The ECLIPSE

August 2020

The Newsletter of the Barnard-Seyfert Astronomical Society

Next Membership Meeting:

August 19, 7:30 pm
Online meeting:
"The Great Comet(s) of 2020"

Details on page 8.

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Barnard-Seyfert Astronomical Society

BSASNashville.com

Letter from the President

Did you get to see the comet? Comet C/2020 F3 (NEOWISE) graced us with some pretty spectacular views over the past few weeks. Even some naked eye sightings in the right conditions. Thanks to all of you who posted pictures to the Google group of the comet. I really enjoy the pictures.

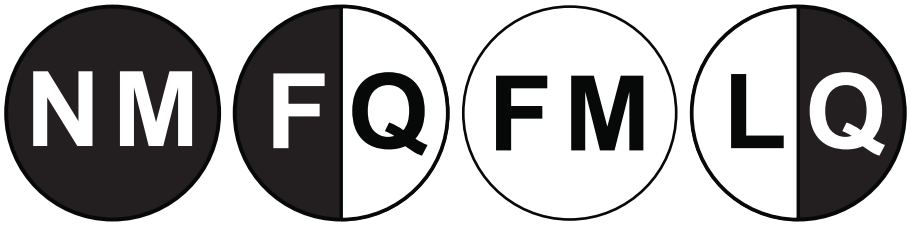
Did you get to see our virtual meeting last month? I was unable to attend, but Tom Fields did a Zoom presentation on spectrography. I wish I could have seen it. That meeting was a sort of test run for virtual meetings for BSAS. We will have another virtual meeting this month where Theo will discuss comets (a timely topic). It also looks like we have another virtual meeting set up for September, I just have to finalize with the presenter. The virtual meetings will be a great way for us to socialize and have meetings without having to worry about masks or social distancing. The way things are looking, we may have the rest of the year be virtual. The only impact on our regular meetings would be the Christmas dinner in December – but we could still have a program. As always, keep your eyes open for emails or Facebook updates for up to the minute meeting information.

Along with the fading comet, there are a couple of things happening this month in the sky. Jupiter and Saturn will have oppositions in August and Mars will have a close conjunction with the moon on the morning of the 9th. Get those scopes and/or binoculars out and see if you can find the Galilean moons or resolve the rings of Saturn. Watch over a few nights and see how the moons of Jupiter change position. Hopefully the clouds stay away so that we can get out and enjoy these events.

Keep staying safe out there!

Clear skies,

Keith Rainey



Aug 18 Sept 17 | **Aug 25 Sept 23** | **Aug 3 Sept 2** | **Aug 11 Sept 10**

Happy Birthday Maria Mitchell
by Robin Byrne

This month we celebrate the birth of America's first female astronomer.

Maria Mitchell was born August 1, 1818 in Nantucket Island, Massachusetts, the third of 10 children. Being Quakers, who valued education for all, Maria and all her siblings were raised to be knowledgable on many topics. Maria owes her career to her father, a school teacher, who had a scientific inclination and was interested in astronomy. At the age of 13, Maria helped her father watch and calculate the exact timing of an eclipse of the Sun.

In 1835, Maria opened her own school, where she used innovative instructional techniques, and insisted on teaching both Black and white children. A year later, Maria followed in her mother's footsteps and worked as a librarian at the Nantucket Antheneum for 20 years. During that time, her father's example led her to read as many math and science books as she could find. So Maria was a self-taught astronomer.

At the same time, she spent her evenings in an observatory her father built on the roof of their house. They surveyed the sky to assist the local seamen in navigation. In 1847, on October 1, while working on this project, Maria discovered a comet. Once it was confirmed, it was named after her: "Miss Mitchell's Comet." She was only the third woman to ever discover a comet. This brought world-wide attention to Maria. One year later, she became the first woman elected to the American Academy of Arts & Sciences (and it was several decades before another woman joined their ranks).

In 1849, Maria went to work for the U.S. Nautical Almanac Office, working on the U.S. Coast Survey. Her responsibility was to track the positions of planets, especially Venus, to aid in navigation.

In 1865, a new college for women opened: Vassar College. Maria was asked to teach astronomy. She was reluctant, due to her lack of formal training. However, the additional incentive of being made the director of an observatory with a 12" reflector built just for her was what it took to bring her on board. Her teaching style was unconventional - she didn't take attendance or assign grades. Her teaching

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Maria Mitchell, continued

philosophy can be seen in this quote: “I cannot expect to make astronomers, but I do expect that you will invigorate your minds by the effort at healthy modes of thinking. When we are chafed and fretted by small cares, a look at the stars will show us the littleness of our own interests.” After teaching for several years, Maria discovered that her salary, and that of the only other female professor, were much lower than that of less experienced male professors. Maria insisted upon getting a raise. She got it.

Maria studied almost every area of astronomy during her career. She pioneered the practice of photographing sunspots on a daily basis to study their changes. She also studied comets, nebulae, double stars, variable stars, solar eclipses, and the satellites and atmospheres of Saturn and Jupiter.

Maria died June 28, 1889 in Lynn, Massachusetts, just a month shy of her 71st birthday.

Being the first to do anything is always noteworthy, but does not necessarily have an impact on others. Being the first female astronomer in America is important, but Maria went beyond that. By teaching at Vassar, she inspired more women to follow in her footsteps. Maria also helped found the Association for the Advancement of Women so that other women could have the same opportunities she had. Today, roughly one third of professional astronomers are women. All women in astronomy can trace their heritage back to this month’s birthday-girl. Thank you, Maria Mitchell.

References:

The New Encyclopaedia Britannica, 1995 Notable American Women 1607-1950; Ed’s: James, James & Boyer, 1971

Maria Mitchell - Wikipedia

A United Launch Alliance Atlas V rocket with NASA's Mars 2020 Perseverance rover onboard launches from Space Launch Complex 41, Thursday, July 30, 2020, at Cape Canaveral Air Force Station in Florida. The Perseverance rover is part of NASA's Mars Exploration Program, a long-term effort of robotic exploration of the Red Planet. Photo Credit: (NASA/Joel Kowsky)

Summer Triangle Corner: Deneb
by David Prosper

Long exposure shot of Deneb (brightest star, near center) in its richly populated Milky Way neighborhood. Photo credit: Flickr user jpstanley.

Source: https://www.flickr.com/photos/jpstanley/1562619922

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The Summer Triangle is high in the sky after sunset this month for observers in the Northern Hemisphere, its component stars seemingly brighter than before, as they have risen out of the thick, murky air low on the horizon and into the crisper skies overhead. Deneb, while still bright when lower in the sky, now positively sparkles overhead as night begins. What makes Deneb special, in addition to being one of the three points of the Summer Triangle? Its brilliance has stirred the imaginations of people for thousands of years!

Deneb is the brightest star in Cygnus the Swan and is positioned next to a striking region of the Milky Way, almost as a guidepost. The ancient Chinese tale of the Cowherd (Niulang) and the Weaver Girl (Zhinü) - represented by the stars Altair and Vega - also features Deneb. In this tale the two lovers are cast apart to either side of the Milky Way, but once a year a magical bridge made of helpful magpies – marked by Deneb – allows the lovers to meet. Deneb has inspired many tales since and is a staple setting of many science fiction stories, including several notable episodes of Star Trek.

Astronomers have learned quite a bit about this star in recent years, though much is still not fully understood – in part because of its intense brightness. The distance to Deneb from our Sun was measured by the ESA's Hipparcos mission and estimated to be about 2,600 light years. Later analysis of the same data suggested Deneb may be much closer: about 1,500 light years away. However, the follow-up mission to

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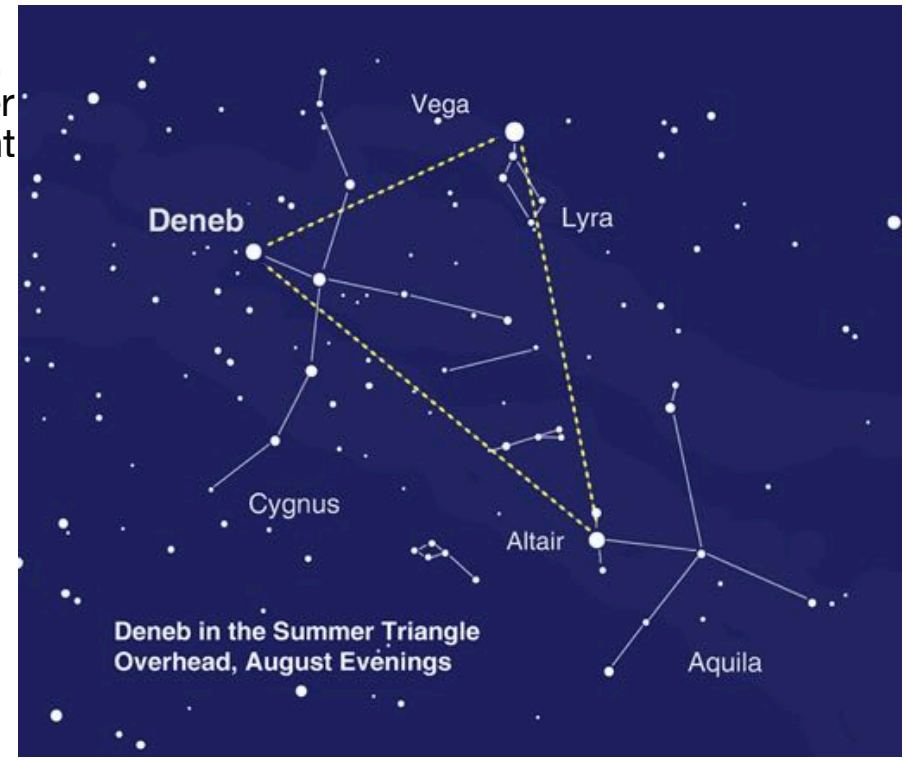
Deneb, continued

Hipparcos, Gaia, is unable to make distance measurements to this star! Deneb, along with a handful of other especially brilliant stars, is too bright to be accurately measured by the satellite's ultra-sensitive instruments.



Spot Vega and the other stars of the Summer Triangle by looking straight up after sunset in August!

Deneb is unusually vivid, especially given its distance. Generally, most of the brightest stars seen from Earth are within a few dozen to a few hundred light years away, but Deneb stands out by being thousands of light years distant! In fact, Deneb ranks among the top twenty brightest night time stars (at #19) and is easily the most distant star in that list. Its luminosity is fantastic but uncertain, since its exact distance is also unclear. What is known about Deneb is that it's a blue-white supergiant star that is furiously fusing its massive stocks of thermonuclear fuel and producing enough energy to make this star somewhere between 50,000 and 190,000 times brighter than our Sun if they were viewed at the same distance! The party won't last much longer; in a few million years, Deneb will exhaust its fuel and end its stellar life in a massive supernova, but the exact details of how this will occur, as with other vital details about this star, remain unclear.

Discover more about brilliant stars and their mysteries at nasa.gov.

This article is distributed by NASA Night Sky Network. The Night Sky Network program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.gov 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!

Next Membership Meeting:

Wednesday August 19, 7:30 pm Central
online on Zoom

Theo Wellington: *"The Great Comet(s) of 2020"*

When do we get one actually as bright as the full Moon? Comets in ancient times were mysterious apparitions in the sky, omens of ill fortune. The unraveling of their mystery was part of our discovery of the nature of objects in space. Where are they from, what do we know today, and what do they tell us about the formation of the solar system?

Zoom link will be posted to bsasnashville.com

On the Cover: Comet NEOWISE is seen before sunrise over Washington, Sunday, July 12, 2020. The comet was discovered by NASA's Near-Earth Object Wide-field Infrared Survey Explorer, or NEOWISE, on March 27. Since then, the comet — called comet C/2020 F3 NEOWISE and nicknamed comet NEOWISE — has been spotted by several NASA spacecraft, including Parker Solar Probe, NASA's Solar and Terrestrial Relations Observatory, the ESA/NASA Solar and Heliospheric Observatory, and astronauts aboard the International Space Station. Photo Credit: (NASA/Bill Ingalls)

There was no board meeting in July 2020.

Barnard-Seyfert Astronomical Society
Minutes of the Monthly Membership Meeting
Held On Wednesday, July 15, 2020

Because monthly in-person meetings are suspended due to the COVID-19 epidemic, the Barnard-Seyfert Astronomical Society held a virtual meeting via Zoom on Wednesday, July 15, 2020. Twelve members logged in. The presentation began at 7:30 and lasted an hour. The presenter was Tom Field, Seattle, Washington, (http://www.rspec-astro.com) and the subject was amateur spectroscopy. Tom provides spectrum analysis software, RSpec, and some hardware, including transmission gratings and adapters. The take-away is that spectroscopy is doable by hobbyists with modest equipment and fun.

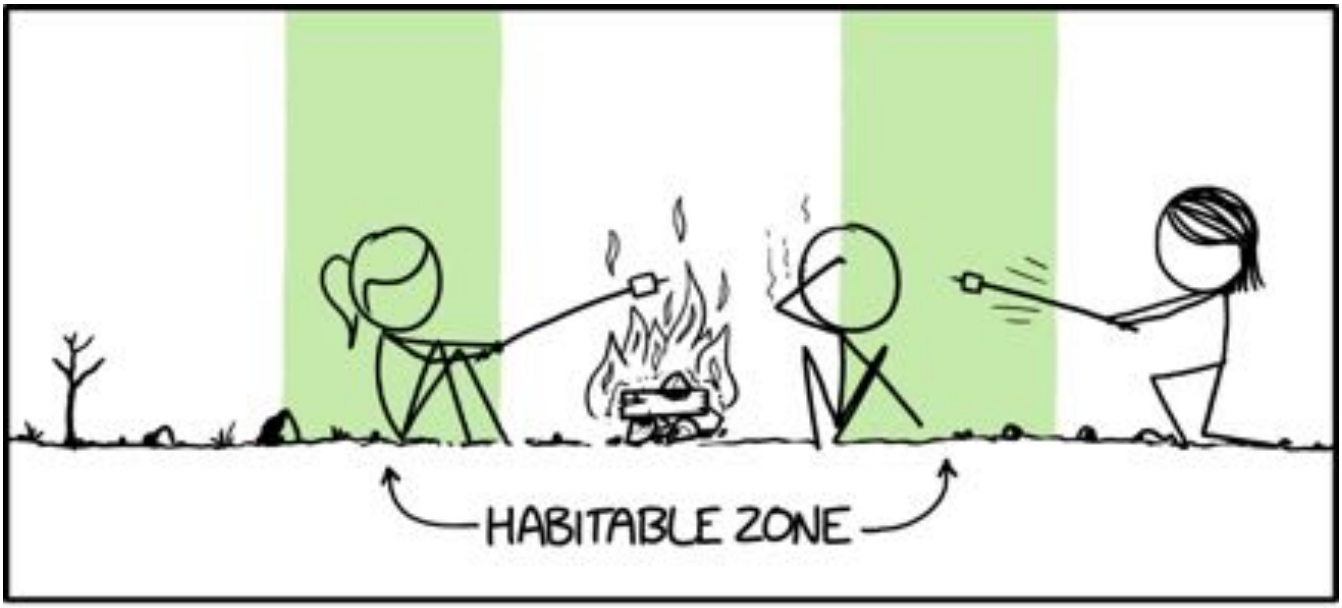
Theo Wellington announced the Tennessee Virtual Star Party scheduled for Friday, July 24, from 8:30 until 10:30 PM. This will be available on the Warner Park Nature Center YouTube channel, https://www.youtube.com/channel/UCnCfCZmHYJBkI_UQSpjcXkA.

Respectfully submitted,

Bud Hamblen

Secretary

xkcd



ASTRONOMERS DEFINE THE CAMPFIRE HABITABLE ZONE AS THE REGION WHERE YOU'RE FAR ENOUGH NOT TO BE BURNED BUT CLOSE ENOUGH TO ROAST MARSHMALLOWS.

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.

Barnard-Seyfert Astronomical Society

Become a Member of BSAS! Visit bsasnashville.com to join online.

All memberships have a vote in BSAS elections and other membership votes. Also included are subscriptions to the BSAS and Astronomical League newsletters.

Annual dues:

Regular: $25
Family: $35
Senior/Senior family: $20
Student*: $15

* To qualify as a student, you must be enrolled full time in an accredited institution or home schooled.

About BSAS

Organized in 1928, the Barnard-Seyfert Astronomical Society is an association of amateur and professional astronomers who have joined to share our knowledge and our love of the sky.

The BSAS meets on the third Wednesday of each month at the Cumberland Valley Girl Scout Building at the intersection of Granny White Pike and Harding Place in Nashville. Experienced members or guest speakers talk about some aspect of astronomy or observing. Subjects range from how the universe first formed to how to build your own telescope. The meetings are informal and time is allotted for fellowship. You do not have to be a member to attend the meetings.

Membership entitles you to subscriptions to Astronomy and Sky & Telescope at reduced rates; the club's newsletter, the *Eclipse*, is sent to members monthly. BSAS members also receive membership in the Astronomical League, receiving their quarterly newsletter, the Reflector, discounts on all astronomical books, and many other benefits.

In addition to the meetings, BSAS also sponsors many public events, such as star parties and Astronomy Day; we go into the schools on occasion to hold star parties for the children and their parents. Often the public star parties are centered on a special astronomical event, such as a lunar eclipse or a planetary opposition.

Most information about BSAS and our activities may be found at bsasnashville.com. If you need more information, write to us at info@bsasnashville.com.

Free Telescope Offer

Did someone say free telescope? Yes, you did read that correctly. The BSAS Equipment & Facilities Committee has free telescopes ranging in size from 2.6" to 8" that current members can actually have to use for up to 60 days at a time. We also have some other items in the loaner program such as a photometer, H-alpha solar telescope, educational CDs, tapes, DVDs, and books. Some restrictions apply. A waiting list is applicable in some cases. The BSAS Equipment Committee will not be held responsible for lost sleep or other problems arising from use of this excellent astronomy gear. For information on what equipment is currently available, contact info@bsasnashville.com.