Richland Astronomical Society
The Warren Rupp Observatory

M111

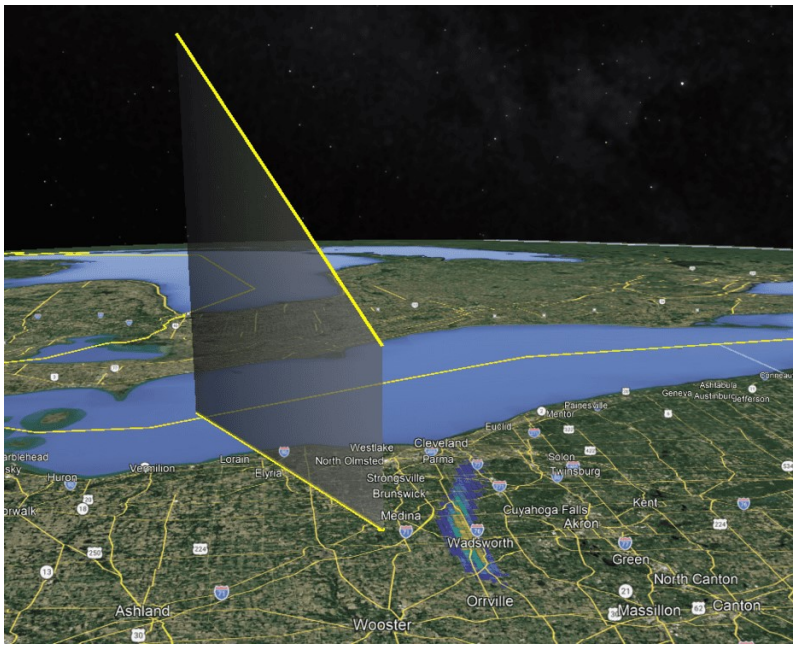
May 2026

The newsletter of the Richland Astronomical Society and Warren Rupp Observatory

The 2026 St. Patrick's Day Meteor over Ohio

By Mark Vanderaar

At exactly 8:56:42 AM on St. Patrick's Day 2026, a six-metric-ton asteroid fragmented 30 some kilometers above Valley City, Ohio, only a few miles from where I live! I was out in the out-building when it hit, making a sharp, violent initial crack-boom that rattled windows and could definitely be felt. My first thought was that a train had derailed or a piece of heavy equipment had been dropped nearby, but then the sound just...kept going. It transitioned into a long, heavy, reverberant roll that lasted for nearly

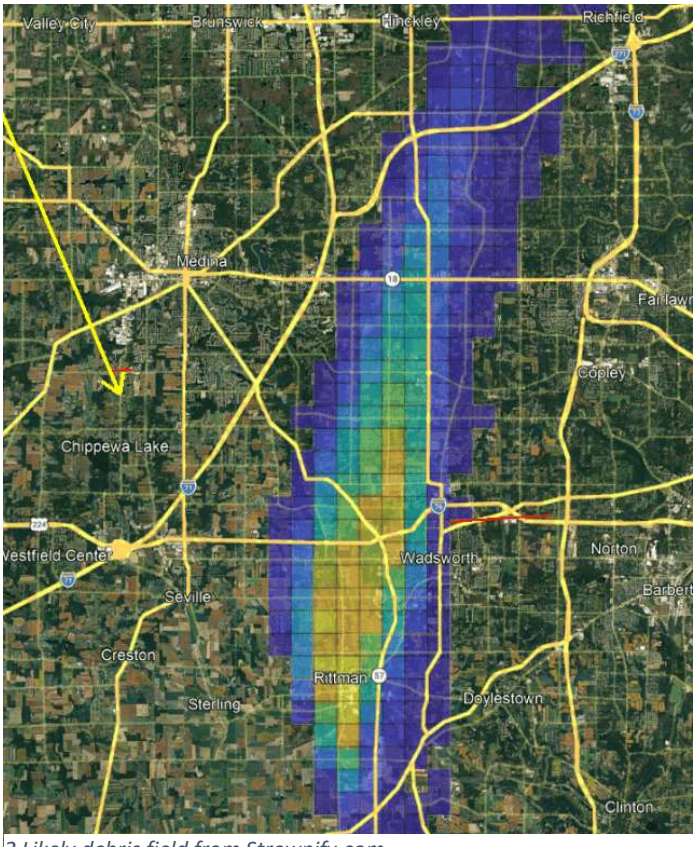


1 Path of Meteor from Strewnify.com

ten seconds. By the time I got outside to see what was up, it was over. After a quick, “hmmm, what was that?” I largely forgot about it. It wasn’t until later that morning that the news started breaking: we had just experienced a once-in-a-lifetime celestial event! Moreover, the meteor was large enough that hundreds of kilograms of meteorites survived the blast and could possibly be found!

As an astronomy enthusiast, I’ve experienced my share of "shooting stars" and even a few night-time bolides. One of the most memorable happened a few years back at the Warren Rupp Observatory. I was standing just inside the observatory dome talking to visitors just outside the dome when a massive flash lit up their faces and the surrounding area. Everyone outside started shouting "Wow!" and "Did you see that?!" while I stood there, having seen only a flash and processing nothing until it was long gone!

The St. Patrick’s Day meteor collided with Earth's atmosphere at a steep angle rather than dropping straight down, so the debris field ended about 15 miles away from Valley City. If it had arrived just about 30 seconds earlier at a slightly steeper angle, I might have not just heard the booms, but could have heard the “tinkle" of small ancient space rocks hitting my metal roof.



2 Likely debris field from Strewnify.com

What a thrill that would have been! I spent a few optimistic hours wandering our property just in case, but finding absolutely nothing. Soon, we started hearing about professional "meteorite hunters" descending on the area. Social media was flooded with "meteorwrongs”, mostly asphalt, slag, or industrial waste. However, within a day, a few legitimate pieces started to be found.

I hadn’t planned on joining the search until I realized a weekend trip to visit my brother would take me nearly through the center of the roughly 20-by-4-mile strewn field mapped out by Strewnify and NASA.

I did some dubious "back-of-the-envelope" math: if roughly 900 kg of the original mass survived vaporization, and the pieces were marble-sized, there should technically be a space rock in every 50-by-50-foot square. Armed with that "bulletproof" logic, I made my first stops. They were a bust; I tried searching cornfields, where last year's cut stalks theoretically allow for a deterministic back and forth search, but my eyes kept wandering a couple or few rows over to investigate a promising stone. Thus, my resulting path looked less like an organized search and more like a "random walk." A number of stones went in a ziploc bag for further investigation, but I knew they were not meteorites.

I spent time with my brother laughing at my collection of meteorwrongs, but I clearly had "meteor-on-the-brain." When a spring storm rolled through and the first clap of thunder hit, I jumped out of my seat thinking it was another bolide. That was good for a laugh! Giving into the condition on the return trip, I decided to search some more. I did some "urban" searching in the big retail parking lots, but dodging cars and stares isn't as much fun as walking the fields, and headed back into nature. After about an hour of criss-crossing the mud and cattle manure, I spotted it: a 11.7-gram fragment, strikingly obvious even a couple of rows away! Letting one's eyes wander from the prescribed path paid off…random walkers for the win! It was clean, shiny, and halfway wrapped in a fresh, blackmelted fusion crust, the other half exposed, white with black flecks, reminding me of cookies-and-cream ice cream. I carefully tucked it into a fresh plastic baggy, keeping it separate from my muddy meteorwrongs, and eventually walked back to the truck on cloud nine.

3 Mark Vanderaar's meteor fragment

Testing my beginner's luck, I spent the following, cold and rainy Monday back in the mud, yielding absolutely nothing, though thoroughly enjoying it!

After the dust settled (literally!), experts started to characterize the fragments. It turns out these are Eucrites from the crust of the asteroid Vesta. They have almost no iron; a metal detector won't help to find fragments; it's strictly a visual game. There is an intriguing remaining mystery: a fleeting Doppler radar return suggests a massive individual chunk (potentially 180

lbs) may have landed southwest of Rittman. While it's likely a "phantom" return or a cluster of smaller stones, the dream of finding it persists. Thousands of fragments are still out there, but with spring rain and planting season starting, they are disappearing fast. If you’re up for a search, check out Strewnify.com to plan your route, and remember: always get permission before wandering onto private property!

Big Blue Targets for May

M104 - The Sombrero Galaxy

The Sombrero Galaxy, also known as M104, is a large, nearly edge-on, spiral galaxy located in the constellation Virgo, approximately 28 million light-years from Earth. It's a member of the Virgo II Group and is one of the most massive objects in the Virgo galaxy cluster, with a mass equivalent to 800 billion suns. The galaxy is nicknamed the Sombrero due to its distinctive edge-on appearance, which resembles a wide-brimmed hat.

NGC4631 - The Whale Galaxy

NGC 4631 (also known as the Whale Galaxy or Caldwell 32) is a barred spiral galaxy in the constellation Canes Venatici about 30 million light years away from Earth. It was discovered on 20 March 1787 by German-British astronomer William Herschel. This galaxy's slightly distorted wedge shape gives it the appearance of a herring or a whale, hence its nickname. Because this nearby galaxy is seen edge-on from Earth, professional astronomers observe this galaxy to better understand the gas and stars located outside the plane of the galaxy.

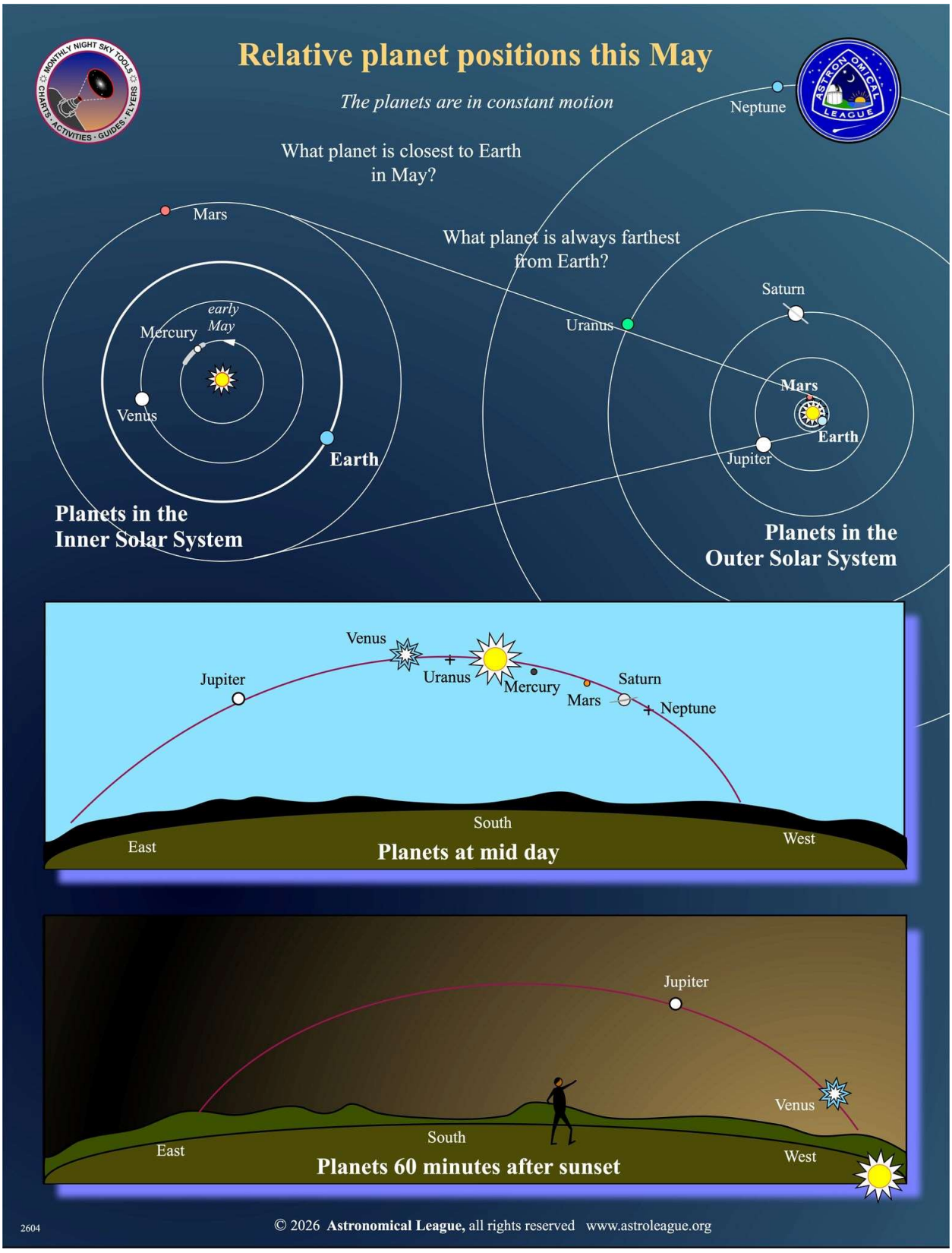
M51 - Whirlpool Galaxy (after about 10:30PM)

Galaxy Messier 51 (M51, also designated NGC 5194) is nicknamed the Whirlpool because of its prominent swirling structure. Its two curving arms, a hallmark of so-called grand-design spiral galaxies, are home to young stars, while its yellow core is where older stars reside. Many spiral galaxies possess numerous, loosely shaped arms, which make their spiral structure less pronounced. These arms are star-formation factories, compressing hydrogen gas and creating clusters of new stars. Some astronomers believe that the Whirlpool's arms are so prominent because of the effects of a close encounter with NGC 5195, the small, yellowish galaxy at the outermost tip of one of the Whirlpool's arms. At first glance, the compact galaxy appears to be tugging on the arm. Hubble's clear view, however, shows that NGC 5195 is passing behind the Whirlpool. The small galaxy has been gliding past M51 for hundreds of millions of years.

Updates to Membership Roster Data

Because we're a small and frugal club, we maintain our membership data using the free Night Sky Network website maintained by the Astronomical Society of the Pacific and sponsored by the Jet Propulsion Laboratory and NASA. All RAS members have an NSN account except for those covered by another member of their family. Additionally, every member of RAS is also a member of the Astronomical League. Our membership data for the Astronomical League is maintained in a spreadsheet that's updated manually.

If a member moves, changes phone numbers, or wants to update their profile in some other way, they can do so easily by logging onto their NSN account. Additionally, they can email the club secretary (secretary@wro.org) and ask that it be updated. If you update your data – especially your mailing address, please email the secretary so that he can update the Astronomical League's roster as well.


Relative planet positions this May
The planets are in constant motion
What planet is closest to Earth in May?
What planet is always farthest from Earth?
Neptune
Mars
Mercury
early May
Venus
Earth
Uranus
Saturn
Mars
Earth
Jupiter
Planets in the Inner Solar System
Planets in the Outer Solar System
Venus
Jupiter
Uranus
Mercury
Saturn
Mars
Neptune
South
East
West
Planets at mid day
Jupiter
Venus
South
East
West
Planets 60 minutes after sunset
2604
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Little Dipper, take a closer look

It is a welcome friend
always holding onto the north celestial pole.

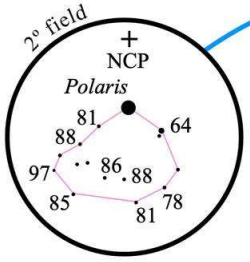
Ursa Minor is a small constellation whose brightest star, Polaris, is pinned at the north celestial pole. Four fainter stars lie in a curve swinging south-southwest from it. The two end stars mark the upper stars of the bowl of the Little Dipper. Because of the dimness of Delta (δ), Epsilon (ε), Zeta (ζ), and Eta (η), they are often used as indicators of sky darkness.

Once you meet the Little Dipper, it'll be a friend for life!

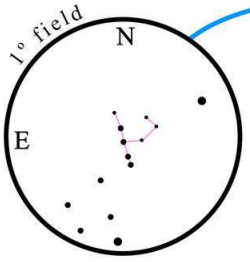
ASTERISMS in the LITTLE DIPPER (which itself is an asterism)

Asterism Observing Program

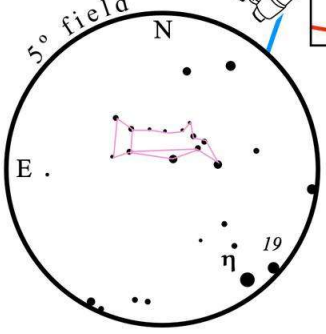
A7 Diamond Ring

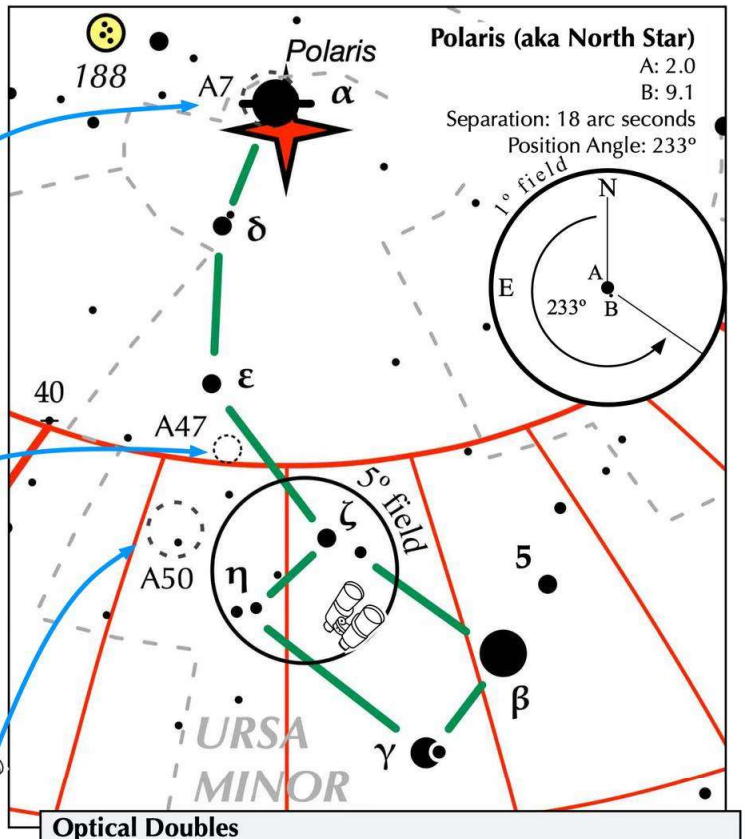


A47 Mini-Coathanger



A50 Shark





Polaris (aka North Star)
A: 2.0
B: 9.1
Separation: 18 arc seconds
Position Angle: 233°

Optical Doubles
Two stars lying close to each other in a chance line of sight arrangement. They are nowhere near each other in three-dimensional space.

- **Delta (δ) & 24 Ursae Minoris:** 4.3 & 5.8, 23 min sep.
- **Zeta (ζ) & Theta (θ) Ursae Minoris:** 4.3 & 5.0, 49 min sep.
- **Eta (η) & 19 Ursae Minoris:** 4.9 & 5.5, 26 min sep.
- **Gamma (γ) & 11 Ursae Minoris:** 3.0 & 5.0, 17 min sep.

2601

Binoculars and Double Stars

A rewarding and challenging activity

https://www.astroleague.org/binocular-double-star-observing-program/

Effective Binocular Observing ...

- Binoculars must be precisely focused.
- Binoculars must be held steady. Mounted on a tripod is best.
- Adequate dark adaption is needed. Wait at least 15 minutes in the dark before meaningful observing begins. 30 minutes is better.
- Glare from a bright primary interferes with spotting a dim secondary. The greater the magnitude difference, the greater the difficulty splitting them.
- Steady atmospheric seeing is desired.
- Best observed when the double star has an altitude higher than 30°.

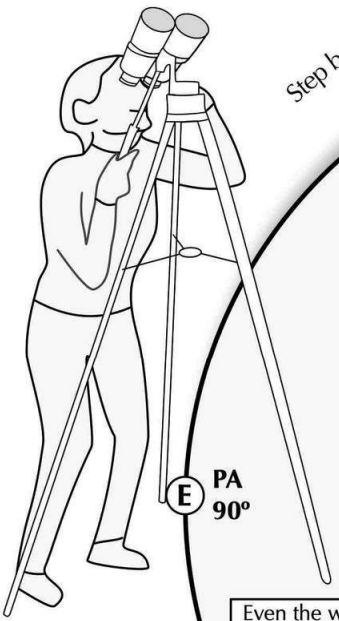
In Your Observing Notes:

- Brightnesses of the components.
- Separation of the components.
- Position Angle (PA).
- Colors of the components.
- Neighboring stars in the field?
- Seeing conditions.
- Atmospheric transparency.
- Altitude.

Rule of Thumb ...

Minimum <u>true</u> separation with 10 x 50 binoculars:

- 24 arc seconds for two stars of 4th magnitude. This equals 4 minutes apparent separation.
- For comparison, the full moon has a true diameter of 1800 arc seconds (=30 minutes).
- **True separation** is the angular space between stars as it appears to the unaided eye. **Apparent separation** is how it appears in binoculars.



Step back 1.5 m (4.75 ft) from this 150 mm (6 inch) printed field, and the 6° field will match 6° in the sky.

PA N 0°

6° true angular field – typical for binoculars

PA E 90°

PA W 270°

PA S 180°

Example Doubles

Alpha Capricorni
381", PA: 290°

Delta Cephei
41", PA: 191°

Σ1474 Hydrae
66", PA: 27°

56 Andromedae
203", PA: 298°

Nu Draconis
61", 311°

Alpha Ursae Majoris
385", 206°

Stellar Magnitude

2
3
4
5
6
7
8

Relative diameter of the full moon.

Separation distance

— 600" = 10'
– 300" = 5'
- 120" = 2'
· 60" = 1'
· 40" = 0.67'

Even the wider doubles appear close to each other. Two stars that have a tight separation, or a large magnitude difference, or a combination of the two are much more difficult to split, sometimes frustratingly so, but an enjoyble challenge nonetheless.

2402

A fun gibbous and full moon observing activity!

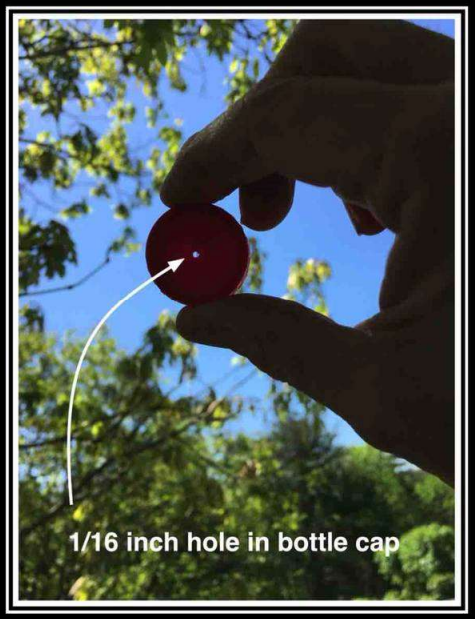
Observing the gibbous & full moon without optical aid

The gibbous and full moons can be quite bright, producing an abundance of refracted glare when viewed by the unaided eye. Little, if any lunar detail can be seen – just a frustrating blur.

To nearly eliminate the glare while increasing your ability to discern surface detail, try the following:

1. Drill a 1/16 inch (or 1.5 mm) hole in a thin opaque card. A plastic soft drink bottle cap works nicely. (A smaller hole dims the moon too much.)
2. Remove any burrs.
3. Hold the card/bottle cap to your eye so that it is within 1/2 inch of the pupil, and look at the bright moon.
4. The dark markings (maria) on the lunar surface should be discernible.

This works because of two reasons.
1. Only about 6% of the moonlight is allowed to enter the pupil, nearly eliminating glare.
2. Light traveling through the outer portions of the eye, where most common eye distortions occur, is blocked by the opaque card. The light that passes through the central part of the pupil has little distortion, resulting in greatly improved visual acuity.



The larger lunar maria might be seen including Maria Crisium, Tranquilitatis, and Serenitatis – even for observers with less than 20/20 vision. The distance gap between Mare Crisium and the limb can be estimated, and over time, the observer can notice the effect of changing eastern lunar libration.

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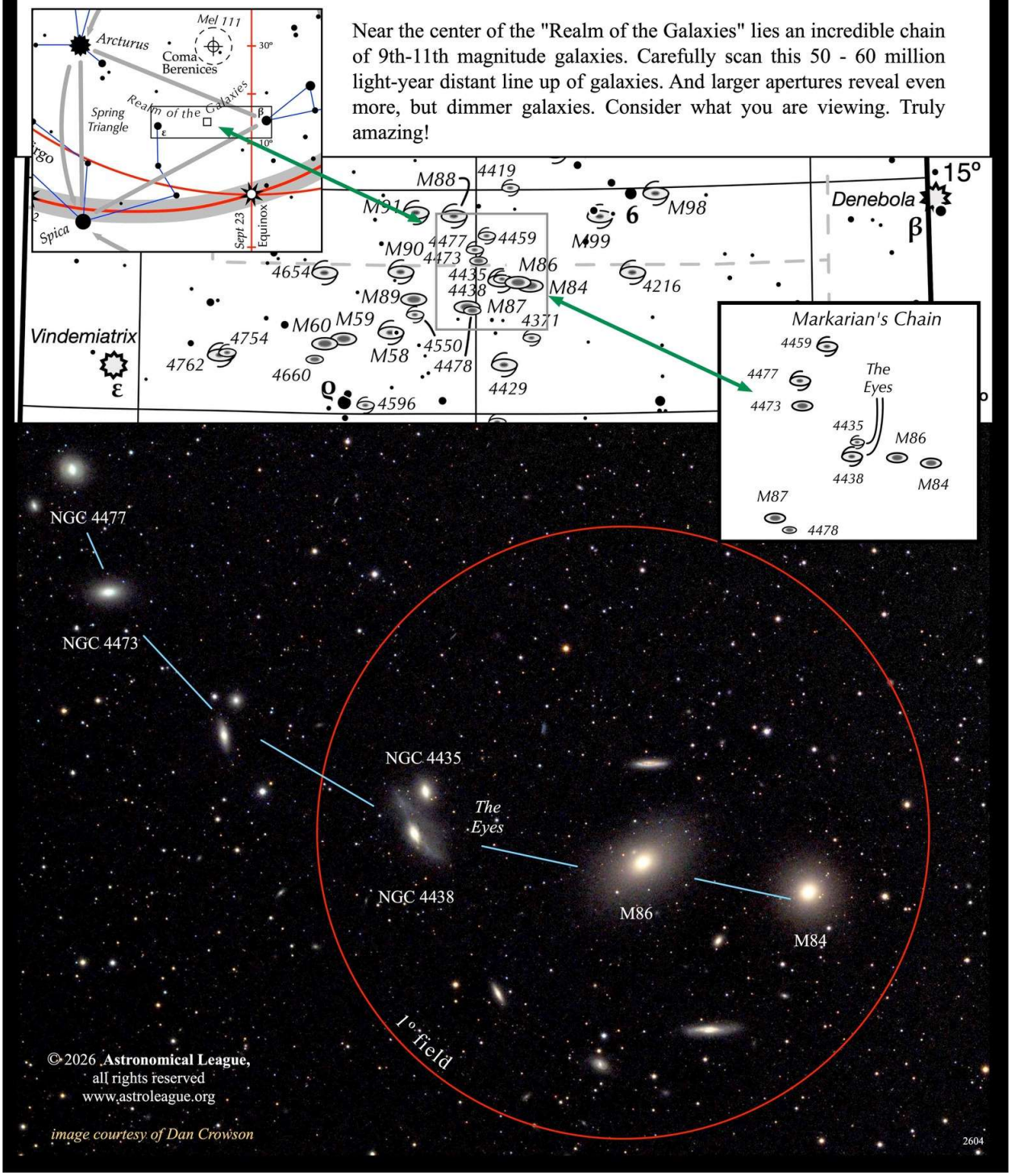
Don't miss "Markarian's Chain"

For scopes 8 inches or larger, a journey in galaxy hopping.



The nearest cluster of stars with approximately two dozen members.

Ursa Major Moving Group

Collinder 285

Ursa Major Moving Group (UMMG)

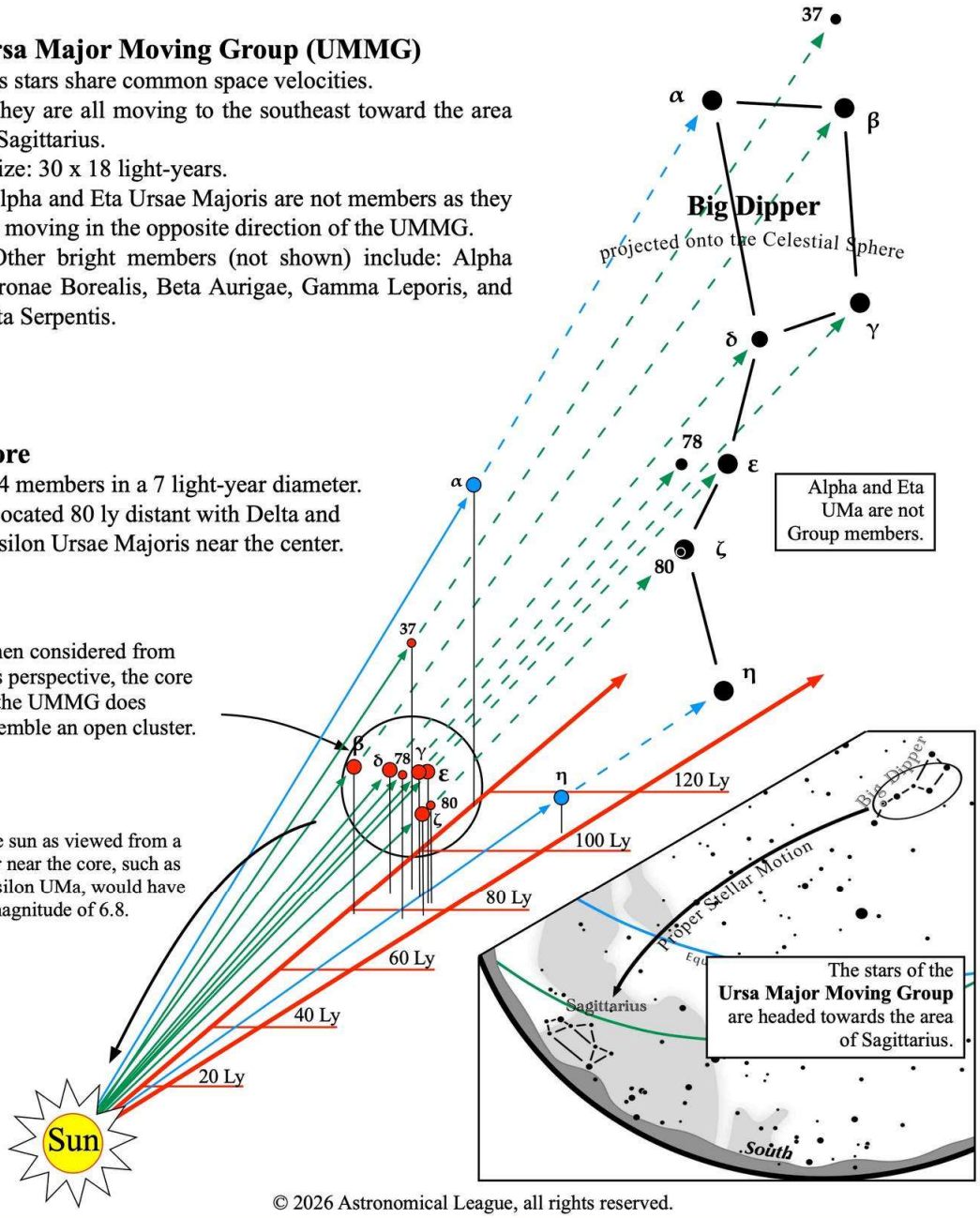
- Its stars share common space velocities.
- They are all moving to the southeast toward the area of Sagittarius.
- Size: 30 x 18 light-years.
- Alpha and Eta Ursae Majoris are not members as they are moving in the opposite direction of the UMMG.
- Other bright members (not shown) include: Alpha Coronae Borealis, Beta Aurigae, Gamma Leporis, and Beta Serpentis.

Core

- 14 members in a 7 light-year diameter.
- Located 80 ly distant with Delta and Epsilon Ursae Majoris near the center.

When considered from this perspective, the core of the UMMG does resemble an open cluster.

The sun as viewed from a star near the core, such as Epsilon UMa, would have a magnitude of 6.8.



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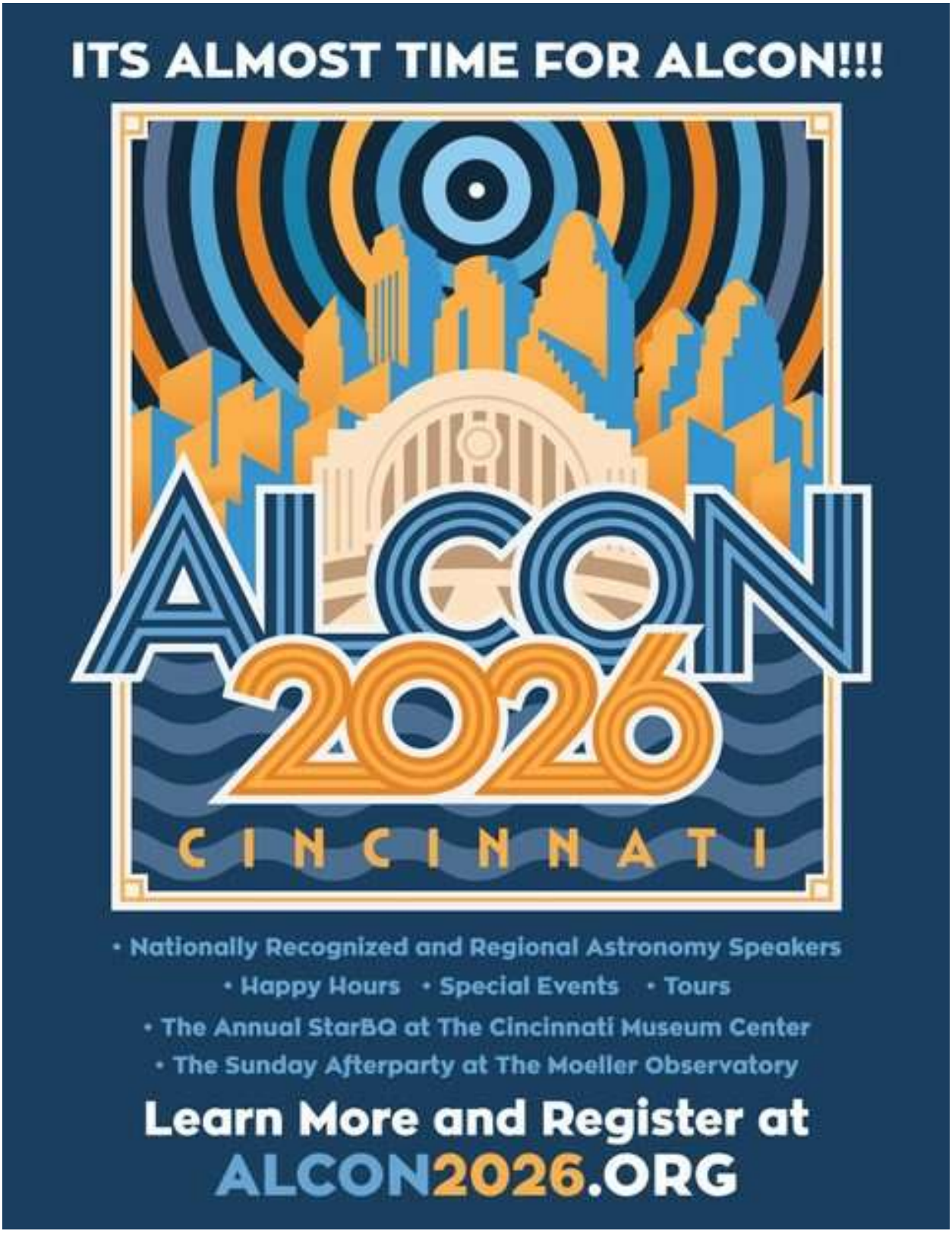
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