evening, and nearly your last chance to see Mars, too! The two smallest planets of our solar system pass close to each other the evenings of June 17-18, coming within just $\frac{1}{4}$ degree, or half the width of a full Moon, making for a potentially great landscape photo at twilight.

Discover more about NASA's current and future missions at nasa.gov

This article is distributed by NASA Night Sky Network

See page 6 for images related to the above article.

Astronomy Quiz

1. Who was the first to suggest that stars are like our sun and might even have worlds orbiting them?
2. Who was the first to measure the distance to a star and to coin the term "light-year"?
3. Who was the first to use spectroscopy to analyze the composition of the sun?
4. Who was the first to photograph a body in space?
5. Who is credited with being the first to predict a solar eclipse?

New Members

Welcome two new members:

Joel Sauer and Jay Schubring



The Blue Moon Observer

Radio Astronomy In the Future for DPAS?

Although radio astronomy is not a totally new concept to DPAS, it may be unfamiliar to newer members. When Dr. Ray Stonecipher and Kent Seeley were active members, we had a basic radioastronomy setup which I believe was a decametric array. Recently some interest in reviving radioastronomy at DPAS has been expressed including by Board member Dennis Sundin.

Unlike optical astronomy, amateur radioastronomy is not used for imaging of celestial objects. What can be done with an amateur radioastronomy setup? It depends on many things, but especially three: antenna, frequency, and desired use.

All radio telescopes have at least have 3 basic components: the antenna, the receiver, and the output recorder. One approach for starting out is the use of a parabolic antenna such as a DirectTV dish. A popular example is the "Itty Bitty Telescope" as described in several articles available on the internet including:

<http://www.aoc.nrao.edu/epo/teachers/ittybitty/procedure.html>

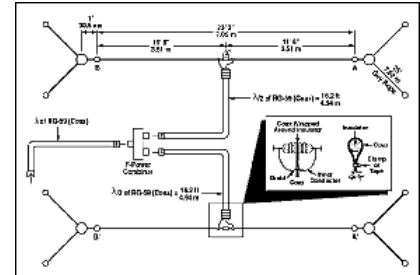
It operates in the 12,000 MHz band. It detects heat and can distinguish between the cold sky and the sun and can detect warm bodies such as a person. It is not useful for serious astronomy but can be used to track satellites.



The decametric array operates at 20 megahertz and can be used to detect

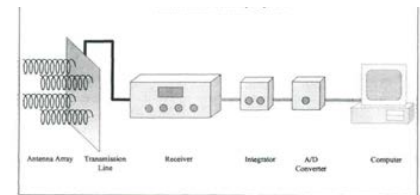
Jupiter and activity on the sun. NASA's Jove project is an example, and likely what we would use again, were we to proceed with radioastronomy. One of many resources is:

<https://radiojove.gsfc.nasa.gov/telescope/>



Another type is a helical array as described here:

<http://www.toadland.net/works/Design%20of%20Helical%20Radio%20Telescope.pdf>



The one cited in the article operates at 408 MHz. This is an advanced approach to radioastronomy, perhaps beyond the scope of what is practical for a small club.

The SuperSID uses a compact 1meter loop antenna for indoor or outdoor use. It monitors for sudden ionosphere disturbances, real data from the ionosphere resulting from solar activity. This data can be sent to the University of Sanford database.



Resources include the Society of Radio Astronomers, the Astronomical League Radio Astronomy Observing Program, and The American Association of Variable Star Observers (AAVSO).

Poetry Corner A Journey in Space by Frances

(Trinity Anglican School – White Rock)

I have a dream to go to space
because space is an amazing
place.
In space, stars shine like little
lights.
I'd love to touch their mighty
heights.

Ten, nine, eight, seven, six,
five, four ...
We're going to leave this
Earthly floor.
Three-two-one, we're blasting
off.
We're going to space! It could
be tough.

Flying through Earth's thin at-
mosphere
we're finally in space – we're fi-
nally here!
Looking back, what do I see?
Mercury, Venus and Sun face
me.

Moving on to miraculous Mars,
zoom and see a heap of stars.
Flying into the Asteroid Belt ...
mind those little rocks don't
pelt.

Flying through the asteroids
each one's a challenge to avoid.
I see the king of the Milky Way
where Jupiter's colours swirl
and sway.

Saturn's beautiful rings of ice
can freeze us all in just a trice.
Next we fly past Uranus
then Neptune, blue and serious.

And now it's time to go back
home
as I need to search on Google
Chrome.
I must find out about all space.
Yes space, the most amazing
place.



Above photo compliments of
William O'Rourke.

book review from page 2
observing programs, but will also share
an observing methodology to help you
get more out of your observing ses-
sions. Mike is a Platinum Master Ob-
server and has completed all but three
of the currently existing observing pro-
grams. In his book, he shares tips and
tricks he learned throughout the years
of how to overcome some of these pro-
gram's learning curves, so that you can
start recording observations sooner. He
wrote this book because of his love of
astronomy and his desire to share his
knowledge of observing celestial
objects with others.

Mike's book explains the concept of set-
ting SMART goals to ensure you ob-
serve on a regular basis. The book
goes on to explain a methodology that
Mike has developed and refined over
the years of how to plan an observing
session, find the resources you will
need in the field and the importance of
keeping a good observing log of your
observations.

The remainder of the book contains a
chapter for each of the observing pro-
grams that Mike has completed. These
chapters describe how Mike
approached each observing program
and he shares the techniques that were
effective in completing the observations
for each program. With this knowledge,
you will be able to start making obser-
vations from the very beginning for
even the most difficult of observing
programs.

This book emphasizes learning and re-
fining astronomical observing tech-
niques. It is designed to aid the
beginner as well as the experienced
amateur astronomer to train their eye to
see faint celestial objects. This book is
dedicated to those that would like to
start and complete more Astronomical
League observing programs.

**Exploring Amateur Astronomy –
Goal Oriented Observing** can be
purchased in a paperback or eBook
version from Amazon.com.

Outreach

On Wednesday, May 15, Dave Lenius
set up the new Digitalis planetarium at
St. Peter's School and, with the help of
Susan Basten, presented a series of
age-appropriate programs to one group
after another all morning. The "Wow!"
exclamations rang out from time to
time, validating the effectiveness of this
use of the planetarium in holding the in-
terest of young people as they learn
about astronomy concepts.

On Monday, May 20 Dave and Susan
again provided education to young
people with use of the planetarium as a
large group from Algoma visited the
planetarium, set up in the Astronomy
Center. Meanwhile those outside the
planetarium were shown the inside of
the Leif Everson Observatory as well as
the Annelematic Sundial and the
StarGarden. Not having room for the
teachers and other adults accompany-
ing the Algoma group, several adults
have shown interest in returning to
experience a planetarium program.

Celebration of the 50 year anniversary
of the moon landing by Apollo 11 will
take place on July 20 with planetarium
and live viewing opportunities.

Tom Minahan has arranged for dark sky
viewing at Newport State Park August
23, 24, and 25.

The transit of Mercury on the morning
of November 11 commences prior to
sunrise. That morning, viewing of the
transit will take place on campus.

Astronomy Quiz Answers

1. 16th century Italian philosopher Giordano Bruno. He was later jailed and eventually burned to death.
2. Russian astronomer Friedrich Bessel in 1838 used the parallax method to measure the distance to 61 Cygni. He went on to map 50,000 stars.
3. Early in the 19th century, Joseph von Fraunhofer invented spectroscopy and used it to determine elements on the sun and the moon.
4. Louis Daguerre took a photograph (daguerreotype) of the moon in 1839. Unfortunately that image was later destroyed in a fire.
5. The Greek philosopher Thales of Miletus predicted the solar eclipse of 28 May, 585 BC, although he couldn't have predicted the exact timing.

Viewing Nights

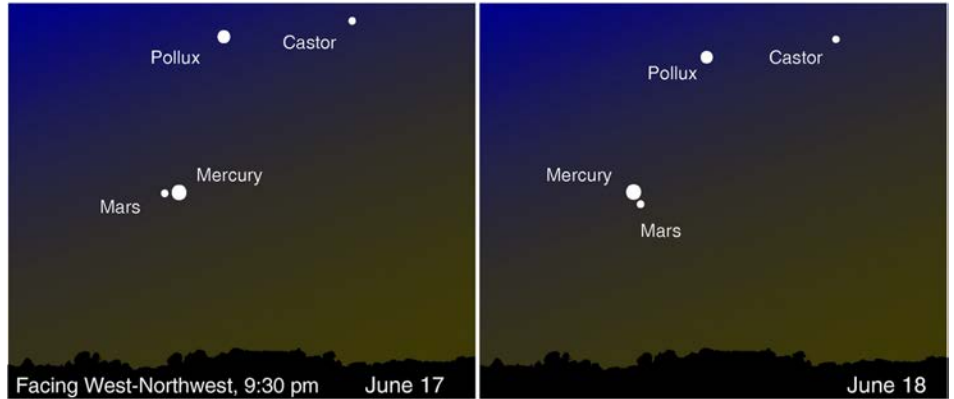
The following is the tentative list of viewing nights for 2019. Changes will be posted here and at

www.doorastronomy.org

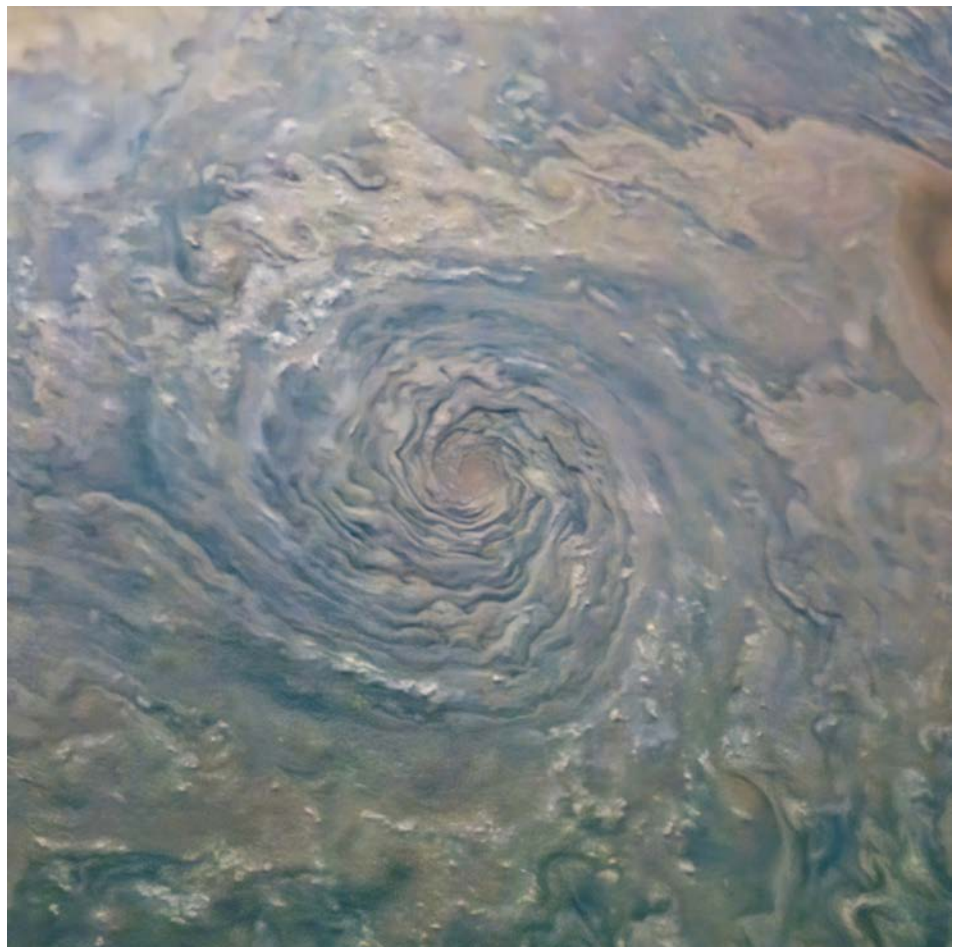
July 6
 August 3 (and/or 28)
 September 28
 October 26
 November 23
 December 28

Note: If skies are cloudy, a program will be presented at the Astronomy Center.

Some summer viewing may be cancelled because it gets dark so late.



The above images were provided with the Night Sky Network article on page 3 in conjunction with the Stellarium software program.



JunoCam image of storm on Jupiter is association with the Night Sky Network article on page 3.

Elections

Elections of officers and board members will be held at the July 2 general meeting. Nominations may be made at the June 4 general meeting. A slate of nominees will be

presented by the board at the July 2 general meeting prior to voting by those present.