CNY OUTDOORS

Upstate NY Stargazing in April: The Lyrid meteor shower

Posted Apr 2, 2018

The good, the bad, and the potentially ugly things that fall from space. Micrometeorites (IFLScience.com), a SkyLab fragment (from wikipedia), and the Chelyabinsk meteor trail (Alex Alishevskikh).(File photos)

By Damian Allis

When asked to list the contents of our Solar System, some stop at the Sun, planets, and moons. Others will remember comets - a list of objects that grows much longer every year. For those looking for up-to-date info, see minorplanetcenter.net - we have comfortably cleared the 4000 comet mark. Some may add the asteroid belt - a region between Mars and Jupiter which looks less like the chaotic debris field from "The Empire Strikes Back" and more like oases of larger rocks separated by vast, empty deserts of tiny particles. Don't forget the currently 18,000-long list of NEOs, or Near-Earth Objects.

These are among the more than 18,000 reasons why the late-great Stephen Hawking and others have championed the need for colonization beyond the Earth's surface.

Changing positions in the sky is one thing - changing elevations is very different. Occasional bright flares make the news when captured on video. Events like Tunguska and Chelyabinsk remind us that there thing in space we might miss that could level cities. We are fortunate that most of the roughly 160 tons of debris from space that hits the Earth *each day* is in the form of micrometeorites that you could start collecting with a strong magnet and a flat rooftop.

The highly-anticipated demise of the Tiangong-1 over the weekend was a reminder that we may not be able to always rely on the "dilution-solution" of handling our garbage. Our planet is large, spherical, mostly covered in water, and largely unpopulated - but the number of satellites going to space will only increase as launches get cheaper. It remains to be seen if nations will opt to address the dangers of space junk before or after something serious - and unavoidable - happens here on the ground.

Lectures And Observing Opportunities In Upstate/Central New York

New York has a number of astronomers, astronomy clubs, and observatories that host public sessions throughout the year. Announced sessions from respondent NY astronomy organizations are provided below for April. As wind and cloud cover are always factors when observing, please check the provided contact information and/or email the groups a day-or-so before an announced session, as some groups will also schedule weather-alternate dates. Also use the contact info for directions and to check on any applicable event or parking fees.

Astronomy Events Calendar

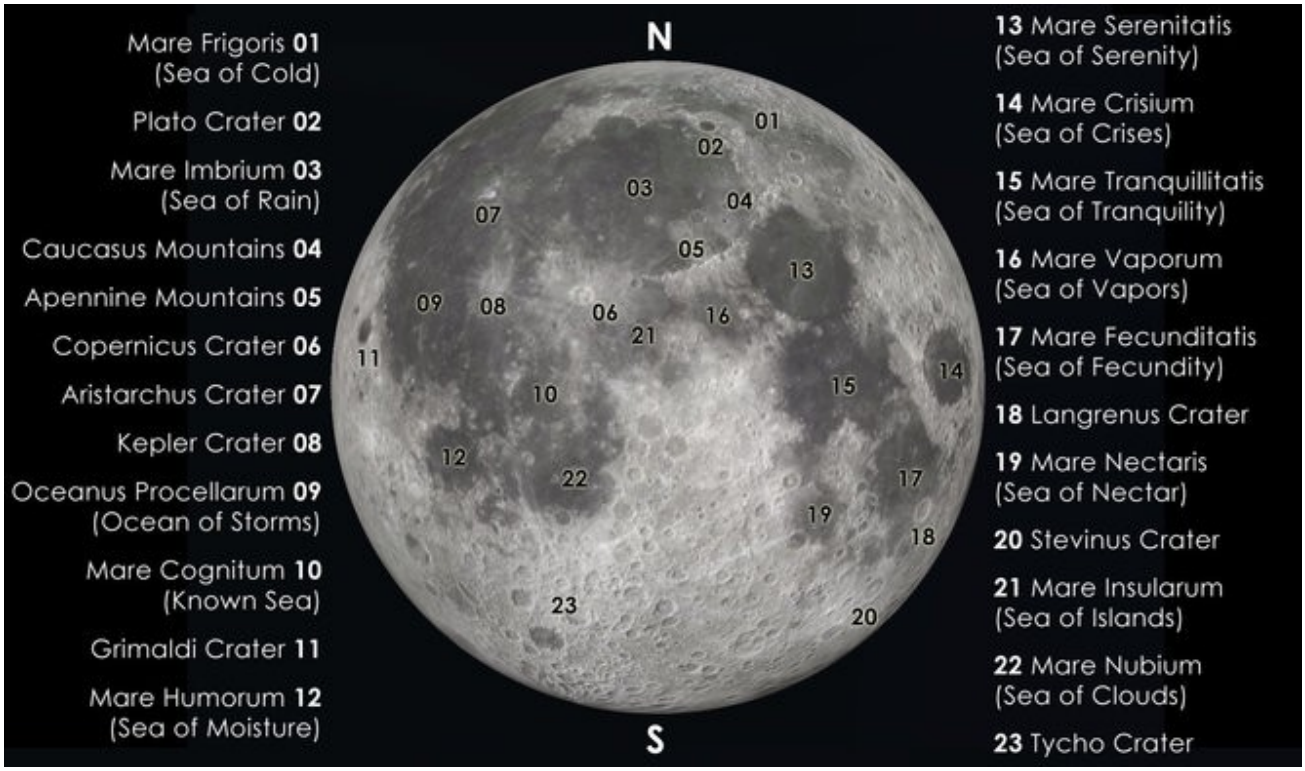
Organizer	Location	Event	Date	Time	Contact Info
Adirondack Public Observatory	Tupper Lake	1st Friday Observing	Apr. 6	7:30 PM	email, website
Adirondack Public Observatory	Tupper Lake	3rd Friday Observing	Apr. 20	7:30 PM	email, website
Albany Area Amateur Astronomers & Dudley Observatory	Schenectady	Octagon Barn Star Party	Apr. 13	8 - 10 PM	email, website
Albany Area Amateur Astronomers & Dudley Observatory	Schenectady	Night Sky Adventure	Apr. 17	7 - 8:30 PM	email, website
Albany Area Amateur Astronomers & Dudley Observatory	Schenectady	AAAA Meeting	Apr. 19	7:30 - 9 PM	email, website
Astronomy Section, Rochester Academy of Science	Rochester	Member Meeting	Apr. 6	7:30 - 9:30 PM	email, website
Astronomy Section, Rochester Academy of Science	Rochester	Observing At The Strasenburgh	Apr. 7	9:00 - 10:30 PM	Jim S., 585-703-9876
Astronomy Section, Rochester Academy of Science	Rochester	Observing At The Strasenburgh	Apr. 14	9:00 - 10:30 PM	Jim S., 585-703-9876

Astronomy Section, Rochester Academy of Science	Rochester	ASRAS Open House	Apr. 15	12 - 4 PM	email, website
Astronomy Section, Rochester Academy of Science	Rochester	Observing At The Strasenburgh	Apr. 21	9:00 - 10:30 PM	Jim S., 585-703-9876
Astronomy Section, Rochester Academy of Science	Rochester	Observing At The Strasenburgh	Apr. 28	9:00 - 10:30 PM	Jim S., 585-703-9876
Baltimore Woods	Marcellus	Hello Spring Skies	Apr. 13/14	7:30 - 9:30 PM	email, website
Kopernik Observatory & Science Center	Vestal	KAS Monthly Meeting	Apr. 4	7 - 9 PM	email, website
Kopernik Observatory & Science Center	Vestal	Friday Night Observing	Apr. 6	7 - 9 PM	email, website
Kopernik Observatory & Science Center	Vestal	Friday Night Observing	Apr. 13	7 - 9 PM	email, website
Kopernik Observatory & Science Center	Vestal	Friday Night Observing	Apr. 20	7 - 9 PM	email, website
Kopernik Observatory & Science Center	Vestal	Friday Night Observing	Apr. 27	7 - 9 PM	email, website
Liverpool Public Library	Liverpool	Planet 9 Lecture	Apr. 19	7 - 8:30 PM	website
Mohawk Valley Astronomical Society	Waterville	Public Stargazing	Apr. 7	8:15 - 10:30 PM	email, website
Syracuse Astronomical Society	Syracuse	Messier Marathon and Public Viewing	Apr. 13	7:00 PM	email, website

Lunar Phases

Third Quarter	New Moon	First Quarter	Full Moon
Apr. 8, 3:17 am	Apr. 15, 9:57 pm	Apr. 22, 5:45 pm	Apr. 29, 8:58 pm

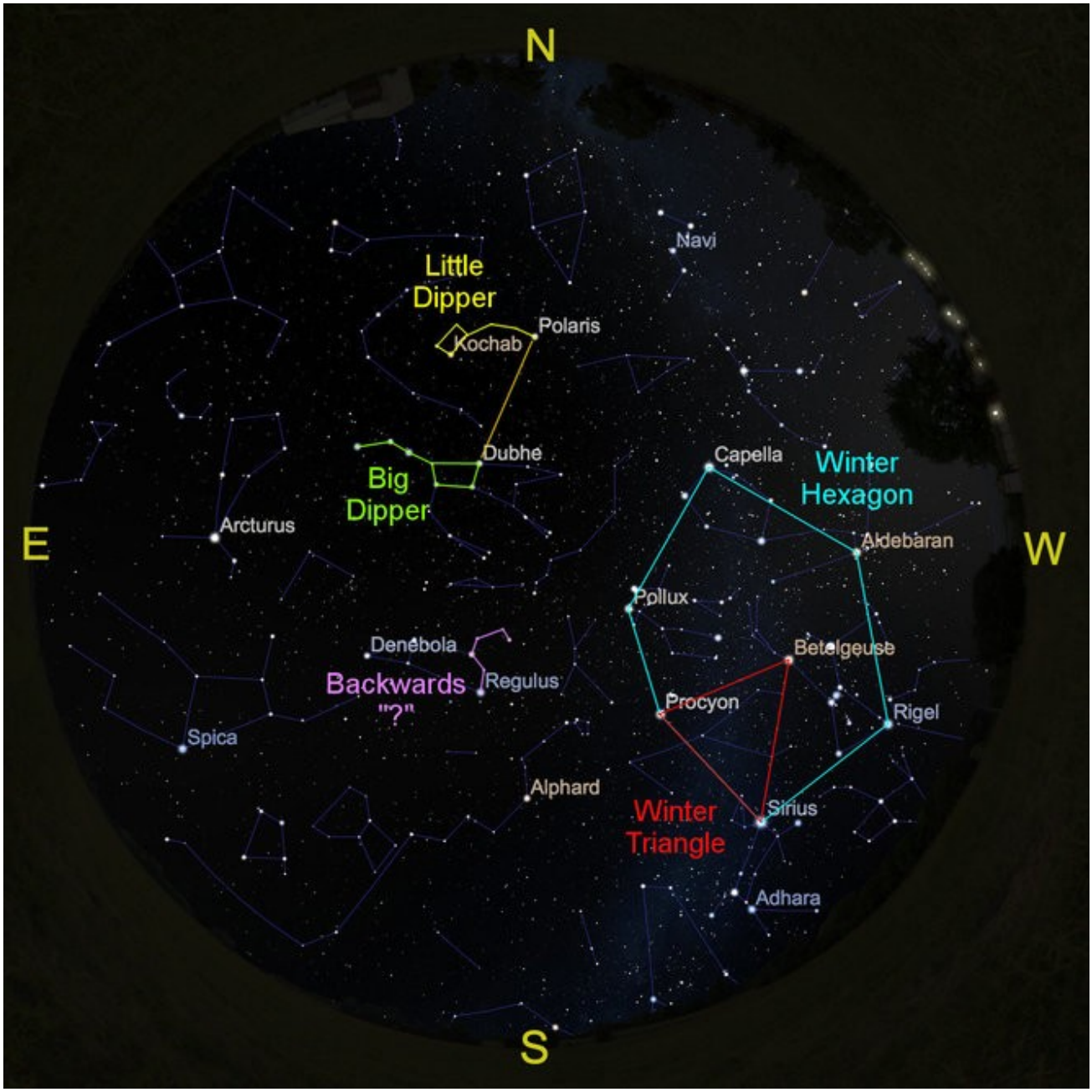
The Moon's increasing brightness as Full Moon approaches washes out fainter stars, random meteors, and other celestial objects - this is bad for most observing, but excellent for new observers, as only the brightest stars (those that mark the major constellations) and planets remain visible for your easy identification. If you've never tried it, the Moon is a wonderful binocular object. The labeled image identifies features easily found with low-power binoculars.



Lunar features prominent in low-power binoculars.

Observing Guides

Items and events listed below assume you're outside and observing most anywhere in New York. The longer you're outside and away from indoor or bright lights, the better your dark adaption will be. If you have to use your smartphone, find a red light app or piece of red acetate, else set your brightness as low as possible.



The sky at 9 p.m. on April 15, accurate all month except for the changing Moon position.

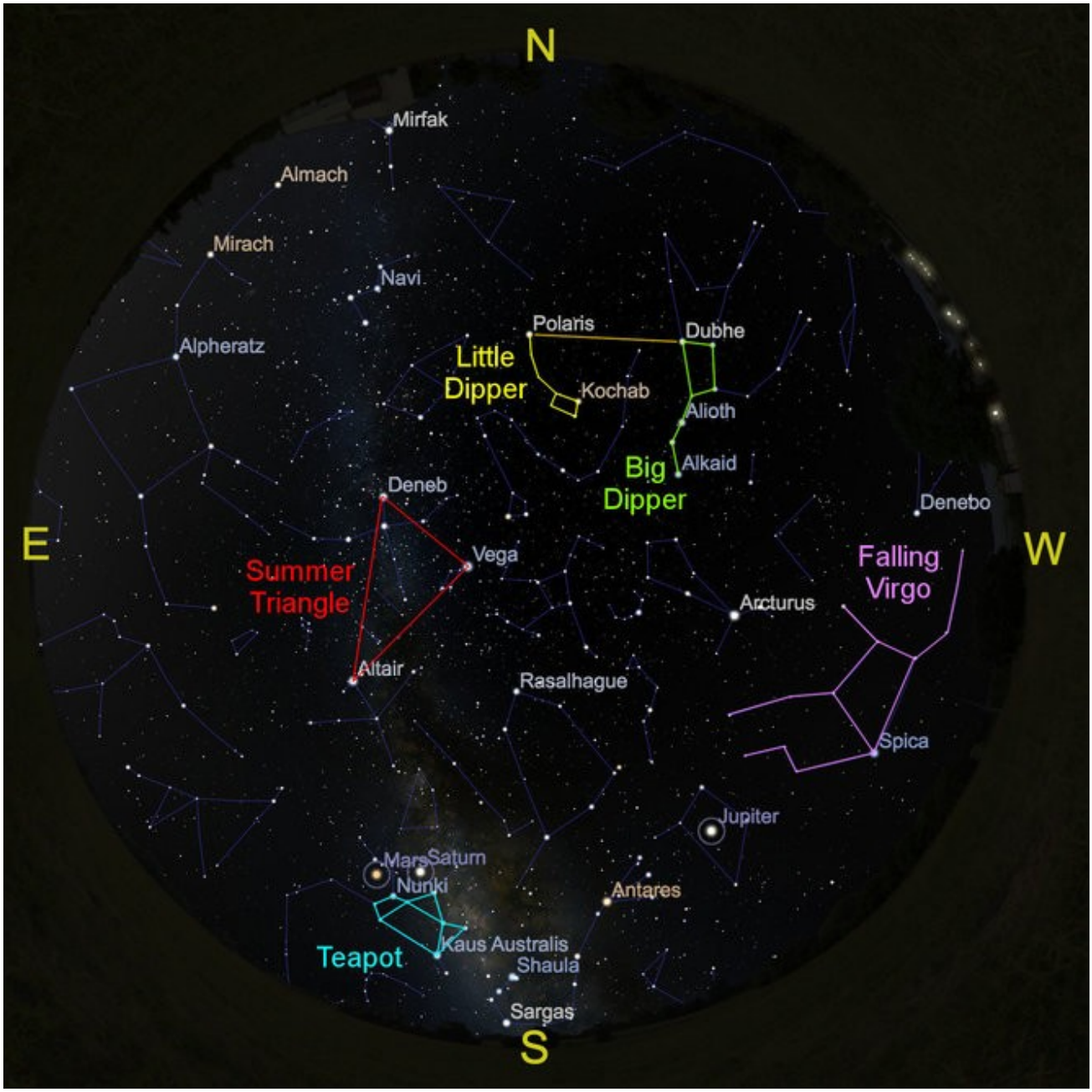
Evening Skies: Observers with bad necks or busy schedules have been waiting all winter for April. The constellations of the Winter Triangle - Canis Major, Canis Minor, and Orion - and additional of the Winter Hexagon - Gemini, Auriga, and Taurus - are finally lower in the western sky after sunset. Binocular viewers have precious little time to take in objects around Taurus and Orion.

This is also our last month to take advantage of Orion as a guide to its local constellations before it disappears again until just before sunrise in early August.

Orion can guide you around its neighborhood. Red = belt stars to Sirius and Canis Major; Orange = Rigel and belt center to Castor and Pollux in Gemini; Yellow = Bellatrix and Betelgeuse to Canis Major; Green = Belt stars to Aldebaran and Taurus; Blue = Saiph and Orion's head to Capella in Auriga. Click for a larger view.

Morning Skies: The observing excitement this month is to the south. Saturn and Mars are putting on an excellent show atop the teapot asterism in Sagittarius, while Jupiter watches from the west in Libra. Hopping from Antares to Jupiter to Spica, try to find the

very personable representation of the constellation Virgo, who appears to be falling on her backside on the western horizon this month.

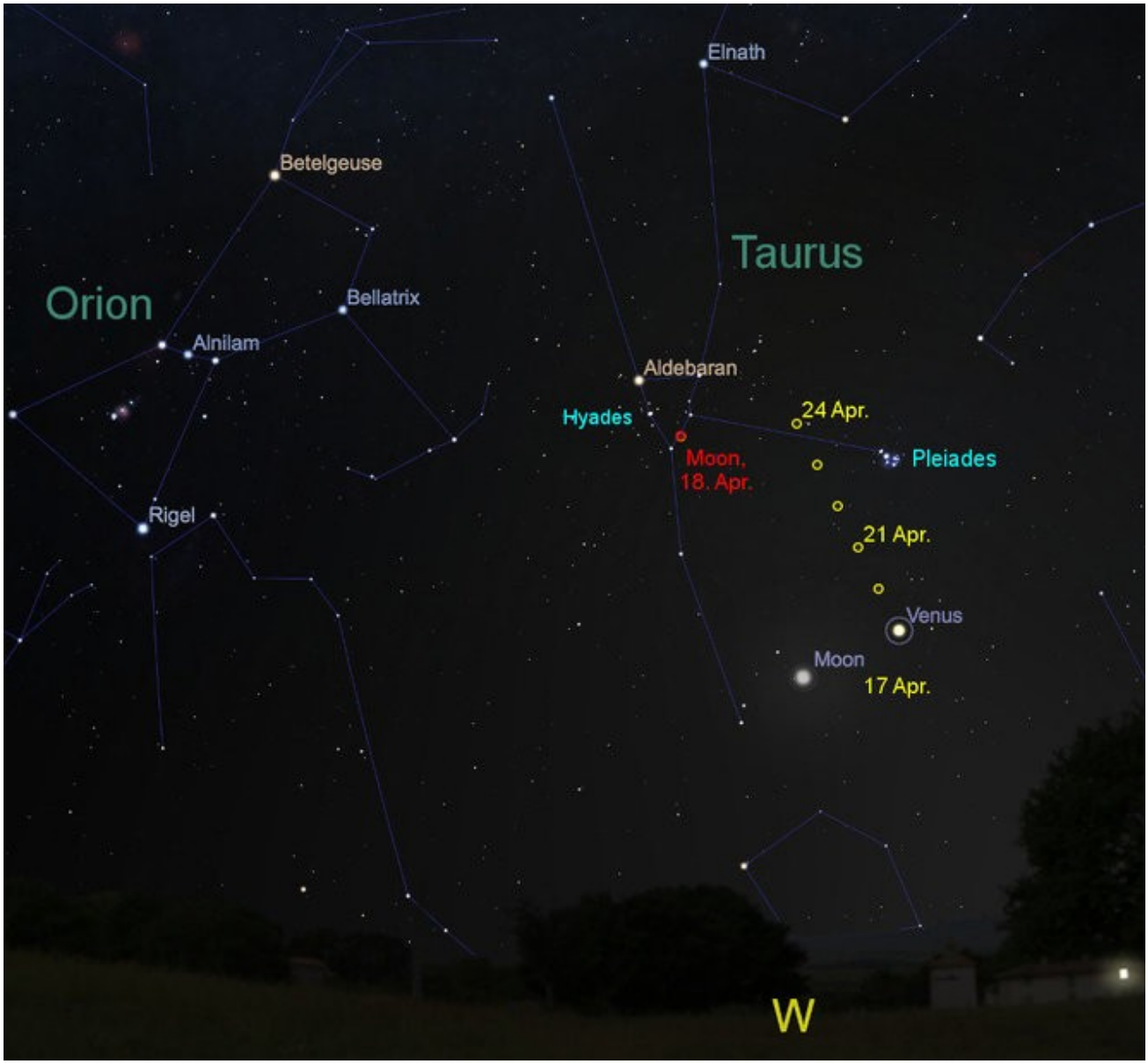


The sky at 5 a.m. on April 15, accurate all month except for the changing Moon position.

Planetary Viewing

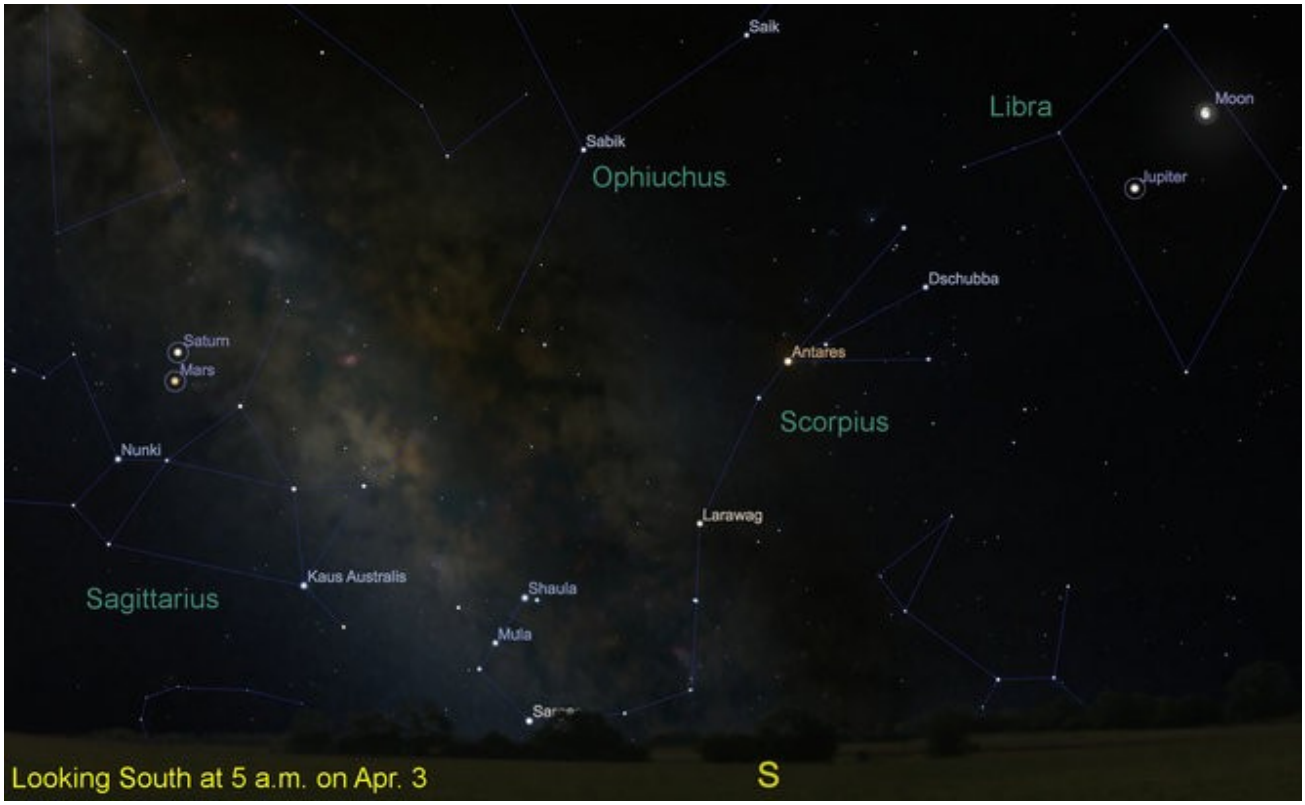
Venus: Venus has been an evening delight recently, with early March observers even fitting it and Mercury into the same binocular field of view. Venus continues to set later each day this month, getting brighter throughout.

For bright sightings, Venus has the first half of the month to itself. On the 17th, it pairs with a thin crescent moon after sunset, then spends the next few days sliding right between our two closest star clusters - the Pleiades and Hyades in Taurus. April 28th is the closest grouping of the three, with Venus almost making a straight line with Aldebaran and the Pleiades.



Groupings of Venus, the Moon, Pleiades, and Hyades later this month.

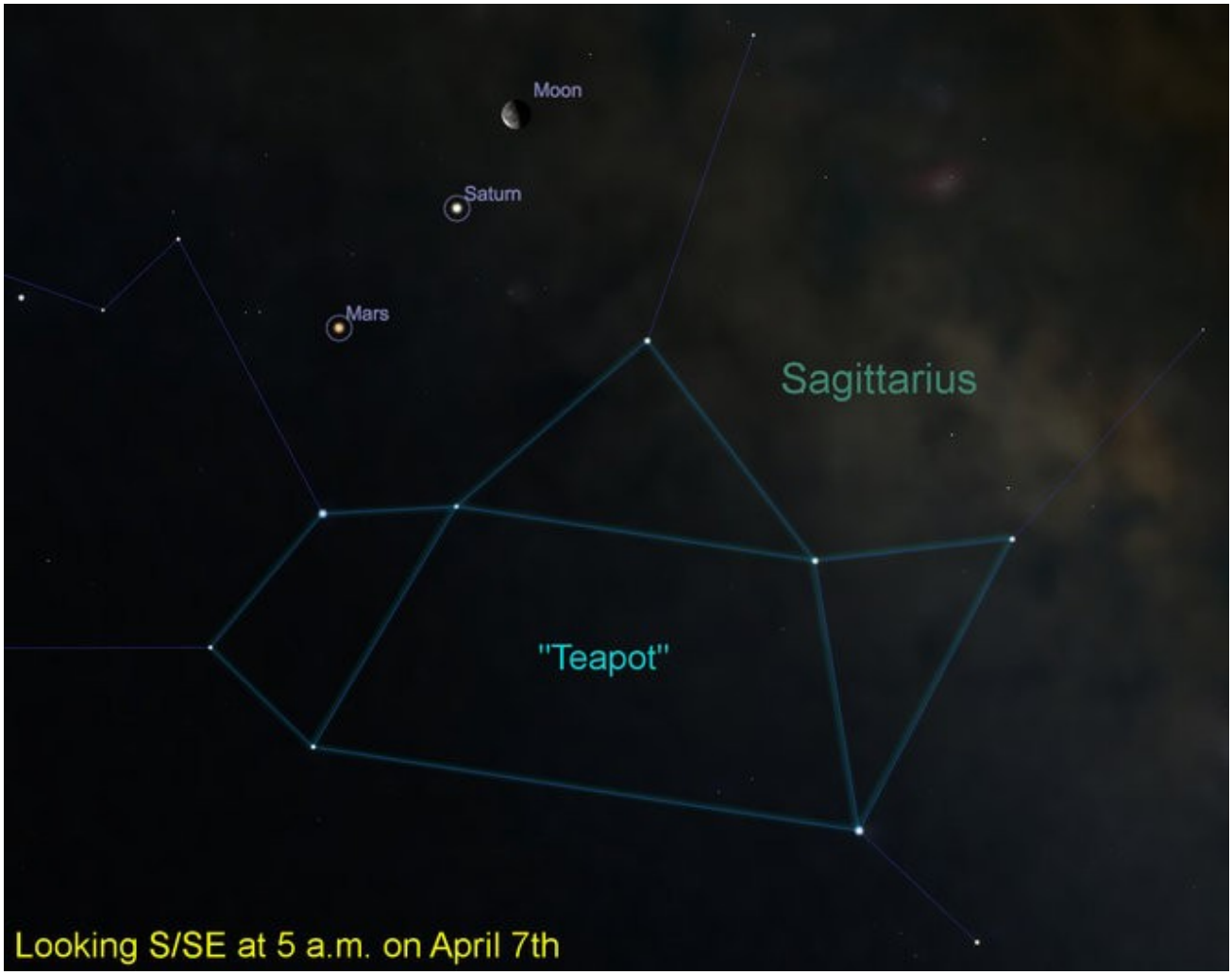
Mercury, Mars, Jupiter and Saturn: Jupiter starts the month rising close to 11 p.m. and finishes the month clearing the horizon at 9 p.m. We'll have Jupiter in our nighttime sky until October, ideal for small telescopes all summer long. As an early marker, the Moon joins Jupiter from above in Libra on April 3rd



The full view of the southern sky on April 3, showing morning pairings of the Moon and Jupiter to the southwest and Mars and Saturn to the southeast.

Those with even poor-quality binoculars are able to see the four bright satellites of Jupiter - known as the "Galilean Moons" for their first observer - and the appearance of Jupiter as a disc of light instead of a simple pinpoint like all stars. Many websites, including the Jupiter's Moons webapp at Sky & Telescope, can provide you with the real-time and future positions of the fast-moving moons for any viewing opportunity you get this and every month.

The best show will be between Mars and Saturn this month. On April 1st, the two are just above the handle of the Sagittarius teapot with Mars on the right. On April 3rd, Mars will be directly below Saturn, an excellent site with or without binoculars. Mars move farther west each night thereafter, buzzing just below distant Pluto on the 26th and 27th. For those still not sure if those two extremely bright pinpoints are Mars and Saturn or not, the Moon provides an obvious marker on the morning of April 7.



The Moon meets Saturn and Mars above the teapot asterism of Sagittarius on April 7. Click for a larger view.

If you scan the area around both planets with binoculars, don't be surprised if you see batches of stars or little fuzzy features that don't come into focus - you're looking into the center - and densest - part of the Milky Way in this direction, where open clusters, globular clusters, and nebulae abound.

Swift Mercury even makes an appearance due east just before 6 a.m. starting in mid-

April. If you intend on using binoculars to find it, be sure to stop your search well before sunrise.

ISS Flyovers

Satellite flyovers are commonplace, with several bright passes easily visible per hour in the nighttime sky, yet a thrill to new observers of all ages. Few flyovers compare in brightness or interest to the International Space Station. The flyovers of the football field-sized craft with its massive solar panel arrays and six current occupants can be predicted to within several seconds and take several minutes to complete.

Those looking to figuratively catch the ISS this month have the first 12 days to do so, after which it is gone from our skies until early May. The ISS is an evening target these first two weeks, with several days of double-flyovers all between 8 and 11 p.m.

ISS Flyovers

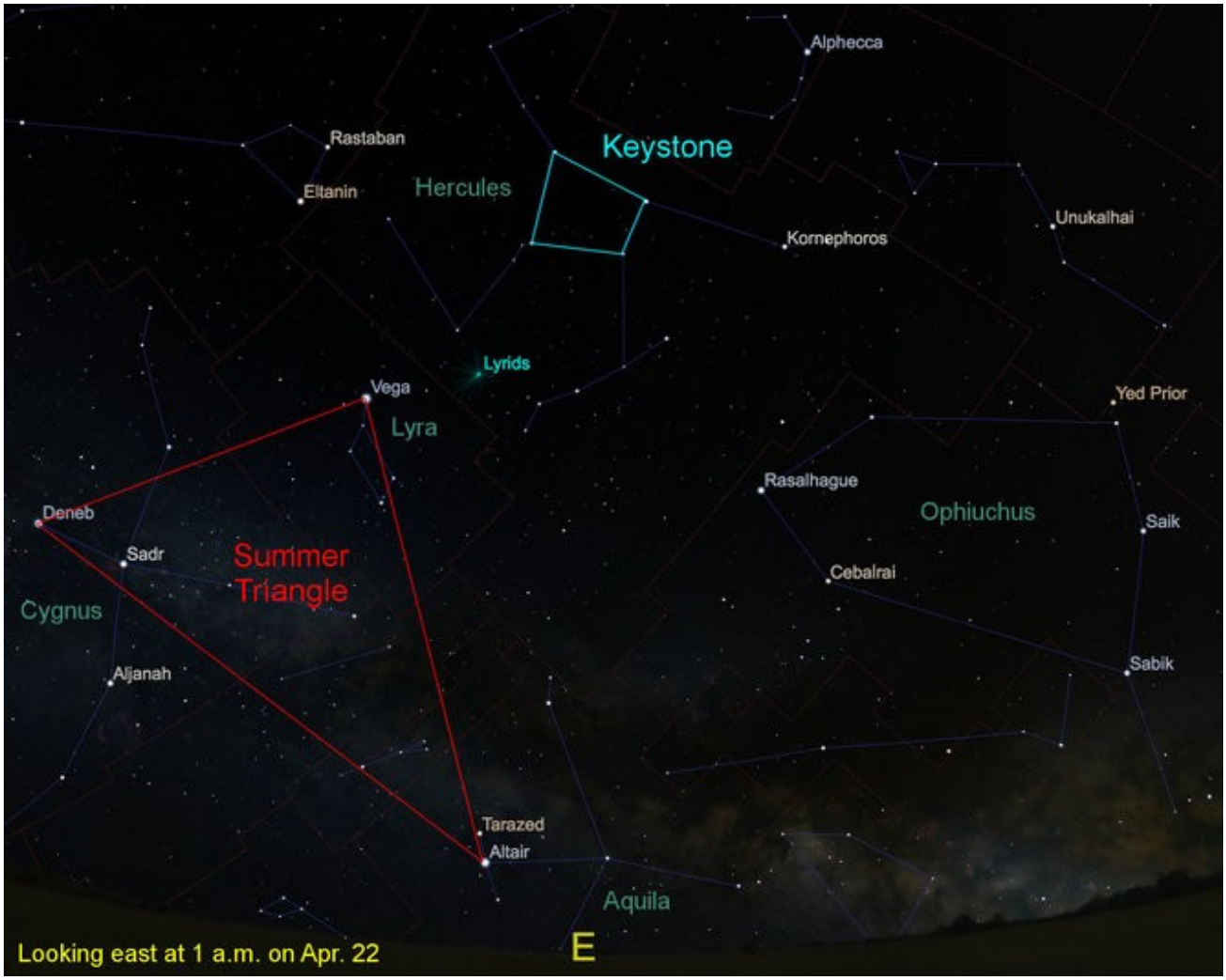
Date	Brightness	Approx. Start	Start Direct.	Approx. End	End Direct.
4/1	moderately	8:24 PM	NW	8:29 PM	NE
4/1	moderately	10:01 PM	NW	10:03 PM	N/NW
4/2	moderately	9:09 PM	NW	9:12 PM	NE
4/3	moderately	8:16 PM	NW	8:21 PM	NE
4/3	moderately	9:53 PM	NW	9:55 PM	N/NW
4/4	very	9:01 PM	NW	9:04 PM	NE
4/4	somewhat	10:37 PM	W/NW	10:37 PM	W/NW
4/5	moderately	8:08 PM	NW	8:13 PM	E/NE
4/5	very	9:45 PM	NW	9:47 PM	N/NW
4/6	very	8:52 PM	NW	8:57 PM	E/NE
4/6	somewhat	10:29 PM	W/NW	10:29 PM	W/NW
4/7	extremely	9:36 PM	W/NW	9:39 PM	W
4/8	extremely	8:44 PM	NW	8:49 PM	E/SE

4/8	somewhat	10:21 PM	W	10:22 PM	W
4/9	very	9:28 PM	W/NW	9:31 PM	S/SW
4/10	extremely	8:36 PM	W/NW	8:41 PM	SE
4/11	moderately	9:21 PM	W/SW	9:24 PM	S/SW
4/12	moderately	8:28 PM	W	8:33 PM	S

Predictions courtesy of heavens-above.com. Times later in the month are subject to shifts - for accurate daily predictions, visit spotthestation.nasa.gov.

Meteor Showers: Lyrids - Active April 16 To April 25, Peaking The Morning Of April 22

Meteor showers occur when the Earth passes through the debris field of a comet or asteroid. As these objects approach the warming sun in their long orbits, they leave tiny bits behind - imagine pebbles popping out the back of a large gravel truck on an increasingly bumpy road. In the case of meteor showers, the brilliant streaks you see are due to particles usually no larger than grains of sand. The Earth plows through the swarm of these tiny particles at up-to 12 miles-per-second. High in the upper atmosphere, they burn up due to friction and ionize the air around them, producing long light trails. We can predict the peak observing nights for a meteor shower because we know when and where in Earth's orbit we'll pass through the same part of the Solar System - this yearly periodicity in meteor activity is what let us identify and name meteor showers well before we ever had evidence of what caused them.



The Lyrid Meteor Shower radiant, roughly between the bright star Vega and the southern elbow of Hercules. Click for a larger view.

The name of each meteor shower is based on the constellation from which the shooting stars appear to radiate - a position in the sky we call the *radiant*. The Lyrid radiant is precariously close to the funny bone of the troubled Hercules, but is still considered within the official borders of Lyra the Harp. Finding the radiant is as easy as finding the bright star Vega, which rises in the northeast just before 9 p.m. on the active nights of the Lyrids. Those awake during the peak 1 a.m. to 5 a.m. window are treated to the complete Summer Triangle - a reminder that the summer constellations are well on their way.

How to observe: The nights leading up to the Lyrid peak will be the best time for viewing this month, as observers on the 23rd and 24th will have to compete with the bright moon to the west. One thing you'll be sure *not* to see this year is the comet producing the Lyrids - Comet Thatcher (C/1861 G1) has a 415-year orbit and was last in our part of the Solar System in 1861, just a bit too early for anyone to even attempt capturing it on a photographic plate.

Learn A Constellation: Gemini

Gemini in the western sky after sunset this month above Orion's Club.

In last month's article, we delved into some of the mathematics that made up the early lunar calendars, noting how much simpler life would be if only the Moon went around the Earth every 30 days and the Earth went around the Sun every 360 days. This month, we go with a full-on mythological possibility.

Venus is bright enough to cast shadows, but is never out for more than a few hours past sunset or a few hours before sunrise - a planet can only be visible all night long if it's beyond our own orbit. Mars, Jupiter, and Saturn are the only three throughout human history that any one of our ancestors could have observed all night long. Of the three, Jupiter is the brightest object, no doubt the reason for its moniker of "king of the planets," its association with Zeus throughout Greek/Roman antiquity, and its attribution to the Babylonian god Marduk long before the Greeks.

Jupiter's orbit is 11.86 years long. That means, nearly every 12 years, Jupiter appears in roughly the same place in the sky from our vantage point on Earth. If one were to believe that the god(s) did not trade in coincidences in the nighttime sky, certainly the 12-year cycle for Jupiter's return to its starting point was something profound - and the division of its path into 12 stations by the Babylonians was simply good bookkeeping to make sure of no confusion when it came to knowing where one's god might be.

Our year-long walk around the zodiac brings us to Gemini the Twins this month. These two have spent at least the last 2,000 years dancing atop Orion's club in their Greek mythological roots, and have had their bright stars Castor and Pollux regarded as celestial twins as far back as Babylonian times. As the eastern-most member of the Winter Hexagon, Pollux and all of Gemini are easy to find and all the more prominent by their placement above Orion and Taurus. Often sketched with hands held, Pollux is all knees-and-feet, while the svelte Castor seems to have had a part of one leg knocked to the other by Orion's club.

M35, off Castor's foot and as wide as the full Moon. The smaller, denser cluster at lower-right is NGC 2158. .

Gemini is best known for four observing targets of astronomical or historical significance. Off the western foot of Castor lies the open cluster M35, observable as a fuzzy patch without binoculars under dark skies. Much closer to home, Aristotle mentioned observing Jupiter occulting, or temporarily covering, a star in Gemini way back in December of 337 B.C.E. Much closer to home and recent history, both Uranus (1781) and Pluto (1930) were discovered within the borders of Gemini.

Dr. Damian Allis is the director of CNY Observers and a NASA Solar System Ambassador. If you know of any other NY astronomy events or clubs to promote, please contact the author.

View Comments