

The ECLIPSE

November
2021

The Newsletter of the Barnard-Seyfert Astronomical Society

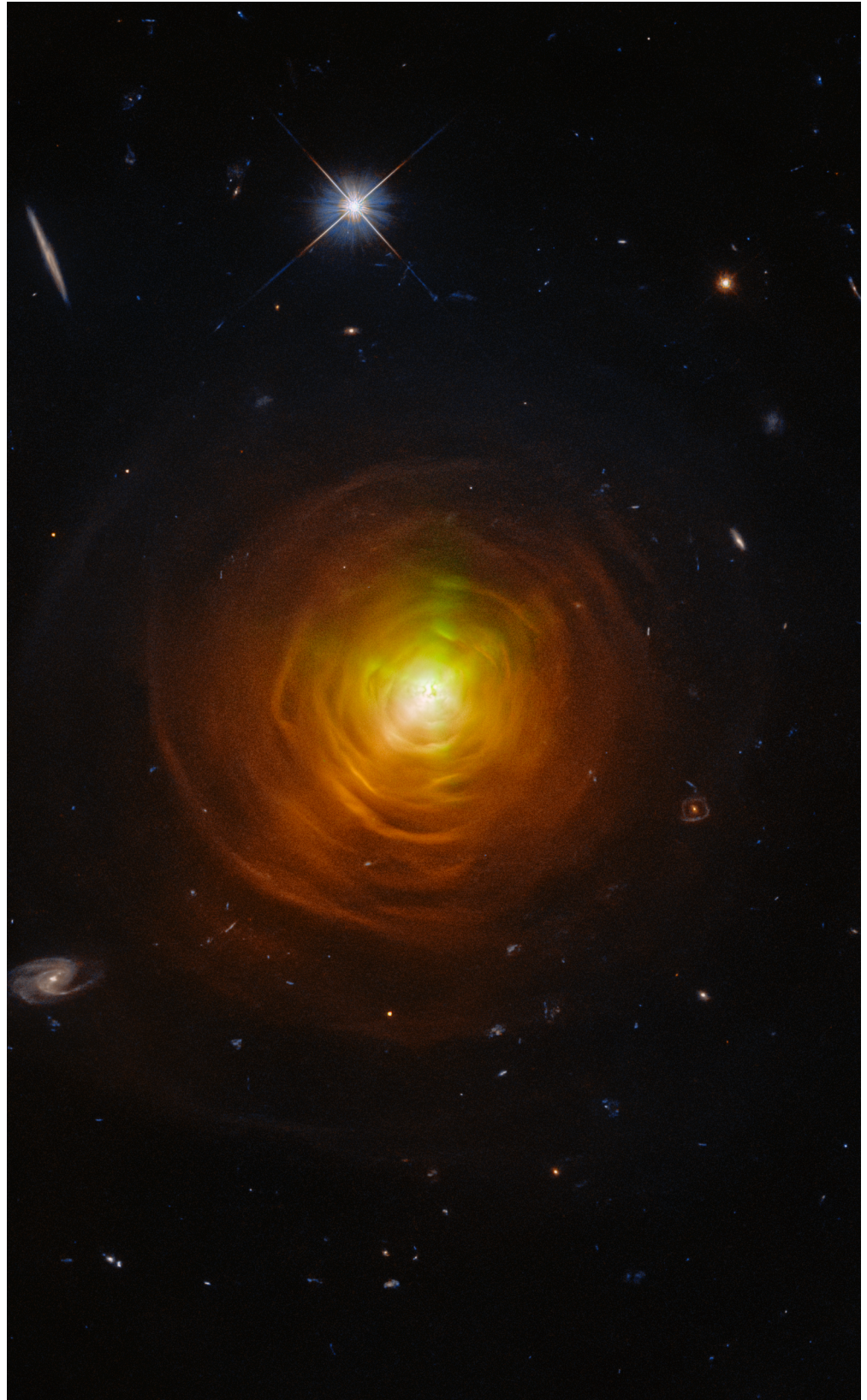
Next Membership Meeting:

November 17, 7:30 pm
Online meeting

Link will be posted on
bsasnashville.com

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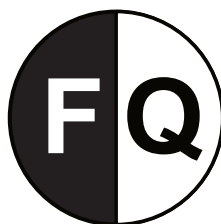
The James Webb Space Telescope has safely made it inside the cleanroom at its launch site at Guiana Space Center, in French Guiana! Read more about why this location was selected for launch: jwst.nasa.gov/content/about/launch.html

After its arrival, Webb was carefully lifted from its packing container and then raised vertical. This is the same configuration Webb will be in when it is inside its launch vehicle, the Ariane 5 rocket.

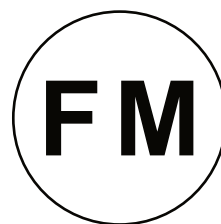
Image credit: [NASA/Chris Gunn](#)



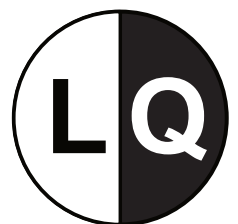
Nov 4
Dec 4



Nov 11
Dec 10



Nov 19
Dec 18



Nov 27
Dec 26

Happy Birthday Ida Barney by Robin Byrne

This month, we celebrate the life of a woman who was another trailblazer for women in astronomy, but who is not well known. Ida Barney was born in New Haven, Connecticut on November 6, 1886. Her parents were Ida Bushnell and Samuel Eben Barney, who was a Professor of Civil Engineering at Yale University. Ida was a lifelong birdwatcher, eventually becoming president of the New Haven Bird Club.

Ida studied mathematics at Smith College, where she excelled academically, being elected to two honor societies: Phi Beta Kappa and Sigma Xi. After graduating with a Bachelor of Arts degree in 1908, Ida enrolled in graduate school at Yale University, where she was awarded a Ph.D. in Mathematics in 1911.



For the next 11 years, Dr. Barney taught mathematics at a variety of women's colleges: Rollins, Smith, Lake Erie, and Meredith Colleges. However, she found teaching mathematics to students who had little desire to learn to be frustrating, so Ida decided to move into another line of work.

Frank Schlesinger was the Director of the Yale Observatory from 1920 to 1941. Much like Edward Pickering at Harvard Observatory, Schlesinger hired women to work as assistants in the observatory. Schlesinger expressed his reasoning for hiring women as, "Not only are women available at smaller salaries than are men, but for routine work they have important advantages. Men are more likely to grow impatient after the novelty of the work has worn off and would be harder to retain for that reason." Schlesinger's area of research was the measurement of the proper motions of stars. This is the motion of stars across the line of sight. To make these measurements, images of star fields must be taken many years apart. The images are then compared in an effort to detect and measure the small changes in position over that time.

In 1922, Dr. Barney was hired as a research assistant at Yale Observatory to work for Dr. Schlesinger. Barney's early job duties involved determining accurate positions of stars from photographic plates. She would first find their position on the image, and then calculate the corresponding astronomical coordinates of right ascension and declination. Then she would compare the coordinates with those from older observations to determine the rate of motion. Although Schlesinger hired women with the expectation that they would not make any independent contributions to the work, Barney proved her worth by developing techniques that improved both the speed and accuracy of determining the star positions. While Dr. Barney truly enjoyed her work, she did later confess to being angry that she was not given the same rank or pay as men with comparable qualifications.

In 1940, the Women's Centennial Congress organized a celebration of 100 years of female progress by honoring 100 American women who were working in jobs that would have been unheard of 100 years earlier. In the category of "Science," Ida Barney was honored with the likes of Annie Cannon and Margaret Mead.

In 1942, Frank Schlesinger retired, and Ida Barney was placed in charge of supervising the completion of the catalog they had been working on for the past two decades. In 1949, Dr. Barney was promoted to the position of research associate, and in 1950, her component of the Yale Observatory Zone Catalogue was finally completed. During this time, Dr. Barney had adopted the use of an electronic device developed by the IBM Watson Scientific Laboratory, which helped to both improve the accuracy of the measurements and reduce eye strain. Dr. Barney alone was responsible for the position, magnitude (brightness), and proper motion values of almost 150,000 stars in 22 volumes of catalogues published in the Transactions of the Yale University Observatory. These measurements are still used today for further studies of proper motion.

In 1952, in honor of this gargantuan undertaking, Ida Barney was awarded the Annie J. Cannon Award in Astronomy by the American Astronomical Society. This award was established in 1934 by Annie Cannon to "be awarded to women for distinguished contributions to astronomy..." Ida Barney was only the fourth woman to receive the award.

In 1955, Ida Barney retired and was succeeded by Ellen Dorrit Hoffleit. Dr. Hoffleit had worked with Barney for many years and shared some of her own memories of the, sometimes difficult, woman in the article, "Ida M. Barney, Ace Astrometrist." As Barney got closer to retirement, she once complained about the IBM computers they were using, saying "We used to get out a catalogue every three years. Now with the high speed computing machines, it has taken us ten years and we are not through yet!" She failed to mention that the data produced by the computers had a much higher accuracy than the work they had previously done by hand. Dr. Barney had asked Dr. Hoffleit to write an introduction to the final volume of the catalogue. Dr. Hoffleit had included a statement about the problem of accuracy in the data for binary stars due to a lack of consistency regarding which star in the system was used when measuring the position. Dr. Barney removed the statement, saying, "Dr. Schlesinger did not include that, so why should you?" Dr. Hoffleit shared another story about when she first arrived in New Haven, one of her colleagues had extolled the local spring water, sending her home with several jugs full. When Dr. Barney was asked if she drank the spring water, she exclaimed, "No! My father was a sanitary engineer!"

Ida Barney never married, living her entire life with her sister, who worked at the Berkeley Divinity School. In 1973, Asteroid 5655 was named Barney in Dr. Barney's honor. Ida Barney died in New Haven, Connecticut on March 7, 1982 at the age of 95.

Ida Barney's name is not one that typically appears in texts or popular books about astronomy. She made no groundbreaking discoveries and remained out of the limelight. However, Dr. Barney's 28-year effort to measure and catalogue stars has left

a scientific legacy that is invaluable. Hers is a name that should be remembered, so let us all celebrate the achievements of Ida Barney.

References:

Wikipedia - Ida Barney

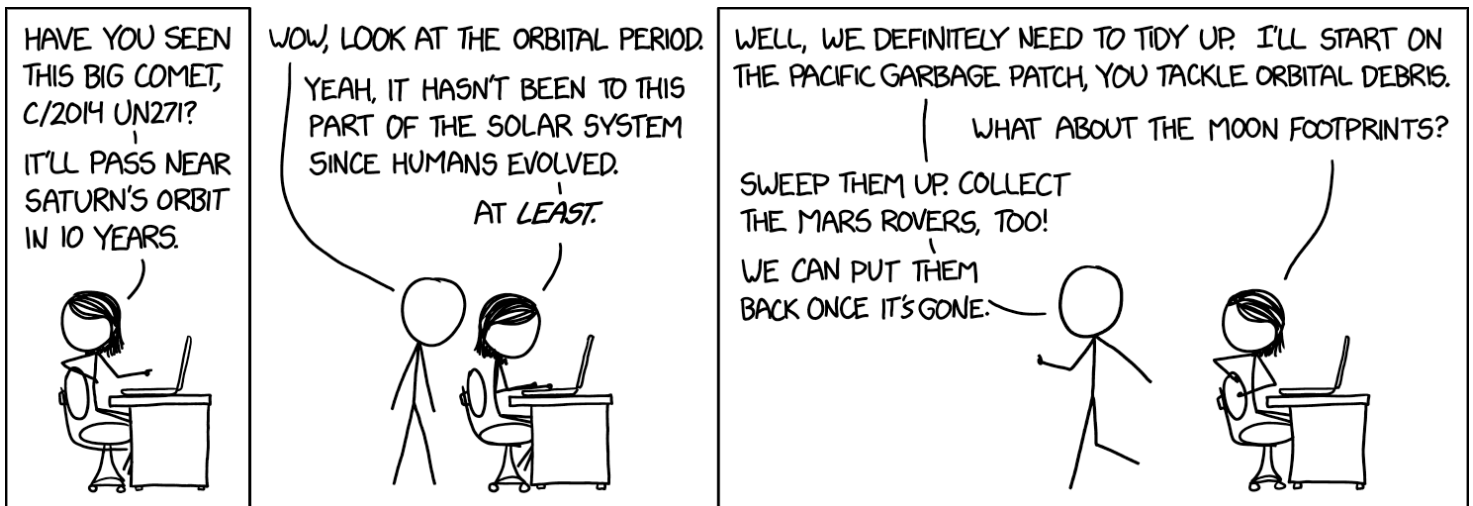
Ida M. Barney, Ace Astrometrist by E. Dorrit Hoffleit, American Astronomical Society Committee on the Status of Women in Astronomy, June 1990

Next BSAS Membership Meeting:

Wednesday, November 17, 7:30 pm Central
online on Zoom

Zoom link will be posted to bsasnashville.com

xkcd



Measure the Night Sky

By David Prosper

Fall and winter months bring longer nights, and with these earlier evenings, even the youngest astronomers can get stargazing. One of the handiest things you can teach a new astronomer is how to measure the sky – and if you haven't yet learned yourself, it's easier than you think!

Astronomers measure the sky using degrees, minutes, and seconds as units. These may sound more like terms for measuring time - and that's a good catch! – but today we are focused on measuring angular distance. Degrees are largest, and are each made up of 60 minutes, and each minute is made up of 60 seconds. To start, go outside and imagine

yourself in the center of a massive sphere, with yourself at the center, extending out to the stars: appropriately enough, this is called the celestial sphere. A circle contains 360 degrees, so if you have a good view of the horizon all around you, you can slowly spin around exactly once to see what 360 degrees looks like, since you are in effect drawing a circle from inside out, with yourself at the center! Now break up that circle into quarters, starting from due North; each quarter measures 90 degrees, equal to the distance between each cardinal direction! It measures 90 degrees between due North and due East, and a full 180 degrees along the horizon between due North and due South. Now, switch from a horizontal circle to a vertical one, extending above and below your head. Look straight above your head: this point is called the zenith, the highest point in the sky. Now look down toward the horizon; it measures 90 degrees from the zenith to the horizon. You now have some basic measurements for your sky.

Use a combination of your fingers held at arm's length, along with notable objects in the night sky, to make smaller measurements. A full Moon measures about half a degree in width - or 1/2 of your pinky finger, since each pinky measures 1 degree. The three stars of Orion's Belt create a line about 3 degrees long. The famed "Dig Dipper" asterism is a great reference for Northern Hemisphere observers, since it's circumpolar and visible all night for many. The Dipper's "Pointer Stars," Dubhe and

Handy Sky Measurements

Hold your hand out in front of your face as far as you comfortably can, and measure:



Hold your hand out in front of your face as far as you comfortably can, and measure:" Below the text is a sequence of five hands, holding their fingers to represent various amounts of degrees, starting with 1 (pinky), going to 5 (three middle fingers), 10 (closed fist), 15 (index and pinky fingers held up), 25 (pinky and thumb outstretched).

Merak, have 5.5 degrees between them - roughly three middle fingers wide. The entire asterism stretches 25 degrees from Dubhe to Alkaid - roughly the space between your outstretched thumb and pinky. On the other end of the scale, can you split Mizar and Alcor? They are separated by 12 arc minutes - about 1/5 the width of your pinky.

Keep practicing to build advanced star-hopping skills. How far away is Polaris from the pointer stars of the Big Dipper? Between Spica and Arcturus? Missions like Gaia and Hipparcos measure tiny differences in the angular distance between stars, at an extremely fine level. Precise measurement of the heavens is known as astrometry. Discover more about how we measure the universe, and the missions that do so, at [nasa.gov](https://www.nasa.gov).

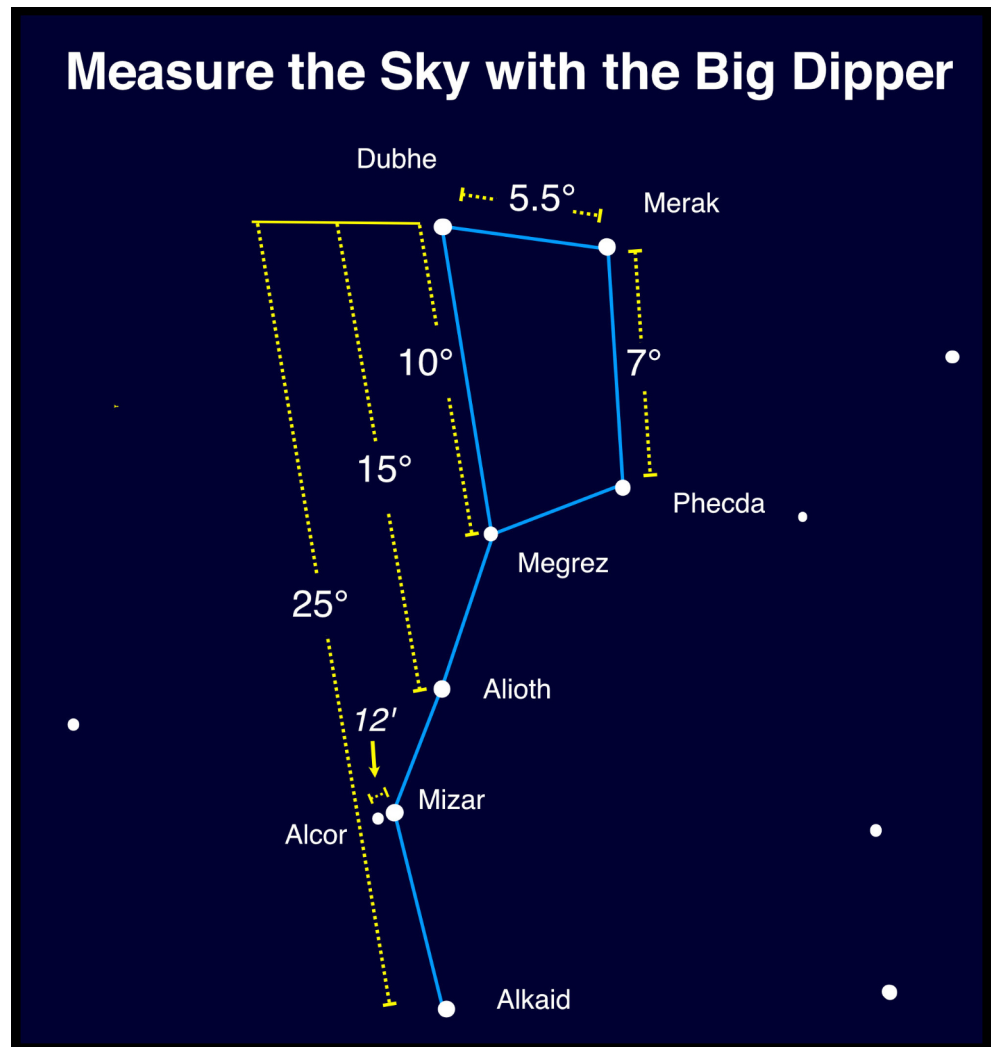


Image created with assistance from Stellarium

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](https://www.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!

Barnard-Seyfert Astronomical Society
Minutes of a Regular Meeting of the Board of Directors
Held On Wednesday, October 6, 2021

The regular meeting of the Board of Directors of the Barnard-Seyfert Astronomical Society was held October 6, 2021, online. Logged in were Tom Beckermann, Chip Crossman, Tony Drinkwine, Bud Hamblen, Keith Rainey and Theo Wellington. A virtual quorum being present, Keith called the meeting to order at 7:30 PM.

Keith asked for a motion to adopt the minutes of the board meeting on September 1, 2021, as printed in the October, 2021, issue of the Eclipse. Theo so moved, Tom seconded and the minutes were adopted unanimously.

Treasurer's Report:

Theo reported \$11,092.85 in the SunTrust account and \$585.05 in the PayPal account.

Meetings:

Belmont University, Nashville State Community College and Trevecca Nazarene University all were not providing meeting space for off-campus groups.

Social Media:

Theo reported that the May 22 virtual star party has had 372 views so far. The Facebook page has 1962 likes and 2,095 followers. The Twitter feed has 2756 followers.

There being no further business, the meeting adjourned at 8:30 PM.

Respectfully submitted,

Bud Hamblen
Secretary



The NASA/ESA Hubble Space Telescope celebrates Halloween this year with a striking observation of the carbon star CW Leonis, which resembles a baleful orange eye glaring from behind a shroud of smoke.

CW Leonis glowers from deep within a thick shroud of dust in this image from the NASA/ESA Hubble Space Telescope. Lying roughly 400 light-years from Earth in the constellation Leo, CW Leonis is a carbon star — a luminous type of red giant star with a carbon-rich atmosphere. The dense clouds of sooty gas and dust engulfing this dying star were created as the outer layers of CW Leonis itself were thrown out into the void.

Credit: [ESA/Hubble & NASA, T. Ueta, H. Kim](#)



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.



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.