DECEMBER 2018

UPCOMING EVENTS

Wednesday, December 5 - Regular PAC meeting @ 6:00 PM in the Founders Suite, Prescott Public Library.

Wednesday, December 12 - PAC Holiday Party @ 5:00 PM at Bonn Fire Restaurant and Grill, 1667 S. State Route 89, Chino Valley. See details below.

RAFFLE OF CELESTRON LUMINOS PREMIUM EYEPiece

At the December 5, 2018 general meeting, we will be raffling a Celestron Luminos Premium Eyepiece donated to the club by Dean Koenig of Starizona in Tucson, Arizona. This eyepiece has a 15 mm focal length with a 1.25" barrel and an 82 degree angular field of view.

Raffle tickets will be on sale at the beginning of the meeting and are $2.00 a piece or 6 tickets for $10.00. The raffle will take place during the meeting. Good Luck!
2019 OFFICER AND BOARD OF DIRECTOR ELECTION RESULTS

The election of officers and at-large directors for 2018 was held at the regular meeting of members on November 7, 2018. The following members were elected:

   President: John Carter
   Vice President: Open
   Secretary: Dennis Eaton
   Treasurer: Open
   At-large Director: Adam England
   At-large Director: Sal Jordan
   At-large Director: Greg Lutes
   At-large Director: John Baesemann

Congratulations to all and thank you for your willingness to serve the Prescott Astronomy Club.

However, two positions are still open - Vice President and Treasurer. Volunteers are urgently needed to fill these two positions. In addition, there are Coordinator positions, such as Refreshments, Public Relations, Webmaster, Star Party Coordinator, Third Thursday Speaker Coordinator, Newsletter Editor, Club Photographer, and others. These are mentioned to let members know about all the activities in our club. Frankly it is impractical for just a few people to take on all these tasks; this is why more volunteers are needed to assist in these various tasks. It’s not complicated and doesn’t require a lot of time. Please strongly consider taking on an active role in your club to help let the Quad Cities know we are here with our goal to provide excellent educational and entertaining resources to the public and for each other. To be a volunteer, just contact any person already mentioned at the end of this Newsletter and let them know you are willing to help. Thank you.

2018 HOLIDAY PARTY

The PAC Holiday Party will be held on December 12, 2018, from 5:00 p.m. to 8:30 p.m. at the Bonn Fire Restaurant and Grill, 1667 S. State Route 89, Chino Valley, Arizona 86323. Drinks begin at 5:00 p.m., and dinner at 6:00 p.m.

The meal will include salad, soup, vegetable, desert and various non-alcoholic beverages. A Pay-As-You-Go Cash Bar for alcoholic beverages will be available. Gouda Scalloped potatoes and dinner rolls will be provided with each entrée.
If you should have any questions regarding the meal, please contact Dennis Eaton.

**PROPOSED 2019 BUDGET**

The proposed budget for 2019 is in the appendix. All club members should review it. Club members will vote to approve/disapprove the budget at the December 5th regular meeting.

**FOR SALE - MEADE 12 ½” STARFINDER DOBSONIAN**

The Prescott Astronomy Club is offering for sale a Meade 12 ½-inch Starfinder Dobsonian telescope and accessories. Members who wish to buy it should submit a sealed bid to John Baesemann (7295 N. Viewscape Drive, Prescott Valley, AZ 86315).

- Meade 12 ½-inch Starfinder Dobsonian Reflector
  - Right angle 8 x 50 finder scope with adjustable focus 1 ¼” reticle eyepiece
  - 1 – 1 ¼” 26mm Plossl eyepiece

The base has trim pieces missing and there are some nicks on the tube.

The minimum bid price to members is $200.00. Anyone who is interested in seeing the telescope can contact John Baesemann ([jbaesemann@q.com](mailto:jbaesemann@q.com) or 928-642-8004) for a mutually convenient time.
OBSERVE APOLLO 8’S LUNAR MILESTONES
By David Prosper

December marks the 50th anniversary of NASA’s Apollo 8 mission, when humans first orbited the Moon in a triumph of human engineering. The mission may be most famous for “Earthrise,” the iconic photograph of Earth suspended over the rugged lunar surface. The photo inspired the imaginations of people around the world and remains one of the most famous photos ever taken. This month also brings a great potential display of the Geminids and a close approach by Comet 46P/Wirtanen.

You can take note of Apollo 8’s mission milestones while observing the Moon this month. Watch the nearly full Moon rise just before sunset on December 21, exactly 50 years after Apollo 8 launched; it will be near the bright orange star Aldebaran in Taurus. The following evenings watch it pass over the top of Orion and on through Gemini; on those days five decades earlier, astronauts Frank Borman, Jim Lovell, and Bill Anders sped towards the Moon in their fully crewed command module. Notice how the Moon rises later each evening, and how its phase wanes from full on Dec 22 to gibbous through the rest of the week. Can you imagine what phase Earth would appear as if you were standing on the Moon, looking back? The three brave astronauts spent 20 sleepless hours in orbit around the Moon, starting on Dec 24, 1968. During those ten orbits they became the first humans to see with their own eyes both the far side of the Moon and an Earthrise! The crew telecast a holiday message on December 25 to a record number of Earthbound viewers as they orbited over the lifeless lunar terrain; ”Good night, good luck, a merry Christmas and God bless all of you - all of you on the good Earth.” Just two days later the astronauts splashed down into the Pacific Ocean after achieving all the mission’s test objectives, paving the way for another giant leap in space exploration the following year.
The Geminids, an excellent annual meteor shower, peaks the evening of December 13 through the morning of the 14th. They get their chance to truly shine after a waxing crescent Moon sets around 10:30 pm on the 13th. Expert Geminid observers can spot around 100 meteors per hour under ideal conditions. You’ll spot quite a few meteors by avoiding bad weather and light pollution if you can, and of course make sure to bundle up and take frequent warming breaks. The Geminids have an unusual origin compared to most meteor showers, which generally spring from icy comets. The tiny particles Earth passes through these evenings come from a strange “rock comet” named asteroid 3200 Phaethon. This dusty asteroid experiences faint outbursts of fine particles of rock instead of ice.

You can also look for comet 46P/Wirtanen while you’re out meteor watching. Its closest approach to Earth brings it within 7.1 million miles of us on December 16. That’s 30 times the average Earth-Moon distance! While passing near enough to rank as the 10th closest cometary approach in modern times, there is no danger of this object striking our planet. Cometary brightness is hard to predict, and while there is a chance comet 46P/Wirtanen may flare up to naked eye visibility, it will likely remain visible only via binoculars or telescopes. You’ll be able to see for yourself how much 46P/Wirtanen actually brightens. Some of the best nights to hunt for it will be December 15 and 16 as it passes between two prominent star clusters in Taurus: the Pleiades and the V-shaped Hyades. Happy hunting!

Catch up on all of NASA’s past, current, and future missions at nasa.gov

Earthrise, 1968. Note the phase of Earth as seen from the Moon. Nearside lunar observers see Earth go through a complete set of phases. However, only orbiting astronauts witness Earthrises; for stationary lunar observers, Earth barely moves at all. Why is that?
LET'S PARTY FOR DECEMBER

Astronomical objects for public (and private) star parties.
by Fulton Wright, Jr.

Flashy, deep-sky objects, visible in the middle of the month, at the end of astronomical twilight, 8:00 PM in March, (when it really gets dark). This list customized for Prescott, Arizona, should work well anywhere in the state, and be usable anywhere in the old 48 states.

Double Stars (2 or 3 stars, close together)

Beta Cygni (Albireo, SAO 87301)
Mag: 3.4 (yellow) & 4.7 (blue), Sep: 35 arc-sec
R.A.: 19hr 31min, Dec.: +27deg 58'

Epsilon Lyrae (Double-Double, SAO 67310 & 67315)
Mag: 5.0 & 6.1, 5.3 & 5.4, Sep: 2 arc-sec, 2.5 arc-sec
R.A.: 18hr 44min, Dec.: +39deg 40'

Gamma Andromedae (Almach, SAO 37734)
Mag: 2.2, 5.0, Sep: 10 arc-sec
R.A.: 2hrs 05min, Dec.: +42deg 45'

Open Clusters (about 50 bright stars)

Collinder 399 (Coat-hanger)
Mag: 3.6, Size: 90 arc-min
R.A.: 19hr 25min, Dec.: +20deg 11'

NGC 663 (Caldwell 10)
Mag: 7.1, Size: 14 arc-min
R.A.: 01hr 47min, Dec.: +61deg 20'

NGC 457 (Owl cluster, Caldwell 13)
Mag: 6.4, Size: 20 arc-min
R.A.: 01hr 21min, Dec.: +58deg 28'
Double Cluster (NGC 869 & 884, h & Chi Persei, Caldwell 14)
Mag: 5.3, 6.1, Size: 18, 18 arc-min
R.A.: 2hr 22min, Dec.: +57deg 10'

Globular Clusters (about 200,000 dim stars) (this is not a good season for globulars.)

M 2 (NGC 7089)
Mag: 6.5, Size: 16 arc-min
R.A.: 21hrs 34min, Dec.: -00deg 44'

M 71 (NGC 6838)
Mag: 8.2, Size: 3.3 arc-min
R.A.: 19hrs 55min, Dec.: +18deg 50'

M 15 (NGC 7078)
Mag: 6.2, Size: 18 arc-min
R.A.: 21hrs 31min, Dec.: +12deg 15'

Galaxies (about 200,000,000 very dim and distant stars)

M 31, M 32, M 110 (NGC 224, Andromeda Galaxy), NGC 221, NGC 205
Mag: 3.3, 7.9, 8.1; Size: 180 x 70, 8 x 5, 16 x 10 arc-min
R.A.: 0hr 44min, Dec.: +41deg 22'

M 33 (Pinwheel Galaxy, NGC 598)
Mag: 5.8, Size: 60 x 35 arc-min
R.A.: 1hr 35min, Dec.: +30deg 45'

NGC 2403 (Caldwell 7)
Mag: 8.2, Size: 20 x 10 arc-min
R.A.: 07hrs 39min, Dec.: 65deg 34'

Bright/Diffuse Nebulae (Gas and dust lit by a nearby star.)

NGC 6888 (Flaming star nebula, Caldwell 27) (dim)
Mag: 7.4, Size: 20 x 10 arc-min
R.A.: 20hrs 13min, Dec.: +38deg 28'

Planetary Nebulae (gas shell from exploding star, looks like Uranus in telescope)

M 57 (NGC 6720, Ring Nebula)
Mag: 8.8, Size 1.4 x 1.1 arc-min
R.A.: 18hr 54min, Dec.: +33deg 02'
NGC 6826 (Caldwell 15, Blinking Planetary Nebula)
Mag: 8.9, Size: 2.1 arc-min
R.A.: 19hr 45min, Dec.: +50deg 31'

NGC 6543 (Cat's Eye Nebula, Caldwell 6)
Mag: 8.1, Size: 0.4 arc-min
R.A.: 17hrs 59min, Dec.: +66deg 38'

For additional information, see: www.dso-browser.com

LET’S TALK ABOUT THE MOON
By John Carter, Sr.

Calling all members! Let’s have an open discussion on the Moon. The discussion can include:

1) Pictures with a DSLR and a tripod, single shot
2) Observing on vacation
3) Sharing the Moon with others
4) Get your birding binoculars out
5) Wherever the discussion goes

We’ll be asking for contributions during the short topic session at each meeting for the next few months. If you have pictures, bring them on a thumb drive to display on the big screen. For just talking about your experiences, the hand held mic will be passed around.

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). You can also bring up the question at the meeting.

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
John Carter - Video Observing - (928) 458-0570

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: pacinfo@prescottastronomyclub.org
Astrophotography special interest group:
https://groups.yahoo.com/neo/groups/pacastrophotography/info

BOARD OF DIRECTORS
President: Jeff Stillman  At Large: Pat Bledsoe
Vice President: John Carter  At Large: Dennis Eaton
Secretary: Doug Tilley  At Large: Adam England
Treasurer: John Baesemann  At Large: Joel Cohen

PAC COORDINATORS
Astronomical League Coordinator: Pat Birck
Facebook: Adam England
Highland Center Coordinator: David Viscio
Hospitality: Cory Shaw
Magazine Subscriptions: John Baesemann  Membership: John Baesemann
METASIG: Marilyn Unruh  Newsletter: David Viscio
PAC Affiliate Partner w/ NAU Space Grant Program – Jerry & Cory Shaw
PAC Store Sales: John & Laura Verderame Refreshments: Liz Dano
Property Records: Doug Tilley Publicity: Adam England
Schools & Camps Outreach: Pat Birck
Starry Nights Coordinator: Pat Birck
Third Thursday Coordinator: Cory Shaw & Pat Birck Webmaster: Russell Chappell
Meteors have been shooting out from the constellation of Orion. This was expected, as October is the time of year for the Orionids Meteor Shower. Pictured here, over two dozen meteors were caught in successively added exposures last October over Wulan Hada volcano in Inner Mongolia, China. The featured image shows multiple meteor streaks that can all be connected to a single small region on the sky called the radiant, here visible just above and to the left of the belt of Orion. The Orionids meteors started as sand sized bits expelled from Comet Halley during one of its trips to the inner Solar System. Comet Halley is actually responsible for two known meteor showers, the other known as the Eta Aquarids and visible every May. An Orionids image featured on APOD one year ago today from the same location shows the same car. Next month, the Leonids Meteor Shower from Comet Tempel-Tuttle should also result in some bright meteor streaks.
## Prescott Astronomy Club Budget - 2019

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