The ECLIPSE

June 2026

The Newsletter of the Barnard-Seyfert Astronomical Society

The Aurora Issue

At last month's BSAS meeting, we heard some about auroras as part of Bill McClain's talk on Space Weather. At the June monthly meeting, we will do a deep dive into aurora with Vincent Ledvina, "The Aurora Guy."

In this presentation, Vincent Ledvina will explain the science behind the northern lights, including how the Sun and Earth work together to produce aurora, what auroral substorms are, and why strong space weather can make the lights visible at lower latitudes. He will also share practical tips for planning a trip to Alaska and for improving your chances of seeing the aurora closer to home.

If you want to do a little "homework" before the meeting, turn to page 4 of this issue.

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Aurora Photo by Sheri Vaughan

In This Issue

BSAS
Barnard-Seyfert Astronomical Society

Do you know the Patriotic Star? Just in time for Flag Day, July 4th, and America's 250th, see page 16

**"No one regards what is before his feet; we all gave at the stars."
– Quintus Ennius, Roman writer and poet (c. 239 BC -c. 169 BC)**

Barnard-Seyfert Astronomical Society

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Contact BSAS officers at bsanashville.com/contact, or email info@bsasnashville.com.

About BSAS

Founded in 1928, the **Barnard-Seyfert Astronomical Society** is an association of amateur and professional astronomers who have joined together to share their knowledge and love of the night - *and day* - sky! We welcome everyone from beginners to pros alike!

BSAS meets on the third Wednesday of each month at the **Warner Park Nature Center** in Nashville, TN. Experienced members or guest speakers usually talk about some aspect of astronomy or sky observing. Subjects range from how the universe first formed to how to build your own telescope, to "Pluto: Dog, planet, or KBO?..."

The meetings are very casual and time is allotted for coffee, hang out and general astro-tivity! Meetings are free and open to the public, you do NOT need to be a member to attend!... Join us!

BSAS membership entitles you to several perks such as subscription discounts to Astronomy and Sky & Telescope magazines, access to the club's Equipment Loan Program, invitations to private club events, participation in our Google chat forums, and much more!

In addition to the regular meetings, BSAS also sponsors many public astronomy events, such as our famous monthly public star parties, Astronomy Day school events, collaborations with the Dyer Observatory, tents and displays at local festivals, and "Pop-Up" star parties!

More information about BSAS can be found on our website bsasnashville.com. If you have any questions, please email us anytime at info@bsasnashville.com.

Equipment Loan Program

Did someone say **FREE** telescope loans??... Why yes, yes they did!!

BSAS has telescopes ranging from 2.5" to 10", from beginner to advanced, that members can borrow for up to 60 days at a time! We also have other items such as H-alpha solar telescopes, Dobsonians, educational CDs, tapes, DVDs, and more!

BSAS will not be held responsible for lost sleep or gear addiction from use of this excellent astronomy equipment! For information on what's currently available, contact info@bsasnashville.com.

President's Corner

By Steve Hughes

Greetings Fellow Astro-nuts!

There's always plenty happening behind the scenes at BSAS, and we're constantly working to make your experience even better!

We've been fine tuning our Zoom setup and you can look forward to some fantastic guest speakers in the months ahead!

As a member club of ***The Astronomical League***, we'll be highlighting more of the great perks and resources available to you.

We're building a better online inventory for our ***Equipment Loan Program*** so you'll have a much clearer picture of all the telescopes and gear you can borrow for free.

Finally, we are ***always in need of volunteers!*** Whether it's helping with star parties, setting up gear, outreach events, or yelling at the clouds, every contribution matters! If you have a few hours to give, please reach out — *we'd love to have you on the team!*

As always, be safe, be kind, and keep looking up!

Steve Hughes
President, BSAS

"Every star may be a sun to someone..." - Carl Sagan

Upcoming Events

June Member Meeting
Vincent Ledvina "The Aurora Guy"
Wednesday, June 17
7:00 - 9:00 p.m.
Warner Park Nature Center
7311 Highway 100 Nashville

Public Star Party
Saturday, June 20
9:00 - 11:00 p.m
Shelby Bottoms Nature Center
Nashville

July Member Meeting
Wednesday, July 15
7:00 - 9:00 p.m.
Warner Park Nature Center
7311 Highway 100 Nashville

BSAS
Barnard-Seyfert Astronomical Society

The *Eclipse* is the monthly newsletter of the Barnard-Seyfert Astronomical Society, Nashville, Tennessee.

Comments, questions, and submissions for future issues are welcome and may be sent to eclipse@bsasnashville.com.

Don Filer, Editor

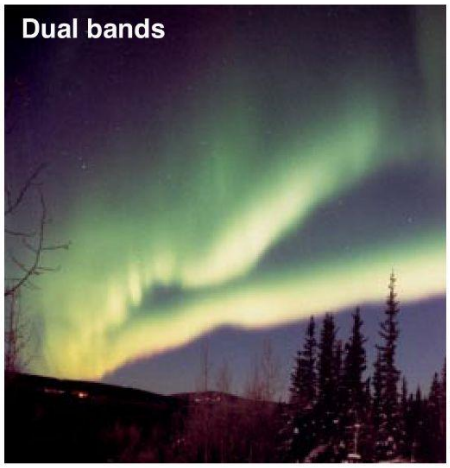
Aurora

What is the aurora?

Named for the Roman goddess of dawn, the aurora is a mysterious and unpredictable display of light in the night sky. The **aurora borealis** and **aurora australis** – often called the northern lights and southern lights – are common occurrences at high northern and southern latitudes, less frequent at mid-latitudes, and seldom seen near the equator. While usually a milky greenish color, auroras can also show red, blue, violet, pink, and white. These colors appear in a variety of continuously changing shapes. Sometimes the aurora is so dim and scattered as to be mistaken for clouds or the Milky Way; sometimes it is bright enough to read by.

Jan Curtis

Auroras are a spectacular sign that our planet is electrically connected to the Sun. These light shows are provoked by energy from the Sun and fueled by electrically charged particles trapped in Earth's magnetic field. While beautiful to behold, they can be a nuisance to those who depend on modern technology.



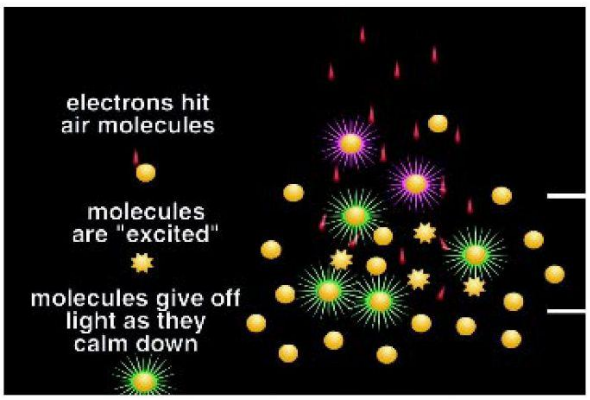
Jan Curtis

What does an aurora look like?

Auroras can appear as long, narrow **arcs** of light, often extending east to west from horizon to horizon. At other times they stretch across the night sky in **bands** that kink, fold, and swirl, or even ruffle like curtains. They can spread out in multi-colored **rays**, like vertical shafts of light that stretch far up into space. And sometimes they engulf the sky in a thin cloud or veil. As aurora expert Robert Eather once wrote: "Like snowflakes, no two are ever quite the same."

Dramatically different auroras can appear in the course of a single night, and all of the forms can vary in intensity. The late evening auroras are usually long diffuse arcs, which slowly evolve into rayed arcs or bands that show increasing activity. As the night progresses, the bands and arcs become rippled and folded, eventually breaking into rays and -- if the viewer is lucky -- a **corona**. The corona is considered the most spectacular form of a rayed aurora, appearing overhead with all shafts converging to a center point. **Patches**–fluffy clouds of light–and flickering auroras are generally seen later in the night.

Jan Curtis



What causes the aurora?

The typical aurora is caused by collisions between fast-moving electrons from space with the oxygen and nitrogen in Earth's upper atmosphere. The electrons—which come from the Earth's **magnetosphere**, the region of space controlled by Earth's magnetic field —transfer their energy to the oxygen and nitrogen atoms and molecules, making them "excited". As the gases return to their normal state, they emit photons, small bursts of energy in the form of light. When a large number of electrons come from the magnetosphere to bombard the atmosphere, the oxygen and nitrogen can emit enough light for the eye to detect, giving us beautiful auroral displays. This ghostly light originates at altitudes of 100 to more than 400 km (60 to more than 250 miles).

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Why do auroras come in different colors and shapes?

The color of the aurora depends on which gas — oxygen or nitrogen — is being excited by the electrons, and on how excited it becomes. The color also depends upon how fast the electrons are moving, or how much energy they have at the time of their collisions. High energy electrons cause oxygen to emit green light (the most familiar color of the aurora), while low energy electrons cause a red light. Nitrogen generally gives off a blue light. The blending of these colors can also lead to purples, pinks, and whites. The oxygen and nitrogen also emit ultraviolet light, which can be detected by special cameras on satellites.

The different shapes of auroras are a mystery that scientists are still trying to unravel. The shape seems to depend on where in the magnetosphere the electrons originate, what causes them to gain their energy, and why they dive into the atmosphere.

Jan Curtis

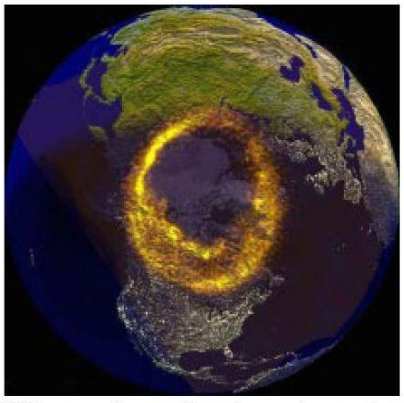
Jan Curtis

Where can you see an aurora?

Auroras usually occur in ring-shaped areas about 4,000 km (2,500 miles) in diameter around the magnetic poles of the Earth. These rings are known as **auroral ovals**. The northern oval traces a path across central Alaska and Canada, Greenland, and northern Scandinavia and Russia. In the southern hemisphere, the auroral oval hovers mostly over the oceans circling Antarctica, but it can occasionally reach the far edges of New Zealand, Chile, and Australia. There is a common misconception that auroras can only be seen near the poles of the Earth, but auroras are actually quite rare at the geographic and geomagnetic poles. In fact, if you made an expedition to the north coast of Alaska, you would usually have to look south to see an aurora.

The auroral ovals expand and contract with the level of auroral activity, sometimes extending to lower latitudes to cover much of North America or Europe when the space around Earth is most disturbed.

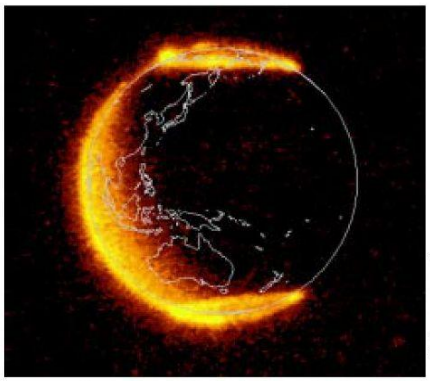
The complete auroral ovals in the north and south are nearly mirror reflections of each other, or **conjugate**. But it wasn't until the Space Age, when satellites could gather images of the entire Earth, that scientists were able to see the large-scale auroras around both poles at the same time.


UV image of auroral oval superimposed on a figure of partly sunlit Earth

When can you see an aurora?

Low levels of auroral activity occur day and night, every day, in the northern and southern **auroral ovals**. Since the aurora is much dimmer than sunlight (a million times), it cannot be seen from the ground in the daytime. The best displays tend to occur in the few hours before midnight.

Light pollution caused by city lights makes it difficult to see auroras except in dark rural areas. Perhaps the best chance to see an aurora is during a high-latitude airplane flight at night. But when a really bright aurora occurs, you can see it from the city and even through thin clouds.


Polar spacecraft

Auroral ovals in UV light from far above the equator. The arc of light (left) is sunlight.

In Alaska and central Canada, the aurora can be a nightly occurrence. Go a little further south and you might see an aurora ten times a year. Auroras are much more likely to occur during periods of high sunspot numbers, at the peak of the Sun's eleven-year **sunspot cycle**. Then you might see an aurora once or twice a year in regions as far south as Texas or Florida. In the rarest events, auroras are observed near the equator, as when in 1909 the most potent geomagnetic storm on record brought an aurora to Singapore.

Auroras are easier to see in the wintertime because it is dark for longer periods of the day. And clear winter nights tend to be better for observing the sky due to less haze and water vapor in the air.

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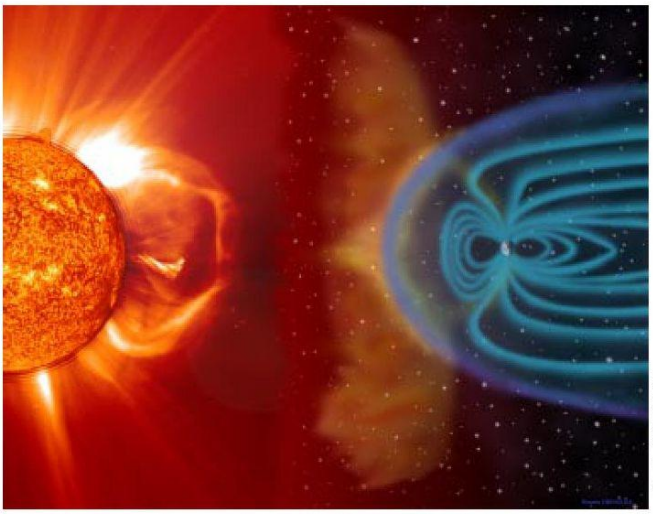
How is the aurora related to the Sun?

Auroras are a sign that Sun and Earth are connected by more than sunlight. They indicate that something electric is happening in space.

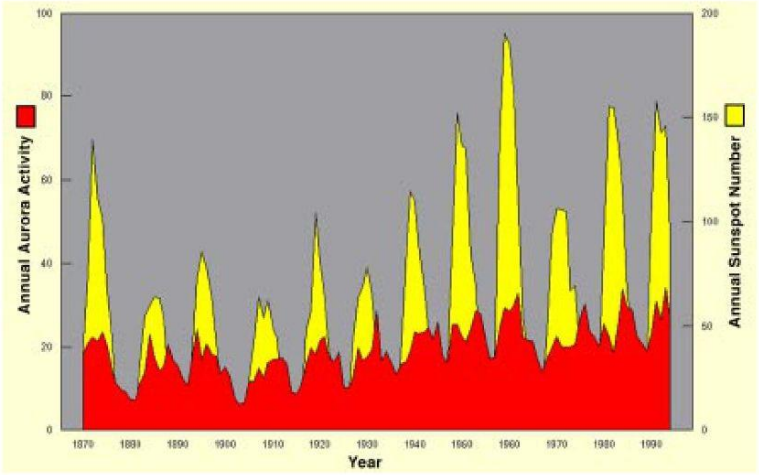
The Sun provides the energy for the aurora, but particles in the aurora come from Earth's own neighborhood in space. The Sun's energy is carried toward the Earth in the **solar wind**, a stream of electrically charged particles (mostly protons and electrons) flowing out from the Sun in all directions. As these particles approach Earth, they interact with our planet's magnetic field. This field deflects most of the particles, creating a huge cavity in the solar wind–the magnetosphere. This region stretches about 60,000 km (40,000 miles) toward the Sun and several hundred thousand kilometers in a long tail on the night side, away from the Sun.



Steele Hill, NASA

A solar storm blasts out from the Sun and heads towards Earth's protective shield, the magnetosphere (sizes not to scale)

Variations in the properties of the solar wind control the amount of energy that can leak into the magnetosphere. Here the energy is converted into electric currents and electromagnetic energy and temporarily stored in the magnetosphere, especially in its tail. When this influx of energy is relatively large, the magnetosphere loses its equilibrium, or balance. To become stable again, the excess energy is released suddenly, with much of the energy going into the acceleration of electrons.



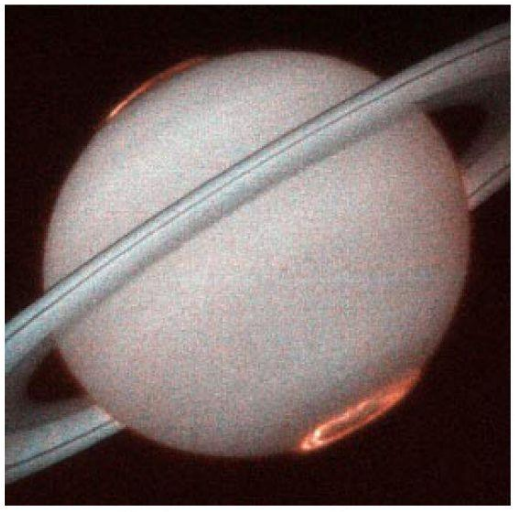
Historical record of linkage between sunspots and auroral activity

The aurora primarily occurs where the magnetic field guides the electrons from the tail of the magnetosphere into the atmosphere where they produce the aurora. Because the tail is on the night side of the Earth (away from the Sun), the more intense, dynamic and beautiful auroras occur near midnight.

For many years, it was thought that the particles in the aurora came directly from the Sun because great auroral displays often occurred a few days after large eruptions on the Sun. But particles coming directly from the Sun would lose their energy at much higher altitudes than where we find the aurora. And due to the deflection of solar wind particles by the magnetosphere, particles straight from the Sun can gain access to the atmosphere only near the Poles, so they would not form the auroral ovals that we see lying a couple of thousand kilometers out from the Poles.

Do other planets have auroras?

Auroras have been observed on Jupiter, Saturn, and Uranus, but not on Mars, Venus, or Mercury. Any planet with a magnetic field and an atmosphere should likely have auroras (Mars and Venus have no global magnetosphere; Mercury has almost no atmosphere). Since an aurora indicates the presence of an atmosphere, we might be able use the presence of auroras to find planets beyond our solar system that could support life.



J.T. Trauger/JPL and NASA

Conjugate auroras on Saturn

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Does the aurora make a sound?

Observers have speculated about this for hundreds of years, noting that they have heard crackling, swishing, and hissing sounds while they watched the aurora dance in the sky. But scientific experimenters have been unable to detect any audible sound from the northern lights, and most scientists cannot find a reason why the lights should make a sound. The air in the upper part of the atmosphere where auroras are formed is too thin to conduct audible sound any distance. So if sounds are heard, they must come from some other phenomenon occurring at the same time.

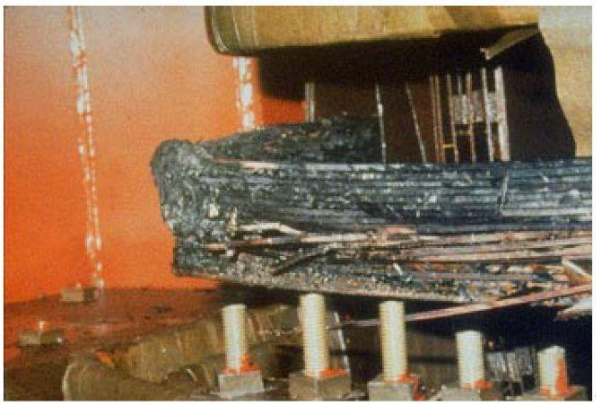
Photo: Dick Hutchinson

Why do we care about auroras?

Before telegraphs and telephones, rockets and radio, people were not affected by auroras. Solar activity and the resulting auroral light shows were curiosities of nature. But then humans started to harness the power of electromagnetism, developing networks of electrical power and communications systems. It was soon learned that the aurora could affect those systems.

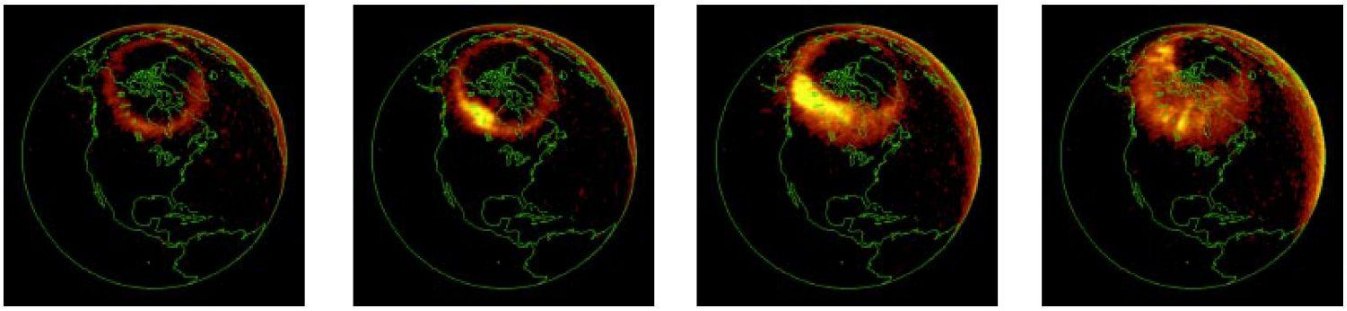
Aurora australis (Southern Lights) from a space shuttle

The electrons spiraling down the Earth's magnetic field to produce the aurora are themselves an intense electric current. The rapidly changing current can cause unwanted electrical currents to flow through long communication lines, power lines and pipelines, producing disruptions in communication, electrical outages, brownouts, and fuel leaks. At the same time, the upper atmosphere, or **ionosphere**, becomes rippled like a piece of corrugated cardboard. Radio signals are refracted (bent) differently than expected or even absorbed, making it difficult to communicate at certain frequencies. Electrons accelerated to high energies in the tail of the magnetosphere can raise havoc with satellites, damaging electronics and creating false commands.



Courtesy: John Kappenman

Large transformer damaged by 1989 geomagnetic storm at NJ power plant



Polar spacecraft

An auroral oval seen from space as it increases in intensity and area over several hours (seen in UV light)

Polar Mission, Mail Code 696, NASA Goddard Space Flight Center, Greenbelt, MD 20771– *http://istp.gsfc.nasa.gov/istp/polar*

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Who has helped us understand the aurora?

Some of the brightest minds in history have puzzled over the aurora. In the **4th century B.C.** Aristotle made one of the first truly scientific accounts of the aurora borealis, describing "glowing clouds" and a light that resembled flames of burning gas.

The real advances in auroral science began when scientists started connecting auroras to magnetism. In the **late 16th century**, William Gilbert conducted experiments that led him to propose that the Earth itself was a giant magnet, with a North and South Pole as if a great bar magnet had been buried inside.

Courtesy: Danish Meteorological Institute

A Finnish oil painting of the aurora

In the **17th century** Anders Celsius proposed that the lights were caused by moonlight reflected by ice and water in the air. Rene Descartes (France) and other scientists asserted that the refraction of moonlight and the reflection of colored rays by ice crystals in the atmosphere somehow caused the aurora. Some of these misconceptions survive even today.

In **1739,** a London watchmaker, George Graham, noticed that on some days, a compass needle made irregular motions from true north that he could not explain. That same year in Sweden, Anders Celsius detected the same phenomenon and noted that it seemed to occur when auroras danced in the sky.

Benjamin Franklin wrongly attributed the lights to a sort of lightning or electric discharge from clouds above the polar regions.

An important discovery of the link between solar activity and the aurora occurred in England in **1859** when astronomer Richard Carrington and amateur sun-watcher Richard Hodgson independently noticed bright patches of white light coming from around some sunspots. These were the first reported observations of a solar flare. About 18 hours after the flare, the magnetic instruments at the Kew Observatory in London measured large variations in the Earth's magnetic field. Across the Atlantic, Elias Loomis, a Yale professor, noted a day later that the auroral light show was "one of the most remarkable ever recorded in the United States."

It wasn't until the **late 1800s and early 1900s** that spectroscopic measurements of auroral light identified oxygen and nitrogen as the color sources for the aurora.

Around the **turn of the 20th century,** Norwegian physicist Kristian Birkeland revived Gilbert's experiments. He placed a spherical magnet inside a vacuum chamber and shot an electron beam at it. He found that the beam was guided by the magnetic field to hit the sphere near the poles. He reasoned that the Sun must shoot beams of corpuscles (now called electrons) toward Earth, where the planet's magnetic field guides them in near the Poles. His view of the aurora was close to the truth, except that the corpuscles originate in our magnetosphere, not from the Sun.

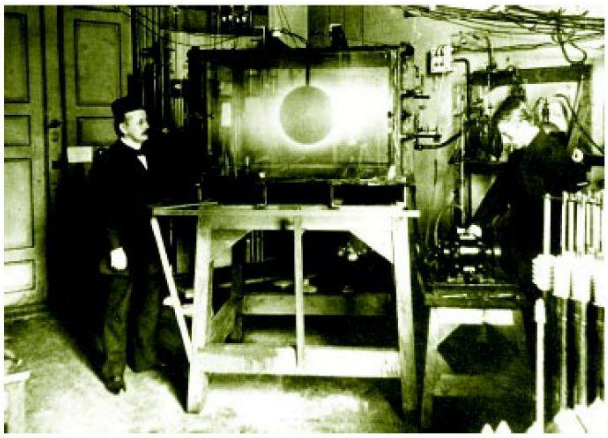

Photo: Fra Birkeland

Birkeland in his lab testing his theories on what causes aurora

In the **1930s**, Sydney Chapman and Vincent Ferraro proposed that clouds of electrically charged particles ejected from the Sun fly across empty space and envelope the Earth to cause auroras; we now call this mixture of electrons and protons plasma, the fourth state of matter. Since these clouds would be excellent conductors of electricity, they would generate currents and distort Earth's magnetic field.

Following the launch of the Sputnik satellites by the Soviet Union and the Explorer satellites by the United States, centuries of scientific theories, remote observations and wild speculations were put to the test by first-hand observations. Scientists such as James Van Allen and Sergei Vernov discovered that the space around Earth was filled with high-energy particles, trapped by the Earth's magnetic field into doughnut shaped rings around the Earth, called the **radiation belts**. Russian and American space probes proved the existence of the solar wind and a series of US satellites mapped out the shape of the magnetosphere. Satellites in the tail of the magnetosphere found it unstable, and low altitude polar satellites measured the electrons producing the aurora.

Today scientists understand much about the transfer of energy from the Sun, its temporary storage in the magnetosphere, and its release into electrons that crash into the atoms and molecules of the atmosphere to produce the awesome auroral light shows. But the aurora still keeps hidden a number of mysteries about why and how it appears as such wondrous displays.

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How do different cultures react to the aurora?

"These northern lights have this peculiar nature, that the darker the night is, the brighter they seem, and they always appear at night but never by day…. In appearance, they resemble a vast flame of fire viewed from a great distance. It also looks as if sharp points were shot from this flame up into the sky." -- Written in A.D. 1230 by an anonymous Norwegian author

Photo: Michel Tournay

Dancing aurora taken near Quebec, Canada

To the dispassionate, objective viewer, auroras can appear as colorful, wispy curtains of light ruffling in the night sky. But legend and lore across the ages and around the world tell of more in the heavens than just a brilliant, ghostly light show.

Ancient folklore from China and Europe describes auroras as great dragons or serpents in the skies. In Scandinavia, Iceland, and Greenland, an aurora was often seen as the great bridge Bifrost, the burning archway by which the gods traveled from heaven to Earth.

1893 Fridtjof Nansen woodcut of aurora

Some Native American tribes pictured spirits carrying lanterns as they sought the souls of dead hunters, while Eskimos saw souls at play, using a walrus head as a ball. One legend from the Inuit describes the aurora this way: "The sky is a huge dome of hard material arched over the flat Earth. On the outside there is light. In the dome, there are a large number of small holes, and through these holes you can see the light from the outside when it is dark. And through these holes the spirits of the dead can pass into the heavenly regions. The way to heaven leads over a narrow bridge that spans an enormous abyss. The spirits that were already in heaven light torches to guide the feet of the new arrivals."

In Norway, the aurora is to be viewed with awe. There is to be no waving, whistling, staring, or any other form of "defiance". If you wave at the aurora, according to myth, it will increase in activity and reach down and touch you, with apparently unwelcome results.

Those who did not see supernatural beings often interpreted the aurora as a predictor of the weather. Snow and bitter cold were often thought to follow bright auroral displays in Scandinavia, while the Eskimos saw just the opposite: the spirits were bringing favorable weather.

"And the skies of night were alive with light, with a throbbing, thrilling flame;
Amber and rose and violet, opal and gold it came.
It swept the sky like a giant scythe, it quivered back to a wedge;
Argently bright, it cleft the night with a wavy golden edge.
Pennants of silver waved and streamed, lazy banners unfurled;
Sudden splendors of sabres gleamed, lightning javelins were hurled.
There in awe we crouched and saw with our wild, uplifted eyes
Charge and retire the hosts of fire in the battlefield of the skies."

— Robert Service, from "The Ballad of the Northern Lights," published in 1908

For more information on the web

The Exploration of the Earth's Magnetosphere
http://www.phy6.org/Education/Intro.html

The Aurora Explained
http://www.alaskascience.com/aurora.html

Windows to the Universe
http://www.windows.ucar .edu/spaceweather/

Sun-Earth Day 2003
http://sunearth.gsfc.nasa.gov/sunearthday/2003/

Observing Page

Image of M65 and M66 by Ron Ladd

Image of M81 and M82 by Tony Drinkwine. 2.5 hours with a Dwarf 3

Image of a portion of Markarian's Chain by Pete Stegemeyer. 2 hours with a Dwarf 3. Pete shared the uncropped image on the BSAS Google group.

Want to see your images here? Send with a short description to eclipse@bsasnashville.com.

Reminder: Getting to Our Natchez Trace Observing Site

Natchez Trace bridge that goes over Highway 96 will be closed through Spring 2027 for updates. It will be closed from mile marker 440 to 437. The rest of the Parkway is open, just the bridge is closed.

Anyone who normally enters the Natchez Trace Parkway at the Highway 100/McCrory Lane entrance near the Loveless Cafe will only be able to go to the pull off before the bridge and will have to turn back. To get to our private star party locations, you will have to enter the Parkway from the Highway 96 entrance. If coming from I-40 or Bellevue area, you'll have to go down HWY 100 past the Natchez Trace entrance to the HWY 96 intersection and turn left. It's about a mile or 2 further distance, but actually a little faster this way as the speed limit is 55 mph on 100/96 vs 35 or 40 mph on the Parkway. If coming from the Franklin or Fairview area, you probably already enter from HWY 96, so nothing should change.

Thanks to Tony Drinkwine for this reminder!

Featured Object
NGC 5907 - The Splinter Galaxy

High in the northern sky in Draco lies NGC 5907, also known as the Splinter Galaxy - a razor-thin spiral seen perfectly edge-on. Stretching about 100,000 light-years across, it glows near magnitude 10 and is faintly visible in large binoculars under very dark skies. Through small telescopes, it appears as a dim, needle-like streak; with medium apertures revealing a narrow dust lane dividing the disk and large instruments showing subtle mottling and a soft glow tapering at each end. Astrophotographers can capture its delicate symmetry and the ghostly halo that surrounds it.

Although discovered by William Herschel on May 5th, 1788, deep imaging has since revealed a faint stellar stream looping around it - evidence of a long-ago galactic merger. NGC 5907 offers a glimpse of cosmic evolution in action and is one of the most elegant spirals of the northern summer sky.

Text From: Highpoint Scientific

Images by Bobby McCullough showing before and after of the supernova visible in NGC 5907.

Less than 15 hours for each image. Last year is from Bortle 6 Franklin and this year from Bortle 1 Starfront. While we began seeing SN 2026kid near the end of April this year, it actually occurred around 45 million years ago. Both images were captured with a Seestar S50 in EQ mode using 20 and 30 second exposures. Processed in Pixinsight and Gimp.

Photo by Steve Hughes 6/3/26
Tycho Crater

Don't Forget the Moon!

Here is a small collection of moon photos by members…enjoy!

* * *

Send more!

iPhone photo by Jake Preston 6/4/26

Photo by Tony Proctor 6/2/26

Upcoming Events & Activities

June Member Meeting

Vincent Ledvina "The Aurora Guy"

Wednesday, June 17th, 7:00 - 9:00 pm

Warner Park Nature Center

7311 Tennessee Highway 100, Nashville

Other Upcoming Events

The joint-venture BSAS/Dyer star parties will continue for the next few months while the observatory is undergoing renovations. Unfortunately, weather caused cancellation of the BSAS/Dyer Star Party on Saturday, June 6, at the Bowie Nature Center in Fairview. We have another chance this month for a public star party at Shelby Bottoms Nature Center on **Saturday, June 20**, 9:00-11:00.

Call for Volunteers!!

BSAS is a non-profit, 100% volunteer operated organization. Please consider giving us a hand if you can!

Specifically, we could use some help with the following:

- Monthly Meeting Setup: Help set up the space and tech for the meetings.
- Program Committee: Help research content for our monthly meetings.
- Event Crew: Help with setting up our various events.

If you have an interest in helping with any of the above, or in any other way, please email us at volunteer@bsasnashville.com.

Night Sky Network

The Night Sky Network (NSN) program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.org to find local clubs, events, and more! You can catch up on all of NASA's current and future missions at nasa.gov. With articles, activities and games NASA Space Place encourages everyone to get excited about science and technology. Visit spaceplace.nasa.gov to explore space and Earth science!

Looking For Meeting Minutes?

Regular- and Board-Meeting minutes are stored on the BSAS Google Drive, and available for review once posted.

BSAS Miscellany

Look what you missed in May if you were not at the BSAS monthly meeting! Don't miss June's meeting: 6/17, 7 pm Warner Parks Nature Center.

Okay, so this shot wasn't taken by one of our members but its still way cool. The photographer spent a freezing night at the top of a mountain in the Alps to get this. See more HERE.

Your editor traveled to the Texas Star Party last month. Above is a shot of one of the three fields filled with telescopes including at least four over 30".

I enjoyed excellent, clear, dark skies (it was cloudy for 3 nights). Omega Centauri was an easy naked eye object and truly spectacular in a telescope (teaser by Seestar 30 below). It was hard to resist just sitting and soaking up the Milky Way. I attempted to complete one of the observing challenge lists but got stymied by some tough early morning targets. Still huge fun!

Will I go again next year? I would love to. Who else is up for a roadtrip?

The BSAS 2026 Member Wall Calendar is SOLD OUT!!

But fear not!.. We will continue to take orders and print more batches as orders come in! Just head over to bsasnashville.com and order one today! Again a VERY special thanks to all the BSAS members who shared some of their amazing images to make this project possible!! Calendars are $20 for members, $25 for non-members.

Click here for a preview!

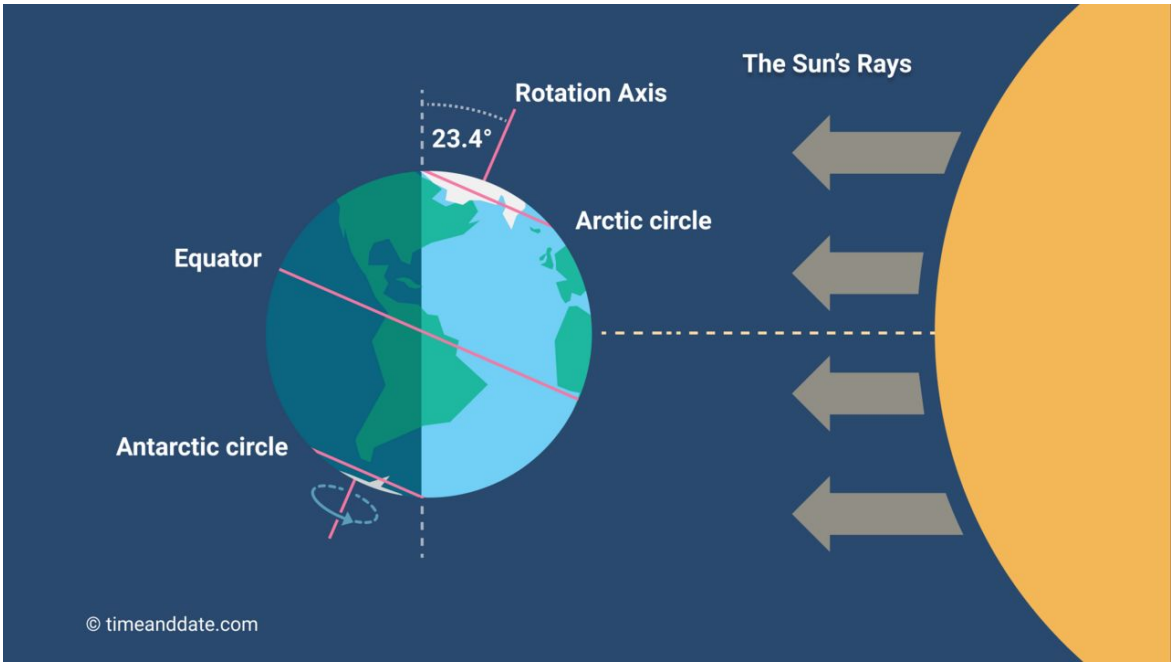
Summer Solstice will soon be here!

The Summer Solstice marks the official beginning of astronomical summer in the Northern Hemisphere and occurs each year around June 20–21. On this day, the Sun reaches its northernmost point in the sky and follows its longest path above the horizon, giving us the greatest amount of daylight of the year.

The solstice occurs because Earth's axis is tilted by about 23.5 degrees relative to its orbit around the Sun. As Earth travels around the Sun, the Northern Hemisphere gradually tilts toward the Sun during spring, reaching its maximum tilt at the summer solstice. At that moment, the Sun appears directly overhead at the Tropic of Cancer (23.5° north latitude).

While the solstice provides the longest day and shortest night of the year, it is not the hottest day. The atmosphere, land, and oceans continue to absorb more energy than they release for several weeks afterward, creating a seasonal lag that typically makes July and August warmer than June.

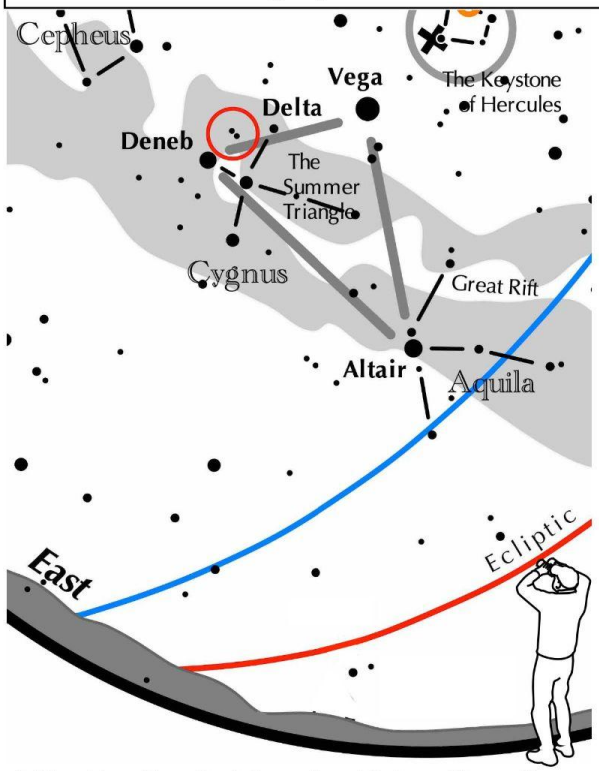
Cultures around the world have celebrated the summer solstice for thousands of years. Ancient monuments such as Stonehenge were carefully aligned with the Sun's position on the solstice. Today, the summer solstice remains a reminder of our planet's place in space and the celestial rhythms that shape life on Earth.



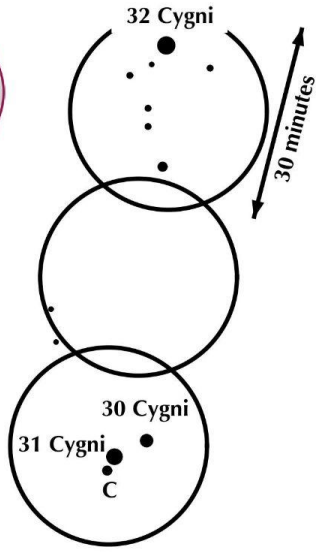
The Patriotic Star

Just in time for July 4th: The Patriotic Star

This time of year, Cygnus rises high in the northeast after sunset.
• Draw an imaginary line from Deneb, its brightest star to Delta, the western star on the constellation's cross bar.
• About half way between Deneb and Delta lies an intriguing stellar jumble.
• Binoculars reveal two groups of stars.



This Fourth of July, aim higher than the exploding fireworks to the "Patriotic Star." Can you see the red, white and blue?



Just in time for Independence Day is the sky's own "Patriotic Star." Actually, it is a grouping of three stars, each being the brightest component of its own multiple system.
• The brightest partner, twinkling at mag. 3.8, is 31 Cygni (aka Omicron-1 Cygni).
• Six minutes to its northwest glows the 4.9 mag. 30 Cygni, while the dimmest member, "C," immediately to the southeast of 31 Cygni, claims a magnitude of 7.0.

Aim your scope at these three stars to make your own color estimations. You may agree with some observers that their advertised red, white, and blue colors may be a bit of a stretch. Slightly de-focus the trio to give small, round blurs instead of crisp points. Now can you distinguish color differences among these three very different stars?

Orangish-red 31 Cygni is classified as a super giant with a surface temperature of approximately 4000ºF, about 2000ºF cooler than our own sun. Incredibly, if placed within our own solar system, its radius bloats the star's surface beyond Mars! 30 Cygni is hotter at 8700ºF, giving it a white appearance. Finally, "C" fires the hottest, possessing a temperature over 11000ºF. If you look closely, it appears bluish.

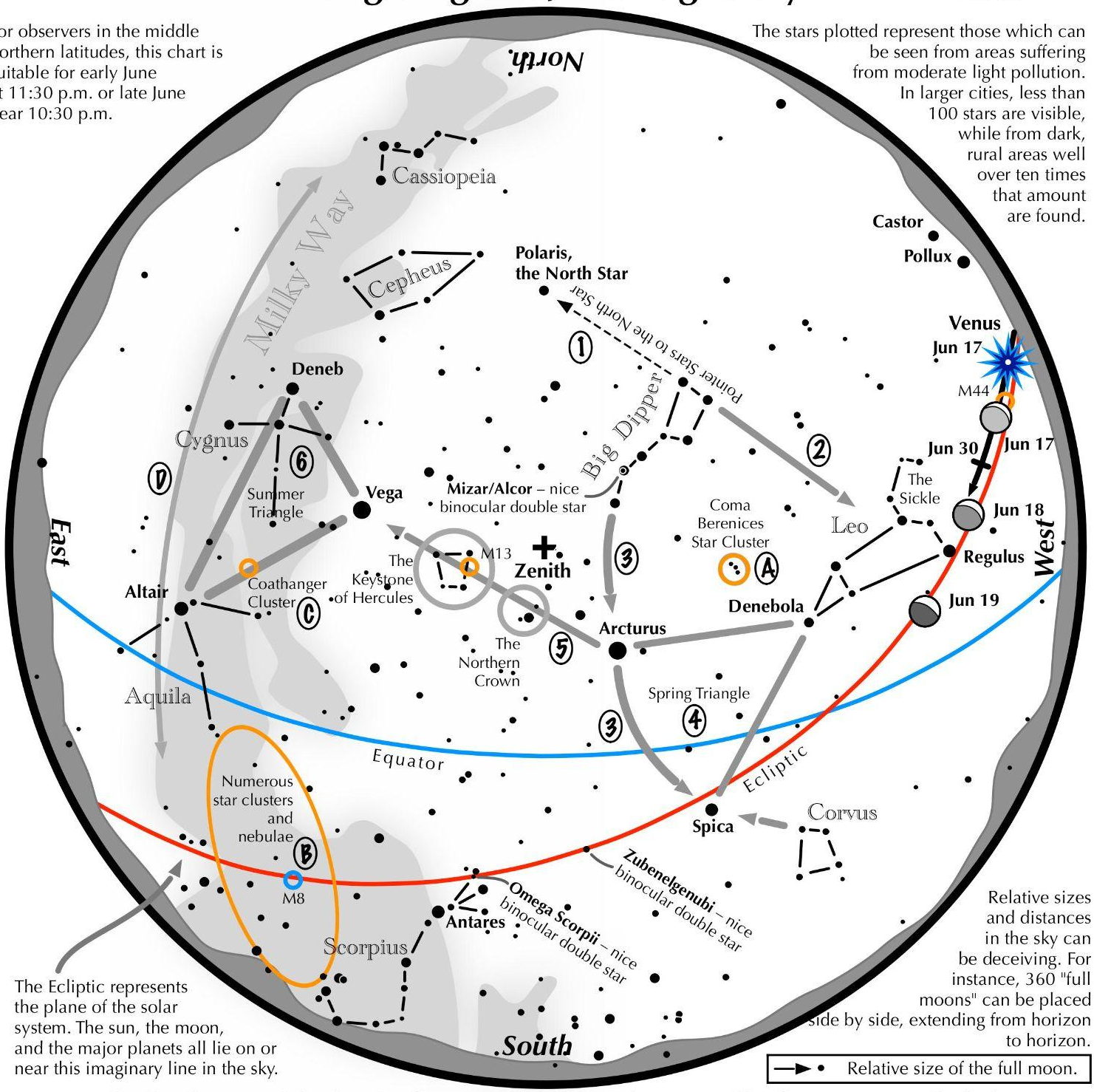
About 1° north of 30&31 Cygni shines the 3.9 magnitude 32 Cygni, sometimes called Omicron-2. It is the northern member of a group of 7th and 8th magnitude stars, forming the shape of a "micro-Cygnus" with 32 Cygni playing the role of Deneb. The pretty flock of Cygnets points south to the stellar family headed by 31 Cygni.

Navigating the June Night Sky

2026

For observers in the middle northern latitudes, this chart is suitable for early June at 11:30 p.m. or late June near 10:30 p.m.

The stars plotted represent those which can be seen from areas suffering from moderate light pollution. In larger cities, less than 100 stars are visible, while from dark, rural areas well over ten times that amount are found.



The Ecliptic represents the plane of the solar system. The sun, the moon, and the major planets all lie on or near this imaginary line in the sky.

Relative sizes and distances in the sky can be deceiving. For instance, 360 "full moons" can be placed side by side, extending from horizon to horizon.

Relative size of the full moon.

Navigating the June night sky: Simply start with what you know or with what you can easily find.

1. Extend a line north from the two stars at the tip of the Big Dipper's bowl. It passes by Polaris, the North Star.
2. Draw another line in the opposite direction. It strikes the constellation Leo high in the west.
3. Follow the arc of the Dipper's handle. It first intersects Arcturus, the brightest star in the June evening sky, then Spica.
4. Arcturus, Spica, and Denebola form the Spring Triangle, a large equilateral triangle.
5. To the northeast of Arcturus shines another star of the same brightness, Vega. Draw a line from Arcturus to Vega. It first meets "The Northern Crown," then the "Keystone of Hercules." A dark sky is needed to see these two dim stellar configurations.
6. High in the east are the three bright stars of the Summer Triangle: Vega, Altair, and Deneb.

Binocular Highlights

A: Between Denebola and the tip of the Big Dipper's handle, lie the stars of the Coma Berenices Star Cluster.
B: Between the bright stars of Antares and Altair, hides an area containing many star clusters and nebulae.
C: 40% of the way between Altair and Vega, twinkles the "Coathanger," a group of stars outlining a coathanger.
D. Sweep along the Milky Way for an astounding number of faint glows and dark bays.

In honor of the club's 90th anniversary we partnered with Hatch Show Print to create a unique poster that would honor the achievement of the club. For those who don't know Hatch Show has been making posters for a variety of events and concerts for 140 years. In all that time we are their first astronomy club. On the poster at the center is the moon. This was made from a wood grained stencil that the shop has used for over 50 years. To contrast that the telescope that the people are using is a brand new stencil made for our poster. The poster has three colors. First the pale yellow color of the moon was applied. Next the small stars, circles, and figures at the bottom were colored in metallic gold. The third color is a blue for the night sky. Where it overlaps with the metallic gold it creates a darker blue leaving the figures at the bottom looking like silhouettes.

This was a one-time printing so the 100 that we have are all that will be printed.

The prints are approximately 13 3/4” x 22 1/4” and are available for $20 at our membership meetings, or $25 with shipping by ordering through bsasnashville.com. Frame not included.

BSAS
Barnard-Seyfert Astronomical Society

Next BSAS meeting
Wednesday, June 17, 7:00 p.m.

Warner Park Nature Center
7311 Tennessee Highway 100
Nashville, TN 37221