

amateur ASTRONOMER



sharing the wonder and science of astronomy

The Return of the Lightbuckets to BMVO



With warming weather, and the reduced threat from COVID-19 as vaccinations continue, Al Lamperti and others brought their large dobsonians out to Blue Mountain Vista Observatory in the Lehigh Valley.

PLAN ON IT!

June 10 Sunrise Partial Solar Eclipse for Philadelphia and Surrounding Areas.

June 18 (8:30 pm) Community Star Party, Heebner Park, Worcester Township

June 19 (8:00 pm) Public Star Party at Valley Forge National Historical Park model airplane field. Free and open to the public in a new distanced format (must pre-register for this event). *Star Party Weather Hotline: 484-367-5278*.

June 19 (8:30 pm) Radnor's Great American Campout, The Willows Park, Villanova.

June 25 (7:00 pm) General Meeting.

July 16 (8:00 pm) Star Party at Norristown Farm Park, Norristown.

FOR ALL THESE EVENTS, SEE THE WEBSITE FOR ADDITIONAL INFORMATION.

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A link to Dave Mitsky's Celestial Calendar can be found at dvaa.org on the Home Page.

Welcome New DVAA Members!

Matt Chapin - Boothwyn, PA
Katrina Comber - Philadelphia, PA
Jeffery Ferguson - Folcroft, PA
Matt Gay - Philadelphia, PA
Jeff Miller - Broomall, PA
Daniel Stern - Philadelphia, PA

We welcome all new members to enjoy the most our club has to offer by participating in DVAA activities. You are encouraged to ask questions and pursue your interests in astronomy through the club.

We suggest that new members attend our observing events and special interest group meetings, or volunteer to help with an outreach event or committee. Participation can advance your skills and enjoyment of the hobby and help you get to know your fellow members. New members are entitled to all benefits of membership.



Brian Lee

Welcoming Committee Chair

DVAA Board & Committee Chairs

Title	Name	Email
President	Harold Goldner	president@dvaa.org
Vice-President	Jan Rush	veep@dvaa.org
Secretary	Mike Tucker	secretary@dvaa.org
Treasurer & Astronomical League Coordinator	Louis Berman	treasurer@dvaa.org
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Programs	Jeremy Carlo	programs@dvaa.org
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Scope Rentals	Joe Lamb	rentals@dvaa.org
Website	Louis Berman	website@dvaa.org
Welcoming	Brian Lee	welcoming@dvaa.org
Women of DVAA	Jan Rush	women@dvaa.org

Mark Your Calendars!

Upcoming Monthly Meetings

Friday June 25, 2021: Featured Speaker: Elizabeth Landau, NASA Senior Communications Specialist, "Life Beyond Earth: Where, How, and Why?" The regular monthly meeting will be livestreamed. Watch your email for sign-on directions.

Upcoming 2021 Meeting Dates: (all Friday evenings): June 25, July 23, Sept. 17, Oct. 15, Nov. 19, and Dec. 17.

2021 Public Star Party Dates

DVAA public star parties at Valley Forge National Historical Park were restarted in March staying with the revised format incorporating Covid-related safety precautions. They will be held at Valley Forge National Historical Park on the Model Airplane Field. ([Google Maps](#)). **Weather Hotline: 484-367-5278.**

Public Star Party dates for 2021 (all Saturday evenings):
Jun. 19 (8:00), **Jul. 17** (8:00), **Aug 14** (7:30), **Sep. 18** (6:30), **Oct. 16** (5:50), **Nov. 13** (4:15).

Note: Consistent with recommendations from Governor Wolf and the Centers for Disease Control, some DVAA events are held online, outdoors, or follow adapted formats. Monthly meetings are being held via Zoom and livestreamed via YouTube. Check the [website](#) for updates.

Follow the DVAA on Facebook!



DVAA [Facebook](#) group
DVAA [Photo Enthusiasts](#)

Newsletter Editorial Committee: Jeremy Carlo, George Keighton, Tom Nolasco, Dana Priesing, Jan Rush and Barclay Thorn.

If you would be interested in joining us on the Newsletter Committee, just drop us a line at newsletter@dvaa.org — we'd love to have you on board, regardless of your experience level!

Thanks to Tom Nolasco for being lead editor last month.

Dana Priesing is lead editor for this issue.

Why Astronomy?

Harold Goldner [email](#)



I have listened to a handful of episodes of our podcast which Louis Berman and Bill McGeeney have done such a great job publishing. Several of the episodes consist of Bill or Louis asking a fellow DVAA member “why astronomy?” That is a great question, and one that I have never been asked.

Why indeed astronomy? I never gravitated (see what I did there?) towards the subject in high school or college. I was never tempted to try my hands at calculus or advanced mathematics. I managed to escape college with a lonely statistics course, and all my science credits were in psychology. In short, I took the lazy person’s approach to hard science and avoided it the way electrons and protons avoid each other. In fact, I would say that I avoided it like matter avoids anti-matter, in that had I been compelled to take such courses my GPA would most assuredly have been annihilated.

A long time ago, when I was no more than ten years old and probably younger, my father took me out in the back yard with what I can only assume now was what we would call a “trashscope” and showed me the rings of Saturn and the cloud bands on Jupiter. That was a time when light pollution along the Main Line was not nearly as bad as it is now, and anyway, with my extensive experience in optics at that point (mainly none), I could not have assessed the viewing conditions. I do remember the fascination with the planets, and I know I had a mobile of all nine planets over my childhood bed.

I also had a complete set of plastic figurines of presidents (through Kennedy) although those did not stimulate me to study history. My father had a stamp and coin collection. Neither of these appealed to me. I took piano lessons for a few years and later for a lot longer oboe

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Join us outdoors for the July Monthly Meeting! Fort Washington State Park

- July 23rd, 6:30-8:30 pm
- Militia Hill Pavilion MHL-3
- Open to DVAA members and the public
- Circulate among astronomy exhibits and talk with DVAA experts
- Topics to be determined, but will include:
 - Solar observing, and planning for the Total Solar Eclipse of 2024
 - Observing the Moon
 - Astrophotography
- Return of the DVAA raffle!
- Scopes available for rental (members only)



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lessons and even played semi-professionally, although I knew I did not want to be a professional musician. After years of English courses and lots of Shakespeare study, I was convinced that I could become the next Great American Novelist.

With the invention of the podcast, I was suddenly able to “drop in” on subjects I had long avoided, which rekindled my interest in the sky. Great podcasters like Pamela Gay, Fraser Cain, Paul Matt Sutter were able to weave interesting episodes introducing me little-by-little to the field of astronomy. An Apple online class in basic astronomy, taught by the founder of Astronomy Photo of the Day, Robert Nemiroff, from his classroom at Michigan Tech University, helped me learn a lot of the basics without having to learn the calculus or the physics. And eventually, I started listening to some of Richard Feynman’s recorded lectures.

I would not pretend to be able to teach an astronomy class now. I still haven’t learned all the constellations or many of the higher magnitude stars. I know where the planets are in the sky and what they look like. I understand the phases of the moon and the cycles of the

sun, and I can talk enough about the sky to convince someone who doesn’t know any better that I have some degree of mastery, but that would only be because my legal training has taught me to argue a point as though I am certain about it.

I remember that William Herschel who started as a musician and was a fellow oboist and composer, who later in life came to astronomy as, at least in part, a means to enhance his social standing.

At least I recognize that standing alone in a dew-filled astronomy observing field at night does not enhance my social standing one iota, but the opportunity to learn the name of another star, see another constellation for what it is, learn my way to deep sky objects by star hopping when aligning my telescope is problematic, and just taking in the marvels of a gloriously dark sky always makes me feel good and continues to challenge me. I still play in an orchestra, I still enjoy many other activities and hobbies, but those don’t detract from my fascination with astronomy.

When I see M13 or Andromeda or survey all 8 planets in one night from a dark sky site, or just sit back and stare into the giant void above us, I cannot help but be in awe of it all. That is when I realize that’s “why astronomy.”

Summer Outreach Events

Date / Time	Event	Venue	DVAA Coordinator
June 10 / 5:30 am	Partial solar eclipse with eclipse glasses & telescopes	Trinity Lutheran Church, Fairview Village	Wayne Reed & Jan Rush
June 10 / 5:30 am	Partial solar eclipse with eclipse glasses & telescope	Spring-Ford Senior High School, Royersford	Al Lamperti
June 18 / 8:30 pm	Community star party	Heebner Park, Worcester Twp.	Jan Rush
June 19 / 8:30 pm	Telescope viewing	Radnor’s Great American Backyard Campout in The Willows Park	Barry Johnson & Jan Rush
July 16 / 8 pm	Community star party	Norristown Farm Park	Jan Rush
Sept. 14 / 7 pm	Community Star Party	Anderson Farm Park, Upper Providence Twp.	Al Lamperti

- Find specific locations and times for events at www.dvaa.org. If you would like to help out with any of these events, contact the DVAA Coordinator for the event. Or, come as a participant and bring your family; all events are free!
- ALSO, don’t forget the Public Star Parties at Valley Forge on June 19, July 17, and August 21

Al's Observing Tips: "Observing The Edge & Beyond "

Al Lamperti [email](#)



No, this is not a title from Rod Serling's "Twilight Zone" but rather a short introduction to those pairs of objects that can be seen in the same eyepiece field that are both within and beyond the Milky Way galaxy. I have selected four pairs of objects that are separated from each other by less than one degree.

One of the best examples of an object usually found around the outer edges of most galaxies is a globular cluster. These are round conglomerations of an older population of stars which congregate near the edges or rims of galaxies. See the article, "Relics of a Distant Past", in the July 2021 issue of S & T for suggested mechanisms of why this may be so.

The most infamous of globular clusters to Northern Hemisphere observers is M13 in Hercules. Low magnification shows it as a round cotton-ball like structure with perhaps some resolution of stars around the periphery. Higher magnification and darker skies will allow you to resolve stars to the core. Higher magnification will also allow you to see NGC-6207, a small 11.6 magnitude galaxy

only 40 arc-minutes from M-13. So here you have M-13, a member of our own galaxy and a mere 25,000 light years distant from us. NGC-6207, on the other hand, seems "close" to M-13 in the eyepiece but is really 56 million light years beyond the Milky Way. What a dichotomous pair!

Three more near and far objects are within an eyepiece field. One is found in the constellation Coma Berenices with the "nearer" object actually being Berenice's Hair, Melotte 111. This is a large naked eye, binocular, low power open cluster, which is fairly close to us at 260 light years. We can see through the expanse of Mel 111 with a telescope and beyond the realm of the Milky Way in which it resides and capture one of two distant galaxies: NGC-4494 or NGC-4251. Both are 10th magnitude and 31 million light years away.

Cepheus, the King, is not about to be outdone by Queen Berenice's hair. This constellation also has an open cluster, NGC-6939, 4,000 light year from our eyes. In the same field about 40 arc-minutes (Continued on next page.)

Don't Miss the Next Monthly Meeting: June 25, 2021

"Life Beyond Earth: Where, How, and Why?"

[Elizabeth Landau](#), NASA Senior Communications Specialist

Could life exist beyond Earth, or might life exist only here? Under what conditions could life exist elsewhere? Where else might this happen, and what would be the likely processes involved?

DVAA Virtual Meeting: June 25, 2021, 7:30 PM (sign-on starts at 7:00pm).

- ◆ DVAA Members via Zoom (check your email for the link)
- ◆ Members of the public can watch the livestream on [YouTube](#)



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away is an 8.8 magnitude galaxy, NGC-6946, 18 million light years distant.

Lastly, Cetus has a 11th magnitude planetary nebula, NGC-246 1,600+light years from us, yet only 24 arc-minutes away in the field is the 12th magnitude galaxy NGC-255, a whopping 65 million light years out.

Consider that the photons from each pair of objects are striking you at the same moment, yet each has traveled for considerably different lengths of time to reach you. This can make you pause to think yet again about the enormity and wonder of the universe. All for a two-for-one price!

The May Monthly Meeting

Jeremy P. Carlo [email](#)



President Harold Goldner opened the DVAA May 2021 meeting, which was held on Zoom and livestreamed via YouTube, as we have been doing during the COVID-19 pandemic. Harold reminded the audience of the upcoming lunar eclipse on the morning of May 26, and a partial solar eclipse on the morning of June 10. Both events are not very favorably placed for us on the East Coast, but we can catch just the tail end of both as the sun rises. Harold updated the club on upcoming events, including several outreach events in June and July, as well as the upcoming outdoor July DVAA Astronomy Fair, to take place in Fort Washington State Park.

Next, Phil DeRosa gave an introduction and overview of the York County Star Party, scheduled for September and October 2021. They will be held in Susquehannock State Park, which is a dark sky site on the border of Lancaster and York counties, about an hour and a half away from most of us. This is the successor to the old Mason Dixon Star Party, held for many years on an airstrip near Dillsburg, PA. Phil said there will be flush toilets, hot and cold water, and electricity available at the pavilion where afternoon talks will be held. Maximum capacity is 100 vehicles, and there will be a food vendor on site. For registration

and more information, see <http://www.skyshedpodpa.com/york-county-star-party.html>.

Welcoming Chair Brian Lee welcomed 6 new members. Treasurer Lou Berman informed the audience that the DVAA is up to 177 members! And Astrophotography Chair Lou Varvarezis surveyed the audience regarding interest in holding an astrophotography workshop.

Observing Chair Andrew Hitchner then gave his observing report for May 2021. He started by thanking Gary Trapuzzano, Wayne Reed, and others who have helped out with our socially distanced public star parties, and announced that the weather forecast for tomorrow's Valley Forge Star Party isn't looking promising.

Andrew's main topic, however, was to discuss lunar eclipses. While the May 26 eclipse isn't particularly favorable for us, there will be several lunar eclipses visible to us over the next few years. A lunar eclipse happens when the earth passes exactly between the sun and moon, so that the moon passes through the shadow cast by the earth. Lunar eclipses al-

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ways occur at the time of full moon. They can be partial, in which at most only part of the moon passes through the shadow, or total, in which there is a period during which the entire moon is within the shadow. Even during totality, though, the moon isn't completely dark, due to (predominantly red) light refracted around by the earth's atmosphere. The moon thus takes on a dark reddish or copper color, hence the name "blood moon;" the degree of shading is affected by the transparency of the earth's atmosphere, which is affected by events such as recent volcanic eruptions. The duration of a total lunar eclipse can be up to several hours, and depends on how far the moon is from the earth, and how closely through the center of the earth's shadow the moon passes. Timings of eclipses are given by seven figures: P1, U2, U2, greatest eclipse, U3, U4, and P4. These correspond to when the moon enters the earth's penumbral (outer) shadow, when it first enters the umbral (inner) shadow, when the moon is completely immersed in the earth's umbral shadow, when the moon is "deepest" inside the shadow, and when the moon exits the umbral, and then penumbral, shadow. These times (usually given in UTC so you have to subtract 4 or 5 hours to get local time) will help you plan your observations.

Following Andrew's presentation, DVAA Programs Chair Jeremy Carlo introduced the evening's invited speaker, Michelle Hanlon of the University of Mississippi School of Law, and president of the National Space Society. Michelle's topic was "An Introduction to Space Law."

We live in a society with many conveniences afforded by space travel, including satellites in orbit, and numerous technological spinoffs from the space program. With more countries than ever with spacefaring capabilities, who owns space? Can somebody purchase (or claim for themselves) the Moon? Part of the moon? Who's responsible if satellites crash into each other, or crash into the ground? Can objects in space be mined or exploited for

commercial purposes? Whose laws apply aboard a spacecraft? Are private "space tourists" treated differently from astronauts and cosmonauts flying as part of their nation's space program? What would the politics of establishing a permanent moon or Mars base look like?

Enter space law. In analogy with international law, space law involves the mutual consent of states, and largely involves parties exercising responsibility by meeting obligations imposed by treaties or conventions. Much of it involves "gentlemen's agreements" or decisions handed down by precedent, but it is vital to have many aspects worked out in writing. Many of these principles are laid out in the Outer Space Treaty of 1957, and about a dozen subsequent agreements.

First, the general principles encapsulated in the Outer Space Treaty. Space is free for exploration by all states, "the province of all humankind." International cooperation is encouraged, as is free scientific investigation, and "free access to all areas of celestial bodies." Outer space, including the Moon, is not subject to "appropriation" by any country, although there is some ambiguity as to whether that applies to private individuals (e.g. Elon Musk). Space is a "global commons." But any resources obtained in space are the property of the entity that obtained them: "if you mine it, you own it." International Law is considered to apply in space, which must be used for peaceful purposes; nuclear weapons are specifically prohibited. There is a "return and rescue" agreement – if an astronaut is in distress, other spacefaring nations are obligated to help (though there is ambiguity as to whether this applies to "space tourists"). Nations bear responsibility for the space activities of their national agencies, as well as those of their private citizens. More specifically, once you launch an object, you are forever liable for it, so if it later becomes defunct and crashes into another satellite or into the ground, you are responsible for any damages. Toward

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that end, all nations must register any object which they launch into orbit, and must avoid “harmful contamination” and other effects on space. There are heightened requirements to avoid biological contamination of potentially habitable worlds such as Mars and the moons of Jupiter and Saturn.

These are the general principles laid out in existing treaties, but there are a number of gaps. Several were outlined above, but there are others. Do any labor laws apply in space? Is there a “right to oxygen” for space tourists? That is not really a consideration on earth, where air is free and abundant, but when your life critically depends on a resource somebody else has the ability to cut off at will or charge whatever exorbitant price they deem appropriate, critical questions arise. How would we deal with the politics of a permanent Moon or Mars settlement? Michelle raised analogies to the exploration of Antarctica, which is currently governed by a treaty, although a space base would raise a number of additional questions. There has long been ambiguity about exactly where space begins, since the atmosphere never really ends, just becomes increasingly tenuous. There are privacy issues, as increasingly capable satellites are launched by more and more countries, capable of studying

sensitive areas of Earth with greater and greater detail.

Michelle spoke about the concern of the so-called “Kessler syndrome,” which is the result of a chain reaction of satellites crashing into each other. Two satellites colliding with one another can generate hundreds or thousands of pieces of debris, each of which can potentially crash into other satellites and create thousands more pieces of debris. This sets off a chain reaction which would so thoroughly pollute the orbital field that it becomes impossible for us to launch anything into space! Clearly, this is a “less than desirable” outcome, and it takes enormous coordination to ensure that it doesn’t start.

Michelle then came to a point of specific interest for her. What about the culturally relevant artifacts of space travel? Neil Armstrong’s footprint on the moon. The iconic flags and plaques left behind by the Apollo astronauts. These are artifacts of immeasurable value, which currently are not protected (as similarly important artifacts on earth would be).

Toward that, and many other, ends, the Artemis Accords are a modern update of the Outer Space Treaty. Currently signed by 11 nations, the Artemis Accords fill in many of the aforementioned gaps, and add a section entitled “Preserving Outer Space Heritage,” to protect culturally and historically relevant artifacts.

Discounted Magazine Subscriptions

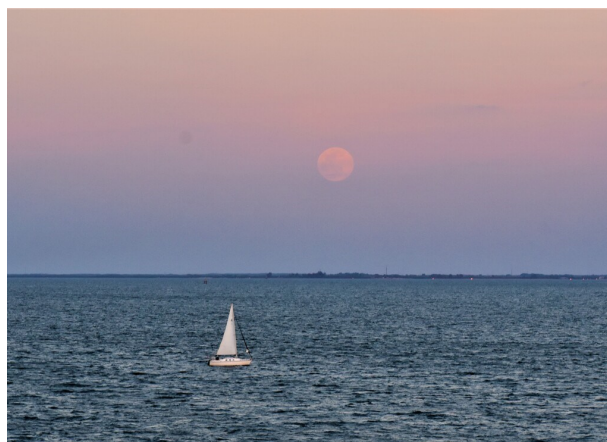
DVAA members are eligible for discounted subscriptions to Astronomy Magazine and Sky and Telescope Magazine. Go directly to these links:

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Harry Orlind’s relaxing image of the April full moon over Tampa Bay, Florida



Astrophotography With Your Smartphone

David Prosper

Have you ever wanted to take night time photos like you've seen online, with the Milky Way stretched across the sky, a blood-red Moon during a total eclipse, or a colorful nebula? Many astrophotos take hours of time, expensive equipment, and travel, which can intimidate beginners to astrophotography. However, anyone with a camera can take astrophotos; even if you have a just smartphone, you can do astrophotography. Seriously!

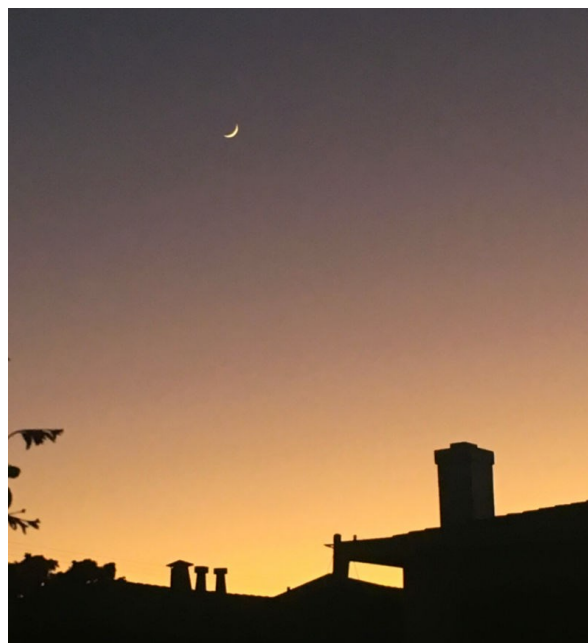
Don't expect Hubble-level images starting out! However, you can take surprisingly impressive shots by practicing several basic techniques: steadiness, locked focus, long exposure, and processing. First, steady your smartphone to keep your subjects sharp. This is especially important in low light conditions. A small tripod is ideal, but an improvised stand, like a rock or block of wood, works in a pinch.



A small tripod for a smartphone. They are relatively inexpensive – the author found this at a local dollar store!

Most camera apps offer timer options to delay taking a photo by a few seconds, which reduces the vibration of your fingers when taking a shot. Next, lock your focus. Smartphones use autofocus, which is not ideal for low-light photos, especially if the camera readjusts focus mid-session. Tap the

phone's screen to focus on a distant bright star or streetlight, then check for options to fine-tune and lock it. Adjusting your camera's exposure time is also essential. The longer your camera is open, the more light it gathers - essential for low-light astrophotography. Start by setting your exposure time to a few seconds. With those options set, take a test photo of your target! If your phone's camera app doesn't offer these options, you can download apps that do. While some phones offer an "astrophotography" setting, this is still rare as of 2021. Finally, process your photos using an app on your phone or computer to bring out additional detail! Post-processing is the secret of all astrophotography.

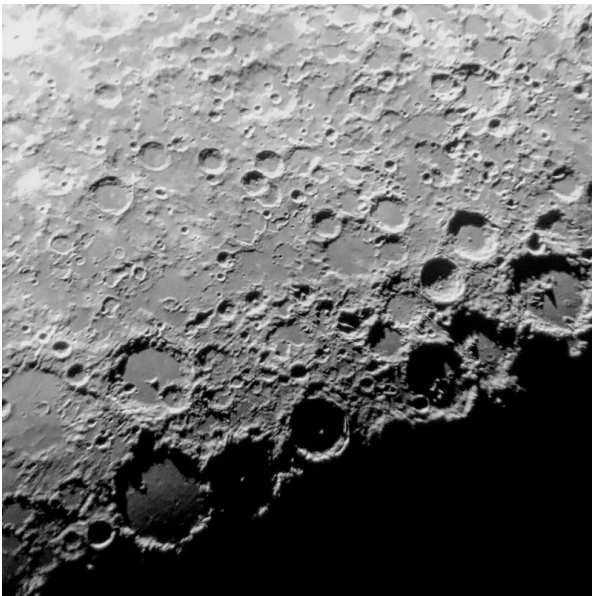


The Moon is large and bright, making it a great target for beginners. The author took this photo using an iPhone 6s. The crescent moon at sunset (above) was taken with a phone propped on the roof rack of a car.

You now have your own first astrophotos! Wondering what you can do next? Practice: take lots of photos using different settings, especially before deciding on any equipment upgrades. Luckily, there are many amazing

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This closeup shot of lunar craters was taken through the eyepiece of a friend's Celestron C8 telescope by the author, using an iPhone 6s.

resources for budding astrophotographers. NASA has a free eBook with extensive tips for smartphone astrophotography at bit.ly/smartastrophoto, and you can also join the Smartphone Astrophotography project at bit.ly/smartphoneastroproject. Members of astronomy clubs often offer tips or even lessons on astrophotography; you can find a club near you by searching the "Clubs and Events" map on the Night Sky Network's website at nightsky.jpl.nasa.gov. May you have clear skies!

This article is distributed by the NASA Night Sky Network, a coalition of hundreds of astronomy clubs across the US dedicated to astronomy outreach. Visit <https://nightsky.jpl.nasa.gov/> to find local clubs, events, stargazing info and more.



Speaking of smartphone astrophotography, here's Mitch Berger's ghostly May 13 image of the 1% illuminated crescent moon and Venus, taken with a hand-held Samsung from Lafayette Hill.

Members' Telescopes

I thought it might be nice to have a look at the scopes some of our members use. Enjoy. — Ed.



Al Lamperti's "Other Woman"

Al Lamperti's telescope is a 22" Obsession Ultra Compact. It is outfitted with a ServoCat Go-To drive system, Argo Navis, Feathertouch focuser, Ripstop shroud, cooling fan, dew heaters, filter slide and electronic ground board. "Juice" to the UTA where the dew controller is located is via a wire through one of the truss tubes. It has a red dot finder and a 10x50 right angle correct image finder on aluminum supports that I devised, along with an extended light baffle. The weight of the mirror and rocker box at the end of the supplied wheelbarrow handles is 25 pounds; the whole telescope is about 150 lbs. It takes him about 45 minutes to set up. He says it's a great photon catcher.

Image credit: Irv Schlanger



Tom Nolasco's Reverse Binocular Telescope

This is Tom Nolasco's unusual reverse binocular telescope. Both mirrors are 143mm in diameter (5 5/8 ") with a focal length of 614mm, giving them an f ratio of F4.3. Tom explains: "A 'reverse' telescope is one where you are looking in the opposite direction that the telescope is pointing. This makes for very comfortable viewing, especially near zenith, where you are looking downward as in a microscope versus craning your neck backward. The project started with two rather odd sized mirror blanks purchased at a Stellafane swap meet, and was completed over a 16-month period, in June 2016. The mount is a Dobsonian style. Typically, I use two 24mm Televue Panoptic eyepieces, which give me approximately 26x with a 2 2/3 degree field of view."



Members' Telescopes, Continued



Jan Rush's Celestron NexStar 8SE

Jan's Schmidt-Cassegrain telescope (SCT) provides a decent-sized aperture while still being easy to lift. The GoTo scope tracks in alt-azimuth mode and can locate and slew to celestial objects. She uses two finderscopes, a Telrad and a 9x50 right-angle finder. In the picture, the scope is decked out with anti-dew apparatus: a heated band on the end of the optical tube, and dew heaters on both finderscopes (thus explaining the multiple cords). During most observing sessions she aligns the scope even if she doesn't plan to use GoTo, because aligning the scope starts the tracking mechanism and tracking during an observing session is convenient when studying an object or changing eyepieces. Jan says her very portable scope has made many wonderful trips to Cherry Springs, Green Bank, Blue Mountain Vista Observatory, and Green Lane, and is a great star-party companion.

Image credit: Mitch Berger



Richard Steinberg's Celestron C11

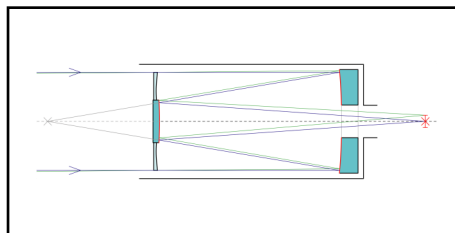
Richard uses this 11-inch Celestron C11 SCT for deep sky imaging. His current astro-camera is a 12-year old Orion StarShoot Pro v1, a cooled color CCD camera with 3032x2016 pixels each 7.8 microns square. Not as sensitive as a monochrome CCD, but allowing color images with fewer gradients, since the three colors are imaged simultaneously. The equatorial mount is a GoTo Sky-Watcher EQ6-R (advertised as capable of a 44-pound load). His Penn Valley sky occasionally allows naked-eye viewing of stars as faint as mag 4. Nevertheless, half-hour exposures with this setup reach mag 18 and beyond. Explore Richard's astrophotography here: <https://www.physics.drexel.edu/~steinberg/Astro%20Welcome.html>.

Members' Telescopes, Continued



Larry Kenyon's Celestron EdgeHD 14" SCT

Larry's 46-lb. SCT sits astride a Celestron CGE PRO GoTo equatorial mount. The mount weighs in at 75 lbs. and the pier and tripod at 52 lbs. Big Iron!



Here's the "folded" light path found in a typical Schmidt Cassegrain telescope.



Gary Trappuzzano's Celestron C9.25 SCT

Waiting for dark at Cherry Springs State Park in Coudersport, Gary here looks into the wrong end of his 9.25 SCT, which is mounted atop a Losmandy GM-8 equatorial mount. We can see that he has a foam dewshield mounted at the front of the scope.

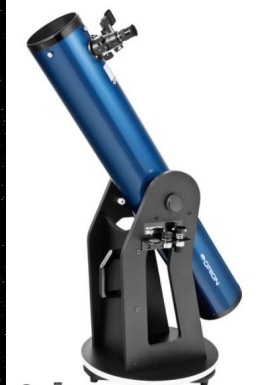
Image credit: Tracey Trappuzzano

DVAA Telescope Rentals

Celestron NexStar 5SE



6" Orion Dobsonian



DayStar 60 mm Solar Telescope



6" Orion StarBlast Dob



All scopes include tripod/base, eyepieces, manuals, power, etc. Rental is \$10/month with \$20 deposit. More info at www.dvaa.org under the OBSERVING tab. To rent one of these scopes, contact Joe Lamb at rentals@dvaa.org.

The Delaware Valley Amateur Astronomers

Since 1976, the **DVAA**, a non-profit corporation, has **shared the wonder and science of astronomy** with thousands of amateur astronomers and the public in the Philadelphia area. Each month we host dark-sky and local star parties, telescope workshops, science & astronomy lectures, educational outreach sessions, and more. To learn more or to join DVAA, please visit www.dvaa.org.

Check the schedule for our **free monthly meetings open to the public**, usually held on Friday via Zoom.

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