Prescott Astronomy Club

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

December 2022

UPCOMING EVENTS

Wednesday, December 7 - PAC Holiday Dinner @ 6:00 PM at the Hassayampa Inn, Prescottt. See details below.

Wednesday, January 4 - Regular PAC meeting @ 6:00 PM at the Prescott Public Library, Founder's Suite, hosted by Art Arnold-Roksandich. Adam England will show highlights of his interview with distinguished club member and pilot, Colonel Pat Bledsoe, to be followed by a question and answer session.

PAC ELECTION RESULTS

Art Arnold-Roksandich

The 2023 club officers and directors-at-large for the Prescott Astronomy Club were elected at the November 2 General Meeting. The new board members are:

President	Art Arnold-Roksandich	
Vice President	Brian Blau	
Treasurer	Roland Albers	
Secretary	Jack Evans	
Directors-at-Large	EJ Van Horn	Susanne Vaughn
	Ken Olson	Doug Tilley

Since there was no opposition, the motion to approve by acclamation was approved. Please join me in welcoming Jack Evans, a new member to the board. Doug Tilley is a long time member and returning to the board.

2022 has been a successful year and we have a new team to lead us in 2023 to build on our success. Thanks to all those who have volunteered and helped out.

2022 PAC HOLIDAY PARTY

Susanne Vaughan

Our annual Holiday Party is on December 7th at 6:00pm at the Hassayampa Inn, Arizona Room, in downtown Prescott. There will be door prizes, a cash bar, and lots of cheer. It costs $50 each and is all-inclusive with tea, coffee, salad, baguettes, your dinner choice, your dessert choice, and tips and service fees.

You can sign up on the web site: www.prescottastronomyclub.org. Just scroll down to the green box labeled Club Holiday Party. Click the LINK to reserve and pay for your meal. This link will take you to a purple box and orange box. In the purple box, choose your dinner and dessert, hit SELECT, then "Add to Cart". Do this for your selection, your spouse or any guest, then pay and checkout using PayPal.

You can also send a check via US post, if you prefer. The orange box has details of dinner choices. Click at the bottom to open it in a new window, print it out, check your dinner and dessert choices, then mail it with a check made out to "PAC" to the Treasurer's address listed on the second page. The check should cover all persons attending.

ALL PAYMENTS AND CHOICES MUST BE RECEIVED BY NOV 28th.

Join us all for a joyous party to celebrate the end of another successful year of star-gazing. Downtown has free parking (the hotel's parking is across the street from the entrance) and the Square should be decorated for the holidays. Don't miss the fun!

THANK YOU, DAVID VISCIO

Art Arnold-Roksandich

On behalf of the Prescott Astronomy Club, I want to thank David Viscio for serving as editor of the Ephemeris for the past 12 years, around 145 issues if I counted correctly. There are not many members left that remember all those years, but I did take a look through the archive to get a perspective. David published astro images by many of the club's illustrious astrophotographers, John Carter, Bill MacDonald, Jeff Stillman to name a few, including some of his own images. He included articles on star evolution, planetary exploration and tips for observing and taking images and documented star parties and community events. He kept us informed about celestial events with calendars and the long running series by Fulton Wright, "If it's clear. . ." The Ephemeris is an essential part of club communications keeping a calendar of club events, and the changing of the guard. In addition to being editor, David served as President, Vice President, Starry Night Coordinator, and participated in many outreach programs. And as the club emerged from the pandemic, he brought back Starry nights including the infamous Pronghorn Star Party

of August 2021. David's dedication and commitment to the club is greatly appreciated! Thank you.

BINOCULARS: A GREAT FRIST TELESCOPE

David Prosper

Do you want to peer deeper into the night sky? Are you feeling the urge to buy a telescope? There are so many options for budding astronomers that choosing one can be overwhelming. A first telescope should be easy to use and provide good quality views while being affordable. As it turns out, those requirements make the first telescope of choice for many stargazers something unexpected: a good pair of binoculars!

Binoculars are an excellent first instrument because they are generally easy to use and more versatile than most telescopes. Binoculars can be used for activities like stargazing and birdwatching, and work great in the field at a star party, along the hiking trail, and anywhere else where you can see the sky. Binoculars also travel well, since they easily fit into carry-on luggage – a difficult feat for most telescopes! A good pair of binoculars, ranging in specifications from 7x35 to 10x50, will give you great views of the Moon, large open star clusters like the Pleiades (M45), and, from dark skies, larger bright galaxies like the Andromeda Galaxy (M31) and large nebulae like the Orion Nebula (M42). While you likely won't be able to see Saturn's rings, as you practice your observing skills you may be able to spot Jupiter's moons, along with some globular clusters and fainter nebulae from dark sites, too.

What do the numbers on those binocular specs actually mean? The first number is the magnification, while the second number is the size in millimeters (mm) of the lenses. So, a 7x35 pair of binoculars means that they will magnify 7 times using lenses 35 mm in diameter. It can be tempting to get the biggest binoculars you can find, but try not to get anything much more powerful than a 10x50 pair at first. Larger binoculars with more power often have narrower fields of vision and are heavier; while technically more powerful, they are also more difficult to hold steadily in your hands and "jiggle" quite a bit unless you buy much more expensive binoculars with image stabilization, or mount them to a tripod.

Would it surprise you that amazing views of some astronomical objects can be found not just from giant telescopes, but also from seemingly humble binoculars? Binoculars are able to show a much larger field of view of the sky compared to most telescopes. For example, most telescopes are unable to keep the entirety of the Pleiades or Andromeda Galaxy entirely inside the view of most eyepieces. Binoculars are also a great investment for more advanced observing, as later on they are useful for hunting down objects to then observe in more detail with a telescope.

If you are able to do so, real-world advice and experience is still the best for something you will be spending a lot of time with! Going to an in-person star party hosted by a local club is a great way to get familiar with telescopes and binoculars of all kinds – just ask permission before taking a closer look! You can find clubs and star parties near you on the Night Sky Network's Clubs & Events page at bit.ly/nsnclubsandevents, and inspire your binocular stargazing sessions with NASA's latest discoveries at nasa.gov

The two most popular types of binocular designs are shown here: roof-prism binoculars (left) and porro-prism binoculars (right). Roof prisms tend to be more compact, lighter, and a bit more portable, while porro-prisms tend to be heavier but often offer wider views and greater magnification. What should you choose? Many birders and frequent fliers often choose roof-prism models for their portability. Many observers who prefer to observe fainter deep-sky objects or who use a tripod with their observing choose larger porro-prism designs. There is no right answer, so if you can, try out both designs and see which works better for you.

A pair of good binoculars can show craters on the Moon around 6 miles (10 km) across and larger. How large is that? It would take you about two hours to hike across a similar-sized crater on Earth. The "Can You See the Flag On the Moon?" handout showcases the levels of detail that different instruments can typically observe on the Moon, available at bit.ly/flagmoon. Moon image courtesy Jay Tanner

WHAT'S HAPPENING IN DECEMBER 2022

This calendar from In-The-Sky.org shows the objects and events visible during December 2022.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1 Asteroid 349 Dembowska at opposition Conjunction of the Moon and Jupiter Close approach of the Moon and Jupiter	2 Pheonicid meteor shower 2022	3 Neptune ends retrograde motion
4	5 Close approach of the Moon and Uranus Lunar occultation of Uranus	6 December φ-Cassiopeid meteor shower 2022 The Moon at aphelion	7 Puppid-Velid meteor shower 2022 Full Moon Close approach of the Moon and Mars Lunar occultation of Mars Conjunction of the Moon and Mars Mars at opposition	8	9 Monocerotid meteor shower 2022	10 1 Ceres at perihelion
11 The Moon at apogee	12 σ-Hydrid meteor shower 2022 LMC is well placed	13	14 Geminid meteor shower 2022	15 81P/Wild at perihelion NGC 1981 is well placed	16 Comae Berenicid meteor shower 2022 Moon at Last Quarter	17
18	19 C/2017 K2 (PANSTARRS) at perihelion	20 December Leonis Minorid meteor shower 2022	21 Mercury at greatest elongation east December solstice	22 Ursid meteor shower 2022	23 New Moon The Moon at perihelion	24 The Moon at perigee Conjunction of the Moon and Venus Mercury at dichotomy Conjunction of the Moon and Mercury
25 Mercury at highest altitude in evening sky Venus at aphelion	26 Conjunction of the Moon and Saturn Close approach of the Moon and Saturn	27	28 NGC 2232 is well placed	29 Conjunction of Venus and Mercury Conjunction of the Moon and Jupiter Close approach of the Moon and Jupiter NGC 2244 is well placed Moon at First Quarter	30	31

For additional information and details, see: https://in-the-sky.org/newscal.php and www.telescopius.com . Observing lists of monthly 'Binocular' and 'Telescope' Showpieces can be found on the club website.

CALL FOR ASTRO-IMAGES

Hilary Legacy, editor

I request all astrophotographer members of the club submit examples of their astro-images to share with club members by inclusion in the Ephemeris. Images can be sent to me at ed@prescottastronomyclub.org. Please include description of equipment, cameras, image capture parameters and processing.

NEED TO KNOW - ASK A MEMBER

A 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 Art Arnold-Roksandich p@prescottastronomyclub.org. You can also bring up the question at the meeting.

FOR SALE

As a member of PAC, you may use the groups.io/g/pacinfo message board to post notices of items for sale. It is easy to signup. Go to groups.io/g/pacinfo. Click on "Apply for Membership to This Group". Fill in your email address and click on "Confirm Email Address". You should get a return email by the next day. You can update your profile for a daily digest or no email notices at all. You can go anytime to groups.io/g/pacinfo to check out what other people are doing.

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.

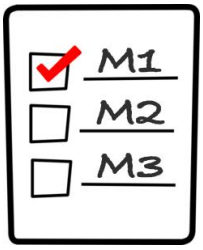
Brian Blau - Astrophotography

David Viscio - General & Astrophotography - (928) 775-2918

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

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

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

Website**:** http://www.prescottastronomyclub.org

E-mail: pacinfo@prescottastronomyclub.org

BOARD OF DIRECTORS

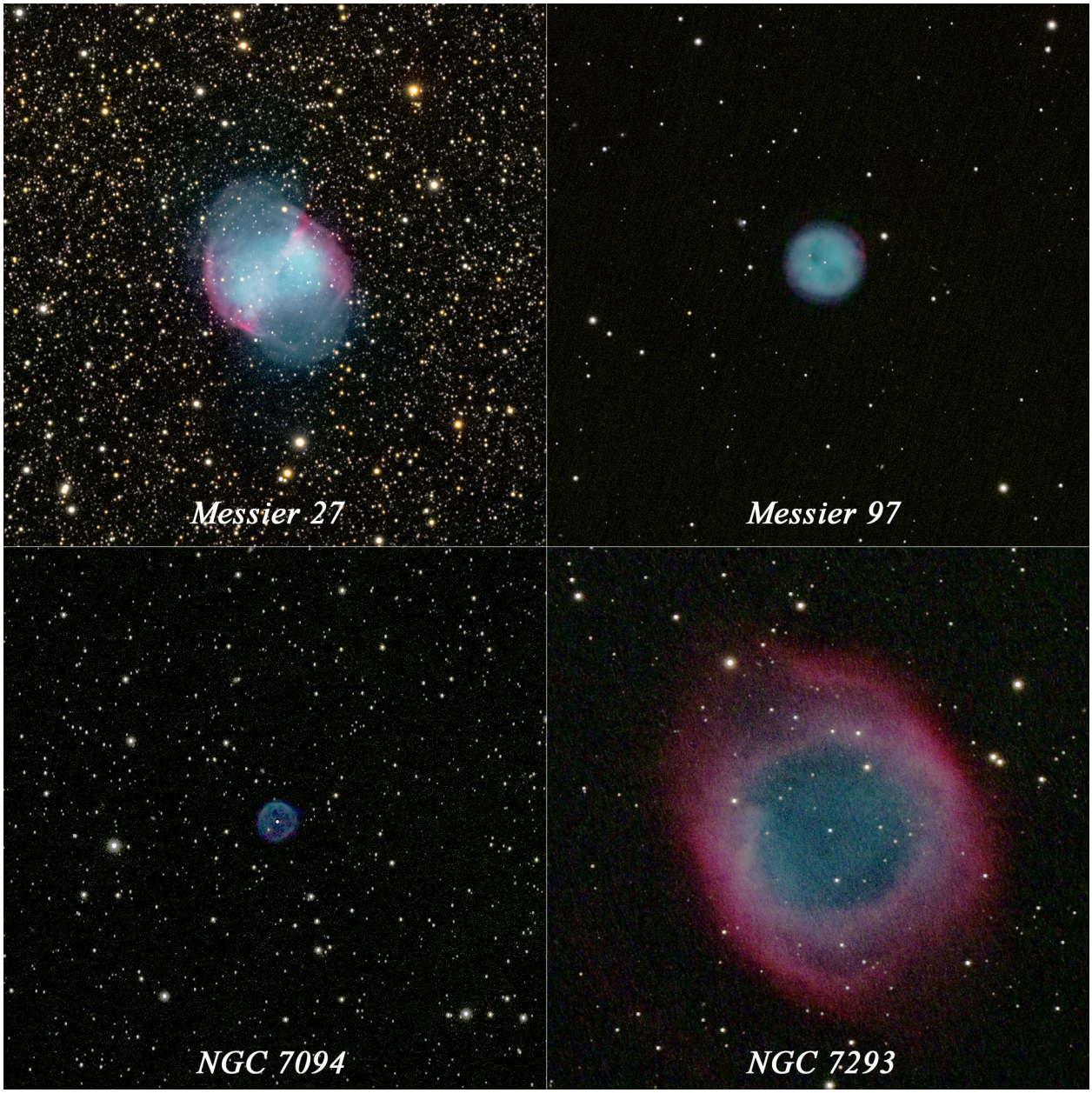
President:	Art Arnold-Roksandich p@prescottastronomyclub.org
Vice President:	Brian Blau vp@prescottastronomyclub.org
Secretary:	Roland Albers s@prescottastronomyclub.org
Treasurer:	Susanne Vaughan t@prescottastronomyclub.org
At Large:	EJ Van Horne web@prescottastronomyclub.org
At Large:	Dave Covey d1@prescottastronomyclub.org
At Large:	Ken Olson d2@prescottastronomyclub.org
At Large:	Pat Bledsoe d3@prescottastronomyclub.org

PAC COORDINATORS

Astronomical League Coordinator: Ken Olson
Events: Susanne Vaughan
Membership: Susanne Vaughan
METASIG: John Dwan
Newsletter: Hilary Legacy ed@prescottastronomyclub.org
PAC Affiliate Partner w/ NAU Space Grant Program – Cory Shaw
Schools & Camps Outreach: Joel Cohen & Brian Blau
Starry Nights Coordinator: David Viscio
Webmaster: EJ Van Horne

A QUARTET OF PLANETARY NEBULAE

Image Credit: David B. Viscio



Stellarvue SV115 triplet apo refractor with 0.8x focal reducer/flattener (640mm FL, f/5.6)
Paramount MX German equatorial mount
Canon 60Da DSLR
60-second sub-exposures
60 light frames, 60 dark frames, 60 flat frames, 60 dark flat frames
Frames stacked in Deep Sky Stacker
Images optimization in Adobe Photoshop CS6