

STELLAR SENTINEL

Grand Traverse Astronomical Society September 2025

This is the Last Printed and Mailed Issue of the Stellar Sentinel

Starting with next month's edition of the Stellar Sentinel, it will be provided only as a Portable Document File or PDF attached to an e-mail. PDFs can be displayed on just about any smartphone, tablet, or computer, and printed out. The nominal page size is letter sized 8½ by 11. It will allow us to save money, having so few members that prefer the printed edition. This will allow us to help fund our outreach efforts. We are finding out, in these days after the COVID pandemic, that our outreach events and donations have dwindled. These donations have supported our equipment and insurance for the society's telescopes and outreach efforts.

If you are a member and we don't have an active email address for you, or you do not have email, a postcard will be sent monthly with notice of society activities.

We also have some complimentary subscriptions that get the printed edition. These will be terminated unless we receive their email address sent to info@gtaastro.org. ★

The Skies They Are a- Changin

By Bob Moler

The nights grow longer as we transition from summer to fall, but the summer Milky Way is still accessible. We will soon lose the south end of the Milky Way as the Sagittarius Teapot pours its celestial tea on the southwestern horizon. September skies give us the best of both the Milky Way, our galaxy, and of other galaxies, notably

the Great Andromeda Galaxy.

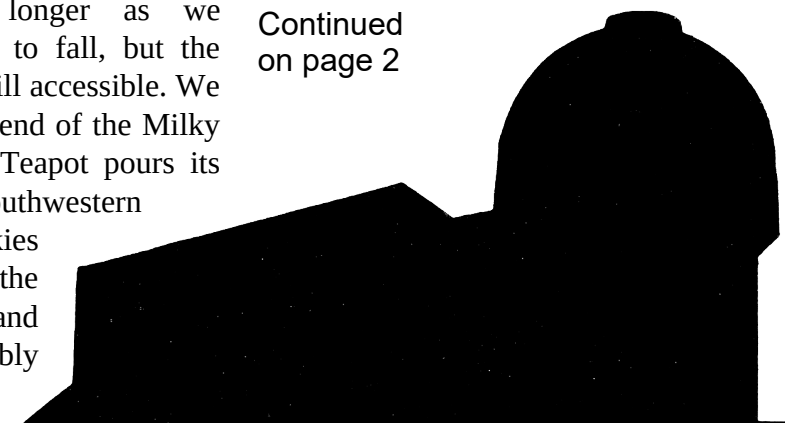
Lets look at some of the wonders of September skies. Overhead is the constellation of Cygnus the swan that lies in the direction the solar system is moving at 300 kilometers per second as we orbit the center of the Milky Way. Cygnus is also known as the Northern Cross, an informal constellation or asterism. East of Cygnus' brightest star, Deneb is a hazy glow that can be seen with the unaided eye on a dark night. It can also be seen in binoculars, but is too big and diffuse for the telescope. It is the North American Nebula.



In the picture above, Deneb is above and right of center, while the North American Nebula is just left of center. The image is a blow up of a photograph taken with a 50mm lens of the whole constellation. Credit: The author.

The North American Nebula is part of a large complex of dust, gas and stars. It lies at a distance of about 1,600 light years, about the same as Deneb itself. Deneb is one of the most luminous stars known. It is thought by some that it is the source of the illumination for the nebula.

Continued
on page 2



Skies... (Continued from page 1)

However, close appearing in our skies, Deneb is at least 70 light years away from the nebula. It is more likely that the nebula is illuminated by other stars near and within it. The North American Nebula glows hydrogen red in photographs.

Starting to come into view is the Great Andromeda Galaxy. It was recorded by French comet hunter Charles Messier as number 31 on his list of fuzzy objects in the sky that weren't comets. So we know it as M31. Others have spotted it. It was first recorded by the Persian astronomer al-Sufi in 964 CE. M31 is climbing up in the northeastern sky. It is barely visible to the unaided eye as a fuzzy spot among the stars of Andromeda just to the left of the Great Square of Pegasus.



The Great Andromeda Galaxy (M31) and companions M32, above, and M110, below. Credit: Daniel Dall'Olmo.

Binoculars give a better view, the dim glow becomes spindle shaped. In a telescope using the lowest power available, more of the galaxy can be seen along with the satellite galaxy M32, a nearly circular elliptical galaxy. Another, fainter and more elliptical galaxy is seen on the other side of M31, It is M110, seen but not recorded by Messier.

Photographs of M31 show the satellite galaxies a lot closer to the main galaxy than visually at the telescope. That's because visually we can only see the bright central bulge of the Great Andromeda Galaxy. The spiral arms are too faint to see. If we could see those arms, M31 would appear as large as 6 full moons side by side. However there is a hint that the elliptical glow of M31 isn't that of an elliptical galaxy to the eye. The north edge of the central glow ends abruptly, at least more abruptly than the on the other side. That is caused by the dark lane between it and a spiral arm.



The Double Cluster. Credit: Daniel Dall'Olmo

Another treat is the Double Cluster, seen in binoculars or a small telescope. It can be found half way between Perseus and Cassiopeia. The Double Cluster, inexplicably, didn't appear in Messier's list. However each cluster has star designations: h and c.

It is a wonderful sight in telescope at it's lowest power. Even a large telescope can squeeze in most of the stars of both clusters with a very low power, wide-field eyepiece. The double cluster can be seen with the unaided eye as a fuzzy spot in the Milky Way just below the "W" of Cassiopeia. Indeed it was recorded by the Greeks in 150 BC. → Page 3

Grand Traverse Astronomical Society - Est. June 1982 – 43 years of service

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Secretary	Joe Brooks	Bill Hathaway	
Treasurer	Gary Carlisle		
Editor	Bob Moler, transitioning to Mary Gribbin		

Upcoming Society Events

Events not held at the Joseph H. Rogers Observatory depend on the weather.

Friday, September 5 – Monthly meeting and star party at NMC Rogers Observatory. Also available via **Zoom**. See our website <http://www.gtastro.org> for instructions and a link.

No Board of Directors Meeting

8 PM – General Meeting: Dan Dall’Olmo, who has taken some amazing astrophotographs, will present the program

9 PM – Star Party, if it is clear.

Friday, October 3 – Monthly meeting and star party at NMC Rogers Observatory. Also available via **Zoom**. See our website <http://www.gtastro.org> for instructions and a link.

No Board of Directors Meeting

8 PM – General Meeting

9 PM – Star Party, if it is clear.

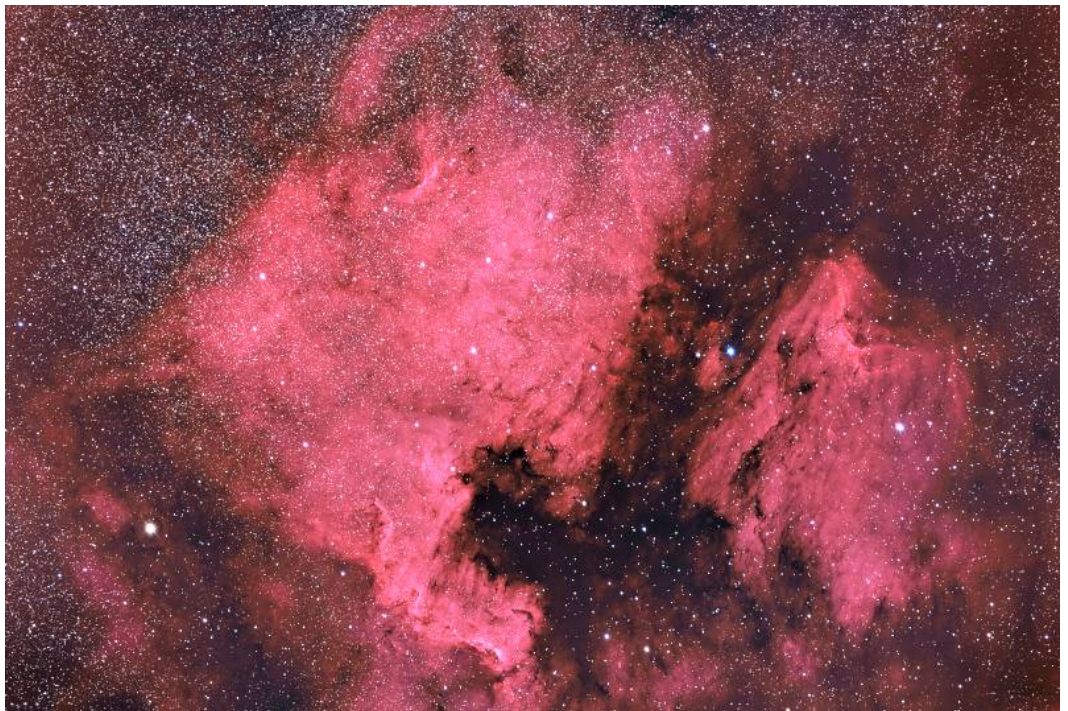
Zoom Meeting Link:

<https://us02web.zoom.us/j/8388913229?omn=88435646093>

Skies... (Continued from page 2).

The Double Cluster lies at a distance of about 7,650 light years, one is slightly in front of the other, and their stars are dimmed by 1.8 magnitude by the dust and gas in the plane of the Milky Way. Being two magnitudes brighter they would be a spectacular sight without a telescope. The telescope overcomes the dimming to produce a magnificent sight.

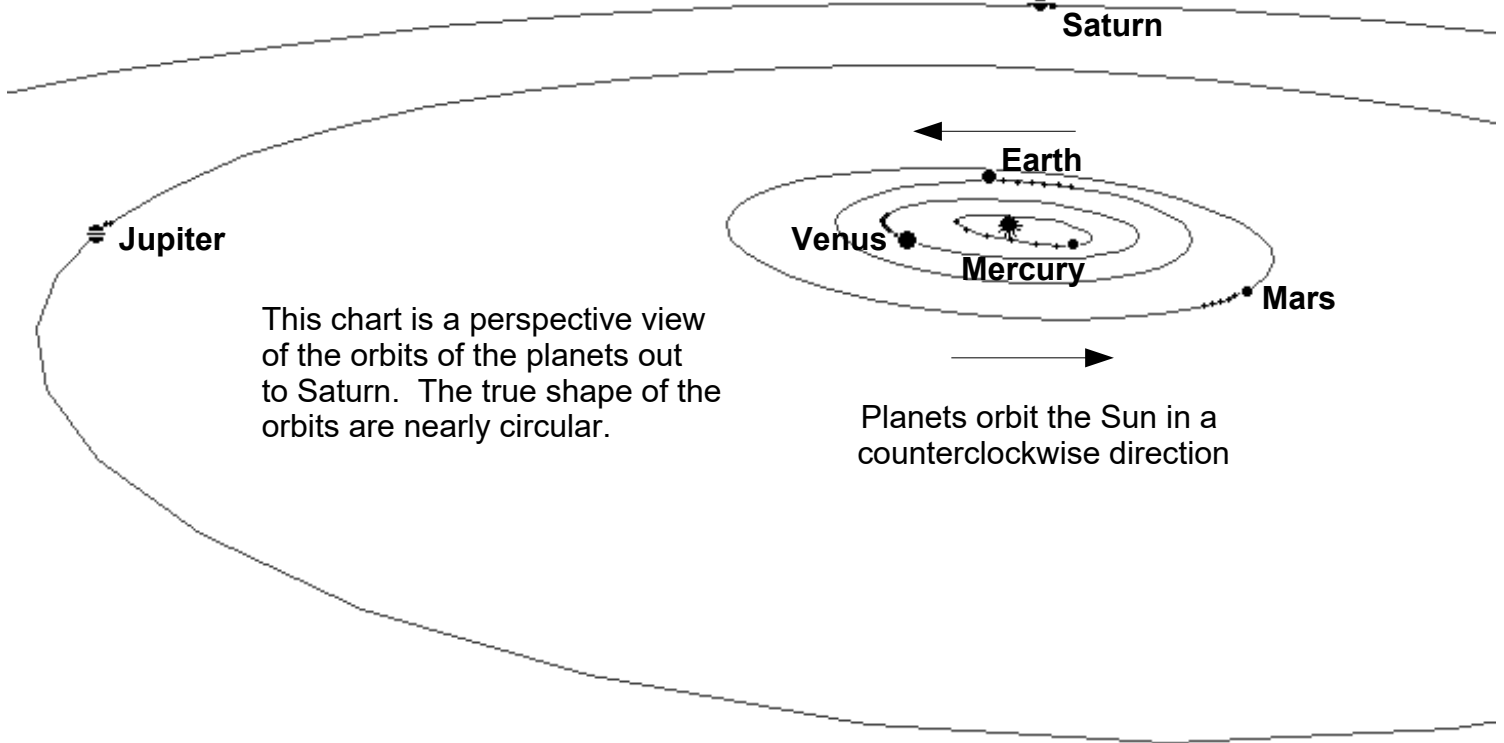
Stay up late enough in September and the Pleiades will rise, and even Orion, before dawn. Just think: The Great Orion Nebula without the frostbite. ★



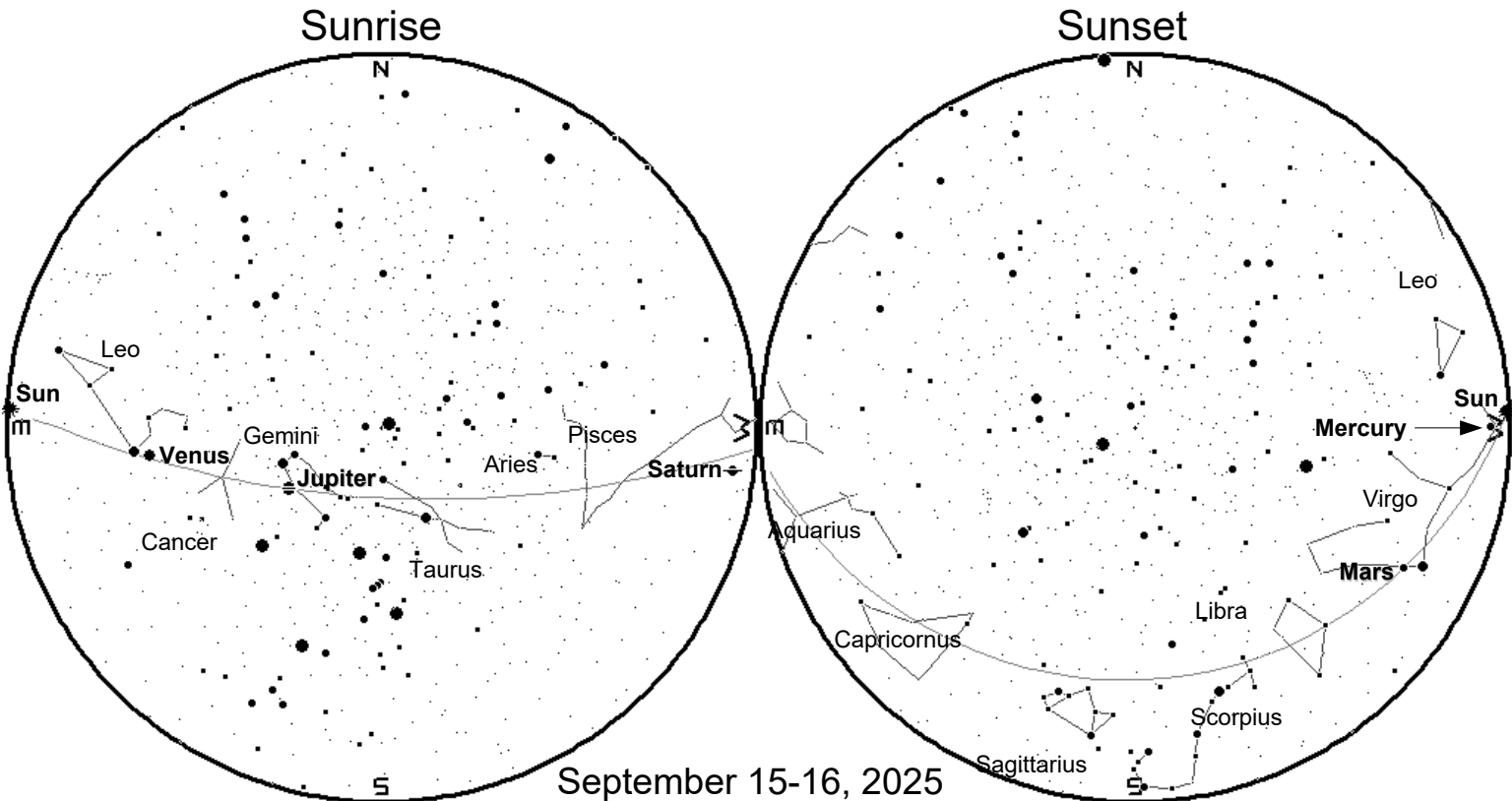
Closeup of the North American Nebula, center-left, and Pelican Nebula, right, in a photograph by Daniel Dall’Olmo.

The Naked Eye Planets

September 1st, 6th, 11th, 16th, 21st, 26th, & October 1st



The Planets as Seen From Northern Michigan

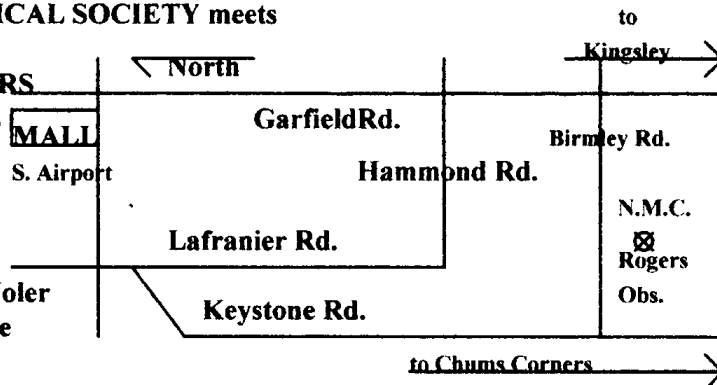


CELESTIAL CALENDAR

Date	Time	Event
Sep 1 Mo		Venus: 31.2° W
1 Mo	6:04 PM	Moon South Dec.: 28.6° S
7 Su	2:09 PM	Full Moon
7 Su	2:13 PM	Total Lunar Eclipse (Not visible from here)
7 Su	7:08 PM	Moon Ascending Node
8 Mo	4:09 PM	Moon-Saturn: 4° S
10 We	8:10 AM	Moon Perigee: 364800 km
12 Fr	11:28 PM	Mars-Spica: 2.2° N
13 Sa	6:46 AM	Mercury Superior Conj.
14 Su	6:33 AM	Last Quarter
16 Tu	7:06 AM	Moon-Jupiter: 4.7° S
16 Tu	1:58 PM	Moon-Pollux: 2.5° N
17 We	1:24 PM	Moon-Beehive: 2.1° S
19 Fr	4:59 AM	Venus-Regulus: 0.5° N
19 Fr	7:11 AM	Moon-Regulus: 1.4° S
19 Fr	7:46 AM	Moon-Venus: 0.9° S
20 Sa	7:13 PM	Moon Descending Node
21 Su	1:10 AM	Saturn Opposition
21 Su	3:42 PM	Partial Solar Eclipse (Not visible from here)
21 Su	3:54 PM	New Moon
22 Mo	2:20 PM	Autumnal Equinox
23 Tu	7:29 AM	Neptune Opposition
23 Tu	5:31 PM	Moon-Spica: 1.2° N
24 We	10:50 AM	Moon-Mars: 4.3° N
26 Fr	5:46 AM	Moon Apogee: 405600 km
27 Sa	1:34 PM	Moon-Antares: 0.7° N
29 Mo	7:54 PM	First Quarter
Oct 1 We		Venus: 23.9° W

Sky Events Calendar by Fred Espenak and Sumit Dutta (NASA's GSFC), <http://eclipse.gsfc.nasa.gov/SKYCAL/SKYCAL.html> to make your own for any year. Some additions and clarifications were made by the editor.

The GRAND TRAVERSE ASTRONOMICAL SOCIETY meets on the first Friday of each month at the NORTHWESTERN MICHIGAN ROGERS OBSERVATORY at 8 p.m. The public is invited to attend all Society functions as our guests. We are a non-profit group dedicated to the study of astronomy and the sky above us. If you would like more information on GTAS, please call Bob Moler at 946-8649, or write to the address on the last page of this publication.



LU Ephemeris of Sky Events for NMC Observatory
September, 2025 Local time zone: EDT

DATE	SUN RISE	SUN SET	DAYLIGHT HOURS	TWILIGHT* END	TWILIGHT* START	MOON PHASE	RISE OR SET**	OR TIME	ILLUM FRACTN
Mon 1	07:05a	08:18p	13:13	09:24p	05:59a		Set	12:52a	66%
Tue 2	07:06a	08:16p	13:10	09:22p	06:00a		Set	01:54a	75%
Wed 3	07:07a	08:14p	13:07	09:20p	06:01a		Set	03:04a	84%
Thu 4	07:08a	08:12p	13:04	09:18p	06:03a		Set	04:19a	91%
Fri 5	07:10a	08:11p	13:01	09:16p	06:04a		Set	05:36a	96%
Sat 6	07:11a	08:09p	12:58	09:14p	06:05a		Set	06:53a	99%
Sun 7	07:12a	08:07p	12:55	09:12p	06:07a	Full	Rise	08:10p	100%
Mon 8	07:13a	08:05p	12:51	09:10p	06:08a		Rise	08:30p	98%
Tue 9	07:14a	08:03p	12:48	09:08p	06:09a		Rise	08:51p	93%
Wed 10	07:15a	08:01p	12:45	09:06p	06:11a		Rise	09:14p	86%
Thu 11	07:17a	07:59p	12:42	09:04p	06:12a		Rise	09:43p	77%
Fri 12	07:18a	07:58p	12:39	09:02p	06:13a		Rise	10:19p	66%
Sat 13	07:19a	07:56p	12:36	09:00p	06:15a		Rise	11:06p	55%
Sun 14	07:20a	07:54p	12:33	08:58p	06:16a	L Qtr	Rise	12:05a	44%
Mon 15	07:21a	07:52p	12:30	08:56p	06:17a		Rise	01:14a	33%
Tue 16	07:22a	07:50p	12:27	08:54p	06:19a		Rise	02:29a	23%
Wed 17	07:24a	07:48p	12:24	08:52p	06:20a		Rise	03:44a	15%
Thu 18	07:25a	07:46p	12:21	08:50p	06:21a		Rise	04:56a	8%
Fri 19	07:26a	07:44p	12:18	08:48p	06:22a		Rise	06:06a	3%
Sat 20	07:27a	07:43p	12:15	08:46p	06:24a		Rise	07:13a	1%
Sun 21	07:28a	07:41p	12:12	08:44p	06:25a	New	Set	07:33p	0%
Mon 22	07:29a	07:39p	12:09	08:42p	06:26a		Set	07:50p	1%
Tue 23	07:31a	07:37p	12:06	08:40p	06:27a		Set	08:07p	4%
Wed 24	07:32a	07:35p	12:03	08:38p	06:29a		Set	08:27p	9%
Thu 25	07:33a	07:33p	12:00	08:36p	06:30a		Set	08:50p	15%
Fri 26	07:34a	07:31p	11:56	08:34p	06:31a		Set	09:19p	23%
Sat 27	07:35a	07:29p	11:53	08:32p	06:32a		Set	09:56p	31%
Sun 28	07:37a	07:27p	11:50	08:30p	06:34a	F Qtr	Set	10:42p	40%
Mon 29	07:38a	07:26p	11:47	08:28p	06:35a		Set	11:39p	50%
Tue 30	07:39a	07:24p	11:44	08:27p	06:36a		Set	12:44a	60%

* Nautical Twilight

** Moonrise or moonset, whichever occurs between sunset and sunrise



Grand Traverse Astronomical Society – Membership Application / Renewal 2025

I am interested, please send me more information about the next GTAS meeting.

I'll join, payment enclosed

Email Address: _____

Membership renewal

Newsletter Delivery: **Email** **Mail** (Postcard only)

Membership term runs from January to December

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For new members just joining mid-year, pro rate the dues thus:
 Annual Dues X months remaining in the year / 12.
 Example: Single Joining in June:
 \$25.00 X 6 (Jul-Dec) / 12 = \$12.50

The Stellar Sentinel
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Stellar Sentinel Extras September 2025

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This article is distributed by NASA's Night Sky Network (NSN)

The NSN program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.gov to find local clubs, events, and more!

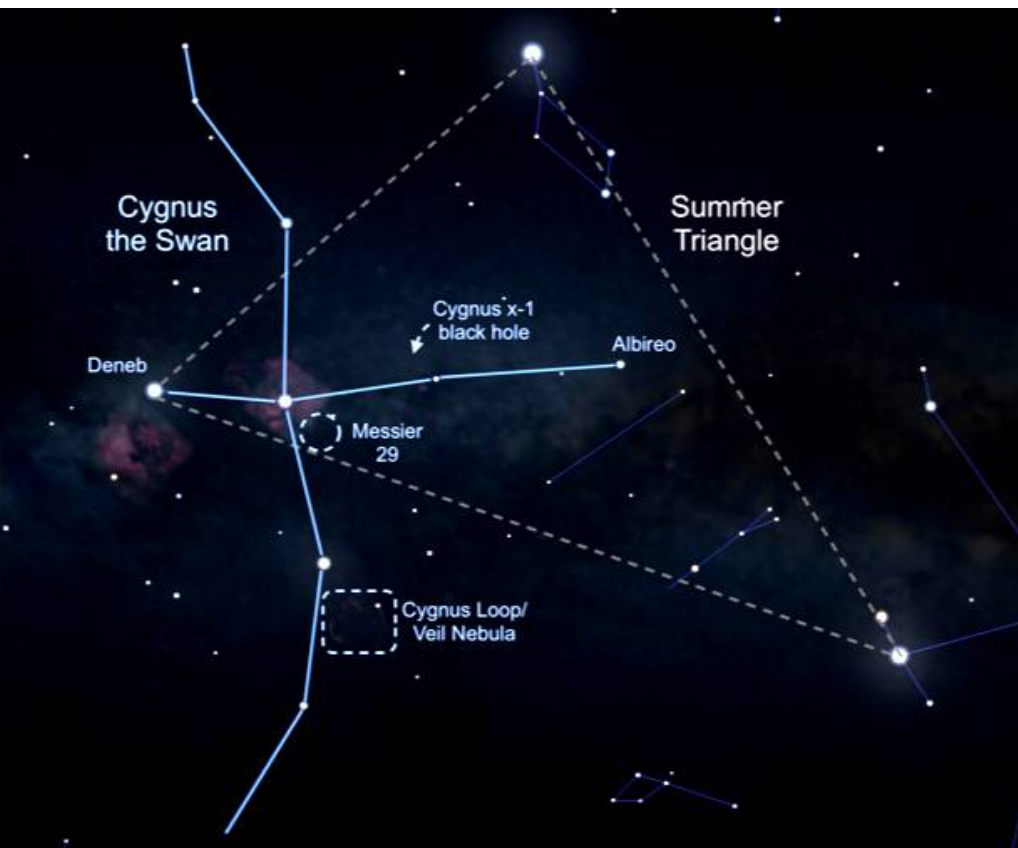
Night Sky Notes: Look Up In the Sky – It's a Swan

Look up after sunset during summer months to find Cygnus! Along the swan's neck find the band of our Milky Way Galaxy. Use a telescope to resolve the colorful stars of Albireo or search out the open cluster of stars in Messier 29.

Bird constellations abound in the night sky, including Cygnus, the majestic swan. Easy to find with its dazzling stars, it is one of the few constellations that look like its namesake and it is full of treasures. Visible in the Northern Hemisphere all summer long, there's so much to see and even some things that can't be seen. To locate Cygnus, start with the brightest star, Deneb, also the northeastern most and dimmest star of the Summer Triangle.

The Summer Triangle is made up of three bright stars from three different constellations – read more about it in the September 2022 issue of Night Sky Notes. "Deneb" is an Arabic word meaning the tail. Then travel into the triangle until you see the star Albireo, sometimes called the "beak star" in the center of the summer triangle. Stretching out perpendicular from this line are two stars that mark the crossbar, or the wings, and there are also faint stars that extend the swan's wings.

From light-polluted skies, you may only see the brightest stars, sometimes called the Northern Cross. In a darker sky, the line of stars marking the neck of the swan travels along the band of the Milky Way. A pair of binoculars

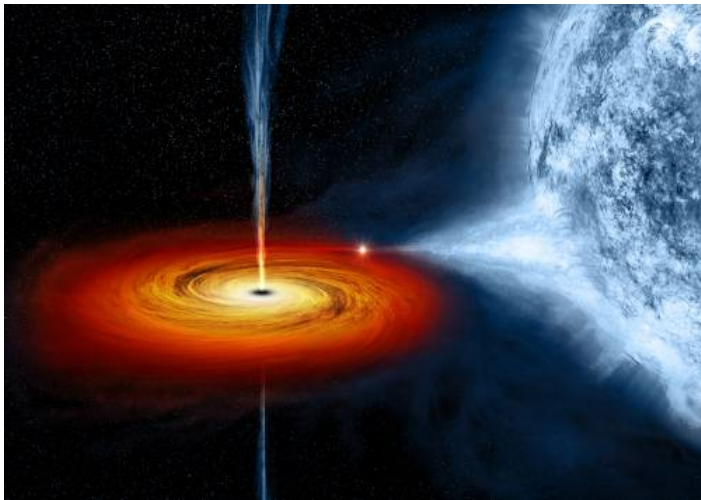


Cygnus and the Summer Triangle.

will resolve many stars along that path, including a sparkling open cluster of stars designated Messier 29, found just south of the swan's torso star. This grouping of young stars may appear to have a reddish hue due to nearby excited gas.

Let's go deeper. While the bright beak star Albireo is easy to pick out, a telescope will let its true beauty shine! Like a jewel box in the sky, magnification shows a beautiful visual double star, with a vivid gold star and a brilliant blue star in the same field of view. There's another marvel to be seen with a telescope or strong binoculars – the Cygnus Loop. Sometimes known as the Veil Nebula, you can find this supernova remnant (the gassy leftovers blown off of a large dying star) directly above the final two stars of the swan's eastern wing. It will look like a faint ring of illuminated gas about three degrees across (six times the diameter of the Moon).

Cygnus X-1



Cygnus x-1 black hole: A drawing of a disk around a small central black hole. The disk is pulling material off of a large blue star to the right. A jet of material shoots up and down from the center of the black hole. Credit: NASA/CXC

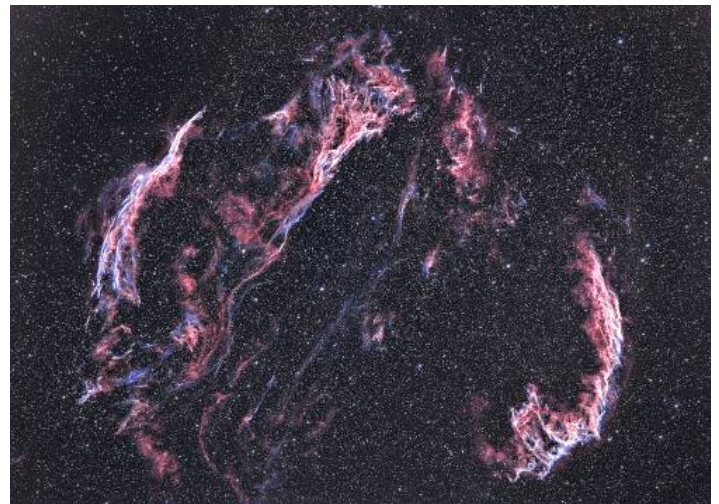
Speaking of long-dead stars, astronomers have detected a high-energy X-ray source in Cygnus that we can't see with our eyes or backyard telescopes, but that is detectable by NASA's Chandra X-ray Observatory. Discovered in 1971 during a rocket flight, Cygnus x-1 is the first X-ray source to be

widely accepted as a black hole. This black hole is the final stage of a giant star's life, with a mass of about 20 Suns. Cygnus x-1 is spinning at a phenomenal rate – more than 800 times a second – while devouring a nearby star. Astronomically speaking, this black hole is in our neighborhood, 6,070 light years away. But it poses no threat to us, just offers a new way to study the universe.

While the black hole Cygnus x-1 is invisible with even the most powerful optical telescope, in X-ray, it shines brightly. is an artist's conception of the black hole pulling material from its massive blue companion star.

Check out the beautiful bird in your sky this evening, and you will be delighted to add Cygnus to your go-to summer viewing list. Find out NASA's latest methods for studying black holes at www.nasa.gov/black-holes. ★

The article mentioned but didn't show these two wonders!



The Veil Nebula supernova remnant. Credit: Daniel Dall'Olmo.



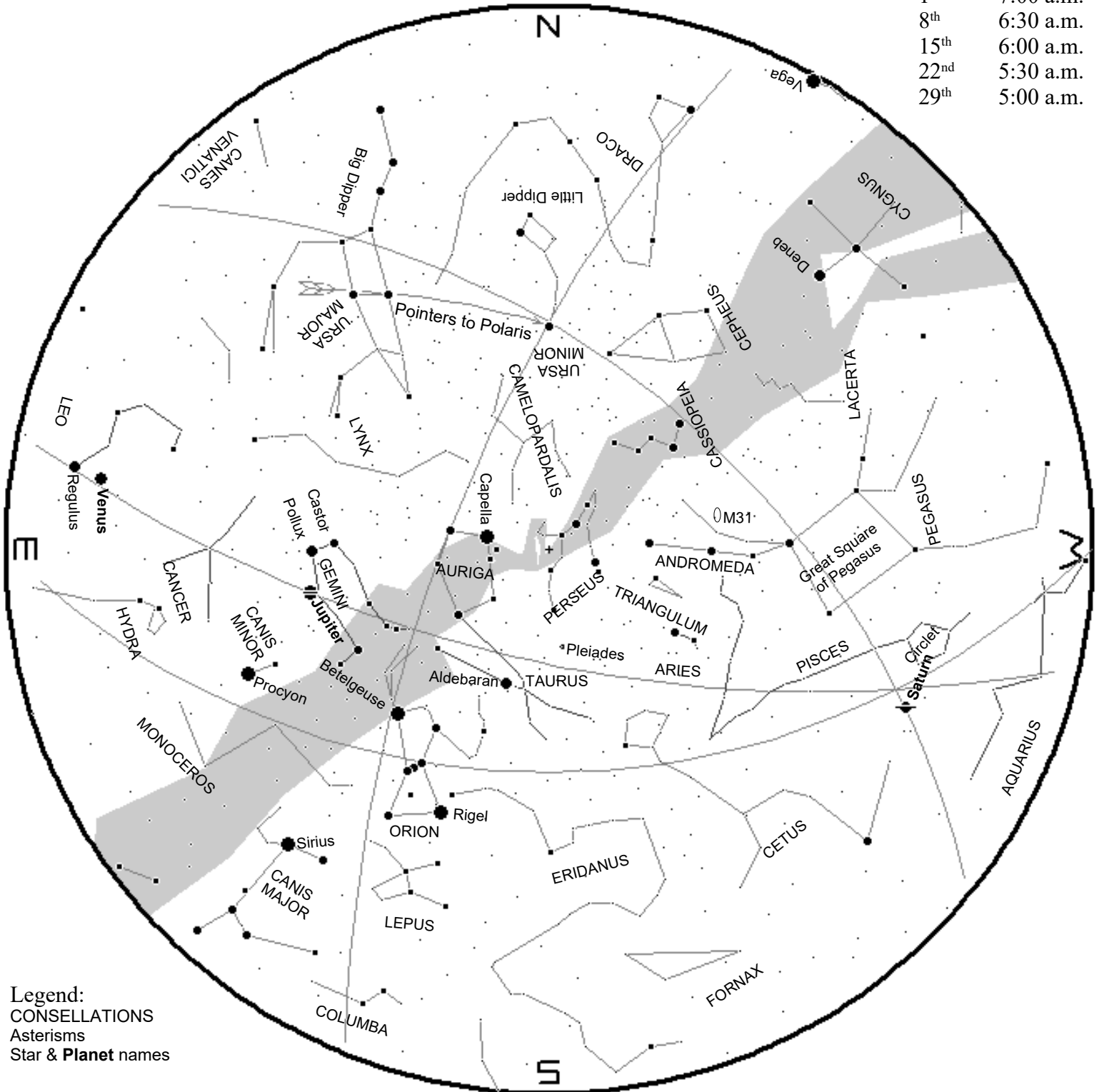
Alberio Credit: Daniel Dall'Olmo

The Stars and Planets for September Mornings 2025

By Bob Moler

Planets are plotted for mid month. The star positions are correct for:

1 st	7:00 a.m.
8 th	6:30 a.m.
15 th	6:00 a.m.
22 nd	5:30 a.m.
29 th	5:00 a.m.



The central constellation of winter, Orion the hunter, is moving to take its place in the south of our predawn sky now. It has two of the seven first magnitude stars of winter, part of the the brilliant Winter Circle. This year, however Jupiter is hanging out near Pollux, adding another “star” to the circle. Three of the naked eye planets are visible at chart time. The autumn stars are setting toward the west. The spring constellation of Leo, or at least the front part of him called the Sickle has cleared the horizon at chart time. The morning is a good time to view Orion without the bitter cold of a January evening.