

THE OBSERVER



Venus and Mars Passing in the Night
 APOD 03/29/2022: Image Credit: [Carlos Kiko Fairbairn](#)

From the Desk of the President by Steve Bradshaw

It seems like we just got through New Years but here it is February already. When Einstein was theorizing about space-time, I think he forgot to mention that one of the characteristics of time is that it flies. In last month's column I wrote, **I would like every one of us to take a moment to appreciate the grandeur and majesty of the night sky.** I hope that everyone has taken a moment this past month, and continues to take a moment each coming month, to forget about photons, filters, and focal lengths and just breathe in the beauty of the night sky.

This month, I would like to share four other "wants" for all of us for this next year.

First, **I would like to see expanding relationships** among club members. We all know that one of the best ways to spend time is to spend it with friends. I am so grateful for the other club members that I have met and spent time with. That time has not only been fun, but I have also learned more about astronomy by interacting with my fellow members. Next meeting, make it a point to say "Hi" to someone new and perhaps ask them an

UPCOMING EVENTS:

- EVAC Riparian Star Party - February 9th*
- EVAC Monthly Meeting - February 16th*
- Dr. Rogier Windhorst (ASU) - The World of Webb, the Cosmic Circle of Life, and Seeing through the Eyes of Einstein.*

Check out all of the upcoming club events in the Calendar on Page 11.

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From the Desk of the President

by Steve Bradshaw

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open-ended question. You never know where that might lead. To promote more member interaction, we will provide a short social break in the middle of meetings. We'll also try to end our meetings a bit earlier to provide members with time to go out afterwards. We went out after last month's meeting, and it was quite fun just to sit and talk.

Next, **I would like to see more participation in club outreach activities.** Do outreach activities take some effort and time out of our lives? Certainly, they do, but there are rewards too. One reward is the new friendships that you can build. I now know several people in the club solely because of my ongoing participation in club outreach events. I look forward to seeing and talking with these people at various events.

Another reward is linked to the joy of gift giving – in this case the gift is the night sky. The joy comes from the excitement that you hear in another person's voice the first time that they view things like the rings of Saturn, the cloud bands on Jupiter, the Pleiades cluster, or the mountains of the moon. Our guests always seem to be so appreciative and that just feels good.

Please participate even if it is only once or twice a year. Don't have a scope or binoculars? Come anyway. Last month, I participated one night without a scope and had a wonderful time talking with the guests and hanging out with other club members.

Third, **I would also like to see more younger members joining the club.** Astronomy certainly interests younger people. I see this interest all the time at GRCO and other outreach events. The trick to moving forward is to find a way to convert that interest into club attendance, membership, and participation. The Board will be discussing ideas in the coming months. If you have ideas, then please let me or a Board member know.

Fourth and finally, **I would like to see more participation in club leadership.** This year we are fully staffed, and the club is healthy. But it will be December and election time again before we know it. The point to remember is that the club does not run itself. It takes multiple staff positions to run the club. Most positions consume only a few hours per month. If each position is filled, then everyone has an easy job. What is the old saying? "Many hands make light work." However, without sufficient volunteers, a staff member must fill multiple positions and that can become more time-consuming and difficult. Over the next ten months give it some thought and please consider helping next year by contributing as a club officer or Board member. Does that consideration make you nervous? Don't be. I certainly did not know how to be President and had some anxiety about taking on the role. As it turns out, past officers are always available to provide guidance when needed.

Thanks for reading. I wish you all clear skies and enjoyable viewing this month.

The Backyard Astronomer

by Bill Dellings

7x50 or 10x50?

For as long as I can remember, I was a fan of 7x50 binoculars. Still am for low power, wide field views of the night sky, large open star clusters, locating elusive comets and assisting in star hopping to targets when not using a Goto telescope. However, I have recently decided to move up to a 10x50 binocular. But first, let's review the basics of binocular "numbers." In the case of the 7x50 (or any binocular) the first number is the magnification and second number the diameter of each of the two front lenses (objectives) in millimeters (25.4 mm = 1"). So, the 7x50 has two front objectives about 2" in diameter, a little bigger than the typical 8x42 commonly used for birding and

other terrestrial purposes. Fifty-millimeter objective lenses are used in astronomy because they gather more light than a 42mm lens, desirable when observing faint objects at night. The above numbers are normally stamped on the binocular plate next to the eyepieces along with the field of view in degrees. My Vixen binocular reads 7x50, 7.1°, a field roughly twice the width of Orion's Belt stars; this is the real field of view. If it reads something like "367' at 1,000 yards", divide the feet by 52.5 to get the real field in degrees. If in meters, divide by 17.5. Fortunately, this system is rarely seen anymore. Armed with these three numbers, 7, 50, 7.1, we can learn two additional numbers associated with binoculars, exit pupil and apparent field

The Backyard Astronomer

by Bill Dellinges

Continued from page 2

(A.F.) An exit pupil is the diameter of the cone of light exiting the eyepieces in millimeters. To determine exit pupil size, divide the power into the objective, $50/7 = 7.1\text{mm}$. For the A.F. or how wide the field is inside the eyepieces, multiply power by real field: $7 \times 7.1 = 49.7^\circ$. Why the concern for A.F.? The same reason you'd desire a telescope eyepiece with an A.F. of 65° over one with a 50° A.F.

I had wondered what a 10x50 binocular would be like, but never sprung for one because I knew I would be losing real field – generally, as power goes up, field goes down. This was reinforced by the 5-degree circle that Matt Wedel, and Gary Seronik before him, use in their S&T Binocular Highlight column. I thought if a 10x50 was good enough for those esteemed observers, maybe I should give them a try. After shopping around a bit, I purchased a Porro prism style Nikon Action EX 10x50 from B&H Photo for \$175 (at that price, made in China of course, but surprisingly acceptable). I chose it because it met several of my basic criteria without breaking the bank: fully multi-coated lenses, Bak-4 prisms (not Bk-7), twist-up eye cups, eye relief of 17.2mm (acceptable for eyeglass wearers) and tripod adaptable. A bonus was its generous 6.5° real field.

It was now time to compare these two binoculars in a shootout with both units tripod-mounted. **Jupiter:** the planet itself was a soft small disk not sharply defined but slightly clearer in the 10x50. The 7x50 revealed 2 moons. The 10x50 produced a third one kissing the planet, which the 7x50 missed lost in the planet's glare – I was very impressed by that. **Albireo:** The 7x50 could not split the 34"

double star. The 10x50 could. **Pleiades:** No contest – the 10x50 provided a larger, brighter, more impressive view of the cluster even with its smaller field of view. **Perseus OB Association:** (Mel 20, under Mirfak): Like the Pleiades, the 10x50 wins with one caveat – the cluster is so large, the extra field of the 7x50 provided a better "framing" of the cluster. **M31:** Overhead that night, difficult to view. But handheld, the 10x50 rendered a slightly brighter galaxy than the 7x50. **Sword of Orion:** The 10x50 view was more rewarding and just had more "punch" to it. **M34:** (Cluster in Perseus): Bigger and brighter in the 10x50. The Moon wasn't out that night but the 10x50's extra 3 power would obviously reign supreme with its higher magnification. **Conclusion:** I feel the 10x50 outperformed the 7x50 on the above seven objects. I'm sold on 10x50's. Final thoughts: If both binoculars have 50mm lenses, why did everything look brighter in the 10x50? Two reasons: 1) All the light of the 5mm exit pupil of the 10x50 was entering my 5mm (or so) senior pupils, while some light of the 7mm exit pupil of the 7x50 wasn't. 2) You have 3x more power. Increasing power darkens the sky making stars appear brighter (resolution increases too, recall that 3rd moon of Jupiter I saw). Regarding field reduction issue: A 6.5° real field is not that much smaller than a 7.1° field, so it's not necessarily a deal breaker. Will I keep my 7x50? Yes, mostly for sentimental reasons. But you never know when a comet with a really long tail may appear!

Recommended references: What Do Binocular Numbers Mean? Jan. 2024 S&T, p.72 (Gary Seronik). The Backyard Astronomer, 4th Ed. Chapter 5. (Terence Dickinson).



What's Up - Some Astronomical Events of Note for February 2024

by James Yoder

Here we make note of some interesting astronomical occurrences for the month that are visible from the Phoenix Metro area. Events we are on the lookout for include:

- [Transits](#) – When a celestial body passes directly between a larger body and the observer. For example when one of the inner planets such as Venus passes in front of the Sun ([image](#)).
- [Eclipses](#) – Specifically we are focused on [Lunar Eclipses](#) (where the Earth passes between the Sun and the Moon) and [Solar Eclipses](#) (where the Moon passes between the Sun and the Earth).
- [Comets](#) – For the comets we are focused on bright comets ([image1](#), [image2](#)) or ones that may have a near miss with other astronomical objects such as globular clusters, planets, nebula, etc ([image](#)).
- Planet Activity – [Oppositions](#), [Conjunctions](#) ([image1](#)) and [Occultations](#) ([image2](#)) of note that may be an opportunity for observation or photography. For Jupiter, we also note when multiple moon shadow transits are visible.
- Visually Interesting astronomical alignments such as Moon & planets arrangement in the morning or evening sky([image1](#)).

Equipment Requirements are noted as follows:

- NE – **N**aked **E**ye event, no equipment needed to appreciate this.
- BL – A decent pair of **B**inoculars are recommended.
- CT – **C**amera on a **T**ripod can be used to capture this event.
- TS – **T**elescope is required to view this event.

Date	Event	Time	Equip-ment	Images	Ref	Comments
02/09	New Moon					
02/22	Venus-Mars Appulse	6:50 AM	NE, BI, T	1 , 2		At 6:50 AM Venus and Mars will be within 38' of each other in the eastern horizon about 11° above the horizon.
02/24	Full Moon	All Night	NE			

These events and others throughout the year can be viewed on my webpage [here](#), Happy hunting!

EVAC Outreach Events

by Jake LeAncala

February Outreach Events:

- February 9th – 2nd Friday Star Party
- February 12th – Playa Del Rey Elementary
- February 15th – CTA Goodman
- February 22nd – Sousa Elementary
- February 24th – Kyrene Traditional Academy
- February 29th – Chandler-Gilbert Community College

Details can be found on the EVAC website. Just go to www.evaconline.org/events-meetings. Click on the calendar entry for location and times. Contact [Jake LeAncala](#) (Events Coordinator) if you can volunteer at an event. It is helpful to know who is coming so we can inform you of where the observing field is located and how to gain access.

Deep Sky Imaging Target Highlights for February 2024

by James Yoder

The average low [temperature](#) for December in the Phoenix metro area is 49° F. February 9th is a new moon with Astronomical dusk at 7:30 pm and Astronomical dawn at 5:53 am, giving us 9:23 hours of imaging time.

In this month's list there are over 130 object/configuration combinations provided of just about every class of deep sky object including 7 Globulars, 12 Open Clusters, 14 Planetary Nebulas, 28 Nebula and 4 Dark Nebula, 65 Galaxies/ Galaxy Clusters.

Bright Moon Targets – These are small targets that have a high surface brightness, these would be globular clusters and Planetary Nebula, that with appropriate filters can likely be imaged even in a near full moon situation.

The [Prospective Imaging Objects Guide](#) (PDF download) covers objects that reach their highest point in the sky and cross the meridian (aka Transit) sometime between Astronomical Dusk to Dawn. We will be highlighting objects that transit roughly between 10pm and 2am. This ensures maximum imaging time over the month.

Happy Hunting!

Some Highlighted Targets for February

Configuration	Page	Object(s)	Type	ImageLink
Hyperstar	25	Seagull Nebula	Diffuse Nebula	535 min
Hyperstar	32	Bode & Cigar (M81 & M82)	Galaxies	97 min
FocalReducer	37	M95 & M96	Galaxies	115 min
Primary Focus	27	Medusa Nebula (Abell 21)	Planetary Nebula	560 min
Primary Focus	28	NGC 2403	Galaxy	256 min
Primary (Moon)	26	Hourglass Nebula (NGC 2346)	Planetary Nebula	248 min
Primary (Moon)	29	Intergalactic Wanderer (NGC 2419)	Globular Cluster	508 min

Resources:

- [ArtCentrics.com](#) – [February Potential Targets Guide](#) (PDF download)
- [Telescopius](#) – Lookup objects, plan imaging session.
- [Field of View Calculator](#) – Test Different Telescope, camera & eyepiece combinations.
- [Astrometry.net](#) – Solve images captured by your system. Get image RA/DEC, pixel scale, image size, orientation of the image you have taken.

THIRD QUARTER MOON ON FEBRUARY 2 AT 16:18

NEW MOON ON FEBRUARY 9 AT 15:59

FIRST QUARTER MOON ON FEBRUARY 16 AT 08:00

FULL MOON ON FEBRUARY 24 AT 05:30

EVAC Meeting Minutes for January 19th, 2024 at 07:30 P.M. AZ Time

by James Yoder

Meeting Minutes

YouTube: EVAC monthly meetings can be viewed on YouTube. Just search for the East Valley Astronomy Club on the YouTube website to locate the recordings or select this [link](#) for the meeting recordings.

Welcome

EVAC President Steve Bradshaw welcomed club members to the meeting and reviewed the agenda. Attendance was 64 in person and 22 online. There were 10 guests in attendance.

General Business

Steve Bradshaw toured the EVAC Website (<http://www.evaconline.org>) and highlighted the following areas on the website:

- Joining or renewing membership can be accomplished online [here](#).
- New member guide can be viewed [here](#).
- To join a distribution list for EVAC announcements can be done [here](#).
- EVAC Calendar shows what events and meetings are slated for EVAC members.
- Past newsletters can be accessed [here](#).
- Used equipment for sale can be viewed [here](#).
- Equipment that can be rented by members can be viewed [here](#).
- Virtual Beginner's Lab has a number of topics that discuss a number of topics related to starting in astronomy.
- Basic astronomy classes such as Beginners guide to small telescopes and Planetary imaging Primer consist of ZOOM classes and hands-on labs and are periodically available based on interest. Contact James Yoder (jty.astro@ArtCentrics.com) if you would like to be added to the waiting list for either class.

Getting Involved and Volunteering

There are a number of volunteering opportunities including:

- Assisting at the Gilbert Rotary Centennial Observatory ([GRCO](#)). Email: grco@evaconline.org to be added to the mailing list.
- Attend the monthly star party on the 2nd Friday of each month
- Volunteer at Private Star Parties. Email events@evaconline.org to be added to the mailing list.

Observing Award

Observing Awards were presented to Nathan Eskey for successful completion of the Lunar Program and the Lunar 100 Program.

Events Coordinator - Jake LeAlcala has taken on the role of the events coordinator.

Member Presentation

Lunar Observation and Imaging Journey by Nathan Eskey – Nathan discussed the two lunar observation programs ([Lunar Program](#), [Lunar 100 Program](#)) available through EVAC and his experience completing these programs. Nathan discussed what equipment he utilized for these programs and shared a list of applications that he utilized to help him complete the programs. He also talked about the [Moon Wiki](#) which is an online resource that has some wonderful information about the moon. In addition to observing moon features, he also did some imaging of the moon and shared some images that he was able to obtain. Finally, Nathan suggested that one should:

- Image when the moon is at highest point in the sky.
- Shadows are your friend.
- Plan your observations.
- Don't rush.
- Enjoy, Learn and Read.

Main Presentation

Featured Speaker: Dr. Jacob Adler (ASU)

Topic: Mars Mudflows From Remote Sensing and Lab Experiments.

Dr. Adler began his presentation by saying his group is interested in water rich sites on other planets because these are the environments where life might have formed. He presented several maps of Mars showing features where water may have resided on the surface at some point in Mar's history. He then went into the geological history of of water on Mars and how water may have formed some of the features on Mars such as mudflows. In an effort to better identify and confirm possible mudflows on Mars, Dr. Adler described several experiments replicating the formation of mudflows. He then showed some videos of these mudflow experiments that led to some surprising results. The audience was shocked and amazed at the videos.

Monthly Meetings will be held in person and also presented live online using Zoom. See the EVAC Website for updates.

The monthly general meeting is your chance to find out what other club members are up to, learn about upcoming club events and listen to presentations by professional and well-known amateur astronomers.

Our normal in-person monthly meetings have resumed. Also, the meetings will continue to be available online via Zoom.

Our meetings are held on the third Friday of each month at the Southeast Regional Library in Gilbert. The library is located at 775 N. Greenfield Road; on the southeast corner of Greenfield and Guadalupe Roads. Meetings begin at 7:30 pm.

Visitors are always welcome!



**Southeast Regional Library
775 N. Greenfield Road
Gilbert, Az. 85234**



Find Out What's Happening – Join EVAC-Announce List

If you would like to receive email announcements about EVAC meetings and activities, please join the EVAC–Announce mailing list. Click on the link below to subscribe. Enter your full email address in the box titled User Options and press OK. You will receive a confirmation email. Your privacy is respected by EVAC and we will never sell your email address, or use it for non-club relevant solicitations. This mailing list is designed for communication from EVAC, and does not enable users to respond to the message. If you wish to contact club officers, please use the list in the Contact-Us area on the Home page of our EVAC website. To subscribe to the EVAC–Announce mail group click: <http://www.freelists.org/list/evac-announce>. To unsubscribe use the same link, enter your email address and select Unsubscribe from the “Choose An Action” list. Another list to consider is AZ-Observing@groups.io, simply click on this link <https://groups.io/g/AZ-Observing> and follow the instructions on the page. EVAC also has a Facebook Group where members may share ideas, photos, and Astronomy related information. To join: EVAC Facebook [Group](#).

The Gilbert Rotary Centennial Observatory (GRCO) also has a Facebook Group where members may share ideas, photos, and Astronomy related information. To visit, please click on Gilbert Rotary Centennial Observatory - GRCO.

Gilbert Rotary Centennial Observatory is open on Friday and Saturday from sunset until 9:30pm. We need volunteers. Training is provided. Help us engage the community in the wonders of the night sky. Email grco@evaonline.org for information.

Used Equipment For Sale at Great Prices

The East Valley Astronomy Club (EVAC) has just posted used astronomy equipment for sale.

- Sales are “As Is”
- Pick-Up-Only

Contact the EVAC Property Director (James Yoder) at properties@evaonline.org for more details and to answer any questions. Detailed information on products being offered can be found on the EVAC Sales webpage [HERE](#). This page includes a brief description of the items, photos and references (i.e. users manuals, ect.)

Equipment being offered for sale this month includes:

- **Meade 8” on Fork Mount Package in good condition (\$2,000 new, Sale Price = \$500)**
- **Meade 4.5” Newtonian telescope in fair condition (Sale Price = \$75)**

EVAC Equipment Rental Program

The East Valley Astronomy Club (EVAC) Is introducing a rental program for EVAC Members. Details on terms and equipment can be found on the [EVAC Rental page](#). Each item below rents for \$25/week for up to 4 weeks. Currently the following items are available for rent:

- **Celestron C-8 with Nexstar GoTo Mount Celestron** - Everything you need to beginning exploring the sky.
- **10” Dobsonian Telescope** - Everything you need to beginning exploring the sky.
- **Visual Filters for Deep Sky Objects** - 15 different filters to try before you buy.
- **Imaging Kit for Planetary & Moon Imaging** - Everything you need to capture and process images except the telescope.

Telescopes come with all equipment needed for observation (ie eyepieces, finder scope, power supply, etc.)

Contact the EVAC Property Director (James Yoder) at properties@evaonline.org for more details and to answer any



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From the site: Very Large Array 42mi E, The Astronomical Lyceum 55mi E, MRO Observatory 80mi E

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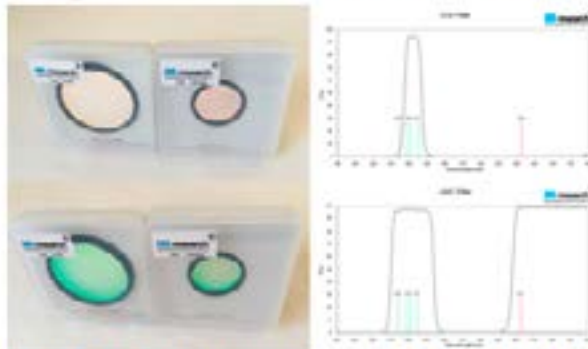
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Telescope
in
Arizona



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www.apache-sitgreaves.org

FEBRUARY 2024

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29		

February 9th - 2nd Friday Star Party

February 12th – Playa Del Rey Elementary

February 15th – CTA Goodman

February 16th - EVAC Monthly Meeting

February 22nd – Sousa Elementary

February 24th – Kyrene Traditional Academy

February 29th – Chandler-Gilbert Community College

MARCH 2024

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

March 7 – Grande Innovation Academy

March 8 - EVAC Riparian Star Party

March 14 - EVAC Monthly Meeting

March 20– AJ Public Library

March 30– Fountain Hills Community Center

East Valley Astronomy Club - 2024 Membership Form

Member Dues (Based on the month you are joining the club)

	Individual	Family	Student (18yr+ with ID)
January - June	\$30.00	\$35.00	\$20.00
July - December (<i>Renew in January</i>)	\$15.00	\$20.00	\$10.00
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Renewal Dues (Current Members Only)

Individual	Family	Student (18yr+ with ID)
\$30.00	\$35.00	\$20.00
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Astronomical League: \$7.50 Annually:

Name Badges: Quantity: _____

\$10.00 Each

Name to imprint: _____

Total amount enclosed:

Please make check or money order payable to EVAC.
Payment will be made using PayPal:

Name:

Phone:

Address:

Email:

City
State
Zip

URL
For website

Would you be interested in our outreach program? Yes No

How did you discover East Valley Astronomy Club?

Liability Release Form

In consideration of attending any publicized Star Party hosted by the East Valley Astronomy Club (hereinafter referred to as "EVAC"), the receipt and sufficiency of which is hereby acknowledged, I hereby affirm that I and any related entities, predecessors, successors, affiliates, attorneys, guarantors, insurers, transferees, assigns, parents, spouses, children, subsidiaries, accountants, officers, directors, employees, agents, shareholders, members, and trustees, past and present, hereby forever release, acquit and discharge to hold EVAC and its related entities, predecessors, successors, affiliates, attorneys, guarantors, insurers, transferees, assigns, parents, spouses, subsidiaries, accountants, officers, directors, employees, agents, shareholders, members, and trustees, past and present, from any and all causes of action, claims, losses, damages, liabilities, expenses (including attorneys' fees) and demands of any nature whatsoever, known or unknown, that in any way relate to, arise out of, or concern EVAC and/or my presence on the premises of any EVAC Star Party and related areas, whether or not those causes of action, claims, damages, liabilities, and demands are part of the specific subject matter of EVAC or any EVAC Star Party. This release is intended to and does cover all injuries and damages, and the consequences thereof, whether known or unknown at the time of the execution of this release, which have occurred or may hereafter occur or which may hereafter be discovered, and which may have been caused or may be claimed to have been caused by the said incident, and specifically includes, but is not limited to, bodily injuries, mental and emotional injury, pain and suffering, medical treatments, and loss of earnings or income.

My signature upon this form also indicates agreement and acceptance on behalf of all minor children (under 18 years of age) under my care in attendance. EVAC only recognizes those who are members or invitees and who also have a signed Liability Release Form on file as participants at an EVAC Star Party.

Signature _____

Date _____

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The East Valley Astronomy Club is a 501(c)(3) nonprofit charitable organization.

www.evaonline.org

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