Snake River Skies

The Monthly Newsletter of the Magic Valley Astronomical Society. September 2024

Membership Meeting
Sept. 14th at the Herrett Center
CSI main campus at 7:00pm

Centennial Observatory
See Inside for Details

Faulkner Planetarium
See Inside for Details

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Dr. Jay Hartwell, Vice President
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Magic Valley Astronomical Society is a member of the Astronomical League

M-51 imaged by
Rick Widmer & Ken Thomason
Herrett Telescope - Shotwell Camera

Message from the Club Vice President

Looking forward to cooler weather and less smoke so we can have some better skies to get back to some nighttime viewing. Hopefully we will get to have a star party either in September or October. Our meeting will be on the 14th of September at 7:00 pm. Our presentation will be by Jim Tubbs on title "Our nearest stellar neighbors."

- **September 18** - **Full Moon, Supermoon.** The Moon will be located on the opposite side of the Earth as the Sun and its face will be will fully illuminated. This phase occurs at 02:36 UTC. This full moon was known by early Native American tribes as the Corn Moon because the corn is harvested around this time of year. This moon is also known as the Harvest Moon. The Harvest Moon is the full moon that occurs closest to the September equinox each year. This is also the first of three supermoons for 2024. The Moon will be near its closest approach to the Earth and may look slightly larger and brighter than usual.

- **September 18** - **Partial Lunar Eclipse.** A partial lunar eclipse occurs when the Moon passes through the Earth's partial shadow, or penumbra, and only a portion of it passes through the darkest shadow, or umbra. During this type of eclipse a part of the Moon will darken as it moves through the Earth's shadow. The eclipse will be visible throughout most of North America, Mexico, Central America, South America, the Atlantic Ocean, and most of Europe and Africa.

- **September 20** - **Neptune at Opposition.** The blue giant planet will be at its closest approach to Earth and its face will be fully illuminated by the Sun. It will be brighter than any other time of the year and will be visible all night long. This is the best time to view and photograph Neptune. Due to its extreme distance from Earth, it will only appear as a tiny blue dot in all but the most powerful telescopes.

Visit our Website
www.mvastro.org

Moon Phases for September 2024

Twin Falls, Idaho, United States

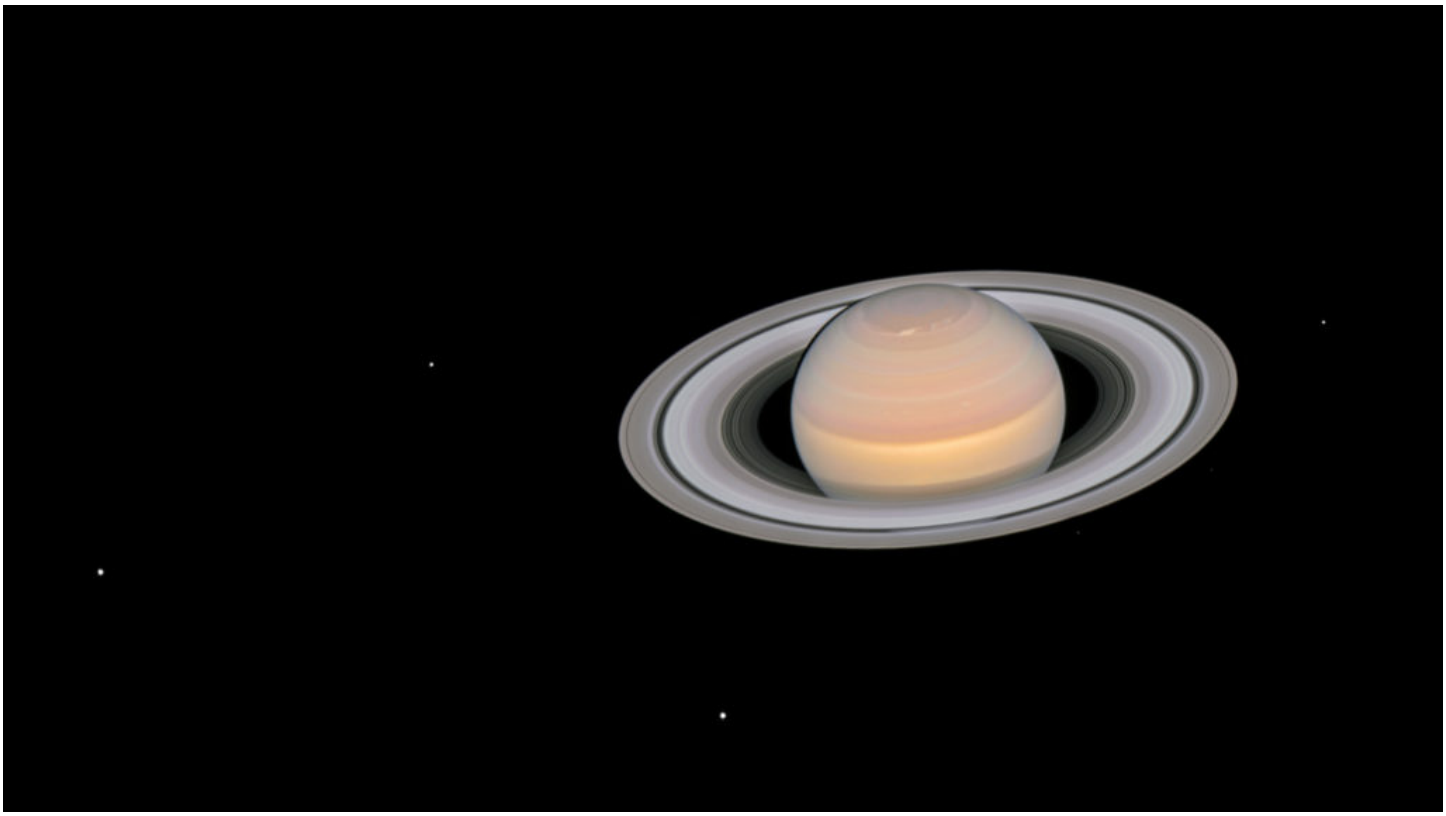
September 2024

No.	Su	Mo	Tu	We	Th	Fr	Sa
36	1  1% Waning Crescent	2  New Moon 07:56 pm	3  1% Waxing Crescent	4  3% Waxing Crescent	5  7% Waxing Crescent	6  13% Waxing Crescent	7  20% Waxing Crescent
37	8  28% Waxing Crescent	9  38% Waxing Crescent	10  47% Waxing Crescent	11  First Quarter 12:06 am	12  68% Waxing Gibbous	13  78% Waxing Gibbous	14  86% Waxing Gibbous
38	15  93% Waxing Gibbous	16  98% Waxing Gibbous	17  Full Moon 08:36 pm	18  98% Waning Gibbous	19  94% Waning Gibbous	20  87% Waning Gibbous	21  78% Waning Gibbous
39	22  68% Waning Gibbous	23  58% Waning Gibbous	24  Last Quarter 12:52 pm	25  37% Waning Crescent	26  27% Waning Crescent	27  19% Waning Crescent	28  12% Waning Crescent
40	29  6% Waning Crescent	30  2% Waning Crescent					

https://www.mooninfo.org/moon-calendar/september-2024.html | Moon Names: The Old Farmer's Almanac, September 2024

The **Harvest Moon** is the full Moon that occurs closest to the **autumnal equinox**. In 2024, this occurs in September.

The Sky This Month – September 2024



This composite image, taken by the NASA/ESA Hubble Space Telescope on 6 June 2018, shows the ringed planet Saturn with six of its 62 known moons.

September marks a change of seasons as the Sun crosses the celestial equator heading south and the Full Harvest Moon arrives. All five bright planets make an appearance this month. Saturn and Neptune reach opposition, Mercury makes its best appearance in the morning sky for 2024, and Mars lies among the bright stars of Gemini as it brightens and grows bigger. And though it's not visible until at least month's end, the promising Comet C/2023 (A3) Tshuchinshan-ATLAS reaches perihelion on its way (hopefully) to a great show in October. Here's what to see in the night sky this month…

1-15 September. Over the next two weeks, northern-hemisphere observers with very dark sky can see the zodiacal light in the east about 90-120 minutes before sunrise. This whitish wedge of light appears to thrust upward from the horizon. The zodiacal light is simply sunlight reflected off tiny dust particles in the inner solar system.

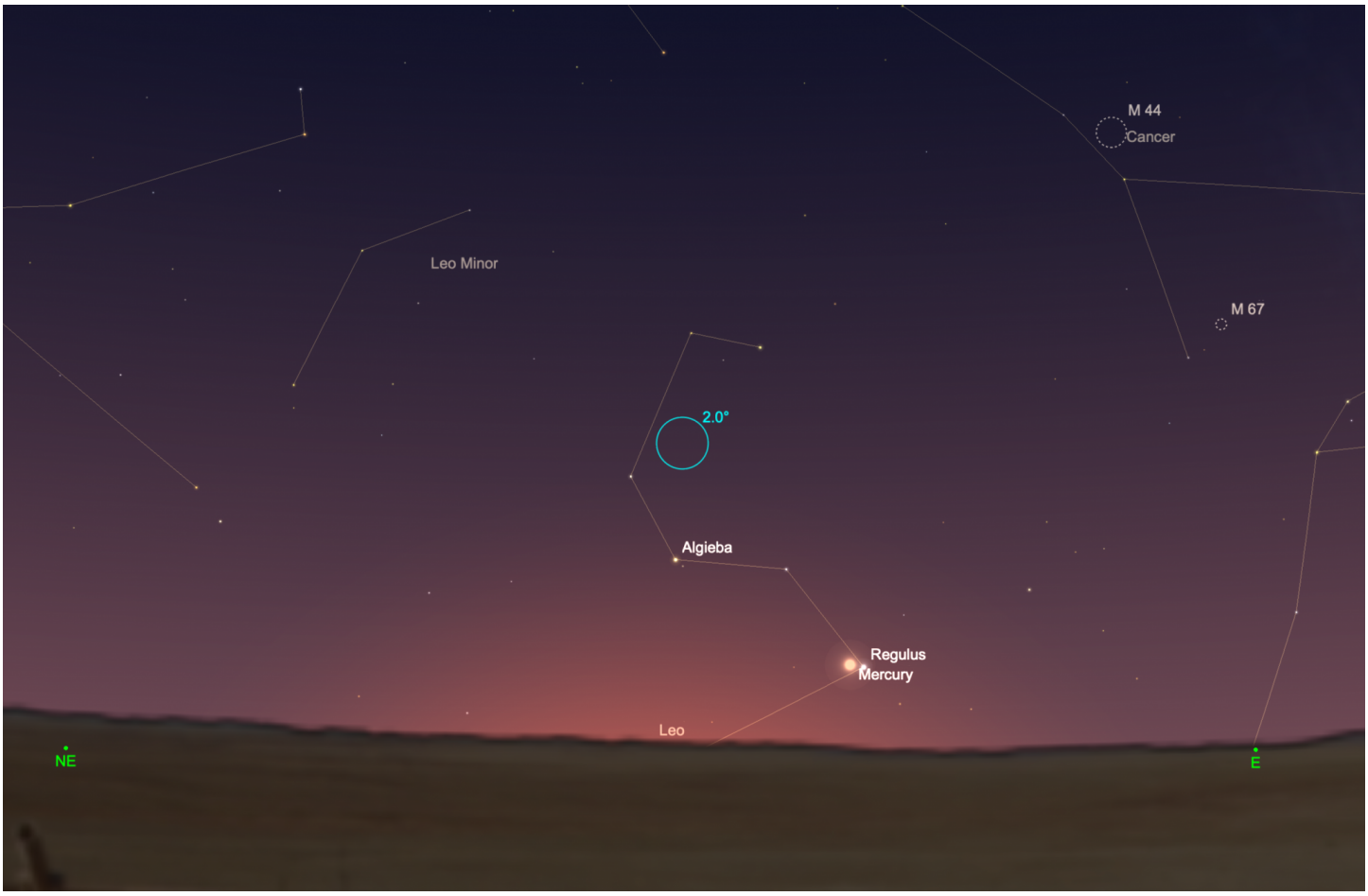
3 Sept. New Moon, 01:56 UT

5 Sept. A slender crescent Moon emerges in the evening sky and tonight lies less than 7º from Venus in the west-southwest after sunset. Mars lies a little less than one degree south of the star cluster M35 in Gemini. Grab a pair of binoculars or a little telescope to capture both in the same field of view high in the eastern morning sky before dawn.

Mercury reaches greatest western elongation 18º from the Sun. It appears low in the east-northeast morning twilight sky for the first three weeks of September and makes its best morning apparition for northern observers in 2024. The planet reaches an impressive brightness of magnitude -1.0 on Sept. 13.

6 Sept. Spica, Virgo's brightest star, lies just a few degrees from a fattening crescent Moon in the southwestern evening sky.

7-8 Sept. Saturn reaches opposition and rises in the east as the Sun sets in the west. Like last year, the planet lies in the constellation Aquarius as it makes its closest approach to Earth in 2024. The planet is slowly moving northwards and now lies about 7º south of the celestial equator so it's well positioned for all observers to get good views of its magnificent ring system. It's worth the effort: Saturn is one of the most beautiful objects to observe in a telescope. At opposition, its disk spans about 19" and its rings about 44". The rings are tilted just 3º to our point of view this year which makes for a unique view. Our Saturn Observing Guide will help you get a good view of this lovely celestial object and understand what to look for. Saturn remains visible through the rest of the year.



Mercury and Regulus less than half a degree apart rise in the eastern sky on the morning of Sept. 9, 2024.

9 Sept. Look to the east-northeast for Regulus and Mercury rising together in the morning twilight sky. The pair are separated by about half a degree.

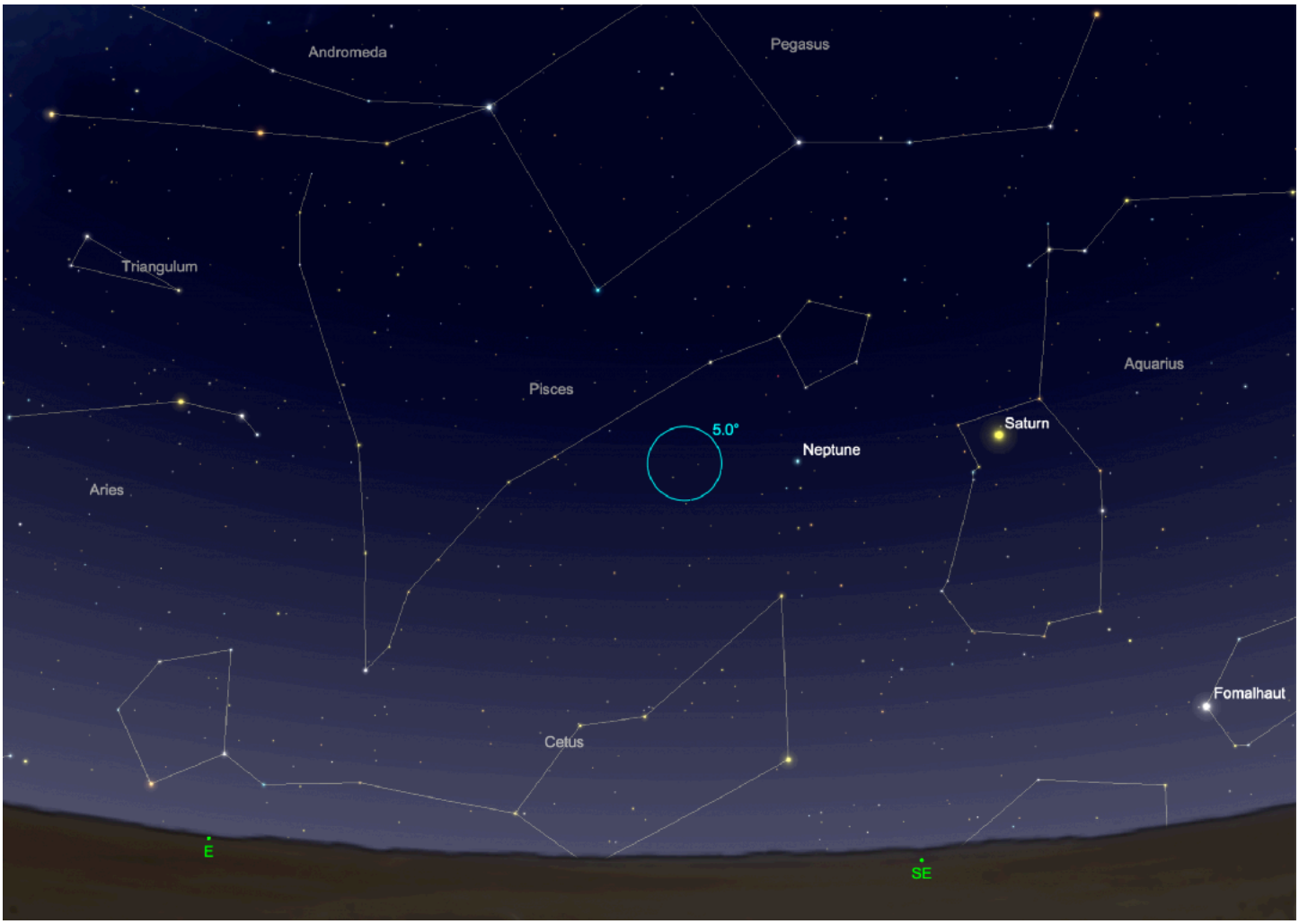
10 Sept. As northern summer winds down, the bright star Antares flickers bright in the southwestern sky as darkness falls. This evening a half-lit Moon hovers about 6 degrees east of the red supergiant.

11 Sept. First Quarter Moon, 06:06 UT

17 Sept. A full Moon lies about 2 degrees south of Saturn in the southern sky. Observers in western North America, Hawaii, and northern Australia will see the Moon occult Saturn in the early morning hours (early evening in Australia). Find timing of the occultation for dozens of locations at this link.

17-18 Sept. A modest partial lunar eclipse is visible in most of the Americas. Greatest eclipse occurs at 02:44 UT on Sept. 18th (that's 10:44 p.m. EDT, for example). The northern part of the Moon passes through the umbra so a slight darkening will be visible.

18 Sept. Full Moon, 02:34 UT



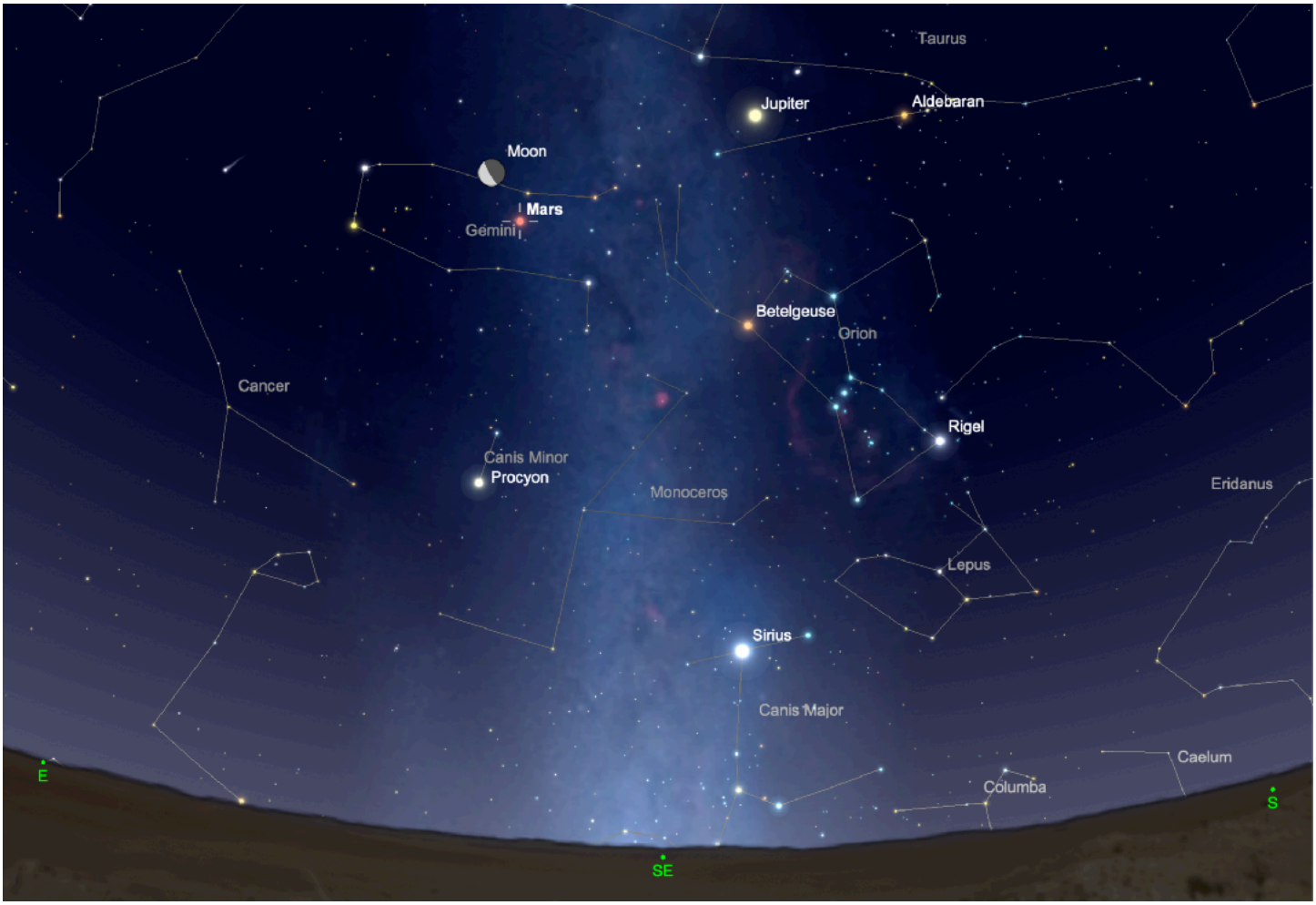
Neptune at opposition south of the Circlet of Pisces on Sept. 21, 2024,

21 Sept. Neptune reaches opposition near the 'Circlet of Pisces', about 5 degrees south-southeast of the star Lambda Piscium. The planet itself, which lies today at a distance of 4.3 billion kilometers, shines at magnitude 7.8 and spans a diameter of just 2.4". You can spot the planet in binoculars, but you need a telescope at about 150x or more to reveal its pale blue-green disk. **Neptune** at opposition south of the Circlet of Pisces

22 Sept. Taurus rises higher in the early-morning sky and today a waning gibbous Moon passes across the Pleiades star cluster.

22 Sept. The Sun crosses the celestial equator moving south at 12:44 UT. This marks the beginning of autumn in the northern hemisphere and spring in the southern hemisphere.

24 Sept. Last Quarter Moon, 18:50 UT, (the 'Harvest Moon"').
Comet C/2023 (A3) Tshuchinshan-ATLAS reaches perihelion about 0.39 AU from the Sun. Later in the month, the comet emerges into the morning sky for southern hemisphere observers and in October into the evening sky for northern hemisphere observers. Here's a guide to help you see this possibly spectacular comet for yourself.



Mars and the Moon in Gemini on the morning of Sept. 25, 2024.

25 Sept. Look eastward well before sunrise to spot Mars rising 5 degrees south of a thick lunar crescent. Wedged between the knees of Gemini, Mars shines at magnitude +0.5 and shows a disk about 7.3” wide. It may tantalize telescopic observers with a few surface details on nights and mornings of rock-solid seeing.

Trivia: When was the planet Uranus discovered and by whom? Anser following Phil Harrington’s Cosmic Challenge.

September's Night Sky Notes: Marvelous Moons

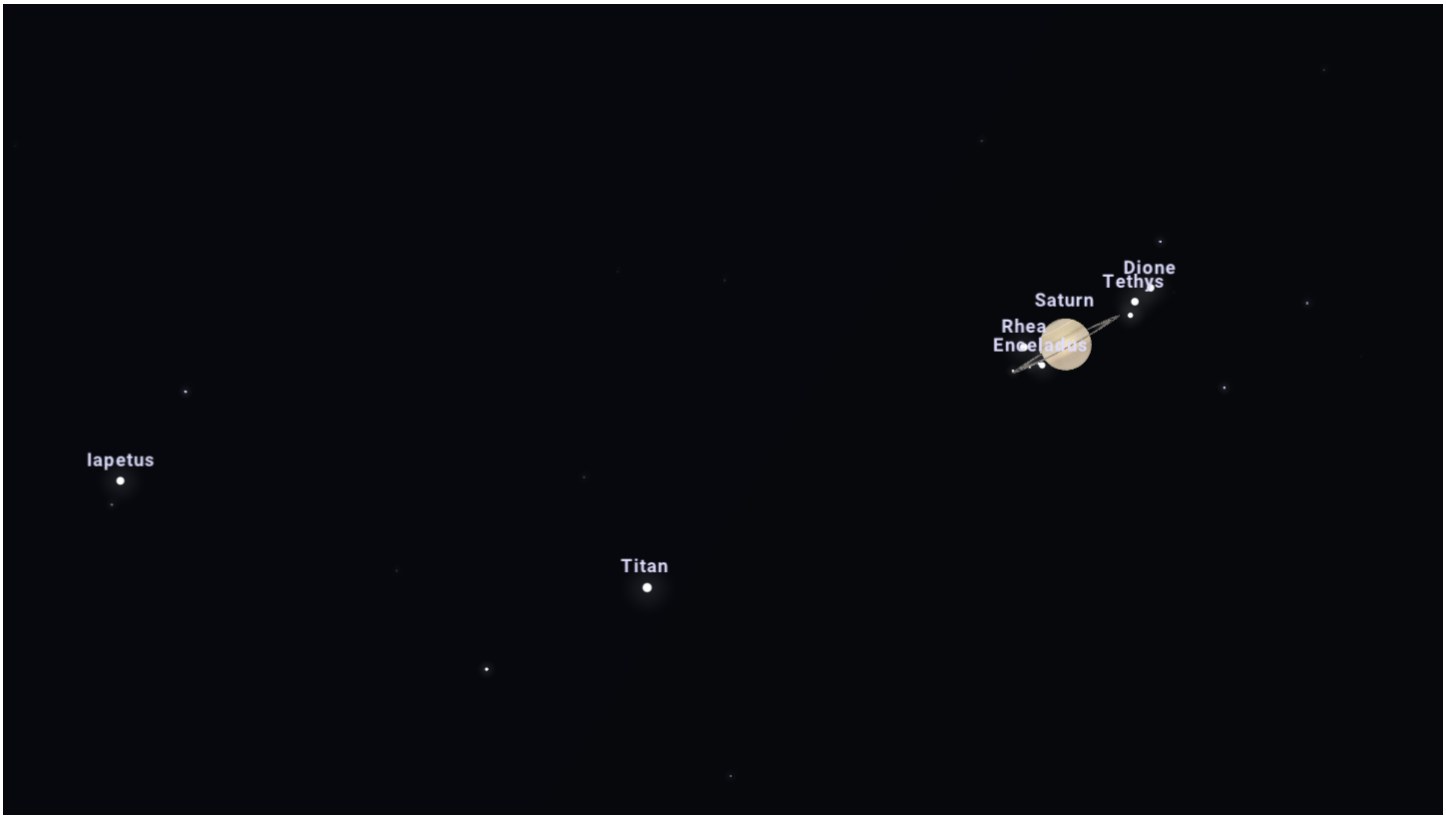
This article is distributed by the NASA Night Sky Network, a coalition of hundreds of astronomy clubs across the US dedicated to astronomy outreach. Visit nightsky.jpl.nasa.gov to find local clubs, events, stargazing info and more.

by Kat Troche of the Astronomical Society of the Pacific

September brings the gas giants Jupiter and Saturn back into view, along with their satellites. And while we organize celebrations to observe our own Moon this month, be sure to grab a telescope or binoculars to see other moons within our Solar System! We recommend observing these moons (and planets!) when they are at their highest in the night sky, to get the best possible unobstructed views.

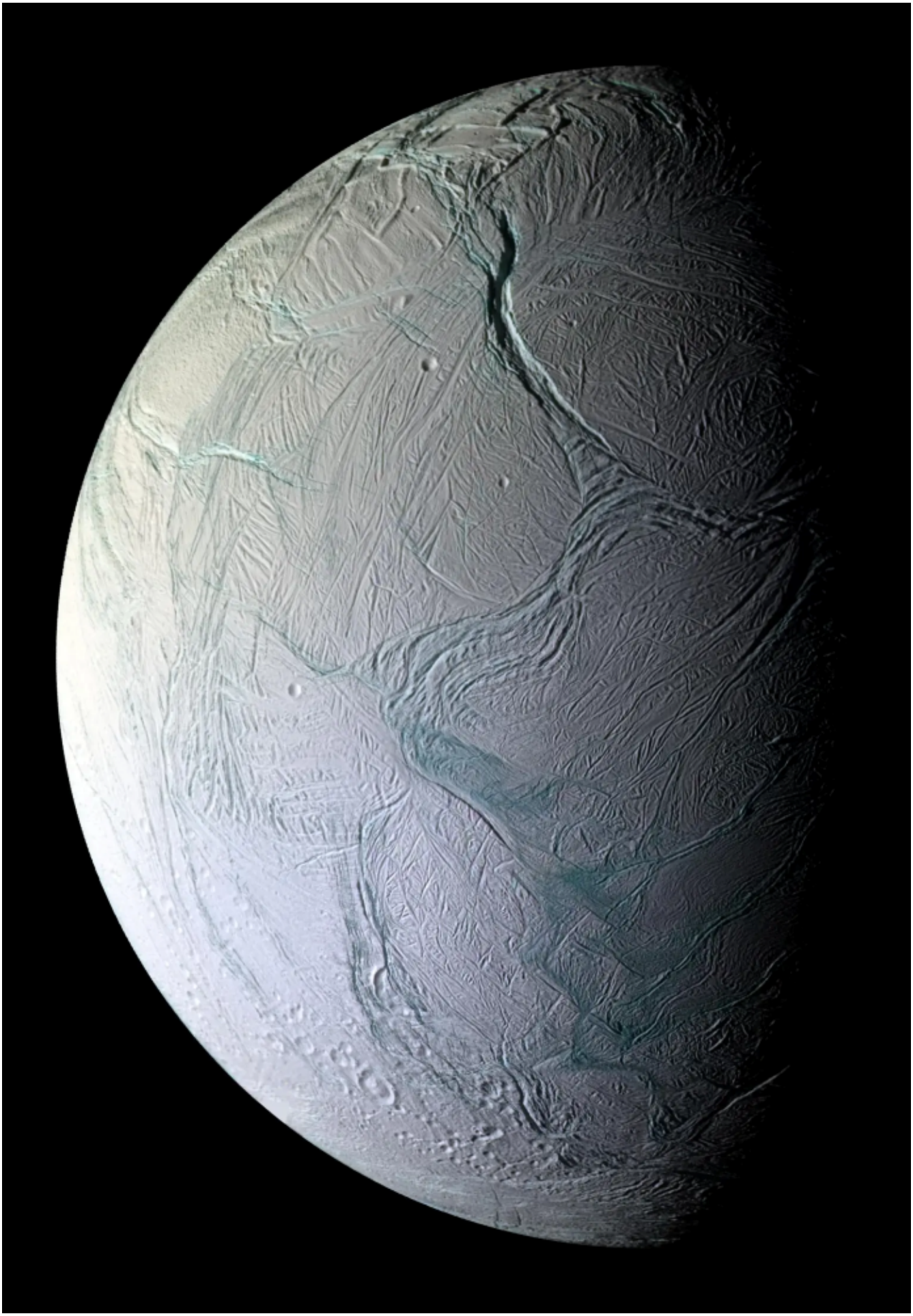
The More the Merrier

As of September 2024, the ringed planet Saturn has 146 identified moons in its orbit. These celestial bodies range in size; the smallest being a few hundred feet across, to Titan, the second largest moon in our solar system.



The Saturnian system along with various moons around the planet Saturn: Iapetus, Titan, Enceladus, Rhea, Tethys, and Dione. Credit: Stellarium Web

Even at nearly 900 million miles away, Titan can be easily spotted next to Saturn with a 4-inch telescope, under urban and suburban skies, due to its sheer size. With an atmosphere of mostly nitrogen with traces of hydrogen and methane, Titan was briefly explored in 2005 with the Huygens probe as part of the Cassini-Huygens mission, providing more information about the surface of Titan. NASA's mission Dragonfly is set to explore the surface of Titan in the 2030s.



This mosaic of Saturn's moon Enceladus was created with images captured by NASA's Cassini spacecraft on Oct. 9, 2008, after the spacecraft came within about 16 miles (25 kilometers) of the surface of Enceladus. Credit: NASA/JPL/ Space Science Institute

Saturn's moon Enceladus was also explored by the Cassini mission, revealing plumes of ice that erupt from below the surface, adding to the brilliance of Saturn's rings. Much like our own Moon, Enceladus remains tidally locked with Saturn, presenting the same side towards its host planet at all times.

The Galilean Gang

The King of the Planets might not have the most moons, but four of Jupiter's 95 moons are definitely the easiest to see with a small pair of binoculars or a small telescope because they form a clear line. The Galilean Moons – Ganymede, Callisto, Io, and Europa – were first discovered in 1610 and they continue to amaze stargazers across the globe.

The Jovian system: Europa, Io, Ganymede, and Callisto. Credit: Stellarium Web

- Ganymede: largest moon in our solar system, and larger than the planet Mercury, Ganymede has its own magnetic field and a possible saltwater ocean beneath the surface.
- Callisto: this heavily cratered moon is the third largest in our solar system. Although Callisto is the furthest away of the Galilean moons, it only takes 17 days to complete an orbit around Jupiter.
- Io: the closest moon and third largest in this system, Io is an extremely active world, due to the push and pull of Jupiter's gravity. The volcanic activity of this rocky world is so intense that it can be seen from some of the largest telescopes here on Earth.
- Europa: Jupiter's smallest moon also happens to be the strongest candidate for a liquid ocean beneath the surface. NASA's Europa Clipper is set to launch October 2024 and will determine if this moon has conditions suitable to support life. Want to learn more? Rewatch the July 2023 Night Sky Network webinar about Europa Clipper here.

Be sure to celebrate International Observe the Moon Night here on Earth September 14, 2024, leading up to the super full moon on September 17th! You can learn more about supermoons in our mid-month article on the Night Sky Network page!

Phil Harrington's Cosmic Challenge

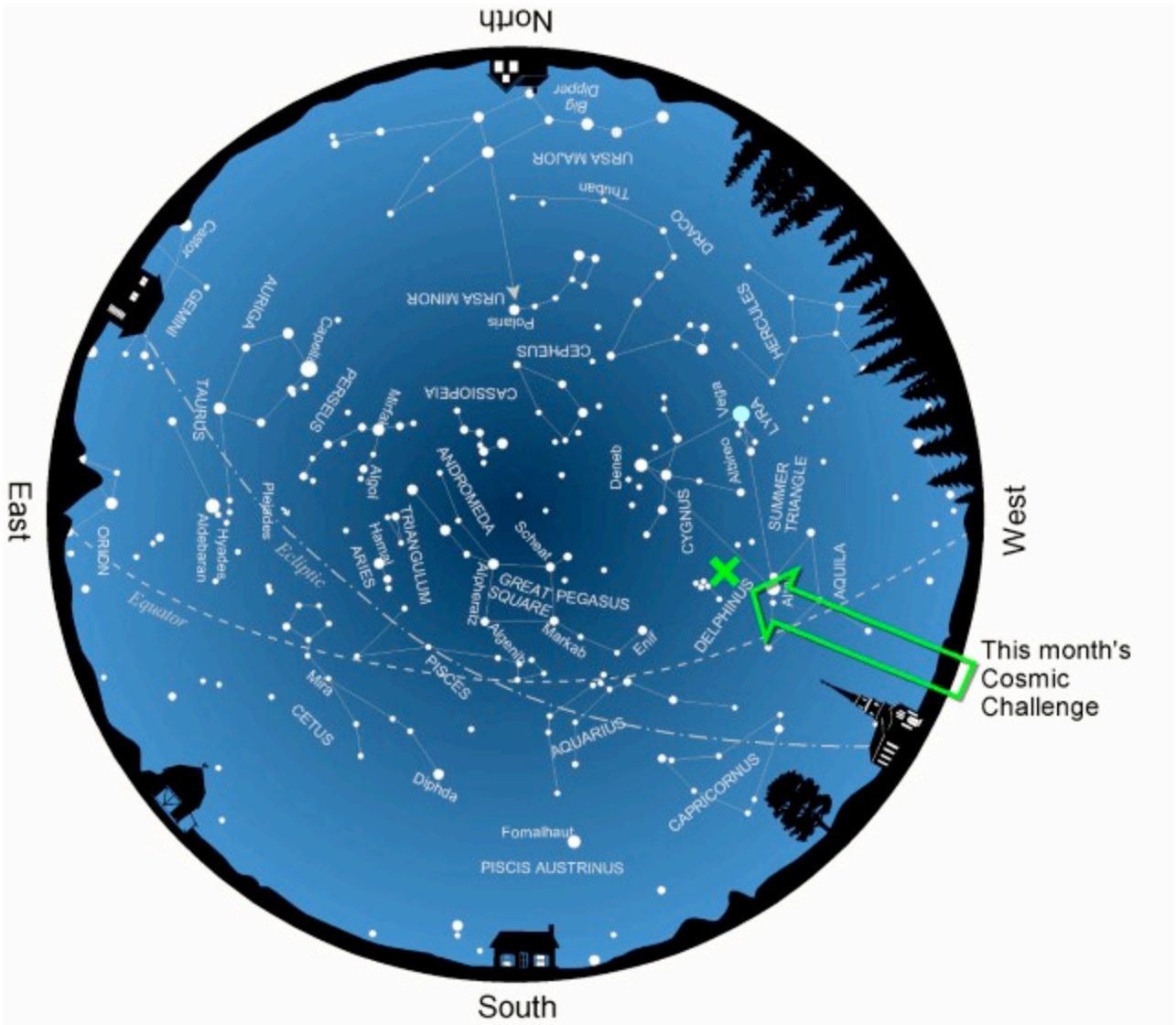
IC - 4997 Planetary Nebula	
	**This month's suggested aperture range:** 6 - 9.25” Telescopes Featured Meade ETX-LS 6

Target	Type	Constellation	RA	Dec	Magnitude	Size
IC 4997	Planetary nebula	Sagitta	20h 20.1m	+16° 43.9’	11.2	2.7"x1.4"

This month’s challenge, the planetary nebula IC 4997 lies within the borders of Sagitta, and is surprisingly bright, but extremely small. That combination makes this a great object for everyone, whether you are observing under the veil of light pollution or from a dark, rural location. Its intensity should shine through all but the most extreme situations.

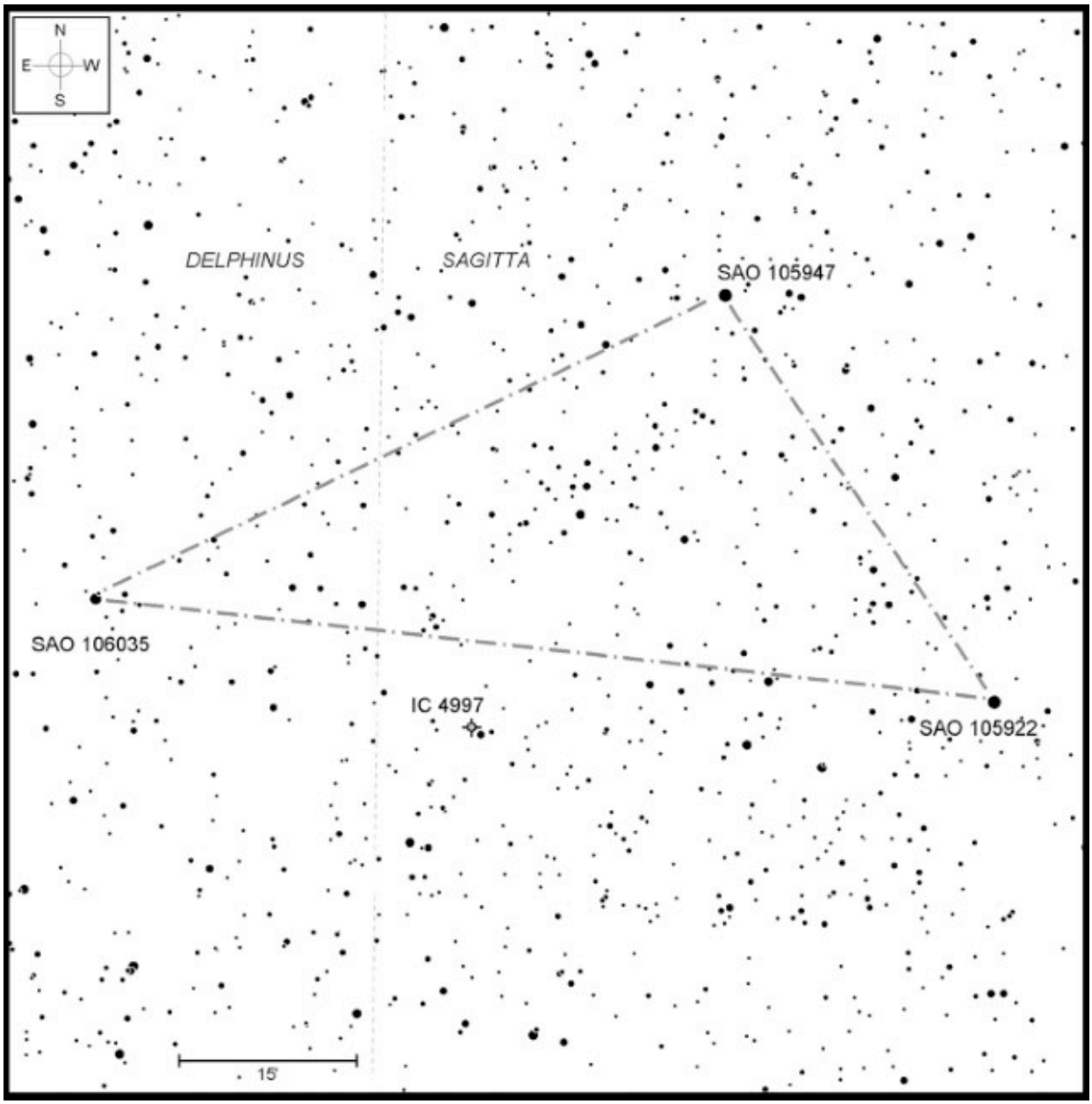
Below: Evening star map showing the location of this month's Cosmic Challenge. Credit: Map adapted from Star Watch by Phil Harrington

Below: Finder chart for this month's Cosmic Challenge.

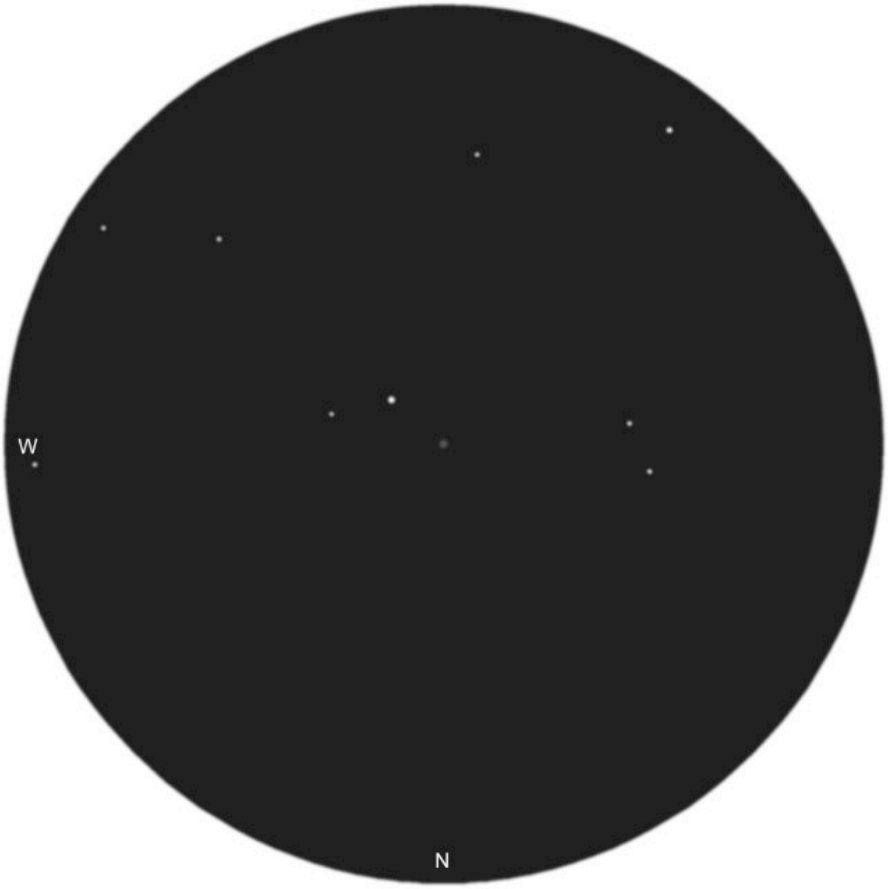


Finding IC 4997 is confounded by its location. It lies in an empty void near the intersection of Sagitta and Delphinus, about halfway between 5th-magnitude Eta (η) Sagittae and 4th-magnitude Beta (β) Delphini. The bright stars in its immediate vicinity shine at only 7th magnitude. Three orangish suns -- SAO 105922, SAO 105947, and SAO 106035 -- form a right triangle just to its north and make a handy reference. IC 4997 is just south of the halfway point along the triangle's hypotenuse, marked by SAO 105922 and SAO 106035. There, you will see that IC 4997 forms a small obtuse triangle with a 10th-magnitude star situated just 1.1' to its southwest and a 12th-magnitude sun 2' to its west.

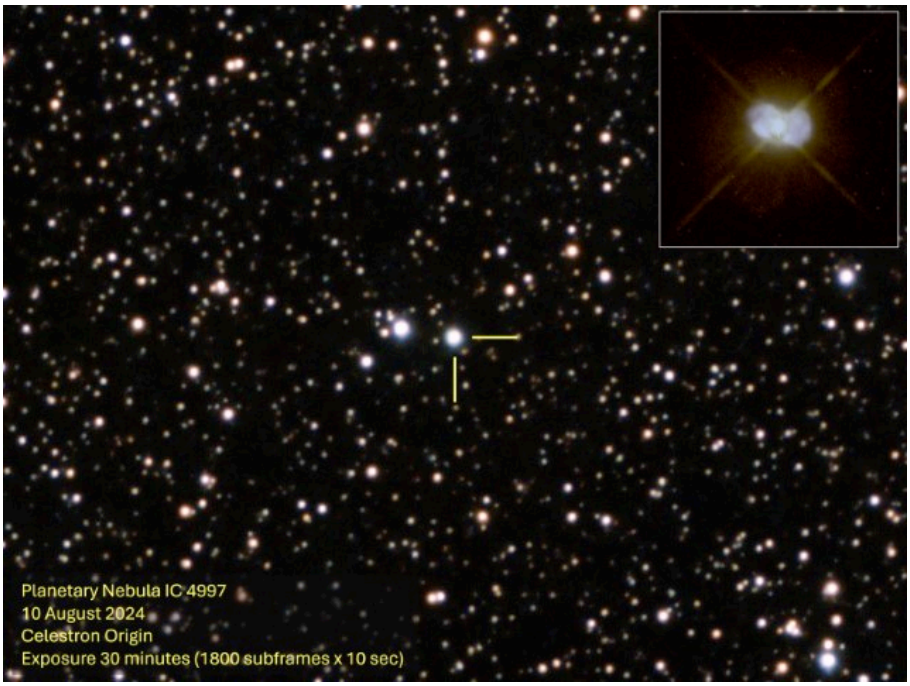
While it is easy to confuse those field stars for the planetary, they actually make handy comparison points when blinking the field with an O-III nebula filter. That's really the only way to confirm which is which, since IC 4997 remains perfectly stellar even at 300x. With a filter in place, however, the nebula will appear brighter than the 10th-magnitude star; with it removed, the star will outshine the planetary. The planetary's very subtle bluish tint may also help to identify it from among the field of white stars. When we look its way, we are viewing across approximately 8,000 light-years.



Above: Above: Finder chart for this month's Cosmic Challenge.
Credit: Chart adapted from Cosmic Challenge: The Ultimate Observing List for Amateurs by Phil Harrington.
Click this link for a printable PDF of this chart.



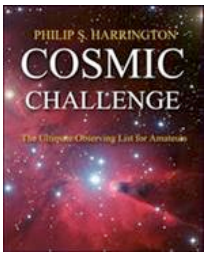
Rendering of NGC 7354 through the author's 8-inch (20.3 cm) f/7 Newtonian reflector at 127x.



Above: Image of IC 4997 taken by the author. South is up to match the sketch above.
Details: Celestron Origin Home Observatory @ f/2.2, 30 minutes total exposure (1,800 subframes @ 10 seconds each).
Insert: IC 4997 through the Hubble Space Telescope. Credit: Howard Bond (ST ScI) and NASA/ESA

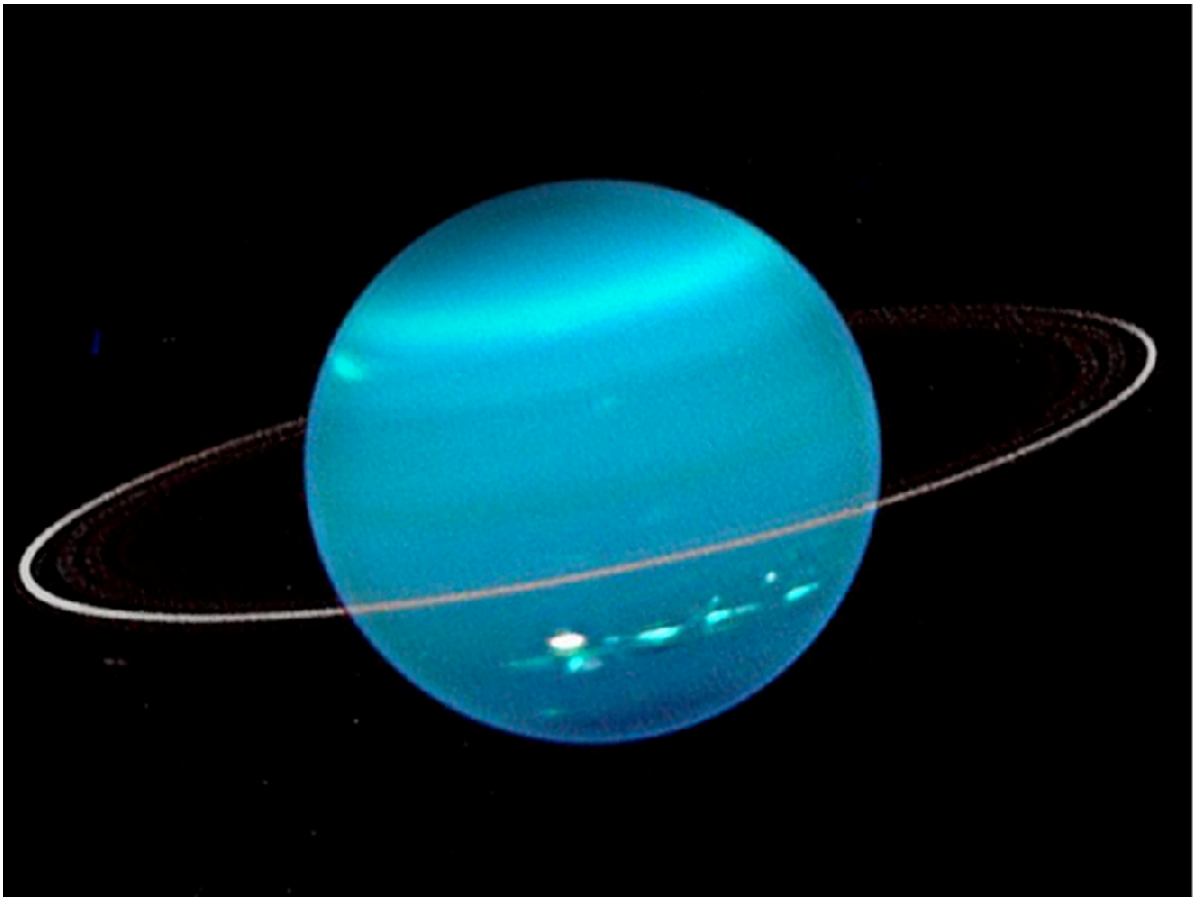
Scientific observations of IC 4997 have revealed a rich spectrum of emission lines, including those from ionized oxygen, nitrogen, and hydrogen, indicative of high temperatures and densities within the nebula. Studies also show that this little planetary varies in brightness. Long-term studies conducted by E. B. Kostyakova of Moscow University reveal that IC 4997 dimmed by as much as a half a magnitude between the years 1968 and 1985, only to slowly brighten again in the ensuing years. The cause of these variations is likely attributable to its misbehaving central star, whose temperature continues to fluctuate, and its interactions with the surrounding gas. These changes, along with the high density of its inner shell, point to IC 4997's extremely young age, possibly no more than 700 years old according to a January 2022 paper entitled An Episodically Variable Stellar Wind in the Planetary Nebula IC 4997. Its young age, compact size and active environment make IC 4997 a key object for understanding the complexities of planetary nebula formation and development.

Good luck with this month's challenge! Be sure to post your results in this column's discussion forum. And remember that half of the fun is the thrill of the chase. Game on!



About the Author:

Phil Harrington is a contributing editor to Astronomy magazine and is the author of 9 books on astronomy. Visit www.philharrington.net to learn more.



Trivia Answer: The seventh planet from the sun was discovered by William Herschel in 1781.

Centennial Observatory Upcoming Events
All events are weather permitting.

Due to a website format, the new events page is online here:
https://herrett.csi.edu/observatory/events.aspx

Faulkner Planetarium Shows
For the full schedule and current show times visit!

Now Showing!

You may also visit the Herrett Center Video Vault

Websites and Other Helpful Astronomy Links.

Information on passes of the ISS, the USAF's X-37B, the HST, the BlueWalker 3, and other satellites can be found at http://www.heavens-above.com/

Visit https://saberdoesthe...does-the-stars/ for tips on spotting extreme crescent Moons and https://curtrenz.com/moon.html for Full Moon and other lunar data.

Go to https://skyandtelesc...ads/MoonMap.pdf and https://celestron-si...RReeves-web.pdf and https://nightsky.jpl...ObserveMoon.pdf for simple lunar maps. Click on https://astrostrona.pl/moon-map/ for an excellent online lunar map. Visit http://www.ap-i.net/avl/en/start to download the free Virtual Moon Atlas. Consult http://time.unitariu...moon/where.html for current information on the Moon and https://www.fourmila.../lunarform.html for information on various lunar features. See https://svs.gsfc.nasa.gov/4955 a lunar phase and libration calculator and https://svs.gsfc.nasa.gov/5187/

The Lunar Reconnaissance Orbiter Camera (LROC) quick map. https://www.universa...ise-and-sunset/

For more on the planets and how to locate them, browse http://www.nakedeyeplanets.com/

Summaries on the planets for each month can be found at https://earthsky.org/astronomy-essentials/

The graphic at https://www.timeandd...lanets/distance displays the apparent and comparative sizes of the planets, along with their magnitudes and distances, for a given date and time.

The rise and set times and locations of the planets can be determined by clicking on https://www.timeandd...stronomy/night/

Click on https://www.curtrenz.../asteroids.html for information on asteroid occultations taking place this month.

Visit http://cometchasing.skyhound.com/ and http://www.aerith.ne...t/future-n.html and https://cobs.si/ for additional information on comets visible this month.

A list of the closest approaches of comets to the Earth is posted at http://www.cometogra.../nearcomet.html

A wealth of current information on solar system celestial bodies is posted at http://www.curtrenz.com/astronomy.html and http://nineplanets.org/

Information on the celestial events transpiring each week can be found at https://stardate.org/nightsky and http://astronomy.com/skythisweek and http://www.skyandtel...ky-at-a-glance/

Free star maps for any month may be downloaded at http://www.skymaps.com/downloads.html and https://www.telescop...thly-Star-Chart and http://www.kenpress.com/index.html

Data on current supernovae can be found at http://www.rochester...y.org/snimages/

Finder charts for the Messier objects and other deep-sky objects are posted at https://freestarcharts.com/messier and https://freestarcharts.com/ngc-ic and http://www.cambridge..._april-june.htm

Telrad finder charts for the Messier Catalog are posted at http://www.custerobs...cs/messier2.pdf and http://www.star-shin...ssierTelrad.htm

Telrad finder charts for the SAC's 110 Best of the NGC are available at https://www.saguaroa...k110BestNGC.pdf

Information pertaining to observing some of the more prominent Messier galaxies can be found at http://www.cloudynig...ur-astronomers/

Author Phil Harrington offers an excellent freeware planetarium program for binocular observers known as TUBA (Touring the Universe through Binoculars Atlas), which also includes information on purchasing binoculars, at http://www.philharrington.net/tuba.htm

Stellarium and Cartes du Ciel are two excellent freeware planetarium programs that are available at http://stellarium.org/ and https://www.ap-i.net/skychart/en/start

Deep-sky object list generators can be found at http://www.virtualcolony.com/sac/ and https://telescopius.com/ and http://tonightssky.com/MainPage.php

Freeware sky atlases can be downloaded at http://www.deepskywa...-atlas-full.pdf and https://www.cloudyni...ar-charts-r1021 and https://allans-stuff.com/triatlas/

For current sky charts visit the NASA Night Sky Network https://nightsky.jpl.nasa.gov/download-view.cfm?Doc_ID=699

Magic Valley Astronomical Society
550 Sparks St.
Twin Falls, ID

The Magic Valley Astronomical Society (MVAS) was founded in 1976. The Society is a non-profit [501(c) 3] educational and scientific organization dedicated to bringing together people with an interest in astronomy.

In partnership with the Centennial Observatory, Herrett Center, College of Southern Idaho - Twin Falls; we hold regularly scheduled monthly meetings and observation sessions, at which we share information on current astronomical events, tools and techniques for observation, astrophotography, astronomical computer software, and other topics concerning general astronomy. Members enthusiastically share their telescopes and knowledge of the night sky with all who are interested. In addition to our monthly public star parties we hold members only star parties at various locations throughout the Magic Valley.

MVAS promotes the education of astronomy and the exploration of the night sky along with safe solar observing through our public outreach programs. We provide two types of outreach; public star parties and events open to anyone interested in astronomy, and outreach programs for individual groups and organizations (e.g. schools, churches, scout troops, company events, etc.), setting up at your location. All of our outreach programs are provided by MVAS volunteers at no cost. However, MVAS will gladly accept donations. Donations enable us to continue and improve our public outreach programs.

Membership is not just about personal benefits. Your membership dues support the work that the Magic Valley Astronomical Society does in the community to promote the enjoyment and science of astronomy.
Speakers, public star parties, classes and support for astronomy in schoolrooms, and outreach programs just to name a few of the programs that your membership dues support.

Annual Membership dues will be:
$20.00 for individuals, families, and $10.00 for students.
Contact Treasurer Jim Tubbs for dues information via e-mail: jtubbs015@msn.com

Donations to our club are always welcome and are even tax deductible. Please contact a board member for details.
Lending Telescopes: The society currently has three telescopes for loan and would gladly accept others please contact President Robert Mayer, for more information on these and other benefits.

Telescopes are an individual thing and not practical for public use. However, everyone should have the experience of a good look at the moon for at least 5 minutes in their life time. It is a dimension and feeling that is unexplainable. Pictures or TV can't give this feeling, awareness, or experience of true dimension. A person will not forget seeing our closest neighbor, the moon.

Norman Herrett in a letter to Dr. J. L. Taylor, president of the College of Southern Idaho, Twin Falls, ID, USA.