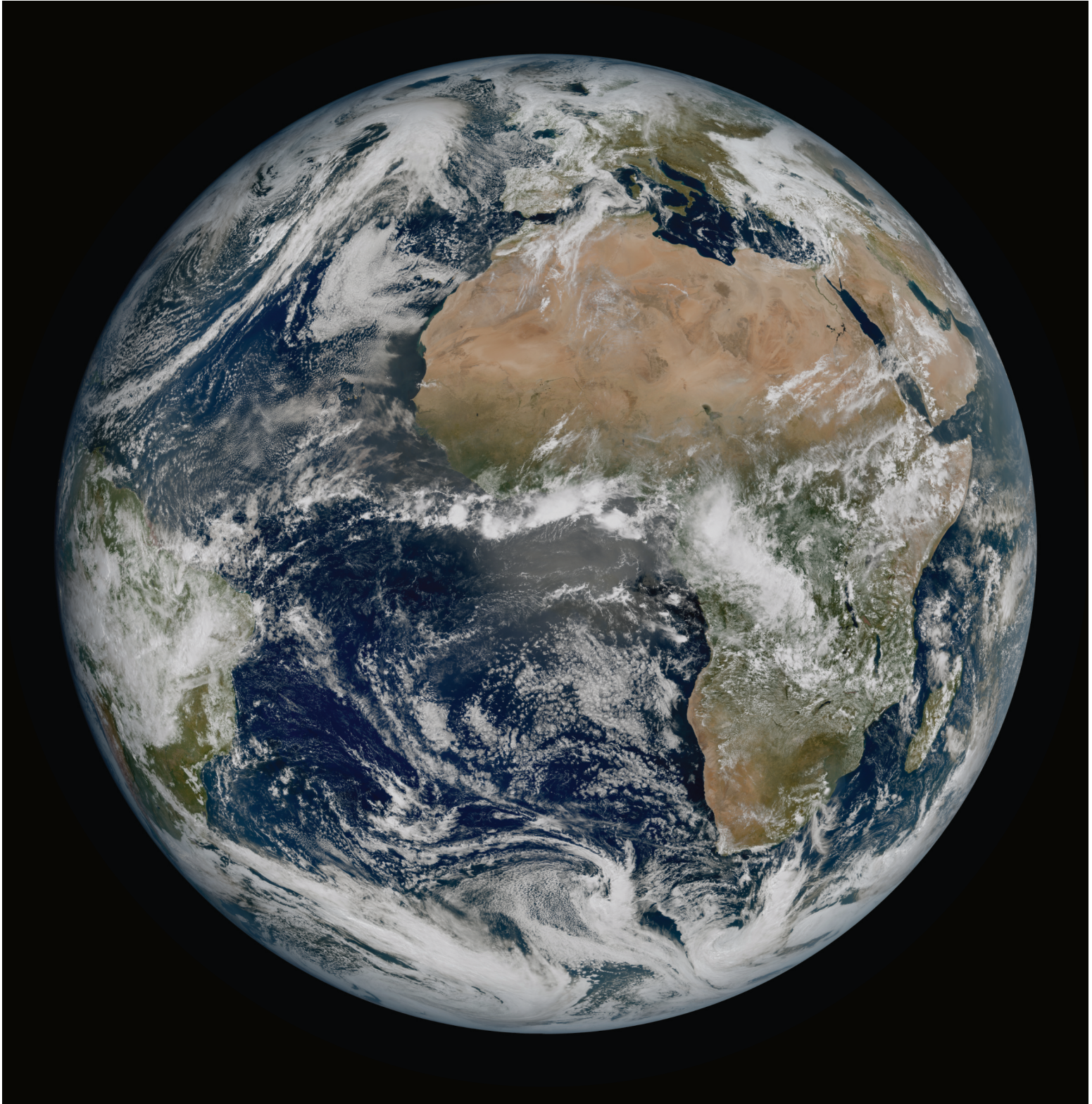


The ECLIPSE

The Newsletter of the Barnard-Seyfert Astronomical Society



May 2023



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President

Bud Hamblen
Secretary

Theo Wellington
Treasurer

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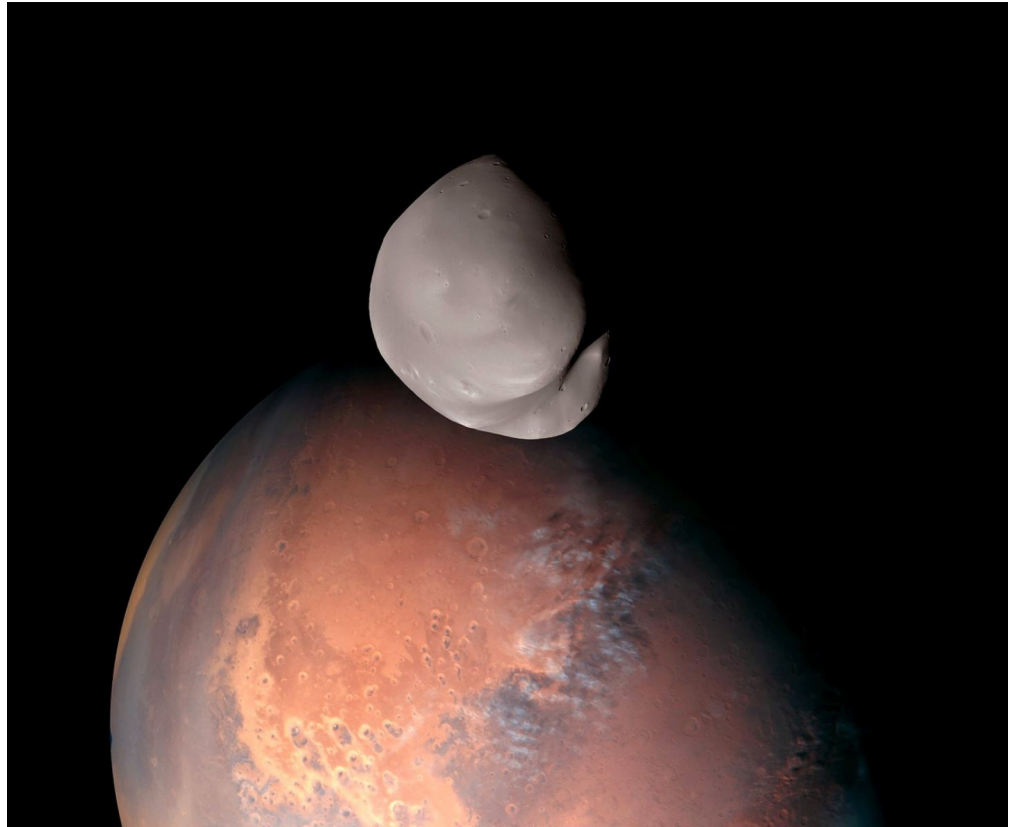
Tony Drinkwine

Osvaldo Gonzalez

Andy Reeves

Kathy Underwood

Contact BSAS officers at
bsasnashville.com/contact
Or email info@bsasnashville.com



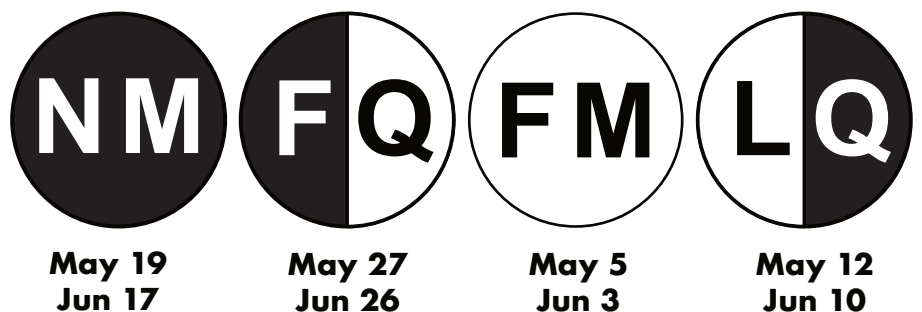
The Hope orbital mission to Mars from the United Arab Emirates returned this image of Mars and Deimos, as the spacecraft approached within 100 km of the tiny moon.

Credit: UAE. Read more at [Universe Today](#)

On the Cover: Europe's latest weather satellite, the Meteosat Third Generation Imager, has just delivered its first view of Earth – revealing conditions over Europe, Africa and the Atlantic in remarkable detail. Launched on an Ariane 5 rocket on 13 December 2022, the Meteosat Third Generation Imager-1 (MTG-I1) is the first of a new generation of satellites set to revolutionise weather forecasting in Europe.

The image, which was captured by the satellite's Flexible Combined Imager on 18 March 2023, shows much of Northern and Western Europe and Scandinavia blanketed in clouds, with relatively clear skies over Italy and the Western Balkans.

Credit: [ESA](#)



Happy Birthday Ruby Payne-Scott by Robin Byrne

This month we celebrate the life of a trailblazer, in more ways than one. Ruby Payne-Scott was born in Grafton, New South Wales, Australia on May 28, 1912. When she was 9 years old, Ruby moved to Sydney to stay with her aunt while attending the Penrith Public Primary School, Cleveland-Street Intermediate Girls' High School, and, finally, Sydney Girls High School. She finished these endeavors with honors in botany and mathematics.

Thanks to being awarded two scholarships, in 1928, at the age of 16, Ruby entered Sydney University to major in Physics. She became only the third woman to earn a physics degree from the university, graduating yet again with honors, this time in physics and mathematics. Ruby stayed on to study medical physics, doing research at the Cancer Research Institute, located at the university. She received her Masters of Science Degree in 1936.

After graduation, Ruby continued with her research, studying the effects of Earth's magnetic field on living organisms. Working with William H. Love at the Cancer Institute, they subjected chicken embryos to magnetic fields of varying strengths, up to 5000 times the strength of Earth's magnetic field. No differences in the development of the chickens occurred. This disproved various myths concerning the benefits or harm caused by Earth's magnetism. When the cancer research project shut down, Ruby had trouble finding any other place willing to hire a female physicist, so she returned to school, earning an Education degree in 1938. For the next year, Ruby worked as a secondary school teacher.

With the start of World War II in 1939, job opportunities for anyone with degrees in science opened up. Amalgamated Wireless Australasia ran all two-way radio communications in Australia, manufactured the equipment used, and they were a major employer of physicists. Ruby was the first female physicist they ever hired, though her initial job there was as a librarian. Ruby quickly changed her "librarian" position into much more. She became the editor of the journal they published, then started doing some research in the standards lab, ultimately becoming a full-time physicist for the company. Ruby performed research in electrical engineering and was placed in charge of the measurements lab. By 1941, though, she became unsatisfied and left.

On August 18, 1941, Payne-Scott became one of only two women working at the Commonwealth Scientific and Industrial Research Organization (CSIRO). Her position was in the radiophysics lab. Here, she performed research on top-secret projects related to radar technology. It turns out that the tropical weather of the region made radar systems that worked well in Europe, ineffective in Australia. Ruby developed techniques to distinguish between aircraft and other sources of signals in the radar static. Payne-Scott became an expert in detecting aircraft, in particular, Japanese fighter planes, allowing early detection of enemy aircraft from larger distances. Ruby accomplished all of

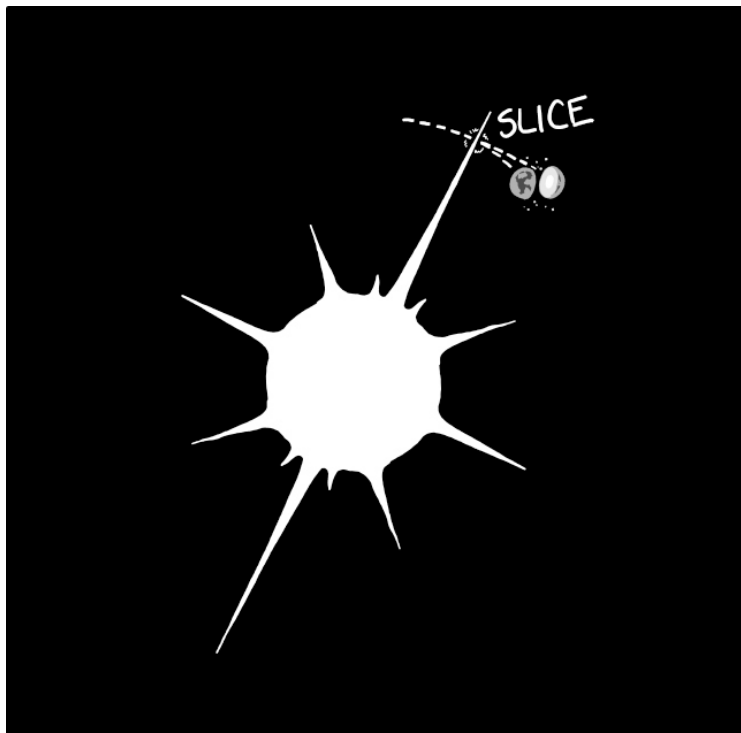


this despite the early reservations of her supervisor, who wrote in an evaluation, “Well, she’s a bit loud and we don’t think she’s quite what we want and she may be a bit unstable, but we’ll let her continue and see how she works out.”

In 1944, Ruby married William Hall. They shared much in common, including some radical views. They were environmentalists, feminists, atheists, and socialists (Payne-Scott had already been nicknamed “Red Ruby” by her colleagues, and unbeknownst to her, was under investigation for several years in an attempt to prove she had communist ties - she didn’t). Their marriage posed a problem, though - women working for the government were required to quit their jobs when they married. Because the work Payne-Scott did was so vital to the country, her colleagues helped to keep her marriage secret, while she wore her wedding band on a chain around her neck.

In 1944, with the war showing signs of ending, Payne-Scott and others began looking into possible applications of their work outside of the war effort. An article suggesting that some radio noise was produced by the Sun inspired Payne-Scott, Joe Pawley, and Lindsay McCready to perform the first radio astronomy observations of the Sun. They published an article in 1945 showing a connection between sunspots and increased radio signals from the Sun. Over the next two years, Payne-Scott discovered what are now known as Type I and Type III solar outbursts from the corona. Payne-Scott also developed the first radio interferometer, which was used to pinpoint the sources of the radio outbursts.

xkcd



BAD NEWS FOR EXOPLANETS: IT TURNS OUT THOSE DIFFRACTION SPIKES ARE REAL.

By 1950, Payne-Scott's secret marriage became an issue. At first, to circumvent the law, Payne-Scott had told people that she and William Hall were living together but not married (pretty scandalous for the time). Eventually, she told her employers the truth about being married as part of a series of correspondences concerning her push for equal pay for women and to change the policy that demotes married women to a "temporary" job status. Sadly, her arguments had no effect, other than to lose her pension and full-time employment.

On July 20, 1951, Payne-Scott gave 2-days notice that she was quitting to have a baby. Maternity leave didn't exist at the time, so this was her only option. On November 20, her son, Peter, was born. This was when Ruby also changed her name to Ruby Hall, since she no longer had to hide her marriage. Two years later, their daughter, Fiona, was born. When Fiona was 10, Ruby returned to her earlier teaching career, taking a job teaching math and science at Danebank School. She remained at the school for eleven years before retiring in 1974.

Sadly, Ruby developed Alzheimer's rather early in life, and passed away just 3 days prior to her 69th birthday, on May 25, 1981. However, Ruby's legacy lives on in many ways. The CSIRO created the Payne-Scott Awards "for researchers returning from family-related career breaks" to help them reconnect to colleagues and become reestablished in their area of research. Danebank School hosts an annual event, called the Ruby Payne-Scott Lecture, with presentations by female scientists. The University of Sydney established the Payne-Scott Professorial Distinctions award to honor professors for their contributions to leadership, teaching, and research.

Pioneer in radio astronomy, trailblazer for women in science, early advocate for women's rights, Ruby Payne-Scott was at the forefront of so many endeavors, yet her name is not well known. That needs to change. As we approach solar maximum, enjoy the sunspots and prominences, but also take a moment to salute the woman who first studied their radio properties: Ruby Payne-Scott.

References:

[Ruby Payne-Scott - Wikipedia](#)

[Ruby Payne-Scott \[1912-1981\] By Colin Ward; March 23rd, 2011](#)

[Overlooked No More: Ruby Payne-Scott, Who Explored Space With Radio Waves By Rebecca Halleck - New York Times, August 29, 2018](#)

Next Membership Meeting:

Wednesday, May 17, 7:30 pm

Cumberland Valley
Girl Scout Council Building
4522 Granny White Pike

Barnard-Seyfert Astronomical Society Minutes of a Regular Meeting of the Board of Directors Held On Wednesday, April 5, 2023

The regular meeting of the Board of Directors of the Barnard-Seyfert Astronomical Society was held April 5, 2023, online, Dr. Tom Beckermann presiding. Logged in were Tom Beckermann, Chip Crossman, Tony Drinkwine, William Hamblen, Keith Rainey and Andy Reeves.

Tom asked for adoption of the minutes of the board meeting on March 1, 2023, No-one objected to the minutes.

Treasurer's Report: There is \$9,650.06 in the Truist account and \$898.77 in the PayPal account.

Membership Report: Keith reported that there were 230 members on the rolls. Keith will be sending a dues reminder soon.

Social Media Report: The Facebook page is being followed by about 2,000. Twitter has about 200 followers.

Eclipse glasses: American Paper Optics has not yet submitted a price quote.

Star Parties: The Bells Bend Outdoor Festival will be on April 15 (solar and a booth). The Messier Marathon will be at Ron Ladd's place on April 22 and 23. The next public star party will be on April 29 at Bowie Nature Park, Fairview, Tennessee. A private star party is scheduled for May 20 at the Water Valley Overlook. A public star party is scheduled for May 27 at Cornelia Fort Air Park.

Outreach: The judging at the Middle Tennessee Science and Engineering Fair went well. The awards ceremony will be on April 13, 2023.

Programs: The April 19 members' meeting will be a Messier Marathon preview. We will be polling the membership for meeting topics. There is a speakers' bureau where a speaker can be engaged for a fee of \$10,000 and up, if anyone would care to make a large donation.

Respectfully submitted,

Bud Hamblen
Secretary

Barnard-Seyfert Astronomical Society Minutes of the Monthly Membership Meeting Held On Wednesday, April 19, 2023

The Barnard-Seyfert Astronomical Society met on-line via Zoom on Wednesday, April 19, 2023, Tom Beckermann presiding. About 24 persons participated on Zoom.

Treasurer's report: Theo Wellington reported there was \$9,650.06 in the Truist account and \$922.41 in the PayPal account.

Membership report: There were 237 members.

Social media report: There were about 2000 likes on Facebook and 226 followers on Twitter.

Star parties: Solar viewing is scheduled at the Bells Bend Outdoor Center for the Outdoor Festival on April 15. A star party is scheduled for Bowie Nature Park, Fairview, from 8:30 to 10:30 PM on April 29. A private star party is scheduled for the Natchez Trace Water Valley Overlook on May 17.

Theo talked about "running" in a Messier Marathon, "Race around the Sky", and citizen science weather observation with the "Community Collaborative Rain, Hail and Snow Network".

Respectfully submitted,

Bud Hamblen
Secretary



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.