VILLAGES STAR

Newsletter of The Villages Astronomy Club

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December 2023

Club Website:
http://vlgastroclub.org/
Facebook:
https://www.facebook.com/groups/vlgastroclub/

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President	Mark Graybill
Vice President	Ken Katta
Secretary	Randy Gilbert
Treasurer	Linda Meng

Newsletter Contact
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(please include TVAstro in subject line)

UPCOMING EVENTS

Exec Directors' Meeting, December 1st, 11am
All members are welcome, join us at Fishhawk Recreation Center, 2318 Buttonwood Run, from 11a to 12p as we plan 2024's events and meetings including our booth at The Villages Outdoor Expo and April's eclipse event.

Telescope Workshop December 5th, 5:30pm

Bring your telescopes, binoculars and eyes and your questions about observational astronomy to our monthly telescope workshop at the Truman Recreation Center Picnic Pavilion at 2507 Canal St. Experienced observers can assist you with setting up your telescope, choosing a telescope to buy, and outfitting it with the right accessories to make it easy and pleasant to use.

Whether you're interested in Electronically Assisted Astronomy, astrophotography, or purely manual astronomy, we have members who are experienced in these areas and can provide practical advice and guidance.

Astronomers with instruments are invited to join us for observing as darkness falls, as well as those who would just like to take a look through someone else's instruments.

Orion Observer ST80 Telescope
Orion Telescopes Image

Space Academy and Telescope Workshop Date Changes for 2024

Space Academy and Telescope Workshop meetings to **first Mondays** in 2024.

The dates we will be meeting are:
Feb 5th, Mar 4th, Apr 1st, May 6th, Jun 3rd, Jul 1st, Aug 5th, Sep 2nd, Oct 7th, Dec 2nd.

Starting time for Space Academy will continue to be 6:30pm. Telescope Workshop starting times will follow sunset through the year, starting at civil twilight on the nearest half hour, more or less.

Both events are at Truman Recreation Center, 2507 Canal Street.

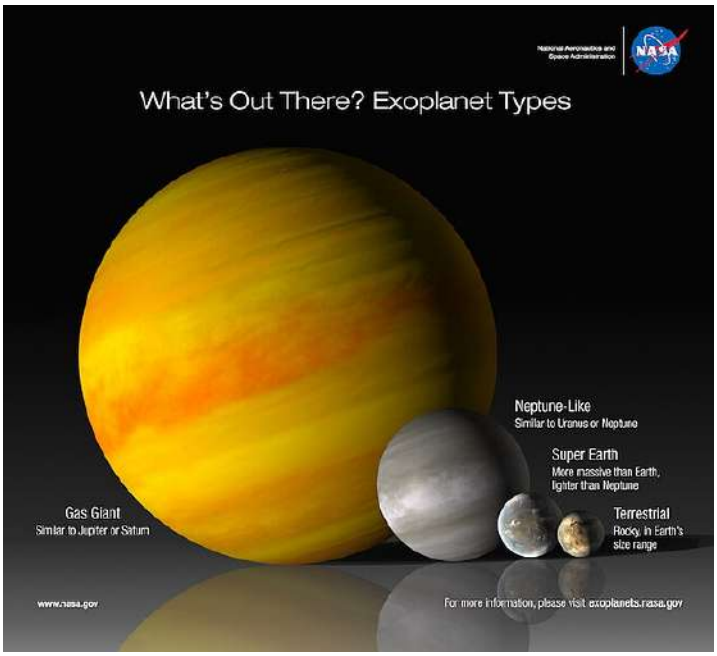
December 16th, 5pm:
Fruitland Park Astronomy Group

The Fruitland Park Astronomy Group meets for an evening of observing and talk on the third Saturday of the month every month, conditions allowing. The meeting is at the Cales Soccer Field in Fruitland Park at 300 Shiloh Road (at the corner of Shiloh Road and Dixie Avenue, north of the Fruitland Park water tower.) Village Astronomy Club members and the public are welcome. Gate opens at 5pm, solar observers can catch the sun while it's up, and astro observers can set up in daylight.

Scopes can be set up directly off of tailgates onto pavement, or taken further into the park along paved walks, away from the road to avoid nearby lights. Power is available.

General Meeting, December 19th, 2023:
Exoplanets Crash Course by NASA Ambassador Anne Holland

This month we are visited by NASA Ambassador Anne Holland for her presentation, "Exoplanets Crash Course". Learn about the types and numbers of planets discovered outside our solar system, and what they have to say about our own solar system's formation.



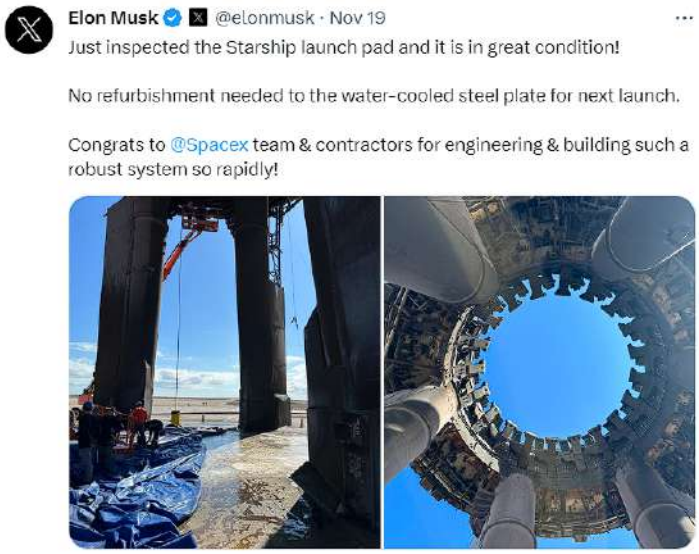
Exoplanet Types. NASA Image.
Calendar: https://vlgastroclub.org/calendar/

NEWS

Starship Integrated Flight Test 2

SpaceX conducted the second fully integrated flight test of their Starship launch system on November 18th, with much greater success than the first flight, successfully staging and reaching near-orbital velocity without destroying the launch stand's base.

This test included a plethora of upgrades to the launch complex and the rocket itself. Most noticeable was the addition of a water deluge system underneath the launch mount. This prevented the storm of broken concrete that happened on the first test. SpaceX has reported that no substantial damage occured to the launch mount, the ground beneath it, or the launch tower on this flight.



This was an important step forward, as the reconstruction of the launch mount's underlayment, the mount itself, and the tower accounted for about three months of effort after the first flight.Additionally, the final work item before flight test 2 was additional cleanup of the concrete hurled into the nearby wetlands under the guidance of the Fish and Wildlife Service, which caused a delay to receiving a launch license for flight 2.

Flight 2 caused no such problems, and the newly added capture ponds for deluge water prevented any overflow into the surrounding

protected areas. Additional water catch basins are expected to be added to provide storage for multiple launch attempts without the need to drain them between attempts. Captured water can be treated and released after testing, or if not appropriate for release can be transported offsite for treatment and disposal.

Now on to the rocket itself.

33 Raptor Rocket Engines Fire at Starship Launch SpaceX Image

On this flight, all 33 Raptor rockets fired at liftoff and continued to function through vehicle staging. This produced over 16 million pounds of thrust, rapidly lifting the 13 million pound rocket off its launch stand. This makes Starship over twice the thrust of a Saturn V rocket, and by far the most powerful launch vehicle in history.

During the first flight, by contrast, 3 engines failed to ignite at launch, and additional rockets shut down during the first stage's flight. At staging, the vehicle was unable to separate because of a loss of control due to fires inside the vehicle destroying critical cabling.

The Starship booster of the second flight not only had upgraded versions of the Raptor engines, but also had a new thrust vector control system and additional fire suppression systems. This resulted in the booster stage successfully completing its mission, allowing the upper stage to depart in flight.

Staging for flight 2 was different as well. Whereas the first flight had intended to use a flip maneuver to separate the stages, which was never tested due to the control system failures in the booster, flight 2 used "hot staging," a technique where the second stage fires its engines while engines on the first stage are still firing. This technique has been used in many prior rocket designs, including the Titan launch vehicles and the Soviet R-7 used to launch Sputnik and its later derivatives like Soyuz.

To allow this, Starship sported a new vented interstage section to allow the exhaust from the second stage engines to escape when they were fired, as well as a protective plate at the top of the booster.

When the second stage engines fired in the upper atmosphere, it produced quite a show as Starship's second stage departed from the first stage.

After separation, the first stage then flipped end for end, assisted by the push from the second stage, to attempt to perform a mock landing and ditch into the Gulf of Mexico. However, in the course of the maneuver several engines relit then went out, and possibly caused an explosion of the vehicle. SpaceX has not provided details of the failure publicly, but the effects of the flip maneuver

on supply of propellants to the engines are a strong possibility, either causing propellant starvation to the engines, or pipe breakages due to water hammer effects. More information will be forthcoming as SpaceX communicates its findings with the FAA. So while the launch portion of the first stage's flight was a complete success, the recovery portion was not.

It took SpaceX 14 attempts to successfully recover the Falcon 9 first stage. Starship's booster is much larger, and flies a higher energy profile, so SpaceX will likely have additional work to do before the first successful landing, in spite of their success with Falcon 9, making its first stage recovery almost routine.

Now on its own, the second stage of Starship headed toward space. It separated from the first stage just a short distance from the internationally-recognized 100km altitude that marks the boundary of space, at about 90km, which was over twice the altitude that the first Starship test flight reached before failing.

Its six Raptor engines included 3 standard ground level Raptors and 3 Raptors with large nozzles intended for use in the vacuum of space. All six started up successfully, sending Starship to an altitude of 150km (93 miles) and to a velocity of 24,000km/hour (15,000mph), just short of the necessary velocity to achieve orbit, 25,000kph or 15,500mph.

As Starship came up on its last minute of powered flight, ground cameras caught puffs of gas around it that may have been caused by engine explosions on Starship. SpaceX lost telemetry from the spacecraft. Additional ground imagery caught broken pieces of the Starship tumbling as they fell into the Atlantic Ocean. Some late-flight event caused the engine section of Starship to blow up, as the nose and payload bay were seen still intact in those images.

Details are scant at this point, but again, more information will be forthcoming as SpaceX pursues its failure investigation with the FAA.

While both stages' flights ended in failure, this test represents a huge success for SpaceX and their Starship team. The advances over the first flight test were dramatic, with the first stage successfully reaching staging velocity and altitude, and the second stage successfully taking off from the first stage.

SpaceX has already begun preparations for the third flight test. Elon has stated that hardware for the flight can be ready in 3-4 weeks. Additional work will likely be required to work through the issues from this flight, and in obtaining the launch license for the next test. Fortunately, environmental remediation and launch pad repairs will likely not be an issue for the next flight, as the problems from the first flight have clearly been corrected.

SpaceX web page on the IFT-2 flight:
https://www.spacex.com/launches/mission/?missionId=starship-flight-2

Watch the video of the flight here:
https://twitter.com/i/broadcasts/1dRKZEWQvrXxB

Boeing Prepares for ISS Crew Launch

Boeing's much-delayed Starliner crew vehicle is preparing to carry astronauts to the ISS for the first time in April of 2024. While there have been multiple delays to reaching this milestone, at present Boeing and NASA are saying that they

are able to hold to the new schedule.

Originally part of the Commercial Crew Development program, funded by Congress in 2010 to develop post-Shuttle crew vehicles through commercial vendors rather than government programs, Starliner was one of two designs selected for construction in 2014.

Then seen as the safer bet between the two vendors, Boeing subsequently ran into a number of extreme problems with its capsule, including issues with its attitude and reaction control rockets that have plagued it even up to its most recent uncrewed flight test. Since that test, safety issues with the batteries and flammable protective wrapping on its cable bundles have caused further delays to the first crewed flight.

Originally in a horse race with SpaceX to provide first crewed flight in 2019, a botched uncrewed test flight, a failed launch attempt for a second uncrewed test, and a string of other problems have delayed Starliner's first crewed flight for over 5 years. Meanwhile, SpaceX has flown successfully with crews 11 times, including 3 non-NASA flights (Inspiration 4 and Axiom-1 and 2), completing its original NASA commercial crew flight contract and receiving a second contract.

Meanwhile, Boeing has struggled to reach even its first crewed flight.

Boeing Starliner Approaches ISS without Crew
NASA Image, May 20, 2022

Now it looks like Boeing may finally achieve its first crewed flight this April, if all continues to go well.

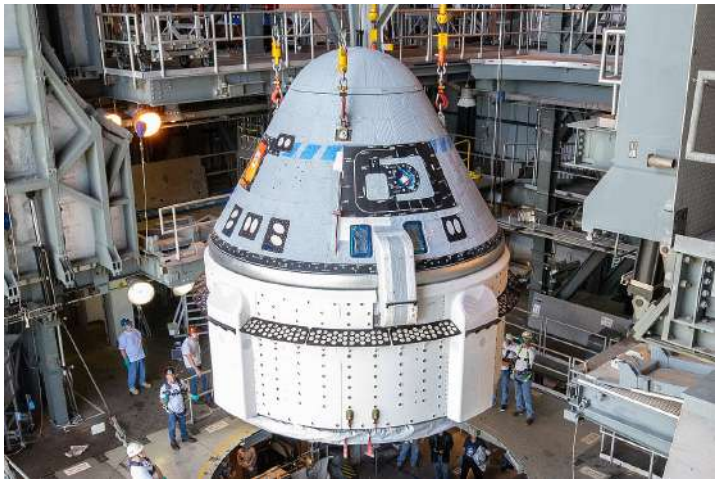
NASA's safety panel, ASAP, still believes that having two commercial crew vehicles is necessary to overall program safety. They are closely reviewing Boeing's work as they prepare for the flight.

A parachute drop test needs to be completed before April's flight to verify changes to the links that hold the parachutes to the spacecraft. The batteries in the craft have been change and approved by safety inspectors. The flammable tape on the cabling is still being replaced, and that work is expected to finish soon.

Boeing is expecting to have all the work complete and the vehicle stacked and ready for flight in March. The current schedule calls for flight no earlier than (NET) April, and the schedule for other vehicles and activities on the ISS will also play a role in the final launch date for Starliner, with April 14th being the current working date.

If all goes well, NASA should have a second way to send astronauts to the space station from the U.S. before next summer. If successful, the crew flight test with 2 astronauts will be followed by a series of operational crew flights, carrying 4 crew.

The crew for next year's test will be Barry "Butch" Wilmore and Sunita Williams.



Starliner *Calypso* Stacking for Orbital Flight Test
NASA Image, November 2019

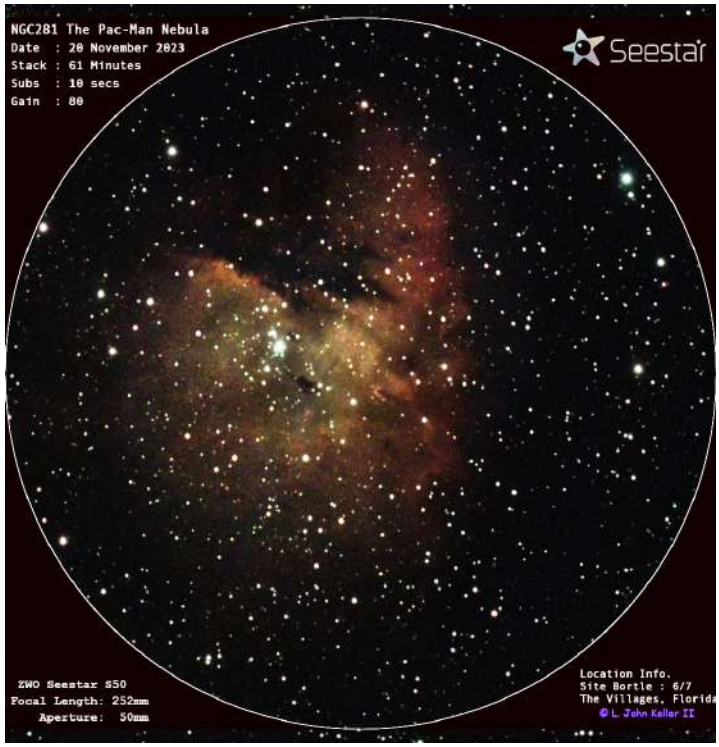
Starry Starry Night, November 2023

On November 4th, the Truman Recreation Center hosted us for our Starry Starry Night program. Starry Starry Night is where our club's astronomers share views of the night sky through their telescopes with Villages residents and their guests.

We had about 500 attendees at this event, and 9 astronomers as well as a great team of volunteers who helped guide our attendees at the event and helped the astronomers with their work. John Keller brought his SeeStar50 automatic astro-imager to show the ability of robotic telescopes in Electronically Assisted Astronomy (EAA), a subject you are sure to hear a lot more about in coming years!

Astronomers showed off views of Saturn, Jupiter, the Andromeda Galaxy, the Ring Nebula, the Double Double (a pair of double stars), the double star Albireo (two different colors!), red carbon stars, and many other objects in the sky, sharing information and lore about each one and its constellation.

The crowd was very appreciative.



Pac Man Nebula
Image by member John Keller. Post processing by Mark Graybill

IN THE SKY THIS MONTH

The Moon:
Last Quarter, December 5th
New Moon, December 12th
1st Quarter, December 19th
Full Moon, December 26th
Last Quarter, January 4th

This year's **Geminid Meteor Shower** falls during favorably dark Moon phases, allowing better views of the meteors than usual. Geminids are active from Dec. 4th through the 17th, with an extended period from Nov 17th through Dec 24th. The peak falls on the 13th and 14th, and after midnight on the 13th will be the best views. The best time to watch is shortly after midght, when the radiant point is highest in the sky, bringing the most meteors into view above the horizon. However, early viewers can still catch some good meteors before then. Geminids can appear anywhere in the sky, they will appear to be shooting away from Gemini (to the left of Orion.) The best equipment for viewing a meteor shower is a chaise lounge and something to sip on while waiting for the next meteor. Geminids are often bright and colorful.

The **Ursid Meteors** are active from Dec 13th through the 26th, with a peak on the evening of the 21st-22nd. Ursids have far lower fates than the Geminids, on the order of 5-10 meteors per hour, with occasional bursts of 25 per hour. Rates are highest shortly before sunrise, so this shower favors early risers. The brightness of the Moon will hide many of the dimmer meteors, so this shower is not expected to be worth going out of your way for.

Saturn is still high in the sky at sunset, though it is getting dimmer now, at magnitude 0.9 vs last month's 0.7. By the end of the month, it will be setting at about 9pm, so it will be best observed in the early evening.

Saturn finder chart:
https://in-the-sky.org//data/object.php?id=P6

Jupiter is already well up in the east at sunset this month, a bright evening star. It is getting dimmer, too, after being at opposition early in November. This month it dims from magnitude -2.8 to -2.6. It is also getting smaller, going from 48 arcsec at the start of the month down to 44 arcsec at the end. Hopefully December will give us clear, haze-free skies so that we can use higher magnifications on Jupiter to get a better look at its surface details--while November is typically a good month for observing in The Villages, this last month has been a disappointment with many cloudy nights.

While greater aperture telescopes will give sharper views of planetary details in general, Jupiter is so bright that it will often hide details in large scopes with its glare. Filters are one way to deal with this, notably color filters such as red and orange that darken the similarly-colored bands on Jupiter while bringing out the light ones. But better yet is a mask that will increase contrast without sacrificing the angular resolution of a larger scope. Often called a Herschelian mask, or an Off-Axis Aperture Mask, the standard design covers the end of the scope except for a single hole cut out to smaller diameter. A better approach is to cut out a pair of circular holes opposite each other, one on each side of the telescope's aperture. This reduces light while still providing angular resolution from the larger scope. This not only allows greater contrast, but allows larger scopes to observe Jupiter at higher magnification without losing detail.

Here is a detailed guide to observing Jupiter's many features:
https://arksky.org/aso-guides/aso-observational-guides/35-observing-jupiter

Uranus rises about half an hour after Jupiter, and is at magnitude 5.7 which is just barely too dim to be seen by eye under our local conditions. It is just past opposition, and makes a good challenge for an observer who has never seen a planet that isn't visible by eye in their telescope. Use binoculars to locate it first, its color should make it stand out among the nearby stars.

Uranus finder chart:
https://in-the-sky.org//data/object.php?id=P7

Neptune shines at magnitude 7.8 this month. It takes binoculars at minimum to see it. It is in Aquarius, near the border of Pisces. It is dimmer than Uranus, but behaves similarly when observed. It appears as a strongly colored star that doesn't look like other stars in a telescope. Most telescopes can catch its brightest moons as well. At 2.4 arcseconds in size, it takes about 75-100x magnification to display a disk.

Online finder chart for Neptune:
https://in-the-sky.org//data/object.php?id=P8

Venus is a morning star right now, greeting early risers. It shines at magnitude -4.1, just a bit dimmer than it was in November.

Its phase is about 73% illuminated at mid-month, increasing through the month to the point where it becomes difficult to see that it isn't "full."

Online finder chart:
https://in-the-sky.org//data/object.php?id=P2

Mercury appears as a bright star near the horizon at sunset, usually with a strong orange color. On the 4th, it is 21 degrees east of the Sun, and it will rapidly dive back toward the sun after the 10, disappearing into its glare on the 22nd. Mercury makes a good challenge for a binocular observer, or for visual spotting for someone who is still building their list of planets that they've seen. Have you seen Mercury?
https://in-the-sky.org//data/object.php?id=P1

Mars sits close to the Sun this month, lost in its glare. It will return to the morning sky at the end of January shortly before sunrise.

More information on sky events this month:
https://in-the-sky.org/

Beginner Telescope Buyers' Guide

Since December is a popular time to find deals on new telescopes, or get some time with clear skies in The Villages, we present our first Telescope Buyer's Guide.

The emphasis in this guide is on telescopes for beginners. Different scopes of different types are covered for a variety of observer interests, capabilities, and types. Each scope features discussion about its good and bad points, as well as anything that will need to be added to make it a more easily usable telescope (spoiler: almost all commercial telescopes need a better finder as their first upgrade!)

Scopes will be arranged more or less from cheapest to most expensive. That makes them also arranged from least to most capable, for the most part. The lowest cost telescopes on this list are capable of viewing fewer objects, and with less detail, than the more capable telescopes. A brief assessment of what each scope can be expected to deliver under Florida skies will be given. Note that observer skill will also play a part in what you can see in any of these scopes, alongside the scope's intrinsic quality.

A couple of rules I recommend for telescope buyers:

1. Don't spend your entire telescope budget on the telescope. You will need to buy accessories to get the most out of it, and you may also find that after-market upgrades are worthwhile as well. Spend less than your budget, save some for a finder, additional/better eyepieces, anti-dew equipment, charts and maps, an observing table or chair, carry cases, etc. In fact, planning for storage and transport of your telescope as part of your initial purchase will pay off every day you own your scope--I have spent as much on cases and carry bags for a telescope and its tripod as on the scope and tripod itself.

2. Don't expect this to be your last telescope purchase. That puts too much pressure on the scope to try to do everything, which no scope is capable of. Instead, get a scope that will let you get a start and find out where your interests actually lie. This will not always be where your interests lie before you become an observer. As you learn, you will discover new things about what it takes to find and see things in the sky, and you'll also find out what you can enjoy the most in a modest amateur instrument (hint: you aren't going to see the Horsehead Nebula in a small amateur scope!)

Orion Observer 80ST 80mm Equatorial Refractor

This short tube refractor comes on a manual equatorial mount with manual slow motion controls. It has a relatively wide field of view for an astronomical telescope, akin to a spotting scope but with optics better suited to astronomy than a spotting scope, as well as a usable mount for astronomy, unlike the photo tripod style mounts of spotting scopes.

The red-dot finder is an upgrade from the typical small telescopic finder that many cheap telescopes use, but the first thing to do with this scope is to replace that with a Rigel Quikfinder, a compact sight similar to a Telrad (my favorite finder) that fits well on this small scope.

The short focal length (400mm) gives a wide field of view that makes it easier for a novice telescope user to get objects into view. It also allows full views of deep sky objects that are too spread out for other scopes to catch, like star clusters.

The field of view can be further improved by adding wide field eyepieces to this scope, which can increase the field of view at low powers to over 3 degrees.

The downside to this scope is also its short focal length. This limits its usable magnification on the Moon and planets, though views of lunar features and features of the disk of Saturn and Jupiter will still be visible. If you get this scope then develop an interest in the features of Mars or closer looks at the planets, then you can keep this as your “grab and go” scope and add a higher focal length scope to your collection.

What you’ll see: Planets with minimal detail, but bands on Jupiter and rings and bands of Saturn. Features of the Moon. Bright “deep sky objects” like the Lagoon Nebula and Orion Nebula with no color or just a tint of green. Widely separated double stars like Albireo and the Double Double. Star clusters like the Pleiades, Hyades, M6 and M7.

Productive observing programs would include seeing how many Messier objects you can see, seeing all the major planets, and major lunar features.

Price: ~$120-150

Product Link (also available on Amazon): https://www.telescope.com/Orion-Observer-80ST-80mm-Equatorial-Refractor-Telescope/p/117096.uts

Orion Observer 114mm Equatorial Reflector Telescope (and 134mm version)

These two telescopes have the same optics as the tabletop Starblast telescopes of the same aperture. Both the Starblasts are good, too, but I prefer these for their mounts and tripods. The Starblast alt-az mounts are easy to use, but requiring a tabletop to set them on is an inconvenience that undoes the value of the alt-az mount.

The 134mm scope costs a bit more than the 114mm scope, but provides about 40% more light gathering area, so if the cost, size, and weight are not a problem, the 134 is the better scope.

The stalk-mounted red dot finder is the Achilles heel of these scopes. It’s usable, but tends to be easy to knock out of alignment and is best replaced with a Rigel Quikfinder or a Telrad.

These scopes will show the same objects as the ST80, though with a slightly smaller field of view in the case of the 114mm, and somewhat smaller in the case of the 134mm. The tradeoff is that they will also give higher power magnification without being excessive for a novice.

As reflectors, they will require occasional alignment of the optics (collimation), though my experience with these is that once aligned, they tend to hold their alignment even through car

travel and normal handling. But the best habit is to learn to do the alignment yourself, and to check it every trip out under the sky so that doing it becomes a matter of course rather than something scary and unknown that can ruin an evening out with your scope if it needs alignment and you're too unfamiliar with the process to do it.

(The ST80, as a refractor, has an advantage in that it does not require alignment of the optics like a reflector. But it isn't difficult to do, come to the telescope workshop or watch some YouTube videos on collimation and you'll be a pro in no time!)

These scopes will allow observing programs like those for the ST80 as well as seeing all of the Messier objects and all the Caldwell objects visible from our location. The dimmest ones will be a challenge, but with good conditions are within reach of these scopes though with little visual detail. Just enough to say, "I saw it! I saw the Owl Nebula with my own eyes!"

114mm Equatorial Reflector: $140-180
134mm Equatorial Reflector: $210-250

Product Links (also available through Amazon):
https://www.telescope.com/catalog/product.jsp?productId=134684

https://www.telescope.com/Orion/Orion-Observer-134mm-Equatorial-Reflector-Telescope/rc/2160/p/134685.uts

Telescope Mounts

You'll note that the lowest cost scopes I recommend use equatorial mounts, rather than alt-az (up/down-side to side) mounts that seem more intuitive for a novice to use. That's because nobody is manufacturing a good alt-az tripod mount at those price points. The equatorials are so superior on these scopes that it's worth learning to use them, which is a simple matter of familiarity.

Apertura Dobsonian Telescope (6" or 8")

Apertura AD6 6" f/8 Dobsonian Telescope

Anyone who knows me know that my favorite telescope type for visual observing is a Dobson-style reflector. Its ease of use and utility on a broad range of objects to observe makes it the best telescope that an astronomer can have.

But, as with anything, there are caveats. Dobsonians are bulky. They are moderately heavy, though they are usually easy to handle and not as heavy as similar telescopes with counterweights.

And, for a variety of reasons, my favorite type of Dobson scope is the home-made variety. They can be customized to the user at construction, and materials can be chosen to make the scope lighter, stronger, and more rugged. If the optics are purchased, rather than home-made, the average household handyman can assemble a telescope that will be better than the commercial models in many ways.

However, not everyone is in a position to do that. In that case, it becomes a matter of traversing the minefield of commercially manufactured scopes, looking for the ones that have the fewest gotchas. There are many ways in which some vendors have compromised the

design of the Dobsonian telescope to the point where I think it's disrespectful to John to sell them under his name.

That said, there are still some sound designs on the market, and I think the Apertura Dobsonians are currently the best that are selling at the same price points as far worse Dobsonians.

They include a good two-speed focuser made out of metal, that will work with either 2" or 1.25" eyepieces, for example. Even with their 6" model.

Their design allows the scope to be balanced properly.

They deliver the scope with a finder that is actually usable (though I still recommend adding a Telrad alongside the optical finder.)

The included eyepieces are good choices for the telescope's size and focal length, and are of good quality rather than barely acceptable.

They provide a number of after-market accessories customized for their scopes to help users adapt the scope to their circumstances.

Apertura AD8 8" f/6 Dobsonian Telescope

So, what are the downsides?

Like all low end commercial Dobsonians, the base is too low. For most manufacturers, this is a cost-cutting measure. In the case of the Apertura scopes it at least appears to be a conscious design choice, made to allow the addition of their caster assembly to allow for easy moving of the telescope in and out of a garage.

Most users will want to do something to raise the height of the telescope. Adding some 4-6" furniture legs, locking casters, or a platform to the base would be one way to do so. I don't recommend placing the telescope on top of a low table, however, as I have seen several telescopes fall when used that way. Whatever is used to boost the height of the telescope, it should be attached to the telescope!

Another downside is the use of engineered wood products, such as chipboard or stranded board, in the base. This is heavier than plywood and more susceptable to water damage. The Apertura base I have used was well sealed against moisture, but an owner would want to make it a point of annual maintenance to look for any wear that exposes the underlying wood, and touch that up with paint.

The telescope itself is of a good midrange focal length in both the 6" and 8" models. This makes it good for both low magnification/wide field viewing and for high magnification/narrow field viewing. They will give excellent high power views of the planets where the shorter focal length telescopes listed above will not be able to reach the same levels of magnification for picking out details. Midrange magnifications for these scopes are at the upper end of the effective magnifications for the smaller scopes.

They also have enough light gathering power to provide a lifetime of deep sky viewing. The 6" will catch the bright galaxies and nebuas, giving some view of structure in them. The 8" will give even more detail in those same objects, and catch some dimmer objects as well.

I really like the 30mm wide angle eyepiece that comes with the AD8. It would make a good addition to the AD6 as well, though it comes with a solid 25mm eyepiece, but I really like using wide angle eyepieces at low powers in Dobsonians.

The AD8 also includes a laser collimator that makes aligning the optics very easy. It's a bit odd compared to other brands of collimator in that it is always on when the batteries are inserted. To turn it off, you have to pull out the four 357 sized batteries. It works fine, though, and as a "free" item that comes with the scope it's a nice addition.

If you can afford the AD8, and can handle its bulk and weight (and your car is big enough for it), I recommend it over the AD6. If size and weight or cost are issues, however, the AD6 is a great telescope and the extras can be added to it, if desired, as time and finances allow.

Both of these scopes are rare in that they are usable out of the box. Very few commercial scopes truly are--the finder is the most common downfall.

High Point Scientific is Apertura's retail partner. High Point Scientific also sells Telrads, and includes them as recommended accessories on the Apertura product pages. If you can afford the extra ~$50, I strongly recommend adding one to your order. Any other accessories can wait until you've used the scope enough to know what you want to add to it.

Apertura AD6, $450-500
Optical Tube Weight: 18lb.
Base Weight: 25lb.
Tube length: 45 inches.
Tube diameter: 7 inches, not including focuser and finder.
https://www.highpointscientific.com/apertura-ad6-6-inch-dobsonian-telescope-ad6

Apertura AD8, $650-700
Optical Tube Weight: 25lb.
Base Weight: 28lb.
Tube length: 46.5 inches.
Tube diameter: 9.25 inches, not including focuser and finder.
https://www.highpointscientific.com/apertura-ad8-8-inch-dobsonian-telescope-ad8

Summary

I have not included any Go-To scopes on this list, nor any of the increasingly capable robotic scopes. I feel that Go-To scopes are best reserved for intermediate level astronomers as their calibration, setup, and use requires a working knowledge of the sky and telescopes in general. Also, there are phone mounts and phone apps that can be used to give the same level of functionality as the low end Go-To systems offered by vendors. These can be added to non Go-To telescopes.

Robotic scopes like the Unistellars are still quite expensive, placing them outside the range that a novice should expect to spend. That will likely change rapidly over the next several years.

Club Calendar

Yellow marks special events hosted by The Villages Astronomy Club
Blue marks events that are not hosted by The Villages Astronomy Club, but which we recommend.
Green Marks Volunteer Events for other groups.

December 2023
1 Exec Meeting
5 Telescope Workshop 5pm/ *NO Space Academy this month*
8 Girl Scout Activity TBA
16 Fruitland Park Observing
19 General Meeting: Anne Holland, NASA Ambassador: Exoplanets Crash Course + Ice Cream Ritter's Frozen Custard

January 2024
Note: Space Academy/Telescope Workshop moving to 1st MONDAY in 2024!
1 No Space Academy. Telescope Workshop TBA
5 Exec Meeting
16 General Meeting: Pauline Schwartz, subject TBA
20 Fruitland Park Observing
26 ERAU Open House

Club Calendar on the web:
https://vlgastroclub.org/calendar/