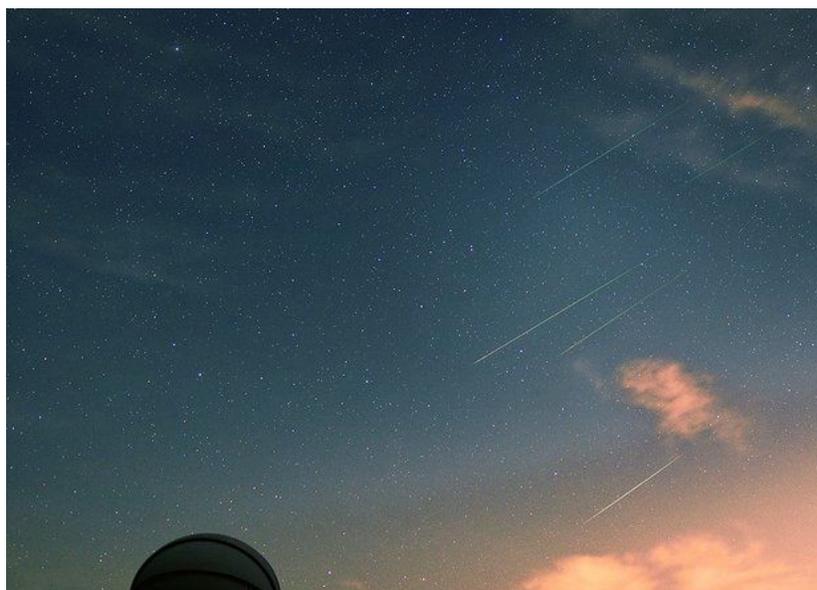


CENTRAL NY OUTDOORS

## Stargazing in Upstate NY in September: Look for more subtle objects on nights

Comment Updated on September 7, 2016 at 9:33 AM  
Posted on September 6, 2016 at 12:57 PM



A composite of three images from Ionia, NY during the Perseid Meteor Shower. *(Image courtesy of Nick Lamendola, member of the Astronomy Section of the Rochester Academy of Science.)*

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By **Special to nyup.com**, [feedback@nyup.com](mailto:feedback@nyup.com)

By **Damian Allis | Contributing writer**

Syracuse, N.Y. — August was an impressive month for local observational astronomers. We were treated to a conjunction, pleasant early-evening alignments of the Moon and several planets, a number of bright International flyovers, and the always predictable and generally (but not always) impressive Perseid Meteor Shower - all this backdrop of our Milky Way Galaxy, which stands tall and at its brightest to our South near midnight during the

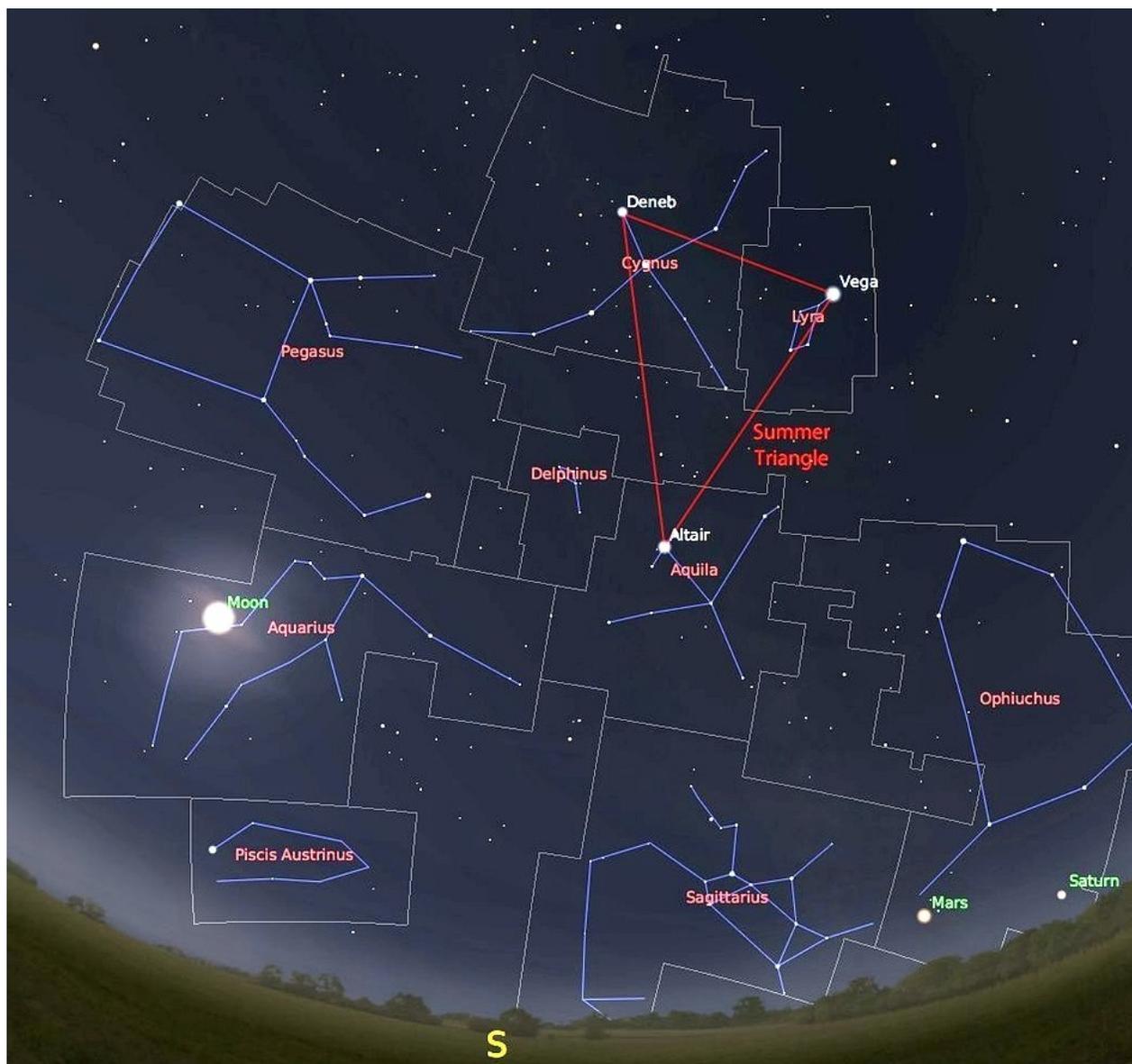
While the night sky is always impressive, September will not see the flurry of planetary activity August brought impressive meteor showers to stay awake for, and even our pre-midnight ISS flyovers are on hiatus until the v month. With the start of the school year upon us, nature has given young observers a chance to reset their clocks mornings, and given many astronomy clubs a chance to refresh their knowledge of the autumn skies before school year outreach activities.

On the bright side (no pun intended), it's getting darker earlier, meaning the hours of productive observing are longer. This makes September a great time for some to head out to a dark patch with a star chart, binoculars, and a red flashlight. We're going to start introducing some of the more subtle observables with this month's guide in an attempt to take you into the dark, wide open space.

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## Your First Steps Outside



The view looking south at 10 p.m. on Sept. 15 (except for the changing Moon position, this mid month view is accurate for all of September). (Image made with Stellarium. )

Items and events listed below assume you're outside and observing between 9 p.m. and midnight throughout New York state. The longer you're outside and away from indoor or bright lights, the better your dark adaptation will be. Use your smartphone, find a red light app or piece of red acetate, else set your brightness as low as possible.

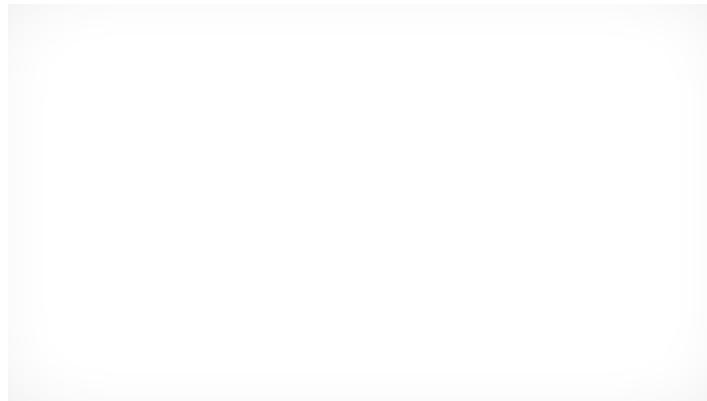
Jupiter is effectively off our observing list with its pre-sunset setting below the western horizon, and won't be visible in our pre-midnight skies until early February, when it pops up in our eastern sky. With luck, Jupiter will still stay propped up, as NASA's Juno probe continues to map and measure the Solar System's largest planet.

Jupiter's late-August companion Venus is very low on the horizon at sunset for the first part of this month, also difficult to catch without a low tree line. If you see a very bright pinpoint of light low on the southwest-west horizon this month, you can assume with high confidence that it's Venus.

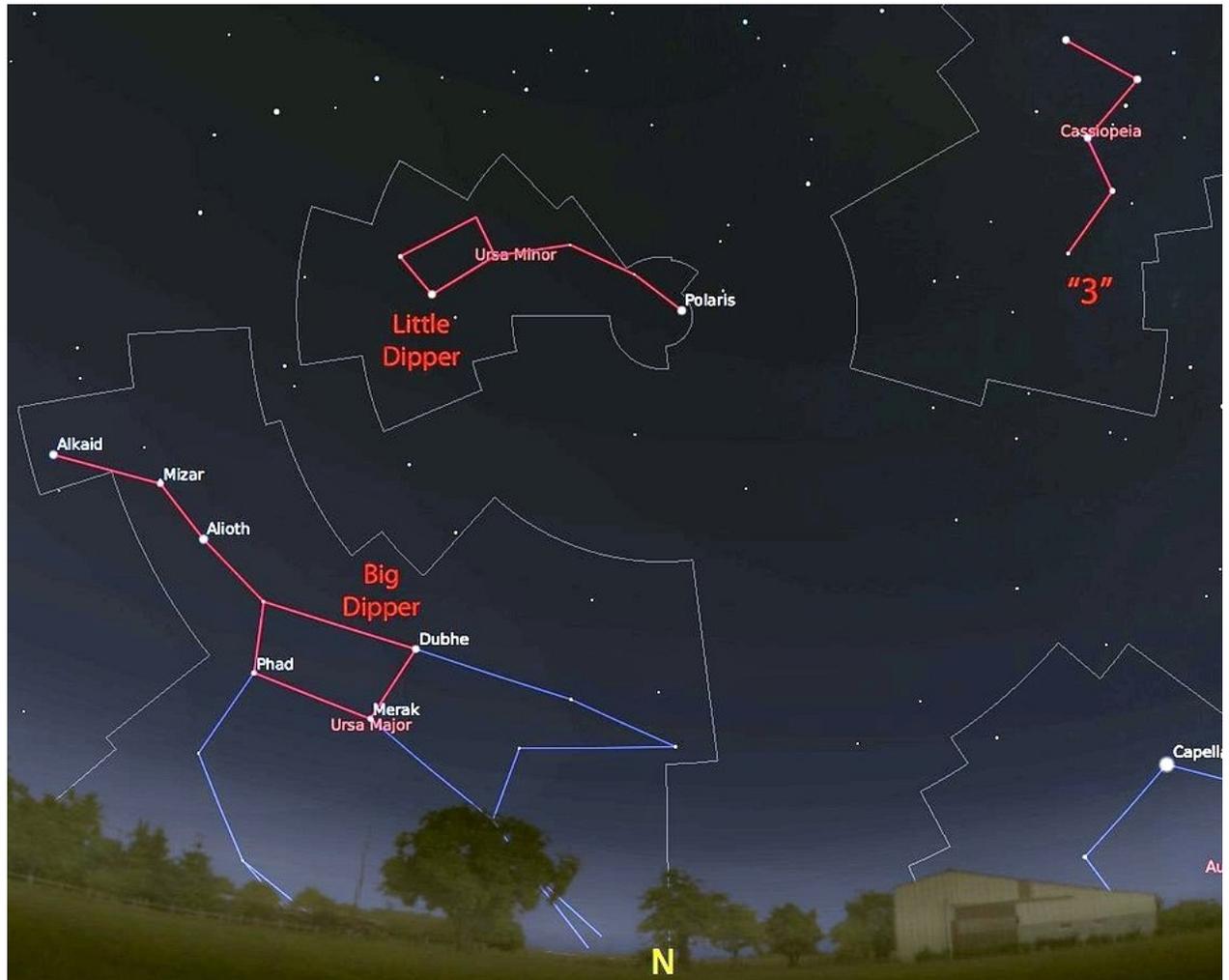
Saturn remains prominent, but sets below the horizon by 10 p.m. just after mid-month, making Mars our primary observing target for all of September. Mars will fly through the densest part of the Milky Way this month and the first half of October.

The Summer Triangle, our highlight in the [August observing article](#), is still prominent in the nighttime sky. As you get to spend less time straining our necks to look straight up, and can now use a pair of binoculars and scan horizontally to look for interesting objects within and around the triangle. Before we begin to explore the northern sky in more articles, we're going to spend a little more time in the Summer Triangle itself, as it is a great opportunity to get some good and easy-to-find deep sky object observing in with only a decent pair of binoculars.

ADVERTISING



## The Big Dipper



The view looking north at 10 p.m. on September 15, highlighting the two dippers, brightest named stars, and Cassiopeia. ( Image made with Stellarium)

The Big Dipper is low on the northern horizon during September observing hours. Its handle extends out to the north and rests near-flat and nearly due-north, balanced as if its bowl were filled to the brim with the last small scoop of seasonings from the Little Dipper, which itself sits directly above the Big Dipper during our observing window. If you look to the northeast, you may see a prominent and jagged "3" in the sky. This constellation, Cassiopeia, will be a topic in an upcoming article, as we hone our deep sky observing skills to find our largest galactic neighbor.

### ISS And Other Bright Flyers

Satellite flyovers are commonplace, with several bright passes per hour, yet a thrill to new observers of all ages. The flyovers of the football-sized craft with solar panel arrays can be predicted to within several seconds and take several minutes to complete. September flyovers during the standard observing window (sunset to midnight) are off the table until month's end. That said, if you're an \*early\* person, there are many flyovers throughout September, with the 10 brightest predictions listed below. Simply arrive a few minutes before the start time, orient yourself, and look for what will at first seem like a distant plane.

Predictions courtesy of [heavens-above.com](http://heavens-above.com)

### Satellite fly-bys

Date	Brightness	Approx. Start	Start Direction	Approx. End	End D
9/6	very	5:26 AM	S/SW	5:31 AM	E/NE
9/8	extremely	5:18 AM	W/SW	5:22 AM	NE
9/9	very	4:27 AM	E	4:30 AM	E/NE
9/10	very	5:10 AM	W/NW	5:14 AM	NE
9/18	very	6:11 AM	NW	6:17 AM	E
9/20	extremely	6:02 AM	W/NW	6:08 AM	E/SE
9/21	very	5:11 AM	N/NW	5:15 AM	E/SE
9/22	very	5:54 AM	W/NW	5:59 AM	S/SE
9/23	extremely	5:04 AM	SE	5:07 AM	SE
9/24	moderately	5:47 AM	SW	5:49 AM	S
9/27	moderately	7:48 PM	S/SE	7:48 PM	SE
9/28	very	8:29 PM	SW	8:31 PM	S
9/29	very	7:37 PM	S/SW	7:41 PM	E
9/29	moderately	9:13 PM	W	9:14 PM	W
9/30	extremely	8:20 PM	W/SW	8:24 PM	NE

### The Moon

<b>New:</b>	<b>First Quarter:</b>	<b>Full:</b>	<b>Third Quarter:</b>
Sept. 1	Sept. 9	Sept. 16	Sept. 23

The moon's increasing brightness as full moon approaches washes out fainter stars, random meteors, and other objects - this is bad for most observing, but excellent for new observers, as only the brightest stars (those that mark the constellations) and planets remain visible for your easy identification. If you've never tried it, the moon is a wonderful object.

Many astronomy clubs worldwide are now planning their events for the International Observe The Moon Night on Saturday night, October 8th. If the skies remain clear, the Technology Alliance of Central New York ([tacny.org](http://tacny.org)) and the Central New York Observing Society ([cnyo.org](http://cnyo.org)) will be hosting a special lecture and observing session at The MOST in Armory Square, downtown Syracuse.

### Viewing the planets

We've one prominent inferior planet (one between us and the Sun) and one superior planet (one beyond Earth) this month, and both are bright and to our south in early September. Those with some observing experience and GOTO telescopes may even want to try for the dwarf planet Ceres or the gas giants Neptune and Uranus.

**Saturn:** Saturn remains at the western border of the constellation Ophiuchus and will slowly make its way eastward into Sagittarius in 2018. Mars will be drifting away from Saturn this month, with Saturn setting earlier and earlier as the month progresses. Saturn will be below the horizon around 10 p.m. at the end of September, but observers will still be able to catch it in the early evening sky until the end of October. In good binoculars, Saturn and its rings appear as a small white dot. With a pair of binoculars or a small telescope, you should be able to distinguish between the planet and its rings, and maybe even the Cassini Division within the rings.

**Mars:** Mars remains unmissable this month, glowing bright red-orange in the south-southwest sky. Mars will be in the constellation Scorpius on September 1st, then will join Saturn within the borders that define the constellation Sagittarius on the night of September 22nd. The border between Ophiuchus and Sagittarius is a busy one - just two nights later, Mars will be equidistant between the galactic center, which lies just on the Sagittarius side, and the Lagoon Nebula and Trifid Nebula interstellar gas cloud roughly 5,000 light years away. During the final week of September, Mars will move ever closer to the Lagoon Nebula while crossing into the galactic thicket - a region of interstellar dust between us and the core of the galaxy - some of the region around the galactic core.

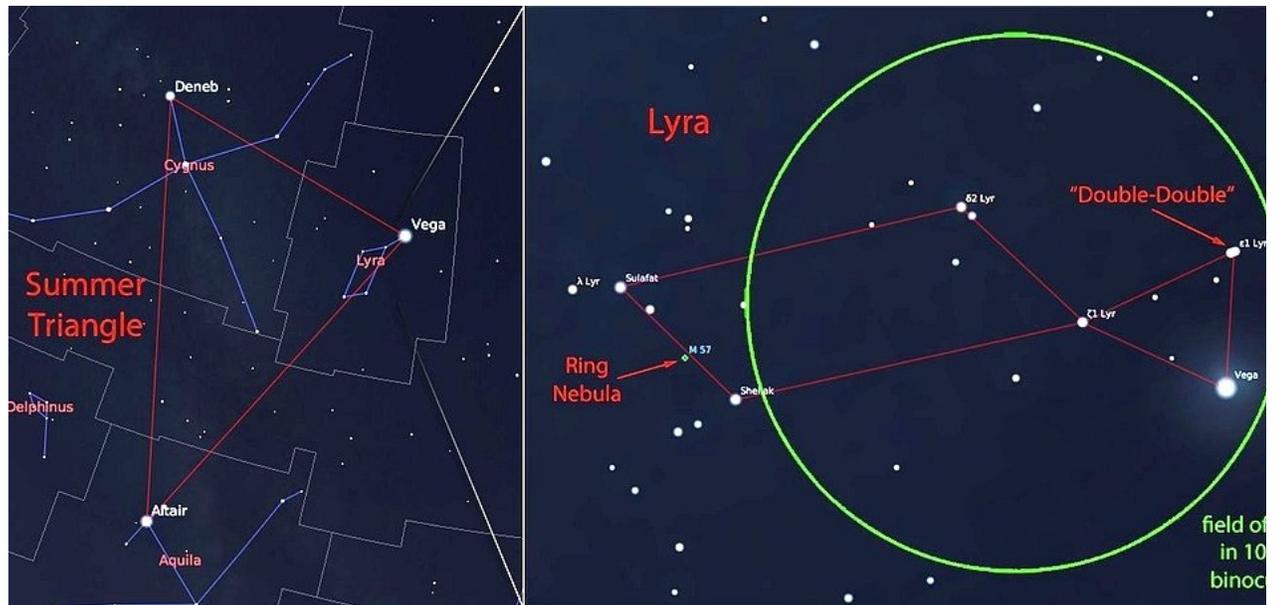


Use Mars to spot the Lagoon Nebula and Trifid Nebula in late-September. The green circles mark the field of view for 10x50 binoculars. ( Image made with Stellarium)

If you've spent many a cloudy night staring at images from the Hubble Space Telescope but have never seen a pair of binoculars with your own two eyes, Mars will avail you a golden - well, orange-reddish - opportunity this month to find two bright objects in the same field of view. On the night of September 19th, anyone with a pair of 10x50 binoculars will be able to put Mars, the Lagoon Nebula, and the Trifid Nebula into the same field of view. If you've a pair of 7x35's, you can start a day earlier - with a pair of 12x50's, subtract a day from either side of the range. From September 19th to October 6th, Mars will move close to those two nebula, hitting close to the Lagoon Nebula on October 6th.

below the Lagoon Nebula on the 28th-29th. If you're a member of any astronomy or astrophotography group, expect some fantastic images of this grouping in early October. The series of images above show you where to respect to the other two in your binoculars. For a number of reasons, ranging from the relative brightness of M sensitivity of our own vision to faint objects under low-light conditions, I will warn in advance that the Lagoon will not be particularly impressive sights. You will, hopefully, be able to identify two dim, fuzzy splotches (I can't astronomical hate email being typed) in the correct locations. With luck, seeing these two for the first time will be a local astronomy club during one of their public viewing sessions - the Lagoon Nebula in particular is an behold in a quality telescope.

### Learn A Constellation: Lyra The Harp



Finding Lyra the Harp is easy once you've found the Summer Triangle. In 10x50 binoculars, splitting the double-double into two bright stars should be easy, while finding the faint Ring Nebula may be a challenge for new observers. (Image made with Stellarium)

When items of astronomical interest are only as large as the very tip of a pen when held at arm's length, even can hold a wealth of observables. Lyra the Harp is a summertime favorite among amateur astronomers because number of impressive sights in a small, easy to find package.

The search starts easily - once you've found the Summer Triangle, tipped high and slightly to the west, the bright star at the west-most point. This star, Vega, is our marker for Lyra, and is bright enough to be visible very soon after sunset. The constellation is equally easy to find - Vega is the brightest star in a small and bright triangle, while the star at the south marks the corner of a perfectly placed parallelogram oriented to the south. For the constellation, that's all.

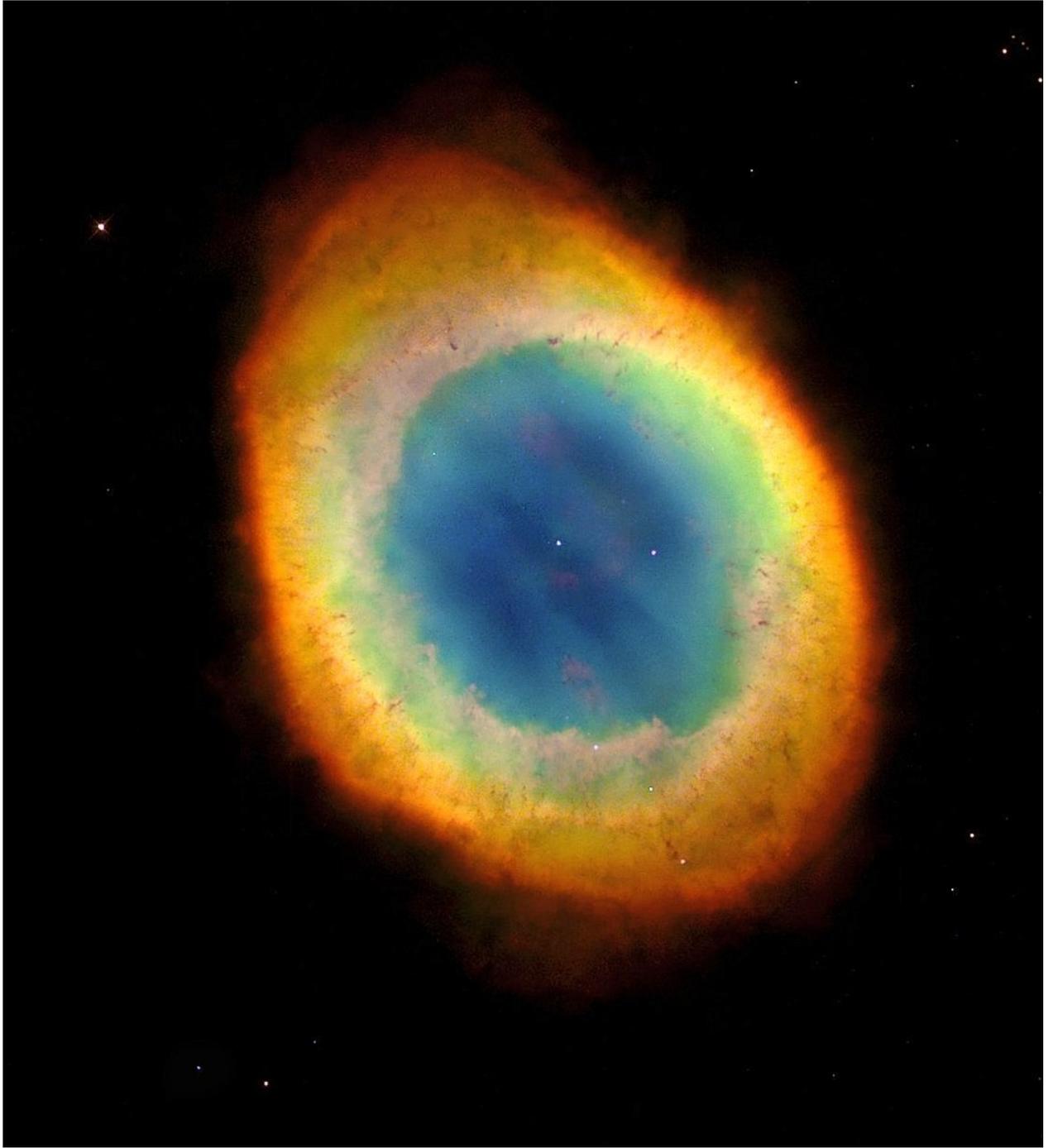
With any decent pair of low-power binoculars or even a small telescope, the second-brightest star of the constellation separates into two stars - one of the more famous double stars in the nighttime sky. Under excellent skies, you can see this single star as a closely-spaced pair without any magnification. With a high power telescope, observe each of these two stars is itself a double star. Observers even refer to this astronomical eye candy as the "Double Double".

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The Double-Double is a busy piece of celestial real estate. The two pairs of stars are gravitationally bound to their positions appear to change (albeit slowly) over time as the two pairs orbit one another. The whole complex is 160 light years from Earth, just over 6 times the distance between ourselves and bright Vega.

As a test of your vision and your binoculars, I now direct you to the southmost part of the parallelogram. Through binoculars you may be able to discern a dim, slightly fuzzy star almost exactly between the two corner stars. In a telescope you may even be able to discern a shape - it should appear as an out-of-focus doughnut.

This otherwise unassuming object is referred to as the Ring Nebula, an object you might also see labeled as M57 (we'll cover the meaning of "Messier" in a future article). The reason for the "ring" shape is one of timing - as the Ring Nebula passed between a Red Giant stage and final White Dwarf stage, a ball of ionized gas was ejected in all directions. Now imagine the ionized gas as being the rubber of a balloon. As you inflate the balloon - our proxy for the star - it starts as a mostly spherical ball of rubber you can't see through. As you continue to inflate it eventually you can begin to see through the middle of the balloon but not the edges - the balloon is being stretched symmetrically, but there's more rubber to try to look through around the edge. Soon after the ionized gas begins to expand from the central star, the "Ring Nebula" would have looked like the "Ball Nebula." Right now, we see a faint ring of gas. Large telescopes and clear skies can even reveal the central white dwarf star in the middle. Eventually, the gas will thin out and the nebula will all but disappear to observers on Earth.



The Ring Nebula as observed using the Hubble Space Telescope. (AURA/STScI/NASA)

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What makes the Ring Nebula a special sight to some observers is that the star that formed the Ring Nebula w  
own Sun, giving we observers an opportunity to see what our own Sun and surroundings may look like in 5 bil  
Sun is expected to undergo the same dramatic transition into a Red Giant before collapsing into a white dwar  
shell of gas out in all directions.

*Damian Allis is the director of [CNY Observers](#) and a NASA Solar System Ambassador.*

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