VILLAGES STAR

Newsletter of The Villages Astronomy Club

Volume 6, Number 11
November 2025

Club Website:
http://vlgastroclub.org/

Facebook:
https://www.facebook.com/groups/vlgastroclub/

UPCOMING EVENTS

Space Academy, Nov 3rd, 6:30pm
Truman Rec Ctr, 2705 Canal St.

Join us for discussion of our favorite star, Sol, that gives light and life to the Earth! Following the presentation, we can go outside to view the sky at the Star Party Workshop to give our astronomers a "test audience"!

Star Party Workshop, November 3rd, 7pm, Truman Rec Ctr Pavilion, 2705 Canal St.

This month's Observers' Workshop is focused on showing the sky! Come out and share tips with our other observers, make sure you and your equipment are ready for a night of showing the sky to attendees at our upcoming Starry Starry Night event! Learn current objects in the sky that we'll be showing--how to find them and what to tell people about them at your scope. How to handle common events like having to realign your telescope, or move to a different object while keeping the attendees engaged.

Our club is always looking for additional observers to assist us with showing the sky to the crowds who come to our Starry Starry Night events. It make things less taxing for the observers to have more of us, and it makes the lines shorter for our attendees.

Help will also be available for those who want help with their telescopes. So if you have a scope you want help with, please bring it!

Bring your telescope or mounted binoculars to November's Observers' Workshop to learn to show the sky!

Location & time: Truman Recreation Center Picnic Pavilion, 2705 Canal Street, 7:30pm-8:30pm. The picnic pavilion is behind the recreation center, follow the sidewalk around the pool.

Executive Directors' Meeting, Nov 7th, 11am-12pm, Fishhawk Rec Center, 2318 Buttonwood Run

All members welcome to our monthly planning meeting. This month we'll planning our fall event schedule including the Star Party workshop for November's Observers' Workshop and Starry Starry Night in November.

Fruitland Park Astronomy Group, Oct 18th, 5pm, 300 Shiloh Rd, Fruitland Park

Join us for an evening of observing and astronomy talk with the Fruitland Park Astronomy Group! Come to Cales Soccer Field in Fruitland

Park, 300 Shiloh Road (at the corner of Shiloh Road and Dixie Avenue, north of the Fruitland Park water tower.) Enter on Shiloh Road (some GPS's will guide you to the Dixie Avenue entrance.) Gate opens at 5pm. We will stay as late as conditions permit and people are interested in observing. Bring power if required. You can set up off your tailgate.

Public is welcome to this event, no Villages ID required! Bring family and friends to view the evening sky with our astronomers!

General Meeting, Nov 18th, 6:30pm: Frank Bridge, Observing the Universe with Binoculars

Join us at Laurel Manor Rec Center, 1985 Laurel Manor Drive, at 6:30pm for a presentation by member Frank Bridge who provides his personal perspective on observing the wonders of the sky with binoculars, which through their portability, ease of use, and wide field of view make the universe more accessible than any other instrument.

EAA Meeting, Homestead Astronomy Park, Nov 19th, 5pm, 6227 Meggison Road

Our EAA (Electronically Assisted Astronomy) meeting is focused on using smart telescopes, telescopes with smart controllers, and astrophotography both traditional and live-stacking. If you want to know more about how smart controllers can put your astronomy in "easy mode", come and see what current devices can do!

Visual observers are also welcome to come and take advantage of the Astronomy Park while we have it open after hours.

Starry Starry Night, November 22nd

Come see the sky with our astronomers this fall! On November 22nd, we will be holding our fall Starry Starry Night event. This event is open to all who have Villages resident and guest IDs.

Come look through our astronomers' telescopes and see the sky! We will be viewing the Moon, Saturn, stars, double stars, star clusters, nebulas, and galaxies!

We will be at Everglades Recreation Center, behind the pickleball courts on the north basketball court and the soccer field. Stargazing starts at 6:00pm and goes until 8:30pm.

Recreation will be shutting off the entire center complex for us to provide more parking places for attendees of Starry Starry Night. We will have additional parking at the baseball fields, about another 150 spaces.

We still recommend carpools and carts to those who plan to attend. We expect 800-1000 attendees in November, and the available parking spaces are about 400.

Objects We'll See

There will be a 3 day crescent Moon visible at the outset of observing that will set shortly after

7pm. Saturn, Uranus, and Neptune will be in the sky, There will be many star clusters, nebulas, and some bright galaxies to view at this event, conditions permitting. See list at end of newsletter.

Instruments

We will have visual telescopes, binoculars, and Smart Scopes at the event to show things to our guests. Visual scopes and binoculars give a personal connection to the object you're viewing, while electronic scopes bring out details our eyes can't see in Florida skies.

Astronomers

If you are interested in bringing an instrument to show the sky, we'd love to have you help us out. The more astronomers we have, the shorter the lines will be! Please contact Mark Graybill at saundby@gmail.com if you are not already on our astronomer mailing list. We welcome astronomers of all experience levels.

Our Observer's Workshop this November will be focused on showing the sky at star parties, so whether you are an experienced star party veteran or new to the experience, please plan to join us on Monday, November 3rd at 7pm to either learn or teach the skills for star parties. Don't be shy! You only need to know a few objects in the sky (even if you only practiced finding them the night before the star party!)

See the Object List at the end of the newsletter, just before the monthly Star Chart.

Your Club Officers & Directors

President	Mark Graybill
Vice President	Ken Katta
Secretary	Randy Gilbert
Treasurer	Linda Meng
Space Academy	Toni Graybill
Public Relations	Jeffrey Kahler, Sr.
Directors	Craig Henry
	John Roarke

Newsletter Contact: saundby@gmail.com

See Calendar at End of Newsletter, before star chart.

Club Calendar Online:

https://vlgastroclub.org/calendar/

NEWS

Nancy Grace Roman Telescope Undergoes Testing.. NASA/JPL photo.

Nancy Grace Roman Telescope Prepares for Flight to Space

The Nancy Grace Roman Telescope, a.k.a. the Roman Space Telescope or RST, NASA's next major space telescope, is scheduled to go aloft aboard a Falcon Heavy launch vehicle between October 2026 and May 2027 is being prepared for its mission.

As of October 14th, the RST completed thermal vacuum chamber testing with all optical components. The telescope was operated against test targets for the course of the testing, and the resulting data was used to test the cloud based data processing system that will be used for the actual data once the RST flies.

Meanwhile, specific observations for the new telescope to complete once it reaches its home at the Earth-Sun Lagrange 2 point are being selected. User's guides for the telescope

are available to scientists, along with guidelines on submitting their requests to perform observations.

One of the studies already approved is the use of RST's Wide Field Instrument to trace the expansion of the universe over time. As we heard at October's presentation by Robert Wickman, the expansion of the universe has not been uniform, and there may well be changes in its rate of expansion beyond the rapid early "inflation" of the universe in its first moments. RST will study that by looking outside the plane of our galaxy to see distance markers such as supernovas, some of which can be used as accurate distance measuring tools based on their brightness.

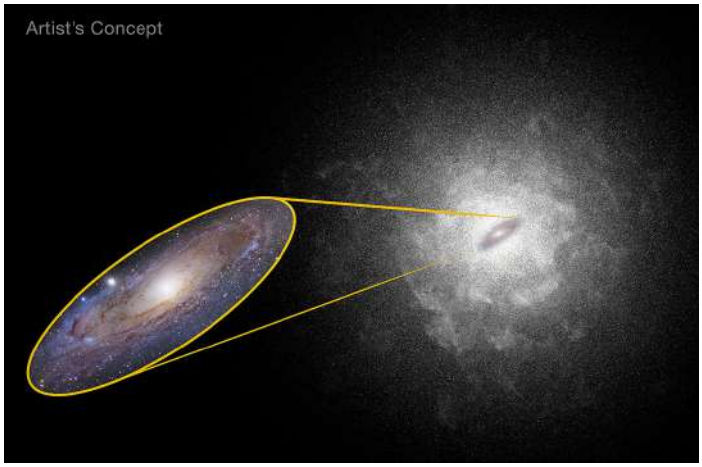
The Wide Field Instrument of RST can cover an area 200x greater than the Wide Field Camera of the Hubble Space Telescope, allowing a much broader view to pick up far more data than we could have found and compared before.

Observing supernovas outside our galaxy over a long period of time with RST will give insights into the expansion rate of the universe, and concentrations of dark matter that affect local rates of expansion. Supernova 2018gv before and after. NASA image.

Another study will use RST to identify over 160,000 gravitational lenses to better understand dark matter. Studying these lenses will give information about the distribution of dark matter around the galaxies at the heart of these lenses by studying the images produced by them of the distant galaxies being lensed.

A third approved study will use RST to look for collections of ancient stars within galaxies to better understand how galaxies form. These "galactic fossils" will give clues about the earliest stages of the galaxy's life, and how it formed from an earlier state.

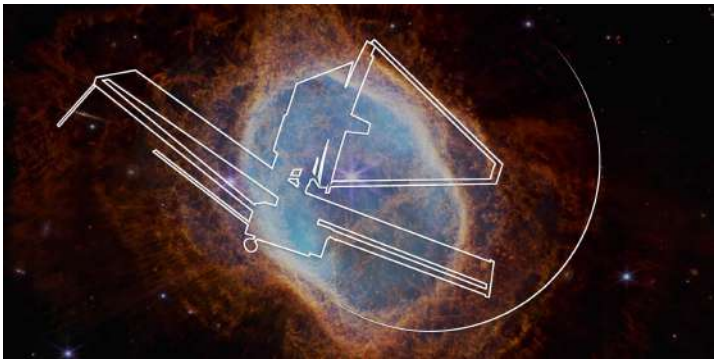
These fossils reside in the outer halo of galaxies, stars that lie well outside the part of the galaxy we normally observe, which are difficult to perceive from surface-bound telescopes. But they contain crucial clues to the earliest parts of the galaxy's existence.



Artist's concept of the halo of stars around the Andromeda galaxy (white), which RST will study to identify the earliest groups of stars formed, and how they affected the formation of the galaxy we see at the core of the halo today. NASA image.

Learn more at:
https://www.stsci.edu/roman

Comet Lemmon C/2025A6 imaged by member Craig Henry over The Villages on Oct 24th.



JWST Gets Continuous Improvements

Just as commercial smart telescopes improve their abilities without hardware changes through ongoing software updates, the James Webb Space Telescope is continuously improving as well. In the past several months, software updates to the instruments and the ground-based image processing have expanded the space telescope's abilities without having to send a servicing mission to change the hardware on board.

Wide Field Slitless Spectroscopy (WFSS) is a new observation mode that will be available to astronomers. It will allow multiple sources to be observed at the same time for collection of spectra. By observing them with a single pointing of the telescope, the data can be more easily compared and calibrated, allowing more accurate spectral observations. This observing mode uses existing equipment on the MIRI instrument in a new way to allow this capability.

Cosmic Ray Showers can affect hundreds of pixels of a spectroscopic image taken by the MIRI's Medium Resolution Spectrometer (MRS). These are local strikes of cosmic rays on the JWST itself that spread noise through its data, reducing its quality or making it useless. A new algorithm has been developed for the latest release of its software that can carefully remove this noise from the data, however, rescuing information that would otherwise have been lost.

Even JWST is not without its issues. One of its designed capabilities, the ability to measure spectra using "multistripe" observation of bright objects by collecting data from stripes of pixels on its sensors, rather than using the full sensor full time, was intended to allow spectrography of bright subjects without the use of a slit. However, the initial attempts to use this capability in flight produced useless results, and that capability hasn't been available ever since. Until October 2nd, when an update was released that the problem is now understood and a fix is in place to allow multistripe slitless spectography of bright objects to begin in the upcoming Cycle 5 studies conducted with JWST.

Just as our small commercial electronic telescopes, cameras, and instruments here on Earth get better with time so long as their makers keep updating and improving the software, and finding new ways to use their built in mechanical abilities, the big flagship space telescopes get updates the improve and expand their capabilities as well!

JWST image of Sagittarius B2, the most active star-forming region in the Milky Way. JWST is used to study why some star-forming regions are more active than others, especially when they contain plenty of material. We don't yet know what can accelerate or hold back star formation in these regions. STSci image.

SpaceX Falcon Boosters OK for 40

SpaceX has cleared its Falcon boosters for up to 40 flights as they continue to improve their ability to reuse and refly their vehicles. Continuous improvements in their processes, not only in rework and preparation of their boosters for launch, but also in making landings as non-disruptive as possible, has allowed them to continue to expand the expected lifetime of the

booster fleet.

This announcement came alongside Booster 1067's 31st flight and the final flight of Booster 1076, which was expended while launching SpainSat NG II to geosynchronous orbit on its 22nd flight. The launch required all of the Falcon 9's thrust capability, leaving no propellant for a landing for that flight.

Launch of SpainSat NGII on Booster 1076's 22nd and final flight, Oct. 23rd. SpaceX image.

SpaceX has added a crown image to their re-use leader, Booster 1067, seen here returning to port after its 31st flight to space. Image by Rocketman Rob, @BobDalt58613847 on X.

Initials targets for Falcon 9 booster re-use were 10 flights in 2013 were considered by many in the industry to be unachievable. At that time, most large industry manufacturers believed rocket re-use to be economically impossible even if it were technically possible.

Since then, SpaceX has demonstrated that not only is re-use feasible, but that it dramatically reduces costs of launch operations. After their initial recovery and re-use of Falcon boosters, they have had two major upgrades to their booster to improve their design, with the current version of the booster, known as "Block 5", not only reaching but easily exceeding their initial goals.

Even after SpaceX demonstrated the ability to reuse boosters, other manufacturers have created new rocket designs to reduce costs to stay competitive with the early Falcon 9 rockets. SpaceX competitor Rocketlab has successfully reused booster stages for its small Electron launch vehicle, but otherwise no other rocket manufacturer has build and reused an orbital-class rocket to date.

United Launch Alliance, once the leading U.S. launch company, has yet to incorporate re-use into its vehicles, in part hampered by major shareholder Boeing, who have limited ULA's developments to prevent perceived competition to their SLS vehicle built for NASA. Similarly, ESA developed the Ariane 6 and Vega C to be cheaper than their prior Ariane 5 and more capable than the prior Vega launch vehicles, but they do not reuse any components, making their costs many times those of SpaceX.

Multiple "commercial" Chinese vehicles under development in the People's Republic of China are following SpaceX's path of development, seeking to fly and reuse Falcon-like boosters before the end of the decade. Rocketlab, makers of the Electron are also deep into development of the Neutron, a new, larger rocket that will have a larger fraction of re-use than the Falcon 9 due to carrying its second stage inside its clamshell fairing that will return to Earth with the booster stage. While carrying slightly less mass than the Falcon 9, it may prove to be a serious competitor to Falcon 9 for lighter payloads.

Rocketlab's Neutron Rocket, planned for first launch late 2025 or early 2026. Second stage and payload are carried inside the nose cone, which stays attached to the vehicle for re-entry. Rocketlab image.

The current record-holder for re-uses of a reusable orbital space vehicle is Space Shuttle Orbiter Discovery, with 39 uses. At one time, it looked like its record would be secure at least until Starship begins to reach high re-use numbers (both booster and ship are intended to be able to be re-used up to 100 times.) But now, it looks like a Falcon 9 booster may be first to take the record, over 14 years after Disco's final flight.

Space Shuttle Discovery, on launch pad 39A before its 39th flight, Oct 2011. NASA image.

North America and Pelican Nebula region imaged by member Frank Masciulli. Canon T6i with Redcat 51, ISO 800, 10 frames of 90 seconds manually stacked in Photoshop.

IN THE SKY THIS MONTH

Also refer to the sky map on the last page.

THE MOON

Full Moon, Nov 5th
Last Quarter, Nov 12th
New Moon, Nov 20th
1st Quarter, Nov 28th
Full Moon, Dec 4th

Our Star Party Workshop session will be held near the Full Moon, making the finding of other objects more challenging than it will be during our November 22nd Starry Starry Night event, which falls 2 days after New Moon. If you

can find it during the workshop, you should be able to find it easily during Starry Starry Night!

We are losing the summer constellations early in the evening, with Scorpius just showing its tail after full dark, and Sagittarius low in the west. They are headed to a position behind the Sun, and will re-emerge as morning constellations in the winter months.

The fall constellations of Capricorn, Aquarius, and Pisces, and Aries are high in the sky at sunset at start of the month, with Sagittarius gone by month's end, and Taurus up in the east at sundown.

While we lose sight of summer spectacles like the Lagoon Nebula (M8) and Trifid Nebula (M20) in the evening sky, they will be replaced by the Pleiades, Orion Nebula, and Hyades. Electronic observers can catch the Horsehead Nebula alongside the Flame Nebula, while Cygnus remains in our sky with the Veil Nebula and North America and Pelican Nebula complex (see image above.)

Each season brings its own delights. Among those this season brings is ever-lengthening darkness, with days getting shorter and nights getting longer.

Mercury starts the month in our evening sky, setting about an hour after twilight. Between the 9th and the 16th it dives rapidly toward the sun, then re-emerges in the morning sky on the 21st, shooting upward toward greatest elongation on December 7th. Its brightness varies from its brightest on the 1st, at mag. -0.2 to its dimmest on the 11th at 0.6 then after re-emerging from behind the Sun's glare, brightening to mag. 0.6 on the 30th.

This is an excellent month to view **Mercury's phases**, at is begins at a gibbous phase on the 1st, becomes a crescent as it approaches solar conjunction on the 11th, re-emerges as a larger crescent (9.9 arcsec) on the 21st, then passes through to a crescent on the opposite side of the planet on the 30th.

Mercury online viewing chart:
https://in-the-sky.org//data/object.php?id=P1

Venus is a morning star, shining at magnitude -4 in the predawn sky. Ir rises briefly before the Sun at the start of the month, then slowly descends toward the Sun, appearing only in the twilight after the first week of the month. It will remain there through the rest of the year. It will be in a full phase through the month of November.

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

Mars is bringing its 2025 show to a close, descending toward its solar conjunction early next year. This month it will start by setting shortly after the end of twilight, but will descend into the twilight sky deeper as the month progresses. It is too far and too low to see significant detail to the casual observer.

Observing information for Mars:
https://in-the-sky.org//data/object.php?id=P4

Jupiter takes its place as the king of the evening sky this month, shining at mag -2.4. It will grow from 41 arcsec to 44 arcsec in angular size, providing excellent views of its bands and zones to all telescopes. Binoculars generally won't provide enough magnification to see surface detail, but they will reveal it as larger than a star, and show its bright moons. By the time of the Starry Starry Night event, it will be an excellent sight in a telescope, but rising too late for the event..

Jupiter observing information:
https://in-the-sky.org//data/object.php?id=P5

Saturn continues to grace our sky this month, to the south after dusk at mag 1. It is an easy bright "star" to pick out near the Aquarius/Pisces border. Its rings are still nearly edge-on, but this gives a better view of the details of the planet's atmosphere. At just over 18 arcsec in diameter, 100-150x will show the bands and

zones, especially in high contrast scopes, or if you use partial blockage of your scope's aperture or a neutral density filter to bring the overall brightness down to where our eyes can easily perceive the faint contrast and color differences in its atmosphere.

A modest sized scope can pick up several of Saturn's moons under a moonless sky, larger scopes can pick up more. We saw 7 moons in a 10" Dobsonian telescope at last month's Fruitland Park Astronomy meeting. Any telescope, or even binoculars will pick up bright Titan as a starlike object near Saturn.

The Saturn Moon and Ring finder tool on theskylive will help you know where to look or what you are seeing:
https://theskylive.com/saturn-rings-and-moons

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

Uranus is visible in the evening sky in Taurus south of the Pleiades (The Seven Sisters.) At mag 5.6, it's too dim to see by eye in our skies (unless it's especially dark and clear, and you're away from the local light pollution), but it can be seen in binoculars or a telescope. At 3.8 arcsec in size, it is small, and will appear as a green or blue colored fuzzy "star". High powers (>300x), a dark night, a good mount, and a scope with excellent contrast can bring it out as a disk, though likely with no detail. The planet is bright enough that a light pollution filter can be used without losing sight of it. However, it is unlikely to show any additional detail.

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

Neptune lies near Saturn, only about 14 arcminutes away (about half the width of the full Moon) and so is easy to find slightly west of Saturn. Look for a bluish or greenish non-stellar object when using over 70 powers of magnification. Colors may be muted by sky conditions, but even with small apertures it should stand out as clearly not a star once over 100x magnification. It is at mag. 7.8 now, only slightly less than its brightest.

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

Pluto, only slightly brighter than magnitude 15, is in Capricorn this year. It requires great patience to locate Pluto, as it has to be eliminated from the nearby stars of similar brightness. A star chart or astronomy app with stars down to mag. 17 or so will show star patterns that will allow you to pick out Pluto as the "interloper."

Pluto finder chart:
https://in-the-sky.org/data/object.php?id=A134340

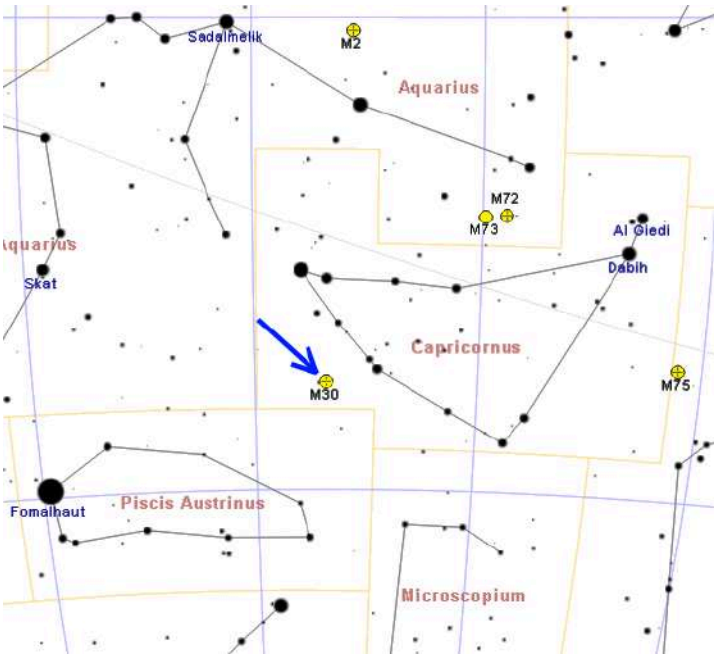
November is when astronomy really takes off in The Villages thanks to lots of clear nights this time of year. October was a good month for astronomy, with a higher than normal number of clear days this year thanks to a lack of hurricanes near Florida. November and December are peak months for astronomy in The Villages, due to average of 20 clear nights each month, cold air reducing humidity in the sky above (though dewing at ground level can be a challenge), and low counts of biting bugs.

This year promises to be especially good, as a weak La Niña system is developing, which brings more clear weather to Florida, on average an additional 2-3 nights per month.

In the center of this month's evening sky lie **Capricornus**, **Aquarius**, **Cetus**, **Pisces**, and **Aries**. Capricornus' brightest star, **Al Giebi**, is a double star that can be split in binoculars or a low power telescope. Capricornus also contains the dense globular cluster **Messier 30**.

88 Aquarii is a beautiful double, containing an orange star(mag 5.8) and a blue one (mag 6.4). At 36 arcsec separation, they can easily be split in binoculars.

Messier 2 is another bright globular cluster in Aquarius. Great in binoculars and a low power telescope view, it may be the core of a galaxy that was consumed by the Milky Way long ago.



Messier 30 Finder Chart by Roberto Mura.

Messier 72 is a dim globular, binoculars show it under a dark sky, but will lose it under moonlight. It is dimmer, but larger than M2.

The Helix Nebula, NGC 7293, is a large planetary nebula that is visible in low power binoculars under the best sky conditions, or at lowest practical power in a telescope. It may take averted vision to see a dim green glow. Seeing it visually is a difficult task, but it's a showpiece object for Electronic Astronomy due to its large size, detail, and colors.

The Saturn Nebula, NGC 7009, is a small planetary nebula in Aquarius with a distinct green color and "ansae", antennas, that look like Saturn's rings. Only a green star is seen in binoculars, but telescopes at mid powers (~100-150x) will see them. Electronic scopes with longer focal lengths (>400mm) may see some detail.

Messier 74 is a classic face-on spiral galaxy in Pisces. A 4" scope or better will see it, its surface brightness is low. When seen, it will present nice detail at mid-high powers with a refractor, Maksutov, Schmidt-Cassegrain, or a Newtonian IF the Newtonian has good baffling or other contrast enhancements.

Cetus the Sea Monster contains **Messier 77**, a Seyfert galaxy with a bright core. The core is visible in binoculars as an oval shaped cloudy object. Telescopes will show the halo of the galaxy as well.

Sigma Arietis is a triple star in Aries, magnitude 5.5 primary blue star with two dimmer blue companions that form an icy trio. The farthest lies 158 arcsec away, so it will take binoculars or a wide telescope field to see all 3.

See the star chart at the end of the newsletter.

Paradise Rec Center, Birthplace of The Villages Astronomy Club, Under Reconstruction

Original Paradise Rec Center Sign. Image by Mark Graybill.

The Villages Stargazing Club held its very first meetings at the home of its founders, Dominic & Dimitri Accetullo, on Cindy Drive with a view south across the water toward Schwartz Park. by 1994, the club secured a spot in the Charlie Chaplin Room of The Villages' first recreation center, Paradise Recreation, a short way away.

Dominic and Dimitri Accettullo, Founders of The Villages Astronomy Club

Meeting on the 3rd Monday of the month at 7pm, our club heard presentations on such subjects as Orion, Birthplace of Stars by Rona Gold, the Compton Gamma Ray Observatory by Chuck Knaus, Comet Hale-Bopp by Ray Johnson, as well as monthly reviews of "What's Up Tonight" on that month's sky.

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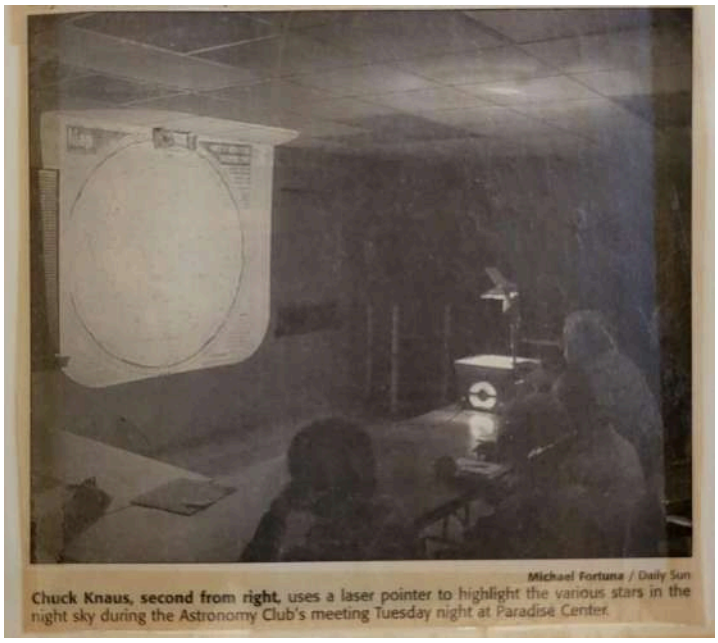
Bob Drollinger stirs his famous eggnog while Muriel Bingley is the first to try some of the holiday beverage at the Astronomy Club Star Gazer's meeting Tuesday at Paradise Center.
(Photo by Michael Fortuna)

Paradise Recreation Center became a very valuable part of The Villages, not only for our club but for all Villages Residents, and its value contributed to the growth that followed as The Villages spread and grew.



Michael Fortuna / Daily Sun

Chuck Knaus, second from right, uses a laser pointer to highlight the various stars in the night sky during the Astronomy Club's meeting Tuesday night at Paradise Center.

Chuck Knaus, left, shows Vera and Ray Broughton, sitting at right, how to operate their new telescope at the Astronomy Club's meeting Tuesday at Paradise Center.
(Photo by Michael Fortuna)

And now, the time has come for Paradise to grow as well. The new Paradise Recreation Center will be much larger, with new amenities. But let's have a look at the Paradise Center as it was when it was our club's home for its first decade.

This facade of the Paradise Rec Center faced the parking lot. The door opens onto the foyer.

A view from the other end of the room. The large double brown doors lead back out to the foyer.

Past the foyer, to the left, lies the entrance to the Charlie Chaplin room, where our club met. Note how convenient the facilities are!

Outside the Charlie Chaplin Room. Did telescopes ever get set up here or in the nearby walkways?

Since our time there, the room had been converted into a craft room. Otherwise, it remained much the same until demolition.

At this point, the old center is well into being demolished to make way for the beautiful new center.

Before that, I visited to get some images of where our club got its start. This is where club members like Rona Gold, Ray Johnson, and Chuck Knaus established this club's legacy and started bringing the stars to The Villages and its residents. They shared the night sky, tips and techniques on using telescopes, information about space exploration, and fun times together.

Here's to keeping this legacy alive for a long time yet to come!

-Mark Graybill

COMET SWAN C/2025 R2
October 22,2025

Image of Comet Swan by member Craig Henry

Club Calendar

Special events by The Villages Astronomy Club
Events not hosted by The Villages Astronomy Club
Notable dates with no event planned.

November 2025
2 DST ENDS
3 Space Academy, 6:30pm, Truman Rec Ctr, Observing Workshop/Doing a Star Party 7pm
7 Exec Meeting, Fishhawk Rec Ctr, 11am
15 Fruitland Park Observing, 5pm, 300 Shiloh St. Fruitland Park
18 General Meeting, 6:30pm, Laurel Manor Rec Ctr, Frank Bridge, Binocular Observing
19 EAA Meeting, Homestead Astronomy Park, 5pm
22 Starry Starry Night, observing 6:30-8:30, 3 day Moon, Saturn, Uranus, Neptune, fall constellations.

December 2025
1 Space Academy, 6:30pm, Truman Rec Ctr, Observing Workshop 6pm
5 Exec Meeting, Fishhawk Rec Ctr, 11am
16 General Meeting, 6:30pm, Laurel Manor Rec Ctr, Anne Holland, NASA Ambassador, Asteroids & Comets.
17 EAA Meeting, Homestead Astronomy Park, 5pm
20 Fruitland Park Observing, 5pm, 300 Shiloh St. Fruitland Park

January 2026
2 Exec Meeting, Fishhawk Rec Ctr. 11am.
5 Space Academy 6:30, Truman Rec Ctr., Observing Workshop, 6pm
17 Fruitland Park Observing, 5pm, 300 Shiloh St. Fruitland Park
20 General Meeting, TBA
21 EAA Meeting, Homestead Astronomy Park, 5:30pm
31 Scout Merit Badge Counseling

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

M42, the Great Orion Nebula. By member John Rourke, Seestar 30, ~2 hr.

See star chart & special observing notes on following pages:

Starry Starry Nights November 22nd, 2025 Observing List

Moon, mag. -6.46, 6% illuminated, 27% of Earth's diameter, 1.25 light seconds away
Venus, mag -4.1, 65% illuminated, 0.72AU from Sun, 225 day orbit, surface pressure 92atm, always cloudy
Saturn, mag 0.9, 9x diameter of Earth, 29 yr orbit, density 0.7 (less than water), 95x mass of Earth
Uranus, mag 5.6, 20x further from Sun than Earth, 98 degree tilt, 4x larger & 14x heavier than Earth, 84Y orbit
5 bright moons spread around in triangle pattern tonight.
Neptune, mag 7.7, near Saturn, 30x further from Sun than Earth, 4x larger, 17x heavier, 165Y orbit. Moon Triton nearby, Nereid far to left.

Bright Stars

Deneb, mag 1.3, 19th brightest star, supergiant, 1600LY away, 60,000x brighter than sun, 60x bigger than sun.
Vega, mag 0, 5th brightest star, Blue Star, 26LY away, 58x brighter than sun, 3x larger, 9,200 degrees C
Altair, mag 0.8, 16LY away, 12th brightest star, 1.5x larger than sun, 9x brighter, rotates every 6.5 hours
Fomalhaut, (below Saturn, halfway to horizon), blue star, 25LY away, 3/4 size of sun but 2x as heavy
surrounded by debris disks from planetismal collisions (not visible.)
Rigel, mag 0.3, 7th brightest star, blue supergiant, 57,000x brighter than Sun, companion star mag 6.7
Betelgeuse, mag 0.7, 10th brightest star, red giant, 410-550LY away, may supernova in <100,000yrs
Capella, mag. 0.1, 6th brightest star, yellow subgiant similar to Sun, 43LY away, near The Kids (triangle)

Interesting Stars

Albireo, beta Cygni**,** double star, blue-orange pair, head of Cygnus the Swan 400LY
Eta Lyrae, "Double Double" near Vega, in Lyra, at least 5 stars in system, 155LY
Herschel's Garnet Star, mu Cephei, red colored giant star, from carbon in atmos., 3KLY
Schedar, Alpha Cass, double star, sep. 0.74", optical double only, 230LY, orange-purple pair
Omicron 1 Cygni, "USA Triple", red white and blue triple star.
61 Cygni, "The Flying Star", high proper motion (not vis.), 11LY away, sep 30", movement vis year to year.
V Aquilae, red giant carbon star, 2.5x sun's mass, 234x times sun's size, 1.3KLY away, future of the sun.
T Lyra, red giant carbon star, "Jewel in the Harp", ~2 deg SSW of Vega, 2.4KLY away, 600x bigger than sun

Star Clusters

Alpha Persei Moving Group, Open Cluster of yellow stars like Sun, in Perseus the Hero, 510LY
Pleiades, M45, The Seven Sisters, open cluster of ~70 stars, 6 vis., in Taurus, 444LY
M71, glob cluster in Sagitta, mag 8.2, 13KLY away, about 22LY across
M103, open cluster, near delta Cass, mag 7.4, 15LY across, 9.2KLY away, "Christmas Tree Cluster"
M52, open cluster, follow line from alpha Cass to beta toward Ceph., mag 7, 15LY across, 3.9KLY away
The Coathanger, asterism, west and south of 1 Vul.Distance to stars vary, not a true cluster.
M15, glob cluster in Pegasus. Follow line from theta Peg through epsilon (Enif). 31KLY away, 130LY across.
Double Cluster, two open clusters NGC 869, 884, 7.2KLY and 7.5KLY away, formed from same cloud.
M11, Wild Duck Cluster, open cluster in Scutum near beta. Good in tel and binos. 6KLY away, 100LY across
M45, The Pleiades(Seven Sisters), 444LY away, ~1000 stars, 100 million years old, 2nd nearest cluster

Nebulas

Saturn Nebula, Caldwell 55, planetary nebula in Aquarius, ½LY across, 5KLY away.
M27, Dumbbell Nebula, planetary nebula,line from Albireo through 13 Vul and bit past, 2KLY away, 8 LY across
M57, Ring Nebula, planetary nebula in Lyra the Harp, 2.5KLY away, 1.3LY across, possible future of the sun.
M42, Great Orion Nebula, nearest star-forming region in galaxy, 1300LY, stars in Trapezium ~300KY old.

Galaxies

Andromeda Galaxy M31, follow line from beta through mu, near nu., M32 and M110 in same low power field
nucl.mag 6, 1 trillion stars, 150KLY across, 2.5MLY away, headed toward Milky Way, collides in 3-4BY
Triangulum Galaxy M33, follow line from alpha Tri toward alpha Andr, about 1/3 of the way. Mag 5.7, 67'across
dim nucleus, diffuse faint oval glow. 2.7MLY away, 60KLY across, 40B stars, 0.01 mass of Milky Way

Objects for EAA Devices

These objects are extremely difficult to observe directly through visual scopes, and make unique targets for smart scopes and EAA devices.

NGC 6820 and 6823, Emission Nebula and Star Cluster in Vulpecula. Nebula is 40'x30', cluster is 12' in diameter. Use a nebula filter if your setup allows. Fairly bright (~mag. 8.1). 6000LY away.

NGC 2237, 2238, 2239, 2246 The Rosette Nebula, 80'x60', Emission Nebula in Monoceros the Unicorn, Use an H-alpha filter or nebula filter if possible. Customary designation for whole object is NGC 2237. NGC 2244 is a star cluster inside the nebula. 5000LY away, 130LY across.

NGC 281, Pac Man Nebula, Open cluster & Emission Nebula in Cass. 35'x30'. Use nebula filter or none. Bright, comes in rapdily. 9000LY away, 48LY across.

NGC 246, The Skull Nebula (aka Pac Man Nebula, sometimes), Emission Nebula in Cetus. Bright, comes in rapidly without filters. 1600LY away, 2.5LY in diameter.

NGC 1499, California Nebula, Emission Nebula in Perseus, 160'x40' comes in best with an H-alpha or Nebula filter. 1000LY away, the nebula is part of a shock wave of gas 22LY in diameter.

M78, Casper the Friendly Ghost Nebula, Reflection Nebula in Orion (use no filters.) Bright reflection nebula that begins to show rapidly. 1350LY away, 10LY across. Contains young stars only visible in infrared.

NGC 1333, Reflection Nebula in Perseus, 10'x8', use no filter. 1000LY away, has a Herbig-Haro object HH12 in its center.

B33 The Horsehead Nebula in Orion, one of the showpiece objects for smart telescopes, especially with the Flame Nebula (NGC2024) in the field of view for short FL scopes. The Horsehead is a dark nebula seen against the HII region IC 434. No filter, nebula filter, or H-alpha filter all work well here.

IC443, The Jellyfish Nebula, in Gemini, 43' diam. Nebula filters preferable, nebula shows in ~3 min. 5,000LY away, supernova remnant from 30,000 years ago. SN shockwave interacting with interstellar molecular clouds.

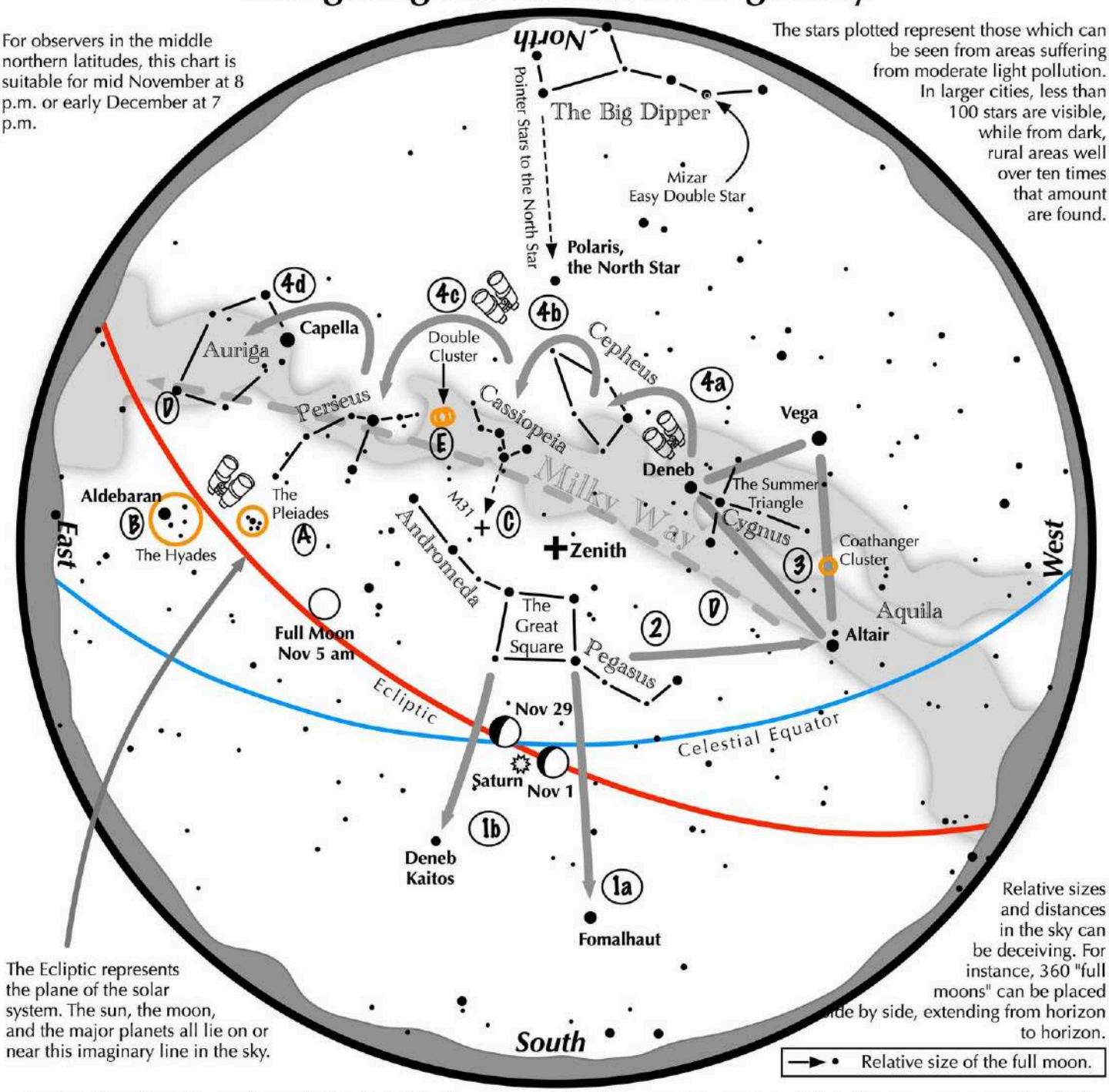
NGC 7023, The Iris Nebula, Reflection Nebula in Cepheus. 10'x8'. Use no filters. High surface brightness. 1300LY away, 3LY radius.

NGC 247, Galaxy in Cetus, 19'x6', Spiral with nice dust lanes, mottled core. 11.1 Million LY away. Gravitationally bound to the Sculptor Galaxy (NGC 253, below.)

NGC 253, C65, Sculptor Galaxy, 30'x7', magnificent spiral galaxy similar to ours, 8 Million LY away. Good detail. Shows as a galaxy in ~5 minutes, more detail in outer arms with more time.

M77, NGC 1065, Peculiar Seyfert Galaxy in Cetus. 8'x7', can be caught in the same field as NGC 1055, another spiral galaxy nearby. NGC 1065 is face-on and has a starlike nucleus and distinctive barred spiral arms. It has an active galactic nucleus. If you can position your scope manually, move it north and slightly east to place NGC 1055, about 30' away, in the field as well. NGC 1055 is an edge-on spiral with a prominent nucleus and a dark band across its arms.
NGC 1065 is 47 million light years away, and 90,000 light years across (barely smaller than the Milky Way.)
NGC 1005 is 52 million light years away, and 120,000 light years across (just bigger than the Milky Way.)

Navigating the November Night Sky



Navigating the November night sky: Simply start with what you know or with what you can easily find.

1. Face south. Almost overhead lies the "Great Square" with four stars about the same brightness as those of the Big Dipper. Extend a line southward following the Square's two westernmost stars. The line strikes Fomalhaut, the brightest star in the south. A line extending southward from the two easternmost stars, passes Deneb Kaitos, the second brighest star in the south.
2. Draw a line westward following the southern edge of the Square until it strikes Altair, part of the "Summer Triangle."
3. Locate Vega and Deneb, the other two stars of the Summer Triangle. Vega is its brightest member, while Deneb sits in the middle of the Milky Way.
4. Jump along the Milky Way from Deneb to Cepheus, which resembles the outline of a house. Continue jumping to the "W" of Cassiopeia, then to Perseus, and finally to Auriga with its bright star Capella.

Binocular Highlights

A and B: Examine the stars of the Pleiades and Hyades, two naked eye star clusters. **C:** The three westernmost stars of Cassiopeia's "W" point south to M31, the Andromeda Galaxy, a "fuzzy" oval. **D:** Sweep along the Milky Way from Altair, past Deneb, through Cepheus, Cassiopeia and Perseus, then to Auriga for many intriguing star clusters and nebulous areas. **E.** The Double Cluster.

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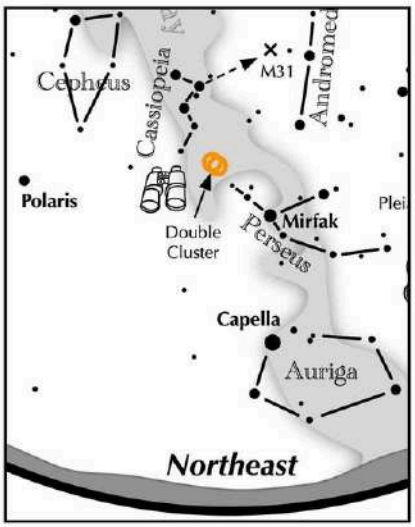
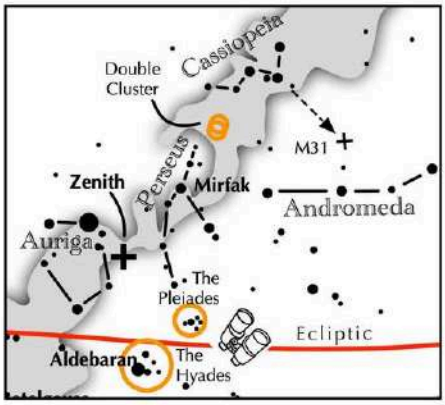
Can you easily find this open cluster showpiece?

Every Curious Skywatcher should know how to find the Double Cluster

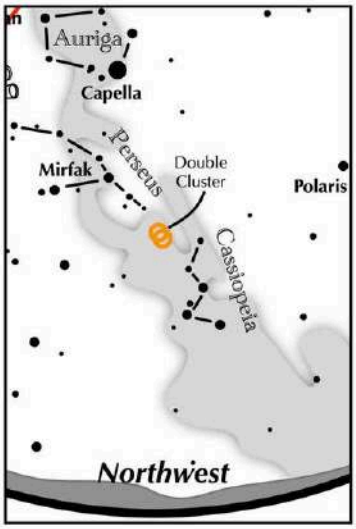
Visible in the early evening sky from late October through late March.



November in the northeast



January facing south looking past the zenith

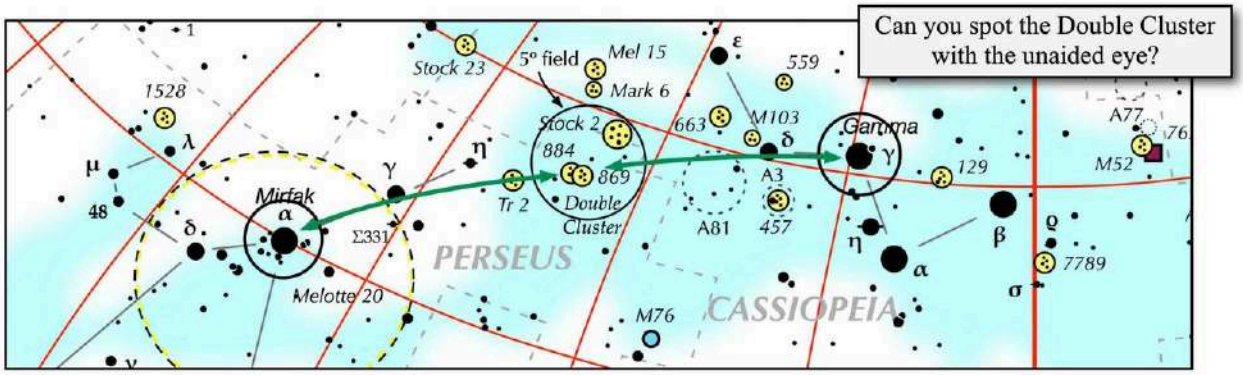


March in the northwest

The **Double Cluster** can be spotted with unaided eye from a dark sky as a dim glow in the Milky Way between Perseus and Cassiopeia. Through 10x50 binoculars, it is an obvious sight, revealing its brighter glittering lights. The neighboring cluster, **Stock 2,** can be seen as a much dimmer and more spread out grainy glow.

How to find the Double Cluster (aka NGC 869 & 884, and Caldwell 14):

1. Find the "w" shaped constellation Cassiopeia and the neighboring constellation to its southeast, Perseus. Identify Perseus' brightest star, 1.8 magnitude Mirfak.
2. Mid way between the center star of Cassopeia's "w" (Gamma Cas) and Mirfak lies a soft glow.
3. Binoculars aimed at the glow reveal the famous Double Cluster, also called NGC 869 and 884, Caldwell 14, and h Persei and Chi Persei.
4. Place the Double Cluster near the southern edge of the field. Near its center lies Stock 2, the Muscleman Cluster, which appears as a large, dim grainy glow.



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