VILLAGES STAR

Newsletter of The Villages Astronomy Club

Volume 6, Number 2
February 2025

Club Website:
http://vlgastroclub.org/

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

UPCOMING EVENTS

Starry Starry Night, Saturday Feb 8th Everglades Rec Center North End

Come see the stars and planets with us at Everglades Rec Center's basketball court and multi-use field on Saturday from 6:30-8:30pm. This event is open to residents of The Villages and guests with Villages Guest IDs.

We will have the Moon, Saturn, Venus, Jupiter, and Mars as well as the winter constellations of Taurus, Gemini, Auriga, Orion, etc. in the sky. See The Great Orion Nebula, the star forming region in our galaxy closest to Earth.

We will be located at the north end of the parking lot, with the telescopes set up behind the pickleball and platform tennis courts. Look for our signs and banners as you enter Everglades at 5497 Marsh Bend Trail.

Astronomy club members bringing telescopes can begin setup at 5pm. Observing will not begin until 6:30 to allow our astronomers the opportunity to set up their equipment and prepare for the evening's activities.

Attendees should not bring flashlights or lanterns, the club will provide adequate red lighting in the observing area that will not interfere with our views of the sky.

Triangulum Galaxy, M33
From Homestead Astronomy Park
By member John Prudente

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

Join us for Space Academy, where we have talks on the basics of astronomy and news about current research topics. This month Frank Ancona will be presenting "Navigating the Heavens: Pointer Constellations." Learn how key constellations can let you find your way around to the others in the sky!

Telescope Workshop, Feb 3rd, 6:30pm
Truman Rec Ctr Pavilion, 2705 Canal St.

Join us to learn how to use or select a telescope, share your knowledge, and get a look at the sky. We will be at the Truman Rec Center picnic pavilion, located behind the pool. Bring your telescope, binoculars, or smart scope, or come to ask questions! Power available. Truman Rec Center Pavilion, 2705 Canal St.

Executive Directors' Meeting, Feb 7th, 11am Fishhawk Rec Center, 2318 Buttonwood Run

All members welcome to our monthly planning meeting. This month we'll be making final preparations for Starry Starry Night and planning for The Villages Outdoor Expo.

Fruitland Park Astronomy Group, Feb 15th, 5pm, 300 Shiloh Rd, Fruitland Park

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, 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.

General Meeting, Feb 18th, 6:30pm: Life on Mars: How Volunteers in NASA's Mars Simulator Will Live for a Year, by Burt Salk

Join us at Laurel Manor Rec Center, 1985 Laurel Manor Drive, at 6:30pm for a presentation by Burt Salk on how NASA is preparing for the first people to live on Mars.

Any Mars mission crew will need to be able to survive away from Earth for 1 to 3 years, with anywhere from months to almost two years spent on the planet. NASA has built a simulator to help learn more about what it's going to take to successfully take a crew to Mars and bring them back home. Learn more from Burt's exciting view into our near future!

Mars Base Concept, NASA Image

EAA Meeting,Feb 26th, Homestead Astronomy Park, 7:15 pm

Join us at Homestead Astronomy Park for an evening of observing with smart telescopes! Owners of smart scopes or scopes with smart controllers are welcome as are those who are interested in learning more about the options to get started in Electronically Assisted Astronomy (EAA). We will keep the park open late for observing and photography if weather permits.

Note that these meetings follow the Lunar phase, so this year the meetings have shifted from the beginning of the month in 2024 to the end of the month in 2025!

The Villages Outdoor Expo, 10-3pm, Feb 28-March 1st, Everglades Rec Center, 5497 Marsh Bend Trail

The Villages will be holding their annual Outdoor Expo, where outdoor activity clubs, local recreation sites, and outdoor equipment suppliers show themselves each year. Our club will be there with a booth, displays, and volunteers to show the Sun, talk about our club and its many activities to new Villagers and Villagers looking for new activities.

We will have a sign up for volunteers to represent our club at the General Meeting this month. No special knowledge is required to tell others about the astronomy club and what we do.

Calendar: https://vlgastroclub.org/calendar/

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.

Newsletter Contact

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(please include TVAstro in subject line)

NEWS

Blue Origin Debuts New Glenn Vehicle

New Glenn Takes Off From SLC-36
US Space Force image by SrA Samuel Becker

On January 16th, at 2:03am, Blue Origin's new heavy lift vehicle New Glenn ignited its engines and took flight for the first time. Using a cluster of 7 BE-4 engines, its first stage generated 3.9 million pounds of thrust, sending the rocket into space. After staging, its upper stage carried the test payload, "Blue Ring", a prototype of a satellite adapter ring for New Glenn, into a successful orbit.

The New Glenn's first stage is designed to be reusable, and Blue Origin had a landing ship ready to catch it, but unfortunately it was lost during re-entry. Blue Origin has stated that they have several other New Glenn first stages being prepared for future attempts at recovery.

If Blue Origin does succeed at both recovering and re-using a first stage, they will become the second company to re-use a booster on an orbital class rocket. They already re-use the booster of their non-orbital New Shepard, which preceded even SpaceX's recovery of the Falcon 9's first stage.

No date has been given for a second launch of New Glenn yet, but future missions include lunar payloads, commercial space station elements, and Blue Origin's own Artemis-related payloads.

SpaceX Launches 7th Starship Test

Later in the day on January 16th, at 5:38pm our time, SpaceX launched Starship on its seventh fully integrated flight test.

In keeping with SpaceX's plans for rapid iteration of their Starship vehicle design, this flight carried the first of the upgraded Starship vehicles known as Starship Version 2. The Superheavy booster was still the original design at this point (a new version will come in the future), and for the first time, the booster was re-using an engine from the flight 5 booster that was caught by the launch tower's "chopsticks."

Starship Prepared for Flight 7
SpaceX image

The launch went normally, with 33 Raptor engines (one previously used) providing about 18 million pounds of thrust to send Starship on its way. The vehicle successfully staged, with the booster returning toward its launch pad and the Starship carrying on toward space.

Superheavy Booster Flies into the Arms of the Launch Tower for a Successful 2nd Capture
SpaceX image

While the booster was flying back and settling into the catch arms for the second successful catch of a Superheavy booster, trouble was brewing with the new version 2 Starship as it approached orbital velocity.

One of the vacuum Raptor engines had a leak in its propellant lines between the back of the propellant tanks and the heat shield around the top of the engine bay. The leak let loose enough gas that the vents in that bay were not enough to allow it to escape. Pressure built up, and burst the Starship's walls, causing it to fall. It re-entered in an impressive display over the Turks and Caicos islands as it passed overhead to fall into the Atlantic.

Starship Debris Re-Entering Over the Caicos
Image by toddmartin via x.com:
https://x.com/MrLaalpotato/status/1881016268272042299

Elon Musk reported the cause of the failure, and measures SpaceX would take in flight 8 and on to prevent a reoccurance.

There will be an FCC investigation into the failure (which is automatically triggered whenever there is a spaceflight failure), SpaceX hopes to have their next flight in February.

IN THE SKY THIS MONTH

Please also refer to the sky map on the last page of the newsletter.

The Moon:
1st Quarter, February 5th
Full Moon, February 12th
Last Quarter, February 20th
New Moon, February 27th

Mercury is passing behind the Sun, but will rise in the evening sky in March, reaching greatest elongation on the 7th of March and its highest point in the sky on March 8th.

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

Venus has just passed greatest elongation on January 26th, and will remain high in the southwestern sky at sunset this month, setting at about 9:30pm. At magnitude -4.6 it shines very bright. By month's end it is descending closer to the Sun and lower in the sky in the evening. It will leave our evening sky after March.

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

Mars has just passed opposition, where it is seen at its best, but it continues to put on a show through the rest of this month. At the start of the month it will be 14.1 arcsec in diameter, by the end of February it will shrink to less than 11 arcsec, rapidly getting smaller as the distance between it and Earth grows after that.

On Feb 9th the Moon will pass in front of Mars, but not as seen from The Villages.People who live north of Nova Scotia will get to see it, as will many people in Scandinavia and northern Russia.

To see what features are visible at any time, you can use the virtual Mars globe at: MarsMap

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

Jupiter is past opposition this month, though it is still close enough you won't notice the difference. It shines brightly at mag -2.6 as it travels retrograde until March 10th, when it will resume eastward movement relative to the stars again.

The result is an excellent month for observing Jupiter, its bands and zones, and perhaps you can even catch the Great Red Spot, which has been improving in visibility in recent months.

As always, the 4 Galilean Moons of Jupiter make for a good show in any telescope or binoculars. They are the largest of Jupiter's many moons, and bright enough that we could see them by eye if it weren't for Jupiter's nearby glare washing them out unless you use binoculars or a telescope to view them.

The Sky & Telescope guide to Jupiter: https://skyandtelescope.org/observing/celestial-objects-to-watch/planets/jupiter-an-observing-guide/

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

Saturn is getting lower and lower in our dusk skies at the start of the month, moving closer to the Sun as the month progresses. It will be invisible for about a week on each side of the time when it passes behind the Sun on March 12th. It will then reappear in the morning sky just in time for the ring plane crossing on March 23rd, when it will rise shortly before the Sun at 7:07am.

The ring plane crossing is the time every 15 years when Earth's position aligns with Saturn's rings to make the rings appear to disappear. The effect can be seen on the day before and after as well, but on the actual day it is the strongest. Seeing Saturn without its rings not only looks strange, but it brings out features of Saturn's disk that are normally washed out by the light of the rings. Hopefully we will have clear weather on the morning of March 23rd!

Meanwhile, enjoy Saturn with its ever-diminishing rings in the evening sky at the start of this month!

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

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

Feature Article:

EAA Resources by Randy Gilbert

I gave a talk on Electronically Assisted Astronomy (EAA) at the January 21st General Meeting. My presentation offered several links to online resources that may be helpful to those interested in EAA.

The first, 'A Beginner's Guide to EAA' offers a high-level review of the topic, types of equipment and contains links to other resources. The article is from 2023 so lacks details on the newer smart scopes such as the Seestar 30 & 50 and Dwarf II/III.

Beginner's Guide to EAA:
https://skiesandscopes.com/electronically-assisted-astronomy/

The next resource is 'Astronomy Tools'. This free website offers users the ability to simulate the field of view of any telescope/eyepiece or telescope camera, as well as barlows and focal reducers. I have used this tool extensively when looking to buy new

equipment. It provides a realistic simulated view of the telescope field, allowing users to determine the best combination of tools required to suit their interests. Astronomy tools also provide calculators to assist in the selection of a guide scope and fitting the camera pixel size and resolution of a camera/telescope combination.

Astronomy Tools:
https://astronomy.tools/calculators/field_of_view/

The next resource, 'What is a Smart Telescope?', is devoted to describing smart telescopes, it offers a short overview of how they function, lists several popular brands as well as a list of advantages/disadvantages of owing a smart telescope.

What is a Smart Telescope:
https://www.smarttelescopesinfo.com/what-is-a-smart-telescope/

Highpoint Scientific offers an outstanding description and overview of smart telescopes in general as well as the individual products. Be sure to scroll down past the ads to get to the informational section. Additionally, smart scopes are ranked by category and interest: best bang for the buck, best overall, best for viewing planets, etc. Highpoint is an outstanding company and they are great at responding to product questions and offering advice. I purchased almost all of my equipment from them and highly recommend them.

Highpoint Scientific:
https://www.highpointscientific.com/telescopes/smart-telescopes

Pegasus Astro is offering a new product that is unique in the EAA arena. Their Smarteye product combines the experience of visual astronomy (eyepiece) with the viewing/image capture capabilities of EAA. It allows for images to be saved and processed later, making it a functional astrophotography tool as well. It is in pre-order status now at $1599. The article is quite descriptive and an intriguing option.

Pegasus Astro:
https://pegasusastro.com/products/smarteye/

I have also included links to YouTube videos offering reviews of the various smart telescope reviews. These are listed below.

SeeStar S50 and S30 Reviews:
https://www.youtube.com/watch?v=8fkUAUVrL9o

Dwarf III Review:
https://www.highpointscientific.com/astronomy-hub/post/astro-photography-guides/dwarf-3-smart-telescope-full-review

Celestron Origin:
https://www.youtube.com/watch?v=jGgmtF4iZf4

Vespera II:
https://www.youtube.com/watch?v=oHsmZne0akQ

Unistellar Odyssey Pro:
https://www.youtube.com/watch?v=FmAHOhY1Drc

Best Smart Telescopes:
https://www.youtube.com/watch?v=StjTVIz-BcA

Example of building a rig with plate-solving:
https://www.youtube.com/watch?v=boE8t8HpPJM

Club Calendar

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

February 2025

3 Telescope Workshop, Space Academy 6:30pm
7 Exec Meeting, 11am Fishhawk
8 Starry Starry Night, Waxing Gibbous Moon (8 day), Sunset 6:12pm, Observing 6:30-8:30, Saturn Sets Early, Venus, Jupiter, Mars
15 Fruitland Park Observing, 5pm, 300 Shiloh St. Fruitland Park
18 General Meeting Burt Salk, "Life on Mars: How volunteers in NASA's Mars simulator will live for a year", 6:30pm Laurel Manor
26 EAA Meeting, Homestead Astronomy Park, 7:15pm
28-March 1st The Villages Outdoor Expo, Everglades Rec Center, 10am-3pm each day

March 2025

1 Outdoor Expo, see above

3 Telescope Workshop 7pm, Space Academy 6:30pm

7 Exec Meeting 11am Fishhawk Rec Center

9 DST Begins

13-14 Total Lunar Eclipse (Morning of 14th) Penumbral Contact 23:58, Umbral Contact 01:10, Totality 02:26-03:31, final umbral contact 04:48, final penumbral contact 06:00 No event.

15 Fruitland Park Observing, 5pm, 300 Shiloh St. Fruitland Park

18 General Meeting, Linda Meng, The Three Sisters of Astronomy

23 Saturn Ring Plane Crossing: See Saturn's Rings "disappear."

26 EAA Meeting, Homestead Astronomy Park, 6pm

29 Partial Solar Eclipse: NOT VISIBLE FROM THE VILLAGES

29 Boy Scout Merit Badge Class

April 2025

4 Exec Meeting 11am Fishhawk Rec Center

7 Space Academy 6:30, Telescope Workshop 8pm

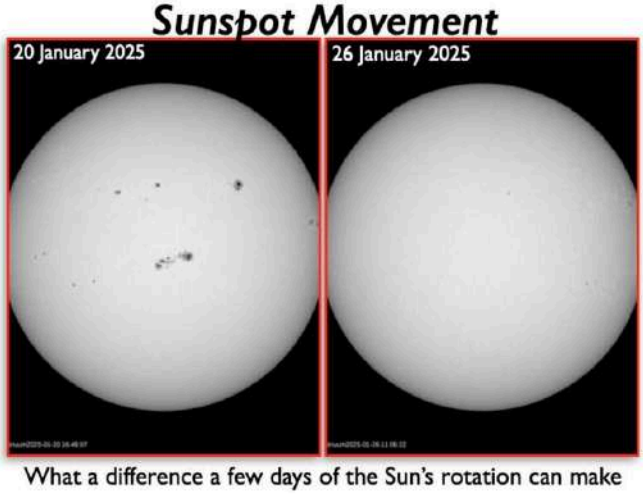
15 General Meeting, High Energy Physics in Space by Toni Graybill,

19 Fruitland Park Observing, 5pm, 300 Shiloh St. Fruitland Park

22 Lyrid Shower Peak @9pm, runs from 16-25th. Radiant rises ~10pm, peak visible rate ~5am @ 17/hour

30 EAA Meeting, Homestead Astronomy Park, 7:30pm

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



What a difference a few days of the Sun's rotation can make

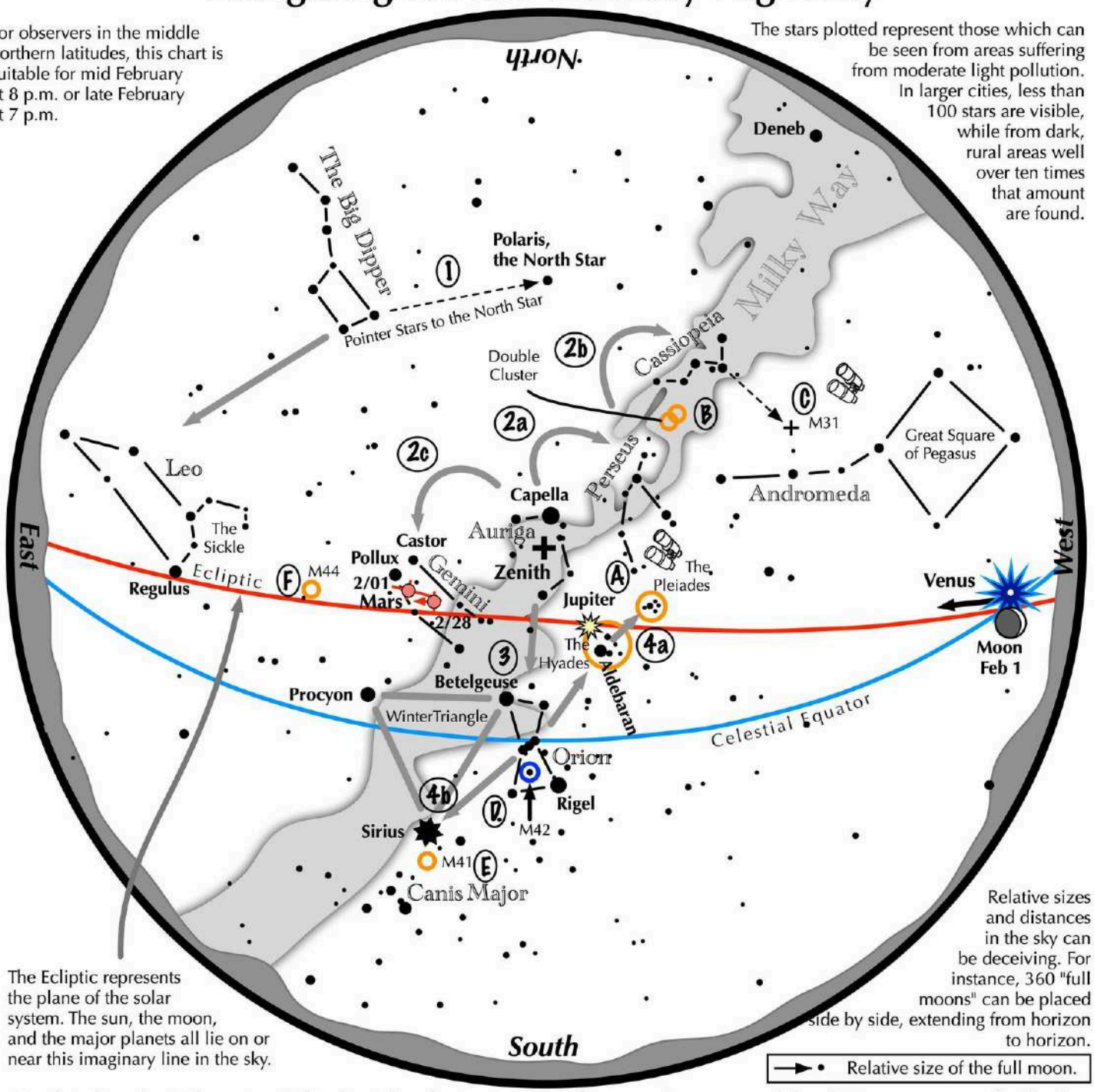
Member John Keller took these solar images a few days apart to show the changes in the Sun.

M42, the Great Orion Nebula by Scott Knapp 245 exposures of 15 seconds apiece with a Dwarf II Smart Telescope. Image adjustments with Snapseed.

Mosaic image of M31, the Andromeda Galaxy by Randy Gilbert
This is Randy's first mosaic image, where multiple astro images that don't completely overlap are combined into one.

See Monthly Sky Chart Next Page

Navigating the mid February Night Sky



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

1. Above the northeast horizon rises the Big Dipper. Draw a line from its two end bowl stars upwards to the North Star.
2. Face south. Overhead twinkles the bright star Capella in Auriga. Jump northwestward along the Milky Way first to Perseus, then to the "W" of Cassiopeia. Next jump southeastward from Capella to the twin stars of Castor and Pollux in Gemini.
3. Directly south of Capella stands the constellation of Orion with its three Belt stars, its bright red star Betelgeuse, and its bright blue-white star Rigel.
4. Use Orion's three Belt stars to point northwest to the red star Aldebaran and the Hyades star cluster, then to the Pleiades star cluster. Travel southeast from the Belt stars to the brightest star in the night sky, Sirius, a member of the Winter Triangle.

Binocular Highlights

A: Examine the stars of two naked eye star clusters, the Pleiades and the Hyades.
B: Between the "W" of Cassiopeia and Perseus lies the Double Cluster.
C: The three westernmost stars of Cassiopeia's "W" point south to M31, the Andromeda Galaxy, a "fuzzy" oval.
D: M42 in Orion is a star forming nebula. **E:** Look south of Sirius for the star cluster M41. **F:** M44, a star cluster barely visible to the naked eye, lies southeast of Pollux.

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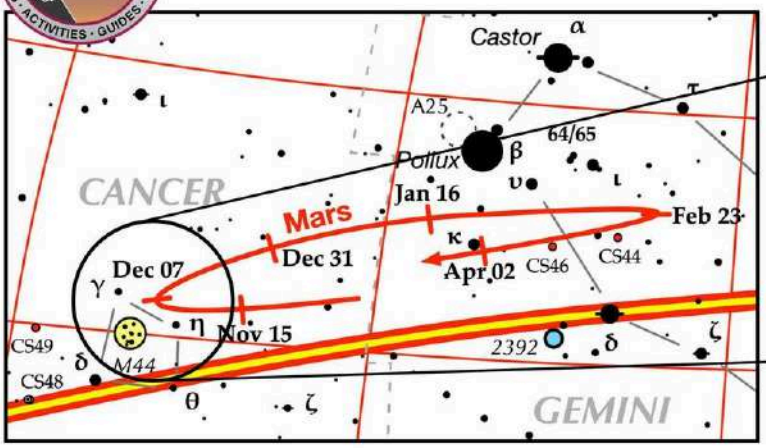
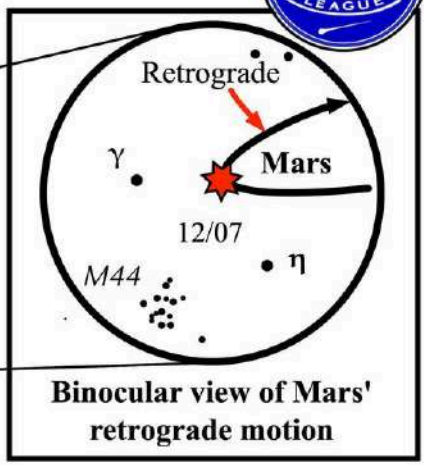
Observing Project: Retrograde Motion of Mars

See this for yourself!





Binocular view of Mars' retrograde motion

Relative apparent size of Mars

94% illuminated

Dec. 7, 2024
Magnitude: -0.6
Diameter: 12 seconds
Distance: 71 million miles

100% illuminated

Opposition
Jan. 16, 2025
Magnitude: -1.4
Diameter: 15 seconds
Distance: 60 million miles

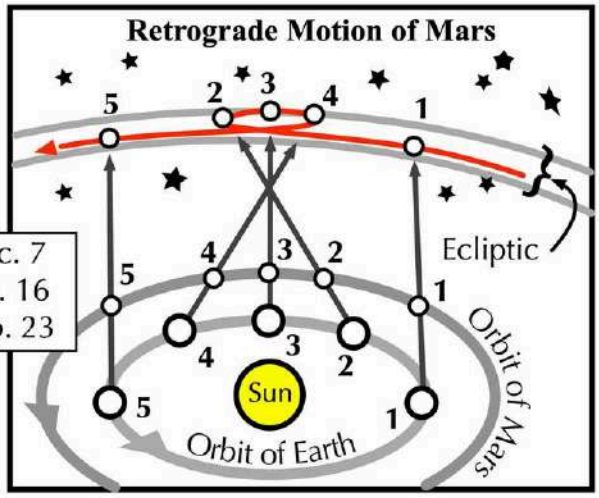
94% illuminated

Feb. 23, 2025
Magnitude: -0.4
Diameter: 11 seconds
Distance: 76 million miles

Over the next four months, observe Mars using binoculars on every clear night, then plot its changing position among the background stars.

Mars nears M44, the Beehive star cluster, in central Cancer in early December. It reaches its closest point to it on December 7, after which it enters retrograde motion, inching westward each evening until February 23, 2025. Mars then lies in central Gemini.

Mars will also be growing in angular size as Earth slowly overtakes it on January 16, 2025. (Actually, the two planets are closest on January 11. The discrepancy is due to Mars' elliptical orbit.) At this time, it shows it largest angular size – 15 arc seconds – until April 2031. By February 23, the Red Planet ceases moving westward nightly, shifting its direction eastward (called prograde motion).



Why do this activity? This planetary dance can only be explained if both Earth and Mars orbit our sun following definable elliptical paths. Our view from Earth clearly shows this to those people who take the time to look carefully enough.

Mars at its brightest, largest & closest:
Jan. 11, 2025
-1.4 mag., 15 arc seconds, 59.8 million miles
It won't come any closer until Apr 11, 2031.

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