VILLAGES STAR
Newsletter of The Villages Astronomy Club

Volume 6, Number 3
March 2025

Club Website:
http://vlgastroclub.org/

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

UPCOMING EVENTS

The Villages Outdoor Expo, Friday Feb 28th & Saturday March 1st. 10am-3pm Everglades Rec Center

Join us at the annual outdoor club event by The Villages Recreation where clubs with an outdoor focus have a chance to represent themselves to new Villages residents or established ones looking for new friends and new ways to take part in The Villages' lifestyle.

We will have our pop-up set up with displays, solar observing, and representative Solar Walk cards set up as our volunteers tell attendees at the event about who we are and what we do.

Last year, in spite of tricky weather, we had over 400 people talk to us each day. If you would like to come out and help tell people about our club, contact our Volunteer Coordinator, Toni Graybill, at (530)906-9715 or just show up and offer to help!

Space Academy, Mar. 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 we'll be looking at the electromagnetic spectrum and a JWST talk by NASA's Night Sky Network!

Leo Triplet, galaxies M65 (center), M66 (lower), and NGC 3628 (left)
By member Ken Katta

Telescope Workshop, Mar 3rd, 7pm
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, Mar 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, March 16th, 5pm, 300 Shiloh Rd, Fruitland Park

NOTE THE DAY CHANGE: This month The Fruitland Park Astronomy Group will be meeting on Sunday the 16th because of an event at Cales Field on March 15th. The groupmeets for an evening of observing and tal, conditions allowing. The meeting will return to Saturday in April. 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.

General Meeting, Mar 18th, 6:30pm:
The Three Sisters of Astronomy
by Linda Meng

Join us at Laurel Manor Rec Center, 1985 Laurel Manor Drive, at 6:30pm to learn about three highly influential women in the history of astronomy as we recognize Womens' Month.

Often overlooked because of their close association with male counterparts, each of these ladies contributed to the progress of astronomy and the preservation of the legacy of other astronomers.

EAA Meeting, Mar 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!

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

Your Club Officers & Directors

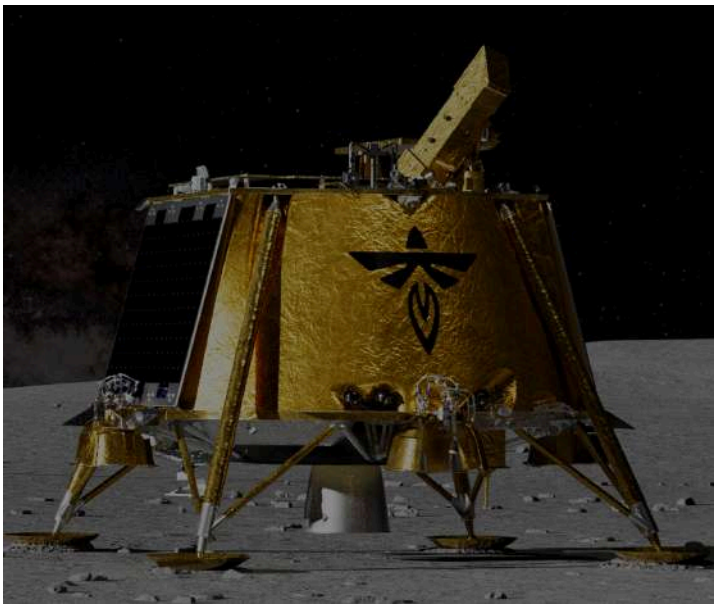
President	Mark Graybill
Vice President	Ken Katta
Secretary	Randy Gilbert
Treasurer	Linda Meng
Space Academy	Toni Graybill
Public Relations	Jeffrey Kahler, Sr.

Newsletter Contact

saundby@gmail.com
(please include TVAstro in subject line)

NEWS

Three Moon Missions at Once!



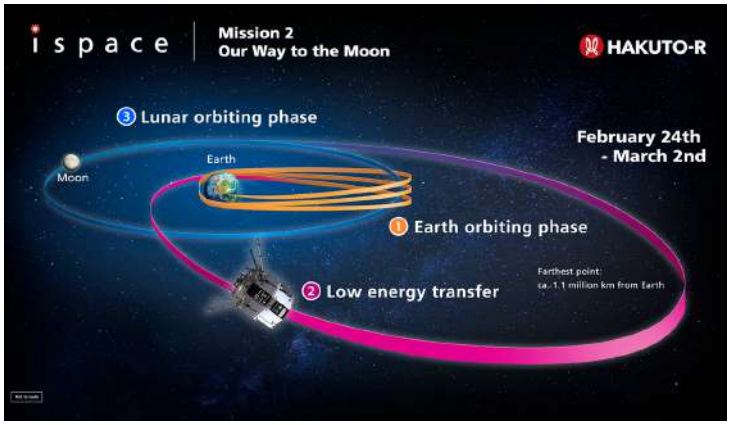
Firefly Aerospace's Blue Ghost Lander (artists' rendering.) Firefly Aerospace image.

On January 15th, a SpaceX Falcon 9 launched with two lunar landers on board, each destined to take a very different path toward the Moon. One was Firefly Aerospace's Blue Ghost lunar lander, which will be landing at a near-equatorial latitude on the Moon, in Mare Crisium. It is expected to land on March 2nd.

The second aboard that launch was iSpace's Hakuto-R Mission 2, with a lander named Resilience. This mission follows after the unsuccessful Hakuto-R mission that crashed in 2023. It is taking a more circuitous route to the Moon, and is planned to land in the Mare Frigoris region of the Moon in May or June. It is using a very low-energy trajectory to reach the Moon using lunar gravity to tug it upward from a high Earth orbit.

Resilience carries a micro-rover named Tenacious, built by iSpace Europe, whereas Hakuto-R was built in Japan.

This mission intends to perform tests on lunar soil composition, and to perform the first tests of splitting lunar water into hydrogen and oxygen on the Moon for future production of rocket propellant and oxygen on the Moon.



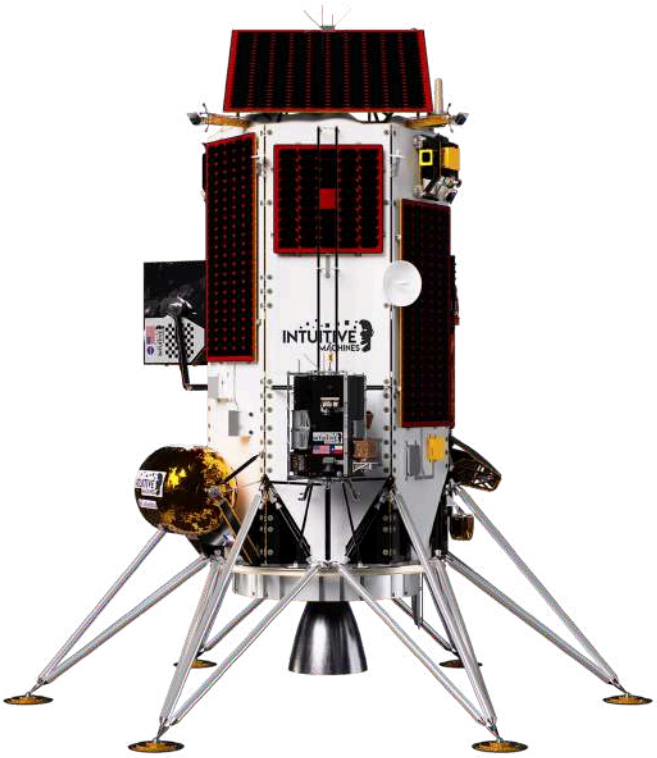
Hakuto R M2's Long Path to the Moon iSpace image.

In a launch all its own, the second Intuitive Machines lander, IM-2, also known as Athena, will be sent toward the Moon by a Falcon 9 rocket on February 26th per current plans. Athena won't be dawdling on the way to the Moon, the IM landers use cryogenic propellants to land, and they have to reach the Moon fast enough that the volatile fluids don't have time to boil off.

Their prior lander, IM-1, was a partial success. A landing lidar on board the craft was accidentally left disabled by a safety lockout on the laser. The craft was still able to land using a lidar payload, but with less accuracy, resulting in a harder than desired touchdown that broke one of the lander's legs, causing it to tip over and leave its antennas misaligned for good communication to Earth, and its solar panels poorly aligned for the Sun. It also resulted in the Embry Riddle camera experiment not being deployed.

This lander looks to perform a clean landing near the lunar south pole in early March. It carries a micro rover that will hop to multiple sites around the landing area looking for lunar ice deposits in the permanently shadowed craters. It also carries lunar geology experiments and a small crawler rover.

IM-2 also carries payloads from Finland and Japan to perform tests on in-situ resource collection and utilization in preparation for future lunar bases.



IM-2 Lander "Athena"
image by Intuitive Machines

Learn more about Firefly Aerospace's Blue Ghost:
Blue Ghost Mission 1 - Firefly Aerospace

More information about iSpace's Hakuto R:
HAKUTO-R Missions | ispace

More information about Intuitive Machines' IM-2:
IM-2 | Intuitive Machines

JWST Team Detects Flares in the Milky's Way's Black Hole's Disk

Artist's Concept of Flares Erupting on Inner Edge of Sag A* Accretion Disk
STScI image

A team led by Farhad Yusef-Zadeh of Northwestern University published a paper in Astrophysical Journal Letters announcing their discovery of flares in the inner accretion disk of the Milky Way's black hole.

Likening the flares to solar flares, they detected eruptions of light and radiation using JWST's NIRCam. They observed the black hole at the core of our galaxy in 2 to 4 hour increments across the course of a year. They expected to see variations, but did not expect them to be so sudden or short-lived, with changes happening over a matter of minutes.

"In our data, we saw constantly changing, bubbling brightness. And then boom! A big burst of brightness suddenly popped up. Then, it calmed down again. We couldn't find a pattern in this activity. It appears to be random. The activity profile of this black hole was new and exciting every time that we looked at it," said Yusef-Zadeh.

The team hopes to get more time in longer increments to continue their study of the flares, to get a better picture of their development and decline.

Full story at: Webb Reveals Rapid-Fire Light Show From Milky Way's Central Black Hole

Extremely Large Telescope Progresses Toward 2028 First Light

ELT Dome and Comet Tsuchinshan-ATLAS
ESA/Apical image

The European Space Agency's immense 39.3 meter telescope (129 feet) is about halfway complete in Chile's Atacama desert. Dozens of its 798 mirror segments have been delivered to the site, and the dome is nearing completion along

with the telescope's immense mount.

The telescope will use adaptive optics technology to stabilize its images against the movement of the atmosphere, the telescope's mechanisms, and effects of the wind on the building. There will be two special mirror segments that will move up to 10 times a second in minute increments to provide corrections. Since each segment weighs half a ton, it takes a very beefy support to tip and tilt the mirrors so rapidly!

ELT's Structural Frame Nears Completion within the Outer Dome
Image be ESA/G, Vecchia

Learn more about this amazing new instrument as it nears completion here: https://elt.eso.org/

IN THE SKY THIS MONTH

Also refer to the sky map on the last page.

The Moon:
1st Quarter, March 6th
Full Moon, March 14th Full Eclipse!
Last Quarter, March 22nd
New Moon, March 29th

Full Eclipse of The Moon will occur on the night of March 13th-14th. The Moon will enter the Earth's penumbra, or outer shadow, 11:56pm ET on the 13th, but this event will be almost impossible to see because of how faint the penumbra is at the outer edges. At 1:09am on the 14th, the Moon will enter Earth's inner shadow, or umbra. Some darkening of the southeast edge of the Moon may be visible earlier than this, as it moves into the deeper areas of the penumbra. Once it enters the umbra, though, the shadow will be very apparent.

Between 1:09am and 2:26am the shadow will travel across the face of the Moon from southeast to northwest. The Moon will enter totality at 2:26am ET, and will remain in total eclipse, completely inside Earth's shadow, until 3:32am.

After 3:32am the southwest edge of the Moon will brighten dramatically as it passes out of the umbra into the penumbra (which is much less dark than the umbra). The Moon will gradually brighten as it passes out of the shadow from 3:32 to 4:48am, being in partial eclipse.

It will leave the penumbral shadow of Earth at 6:02am, returning to full brightness, though again the transition will likely not be visible, just as when the Moon first moved into Earth's penumbra before midnight.

This will be the first total eclipse of the Moon since 2022. It will be paired with a partial solar eclipse at the next New Moon on the 29th, but it will not be visible from The Villages (travel north if you want to see it!)

Total Lunar Eclipse of September 16th, 1997. This image shows the variances in darkness across the face of the Moon. Image by Giuseppe Donatiello

Every lunar eclipse has its own character. The darkness and color of the Moon will vary depending on the qualities of the Earth's atmosphere, which refracts light toward the Moon in the shadow. The lunar eclipses that followed Mount Pinatubo's eruption in 1991 were especially dark due to the thick dust in Earth's atmosphere, being so dark as to render the Moon nearly invisible at totality. Other eclipses appear brown or orange, with different coloration across the face of the Moon.

Each lunar eclipse looks different, so it's definitely not a seen one, seen them all experience!

The Moon will be in Virgo, passing near the star nu Virginis, Virgo's head. Look for a place with a clear view to the southeast to observe it. If you take pictures, post them in the club's Facebook group!

Mercury returns to our evening sky this month with its best appearance of the year! It will reach greatest elongation (distance from the Sun) of 18 degrees on March 7th at dusk, and will be highest in the sky on March 8th. While the July and October elongations will be greater than this one (26 and 24 degrees respectively), the angle of the ecliptic at this time of the year places Mercury higher above the horizon than it will be at those two times. July's appearance will be almost as good as this one, but October's will be relatively poor with Mercury very low on the horizon. We're also likely to have clouds in July.

Mercury can be seen visually as an orange star near the western horizon at sunset. Look from a place with a clear view to the west. Binoculars will show a small disk that is clearly not a star. Be sure to wait until the Sun is out of view before using any optical instruments.

A telescope will show a clear disk at low powers. At medium or high powers faint surface details can sometimes be seen. This will be the best chance this year you will have to see any. You'll have to work quick, before it sets or gets too low in our humid Florida sky!

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

Venus has been our bright evening star for the past 3 months, but this month it will rapidly descend toward the horizon in the evening, disappearing in the Sun's glare at dusk just after midmonth. It will reappear in the morning sky by month's end, just in time for a distant conjunction with the thin crescent Moon on March 26th.

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

Mars remains high in our evening sky all month this month, at a bright magnitude 0. It is easily visible by eye in Gemini, moving from the east side of Castor and Pollux toward the south of them, where it will form a line with them in early April.

It is visible as a non-starlike object with a small disk in binoculars. In a telescope, it is visible as a disk at low powers, at medium and high powers it reveals surface details so long as there isn't a dust storm. The northern ice cap may be visible even at low powers (a light blue filter will bring out the ice cap and any visible clouds, if you have one.)

Mars is 10 arcsec in diameter at the start of this month, so better than usual since we're just past conjunction, but not as good as the 14 arcsec it was at peak. It will decline to 8 arcsec at the end of the month, so the earlier you get your observations in, the better.

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 travels retrograde until March 10th, when it will resume eastward movement relative to the stars. This keeps it high in our sky and bright, at magnitude -2 this month. It opens the month at 40 arcsec in diameter, and shrinks

slightly through the month to end at 36 arcsec.

Jupiter is easy to see by eye, between the horns of Taurus the Bull. It will descend toward the west through the month.

Jupiter by member John Prudente

In binoculars, the four Galilean Moons are easily visible as a row of stars along Jupiter's equator. Sometimes some will be behind or in front of Jupiter, so you may not see all four. Viewing them on different nights you will get used to their motions and typical positions.

Revealing details of Jupiter's disk will require at least modest telescopic magnification, however. Even at low powers of 50-100x you will see bands and zones on Jupiter, and possibly even the Great Red Spot. Clear skies, still air, and higher magnification with a good telescope will show more detail in Jupiter's atmosphere.

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

Astronomical League Jupiter Observing Program: Jupiter Observing Program - Astronomical League

Saturn disappears from our evening sky early this month, with its rings getting thinner each evening, appearing as a thin line. Then it disappears for a few days in the Sun's glare. 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 seem 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

Astronomical League Solar System Observing Program: Solar System Observing Program - Astronomical League

Deep Sky This Month

March is Messier Month! March is the best month to catch the most Messier objects on a single night. The best nights come after midmonth, and extend to month's end with the nights chosen for Messier Marathon events usually being placed close to the New Moon to avoid the Moon's light interfering with views of the Messier objects.

Enjoy your last-chance good views of winter objects like **M42, the Great Orion Nebula**, **M45, The Pleiades**, **M1, The Crab Nebula**, and **M41, The Little Beehive Cluster** before they descend into the murk of our Florida skies near the horizon.

But the moving of the sky also brings new delights for us to enjoy, including **M44, The Beehive Cluster**, a large bright cluster of yellow stars in **Cancer**. It can be seen by eye if you get away from the lights as a fuzzy bright patch out in

front of Leo's backward question mark face. It's also moving into galaxy season, with the galaxies of **Leo**, **Coma Berenices**, and **Virgo** coming into view as the night progresses. **The Leo Triplet** is a group of three galaxies at about 65 million light years away visible in even small telescopes. The three galaxies are **M65**, **M66**, and **NGC 3628** (see Ken Katta's image on the cover!) They are easy to find--point your finder toward Leo's back haunch, halfway between stars **theta Leonis (Chertan)** and **iota Leonis**. Start at low power, you will see three smudges in your field of view. That's light that has travelled 65 million years just to reach your eye!

Virgo and Coma Berenices contain many galaxies in clusters, it takes a program to tell them apart, plus more near Leo's tail. Plan your observations with your favorite atlas (print or electronic, your choice) and you'll find that there are many galaxies visible in any scope, and many in binoculars.

Recommended AL Observing Programs for these objects:

Binocular Messier Observing Program - Astronomical League

Messier Observing Program - Astronomical League

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

Club Calendar

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

March 2025

Feb 28-March 1st The Villages Outdoor Expo, Everglades Rec Center, 10am-3pm each day
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 01:09, Totality 02:26-03:31, final umbral contact 04:48, final penumbral contact 06:00 No event.
16 Fruitland Park Observing, 5pm, 300 Shiloh St. Fruitland Park (Note on Sunday, not Saturday.)
18 General Meeting, Linda Meng, The Three Sisters of Astronomy
23 Saturn Ring Plane Crossing: See Saturn's Rings "disappear." See "In The Sky" above for details.
26 EAA Meeting, Homestead Astronomy Park, 7:15pm
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/

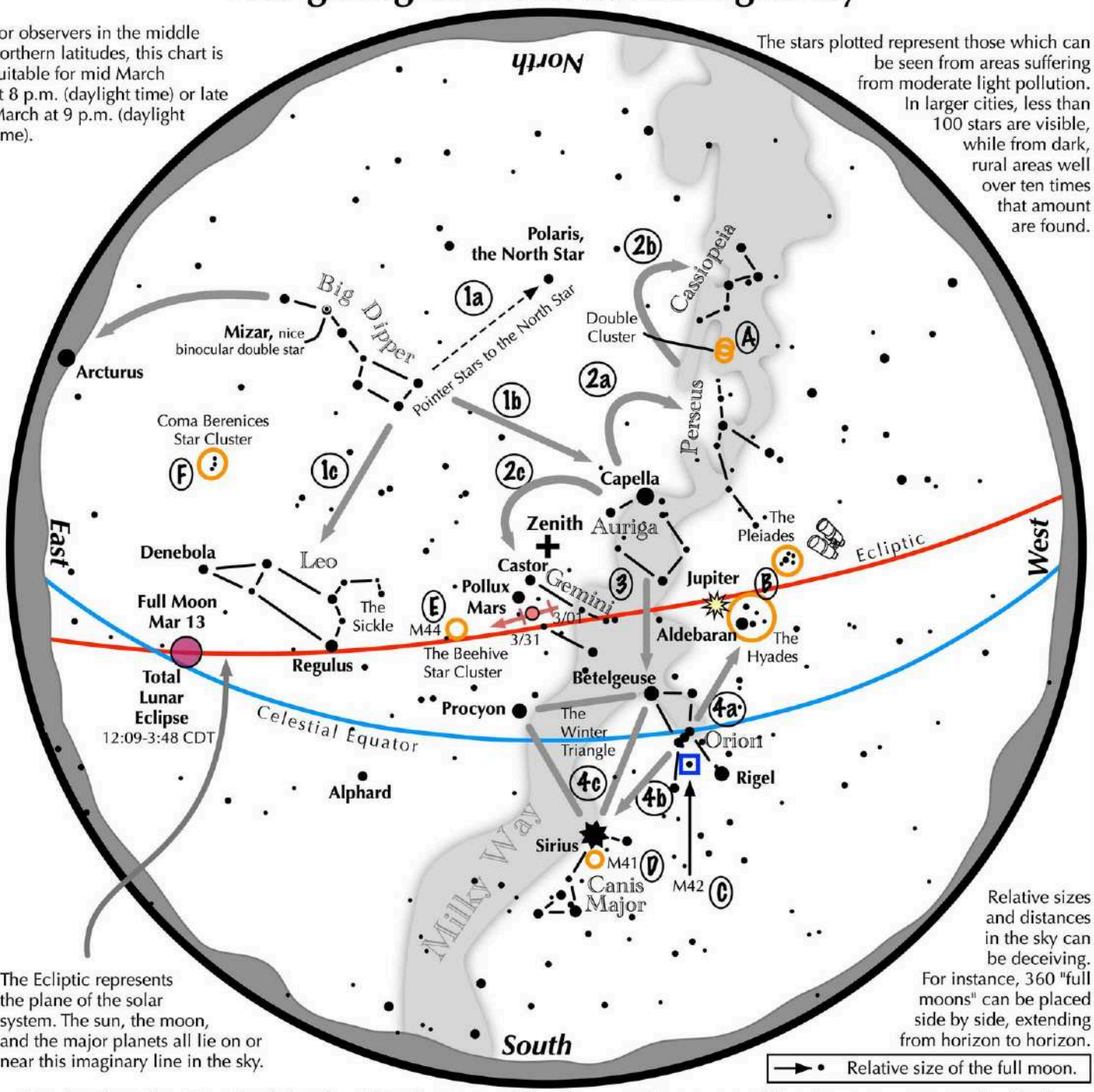
See Monthly Sky Chart Next Page

Image at left: The Flaming Star Nebula in Auriga by member Randy Gilbert. 1500 light years away, 5 light years across.

Navigating the mid March Night Sky

For observers in the middle northern latitudes, this chart is suitable for mid March at 8 p.m. (daylight time) or late March at 9 p.m. (daylight time).

The stars plotted represent those which can be seen from areas suffering from moderate light pollution. In larger cities, less than 100 stars are visible, while from dark, rural areas well over ten times that amount are found.



The Ecliptic represents the plane of the solar system. The sun, the moon, and the major planets all lie on or near this imaginary line in the sky.

Relative sizes and distances in the sky can be deceiving. For instance, 360 "full moons" can be placed side by side, extending from horizon to horizon.

→• Relative size of the full moon.

Navigating the March 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. Its top bowl stars point west to Capella in Auriga, nearly overhead. Leo reclines below the Dipper's bowl.
2. From Capella jump northwestward along the Milky Way 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. It is a member of the Winter Triangle.

Binocular Highlights

A: Between the "W" of Cassiopeia and Perseus lies the Double Cluster. **B:** Examine the stars of the Pleiades and Hyades, two naked eye star clusters. **C:** M42 in Orion is a star forming nebula. **D:** Look south of Sirius for the star cluster M41. **E:** M44, a star cluster barely visible to the naked eye, lies to the southeast of Pollux. **F:** Look high in the east for the loose star cluster of Coma Berenices.