



## EPHEMERIS

The official newsletter of the Prescott Astronomy Club (PAC)  
*e-phem-er-is*: a time-based listing of future positions of solar system objects

## NOVEMBER 2017

### UPCOMING EVENTS



Wednesday, November 1 - Regular PAC meeting @ 6:00 PM in the Founder's Suite, Prescott Public Library. Club member Gary Frey will describe his "North Pine Observatory". In addition, election of 2018 club officers and directors will be held.

Wednesday, November 8 - METASIG @ 5:00 PM at Streets of New York, Prescott Valley. Sign up at November 1 meeting.

Saturday, November 11 - Starry Night @ 6:30 PM at the Pronghorn Park, Prescott Valley. Sign up at November 1 regular meeting.

Wednesday, November 15 - Board meeting @ 6:30 PM.

Thursday, November 16 - Third Thursday Presentation @ 6:00 PM in the Founder's Suite, Prescott Public Library. Dr. Ken Edmundson, Photogrammetrist, USGS, will present "From Corona to the Moon: Secret CIA Spy Camera that Mapped the Moon on Apollo 15-17 Offers Valuable Science Today". From 1959 to 1972 there were 144 satellite launches in the secret reconnaissance program operated by the CIA and the U.S. Air Force known as Corona. Now declassified, the primary purpose of Corona was surveillance of the former Soviet Union and China. A version of the high-resolution panoramic camera on Corona satellites became a critical component in the lunar mapping system flown on several Apollo missions. Data from this system continue to have a wide variety of scientific and engineering uses. The USGS Astrogeology Science Center is producing a digital image mosaic of Apollo 15 Panoramic Camera images that covers approximately 11% of the Moon at a resolution of 2-5 meters. With the Cold War as a backdrop, Dr. Edmundson will present an overview of Corona, the Apollo lunar mapping system, and the beautifully complex Panoramic Camera that went to the Moon.

Friday, November 17 - US Vets @ 6:15 PM on Gurley Street. Sign up at November 1 meeting.

## OFFICER AND BOARD OF DIRECTOR ELECTION

The election of officers and at-large directors for 2018 will be held at the regular meeting of members on November 1, 2017. Any member in good standing may nominate him/her self or another member. If nominating someone other than yourself, make sure that the nominee is willing to serve in the capacity nominated. Nominations will be accepted for all positions at or before the meeting. The 4 officers are elected to a 1-year term; at-large directors are elected to a 2-year term. So far the list of nominees is as follows:



President: Steve Eubanks, John Verderame, Jeff Stillman

Vice President: John Carter

Secretary: Doug Tilley

Treasurer: No candidates at this time

At-large Directors: Adam England, Joel Cohen and John Baesemann

At-large Directors (continuing, not up for election): Pat Bledsoe

To nominate yourself or another member for any of the positions, contact Patrick Birck ([pbirck@cableone.net](mailto:pbirck@cableone.net)).

## SALE OF SELECTED PAC EQUIPMENT

The Board of Directors has approved a process for selling selected equipment that has been donated to or acquired by the Club that is not being used. Items for sale will first be offered to members for a period of at least one month. During this month sealed bids for the item will be accepted from members, subject to a minimum bid set by the Board. At the end of the bid period the bids will be opened and the highest bid (at or above the minimum) will be selected. If the item is not sold to a member, the item will be offered to the public at a higher price. This process has been developed to give all members an equal opportunity to purchase items at a favorable price.



Be on the lookout for the first such sale – an 8” Meade LX 200 Classic SCT. Details will be sent to members by email and available on the PAC website.

## SPOOKY IN SPACE: NASA IMAGES FOR HALLOWEEN

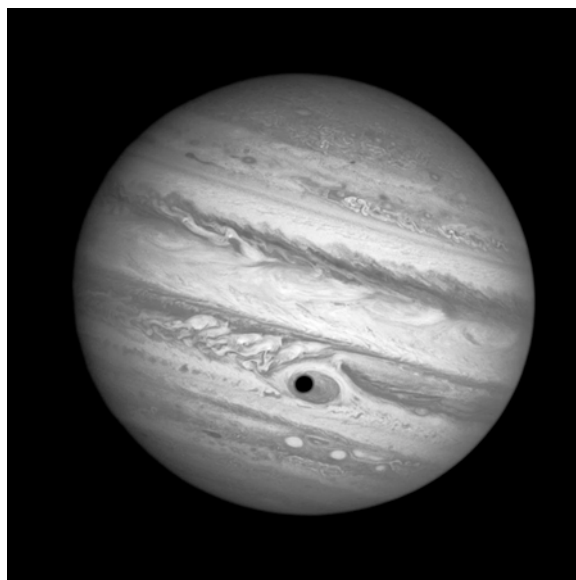
By Linda Hermans-Killiam

Have you ever seen a cloud that looks sort of like a rabbit? Or maybe a rock formation that looks a bit like an elephant? Although you know that a cloud isn't *really* a giant rabbit in the sky, it's still fun to look for patterns in images from nature. Can you spot some familiar spooky sites in the space images below?



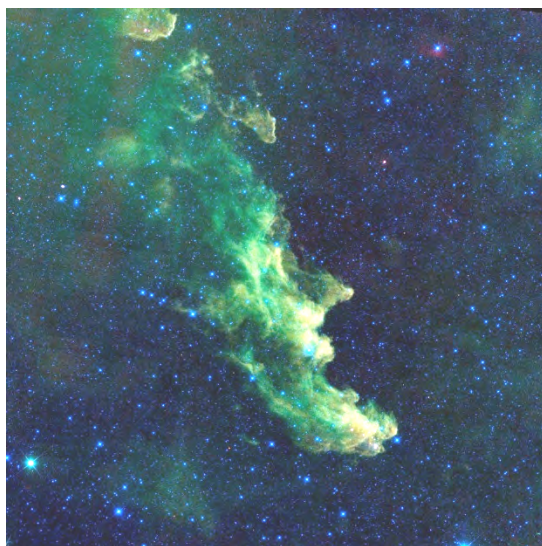
*Credit: NASA/GSFC/SDO*

This might look like the grinning face of a jack-o'-lantern, but it's actually a picture of our Sun! In this image, taken by NASA's Solar Dynamics Observatory, the glowing eyes, nose and mouth are some of the Sun's active regions. These regions give off lots of light and energy. This causes them to appear brighter against the rest of the Sun. Active regions are constantly changing locations on the Sun. On the day this image was captured, they just happened to look like a face!



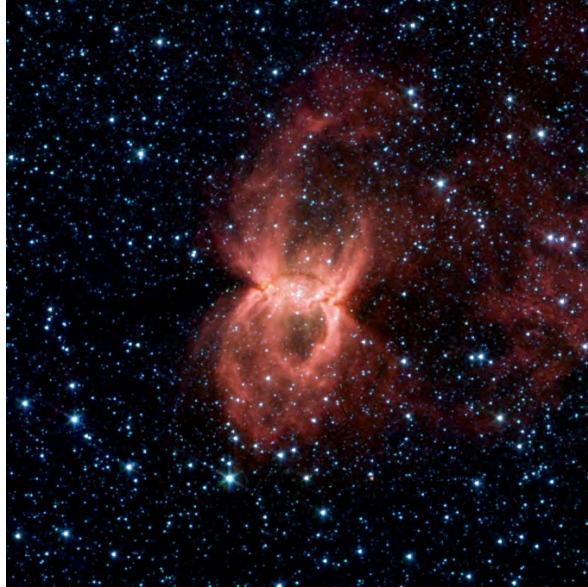
*Credit: NASA/ESA/A. Simon (Goddard Space Flight Center)*

This is a Hubble Space Telescope image of Jupiter. Do you notice something that looks like a big eye peeking back at you? That's actually the shadow of Jupiter's moon Ganymede as it passed in front of the planet's Great Red Spot. Jupiter's Great Red Spot is a gigantic, oval shaped storm that is larger than Earth and is shrinking. It has been on Jupiter for several hundred years, and its winds can swirl up to 400 miles per hour!



*Credit: NASA/JPL-Caltech*

Can you see the profile of a witch in this image? This image, from NASA's Wide-Field Infrared Survey Explorer, shows the Witch Head nebula. The nebula is made up of clouds of dust heated by starlight. These dust clouds are where new stars are born. Here, the dust clouds happen to be in the shape of an open mouth, long nose and pointy chin.



*Credit: NASA/JPL-Caltech/Univ. of Wisc*

The Black Widow Nebula looks like a giant spider in space. It is a huge cloud of gas and dust containing massive young stars. Radiation and winds from these stars push the dust and gas around, creating a spider-like shape. This image is from NASA's Spitzer Space Telescope.



*Credit: NASA/JPL-CALTECH/MSSS*

Did a skeleton lose one of its leg bones on Mars? Nope! It's just an image of a Martian rock. NASA's Curiosity rover captured this image. The rock was probably shaped to look this way over time by wind or water. If life ever existed on Mars, scientists expect that it would be small organisms called microbes. So, it isn't likely that we'll ever find a large fossil on Mars!

To learn some fun planet facts and make a planet mask, check out NASA Space Place: <https://spaceplace.nasa.gov/planet-masks>

## IF IT'S CLEAR

By Fulton Wright, Jr., PAC

Celestial events (from Sky & Telescope magazine, Astronomy magazine and anywhere else I can find information) customized for Prescott, Arizona. Remember, the Moon is 1/2 degree or 30 arcminutes in diameter. All times are Mountain Standard Time.



This month would be a good time to find Uranus and Neptune if you haven't done it in the past. Neither presents much to look at in a telescope. Go online for finder charts so you know where to look.

Also, you might find a comet this month. C2017 O1 is detailed in the article in Sky & Telescope, November 2017, p. 48. It is also called ASASSN1.

On Friday, November 3, at 5:43 PM (8 minutes after sunset), the full Moon rises, spoiling any chance of finding faint fuzzies for the night. Later that night, at 9:39 PM, the Moon occults a 4th magnitude star, Mu Ceti. The star reappears at 10:50 PM. This will be an occultation by the full Moon, so it will be easiest to see with a big telescope at high power.

On Sunday, November 5, at 2:00 AM, most of the USA returns to standard time. Arizona, on the other hand, having eschewed such silliness as daylight savings time, cruises on unperturbed. We just miss an occultation of Aldebaran because the star hasn't risen yet. The star rises at 7:15 PM after the Moon has passed between us and it.

On Friday, November 10, the Moon is at last quarter phase, and rises at 12:13 AM (Saturday).

On Saturday, November 11, at 10:02 AM, the Moon occults a 1st magnitude star, Regulus. The star reappears at 11:01 AM. This is a daylight occultation, so a big telescope, high power, and a tracking mount will all be useful.

On Monday, November 13, about 6:30 AM, you can see Venus and Jupiter less than 1/2 a degree apart. Look low above the east-southeast for the pair.

On Saturday, November 18, it is new Moon and you have all night to hunt for faint fuzzies.

On Sunday, November 26, the Moon is at first quarter phase and sets at 12:36 AM (Monday).

## **NEED TO KNOW - ASK A MEMBER**

A new 15-minute segment is being added to the regular general meetings where members can have their ‘burning’ questions answered by other knowledgeable members. If you have an astronomy related question you would like explained, submit the question to Jeff Stillman ([jstillman50@cableone.net](mailto:jstillman50@cableone.net)). You can also bring up the question at the meeting.

## **VOLUNTEERS NEEDED**

Volunteers are needed for refreshment coordinator. If you would like to help and need additional information, please contact Jeff Stillman ([jstillman50@cableone.net](mailto:jstillman50@cableone.net)).

## **BOOKS AND MAGAZINES**

Over the years astronomy books have been donated to PAC. Boxes of these books will be available at the regular meetings. For a donation to PAC of \$1 per book, anyone can have a book. Books that are not purchased at a regular meeting will be available at the following Third Thursday programs. Any remaining unsold books will be donated to the Friends of the Prescott Public Library. We also have copies of past Sky and Telescope magazine. These will be available to any member wishing to take them. Unclaimed magazines will be recycled.



## **FOR SALE**

Please visit the Classified Ads section of the club website to view the items posted there for sale:

<http://prescottastronomyclub.org/classified-ads/>

New items are added now and then, so don't miss out on something that you would like to get for yourself...or a friend.



## PAC MENTORS

If you need advice on the purchase of astronomy equipment, setting up equipment, astrophotography, etc., contact a PAC mentor.



Jeff Stillman - Astrophotography - (928) 379-7088

David Viscio - General - (928) 775-2918

Greg Lutes - Visual Observing - (928) 445-4430

Joel Cohen - Beginner's Astronomy: Selecting & Using a Telescope - (856) 889-6496

Bill McDonald - Video Observing

## OBSERVING LISTS

Observing lists are available in PDF format on the PAC website to provide guidance and goals for visual and astrophotography programs.



Astroleague Lunar 100

Binocular Showpieces

Bright Nebulae

Caldwell

Dunlop 100

Face-On Spiral Galaxies

Globular Clusters

Herschel 400

Herschel II

Hidden Treasures

Messier

Open Clusters

Planet Maps

Planetary Nebulae

Royal Astronomical Society of Canada Finest NGC

Saguaro Astronomy Club Best NGC

S&T Lunar 100

Telescope Showpieces

The Secret Deep

## PAC WEBSITE & YAHOO GROUPS

Website: <http://www.prescottastronomyclub.org>

E-mail: <mailto:pacinfo@prescottastronomyclub.org>

Astrophotography special interest group:

<https://groups.yahoo.com/neo/groups/pacastrophotography/info>





## BOARD OF DIRECTORS

President: Jeff Stillman  
Vice President: Joel Cohen  
Secretary: Doug Tilley  
Treasurer: Stephen Eubanks

At Large: Pat Bledsoe  
At Large: Open  
At Large: Open  
At Large: John Baesemann



## PAC COORDINATORS

Astronomical League Coordinator: Pat Birck  
Facebook: Adam England  
Highland Center Coordinator: David Viscio  
Hospitality: Corinne Shaw  
Magazine Subscriptions: Stephen Eubanks  
METASIG: Marilyn Unruh  
PAC Affiliate Partner w/ NAU Space Grant Program – Jerry & Corinne Shaw  
PAC Store Sales: John & Laura Verderame  
Property Records: Doug Tilley  
Schools & Camps Outreach: Pat Birck  
Starry Nights Coordinator: Pat Birck  
Third Thursday Coordinator: Corinne Shaw & Pat Birck

Membership: Stephen Eubanks  
Newsletter: David Viscio  
Refreshments: Open  
Publicity: Adam England  
Webmaster: Russell Chappell



**ASTRONOMY PICTURE OF THE DAY: OCTOBER 10, 2017**

**MILKY WAY AND ZODIACAL LIGHT OVER AUSTRALIAN  
PINNACLES**

Image Credit & Copyright: Jingyi Zhang



*What strange world is this? Earth. In the foreground of the featured image are the Pinnacles, unusual rock spires in Nambung National Park in Western Australia. Made of ancient sea shells (limestone), how these human-sized picturesque spires formed remains a topic of research. The panorama was taken last month. A ray of zodiacal light, sunlight reflected by dust grains orbiting between the planets in the Solar System, rises from the horizon near the image center. Arching across the top is the central band of our Milky Way Galaxy. The planets Jupiter and Saturn, as well as several famous stars are also visible in the background night sky.*