

The ECLIPSE

The Newsletter of the Barnard-Seyfert Astronomical Society



May 2024



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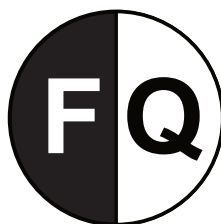


Members of the media viewed NASA's Europa Clipper spacecraft in High Bay 1 in the historic Spacecraft Assembly Facility at the agency's Jet Propulsion Laboratory on April 11, 2024. The largest spacecraft NASA has ever built for a planetary mission, Europa Clipper is expected to launch in October 2024 on a six-year journey to the Jupiter system, where it will orbit the gas giant and study the ice-encased moon Europa. [NASA/JPL-Caltech](#)

On the cover: Total solar eclipse seen from Dallas, Texas on April 8, 2024. [NASA/Keegan Barber](#)



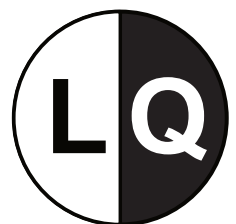
May 7
Jun 6



May 15
Jun 14



May 23
Jun 21



May 1, 30
Jun 28

Happy Birthday the First Test of General Relativity by Robin Byrne

This month we celebrate the confirmation of an interesting idea. In 1916, Albert Einstein published his theory of special relativity. This theory has a number of bizarre effects associated with it, including the idea that mass warps space and time. One result of warped space is that an object that thinks it is moving in a straight line, will actually be following a curved path. This is true even for light.

In 1919, an opportunity arose to test this crazy idea. Arthur Eddington realized that our Sun should be massive enough to cause a noticeable shift in the path of starlight passing near it. However, since the Sun is so bright, it would be impossible to see any other light source near the Sun's disk. However, during a solar eclipse, with the Sun's disk blocked, light from stars appearing in the same direction as the Sun would be visible. The solar eclipse on May 29, 1919 gave Eddington the opportunity to perform an historical experiment, with the Sun passing in front of the Hyades star cluster.

Eddington photographed the Sun during the eclipse with long enough exposures to reveal the background stars (2 to 20 seconds). By comparing this image to ones taken of the same region of the sky without the Sun in front, he could look to see if the apparent position of the stars had changed. The general theory of relativity predicted that the Sun's mass would warp the space near the Sun enough to bend the light from these stars to a new position in the sky. This would give the impression that some of the stars had moved when comparing the two images.

The predicted shift for stars appearing almost in line with the Sun was only about 2 seconds of arc. The farther the star is from being directly in line with the Sun, the smaller the shift becomes. In November of 1919, Eddington announced that the eclipse observations confirmed the predictions with star images shifting by a very small amount.

Some modern critics believe that Eddington may have fudged his data by a small amount to give the results he expected. The small amount of shift observed would have been well within his range of error. However, subsequent observations have confirmed general relativity to be correct.

Whether Eddington published what he wanted to get or what he actually observed, his announcement of confirming general relativity was one of the main reasons why it became accepted by the scientific community. Up to this point, most people were very skeptical of the general theory (although the special theory of relativity was accepted). This one announcement made all the difference in people's perception of the theory and of Einstein. So, whether the experiment really worked or not, the eclipse of 1919 will always be remembered as the first experiment that brought the theory of general relativity into the world of accepted ideas.

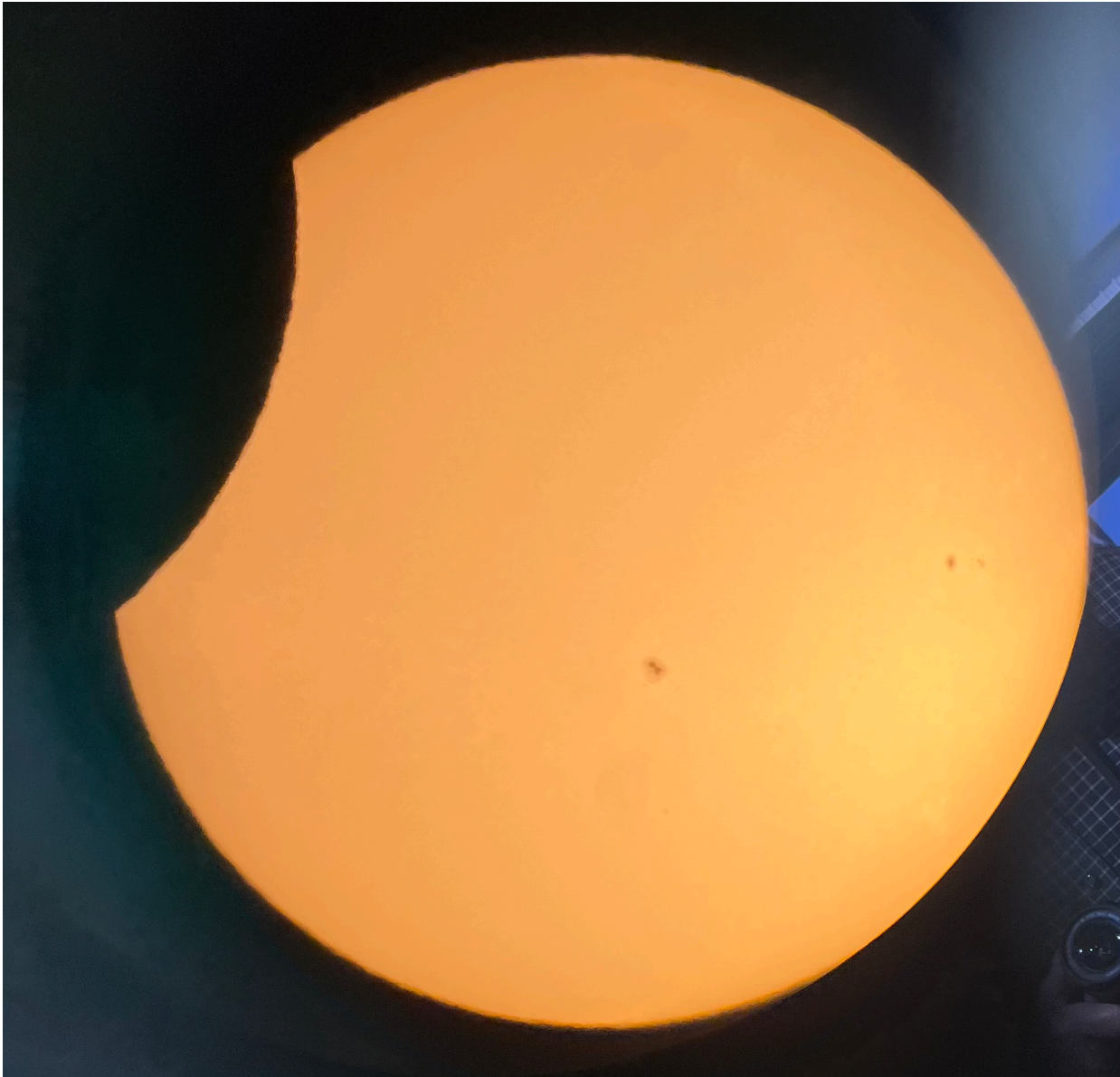
With all the images of the April 8 eclipse, did anyone capture some stars near the Sun? It would be interesting to see if yet another test of relativity could be done with the myriads of amateur astro photographs that were taken. Who's up for some citizen science?



Credit: [ESO/Landessternwarte Heidelberg-Königstuhl/F. W. Dyson, A. S. Eddington, & C. Davidson](#)

References:

[Relativity and the 1919 Eclipse - ESA](#)
[Theory of Relativity - Wikipedia](#)



April 8 2024 solar eclipse from Anna IL using iPhone through 8" dobsonian.

Chuck Schlemm

Barnard-Seyfert Astronomical Society
Minutes of a Regular Meeting of the Board of Directors
Held on Wednesday, April 3, 2024

The regular meeting of the Board of Directors of the Barnard-Seyfert Astronomical Society was held April 3, 2024, online, Dr. Tom Beckermann presiding. Logged in were Tom Beckermann, Stef Brake, Chip Crossman, Bud Hamblen, Andy Reeves, Steve Hughes and Theo Wellington.

The minutes of the board meeting of March 6, 2024, as printed in the April 2024, edition of the Eclipse, were adopted without discussion.

Membership report: 183 members.

Star parties and outreach: MTSEF projects of interest included the physics of a Dyson sphere, glare from windshield washer fluid, and radio interference from an eclipse. The Messier Marathon is April 5/6. The IDA Dark Sky Week is the week of April 8. A public star party is scheduled for April 13 at Edwin Warner Park. The members-only star party on the Natchez Trace is scheduled for May 4. Tom and Steve have eclipse glasses.

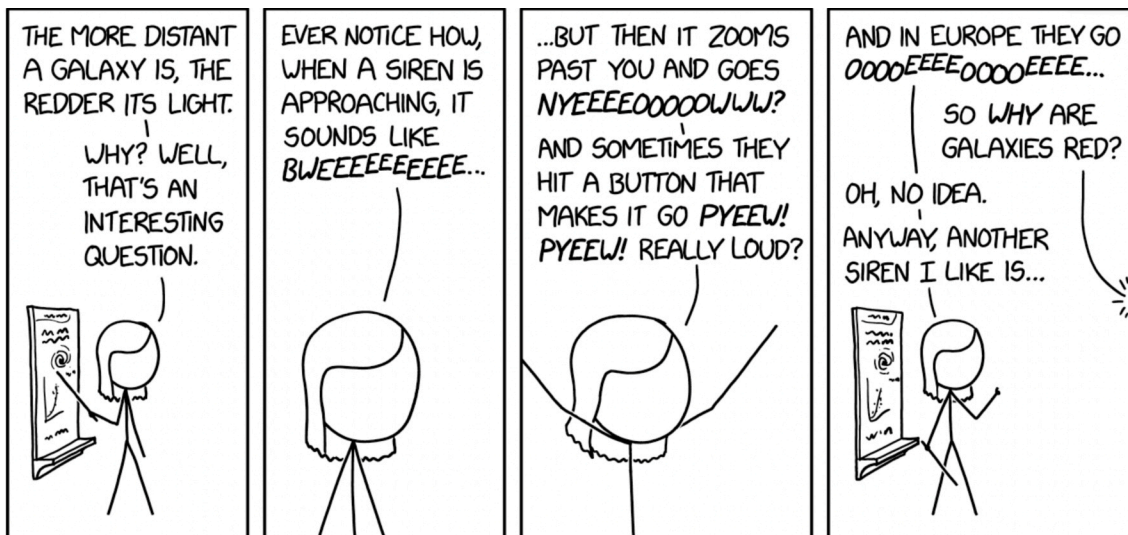
Upcoming meetings: The general meeting on April 17, 2024, will be an “open source” follow up to the solar eclipse where members and guests can talk about their eclipse experiences. Hopefully there will be more to say than “we saw clouds”. Wayne Keith will present on geomagnetism at the May general meeting. Charles Knehn will present on starquakes at the June general meeting. Theo will present a “What’s Up” at the July general meeting. The June and July meetings will be a week later than normal. Dean Regas, Cincinnati Observatory is available for August, but needs a \$500 speaker’s fee and hotel expenses. “All I Want for Christmas ...” is scheduled for November.

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

Respectfully submitted,

Bud Hamblen
Secretary

xkcd



Barnard-Seyfert Astronomical Society Minutes of the Monthly Membership Meeting Held on Wednesday, April 17, 2024

The Barnard-Seyfert Astronomical Society met at Vanderbilt's Dyer Observatory and on-line via Zoom on Wednesday, April 17, 2023, Tom Beckermann presiding. 15 persons signed-in at Dyer. 6 persons zoomed in.

Treasurer's report: The Truist bank balance is \$9,563.29. The PayPal balance is \$42.28. The monthly Zoom fee is \$17.47.

Membership report: There are 186 members.

Social media report: Facebook is liked by 2.2K and followed by 2.4K. "X" has 331 followers.

Previous events: The Messier Marathon was at Ron's property on April 5. Theo and Chuck were at the Bells Bend Outdoor Festival on April 13 with solar telescopes.

Upcoming meetings: The May meeting will be on May 15, 2024. The June meeting will be on June 26, 2024, and the July meeting will be on 24, 2024. The June and July meetings are a week later than normal.

Upcoming star parties: A members-only star party is scheduled for May 4, 2024, at Natchez Trace Mile Marker 435.3. A public star party is scheduled for May 4 at Harpeth River State Park at the Hidden Lake location. A public star party is scheduled for May 18, 2024, at Bowie Nature Park, Fairview, Tennessee. May 18 is Astronomy Day. A public star party is scheduled for June 15, 2024, at Bells Bend Outdoor Center.

Astronomers without Borders (<https://astronomerswithoutborders.org/home>) is collecting spare eclipse glasses. See the web site for collection centers.

Members recounted their solar eclipse adventures. The eclipse was 95% partial in Nashville, Tennessee, and partially clouded out. Travelers to the path of totality experienced anything from clear to mostly cloudy skies.

The chair recognized John (guest) and Connor (new member).

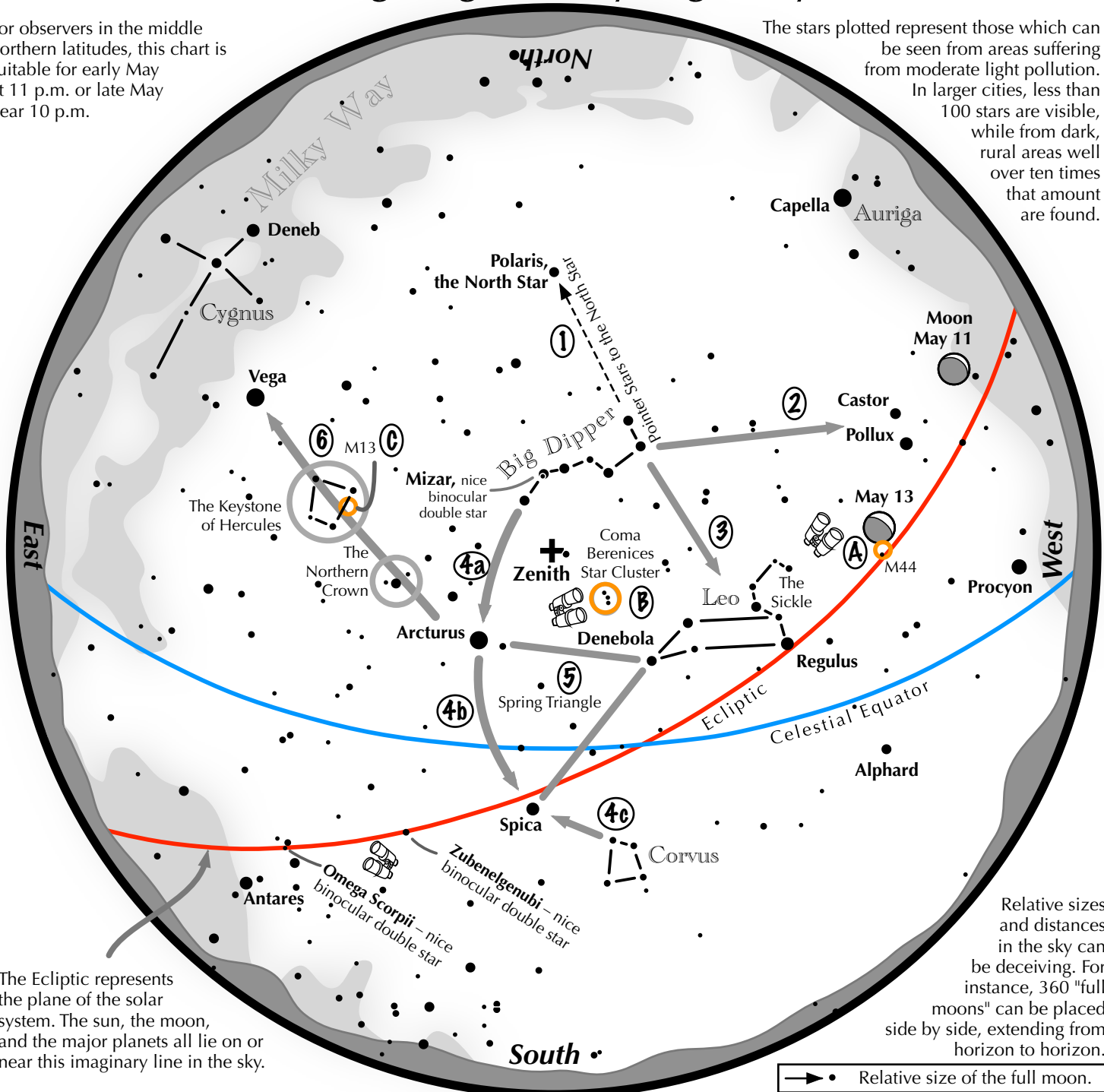
Respectfully submitted,

Bud Hamblen
Secretary

Navigating the May Night Sky

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



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 May night sky: Simply start with what you know or with what you can easily find.

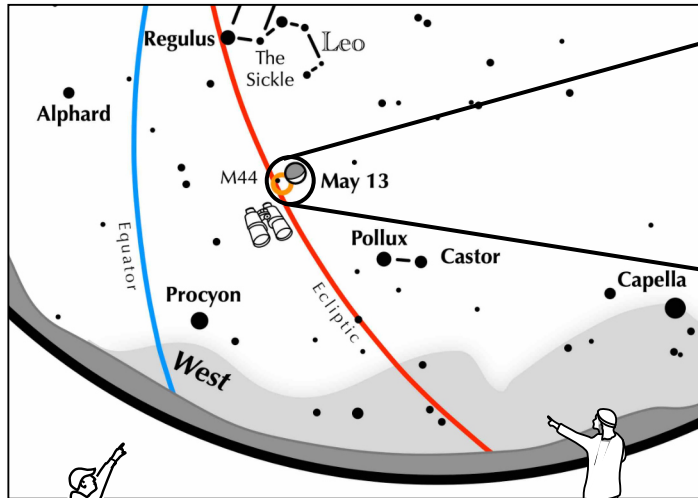
- 1 Extend a line northward from the two stars at the tip of the Big Dipper's bowl. It passes by Polaris, the North Star.
- 2 Through the two diagonal stars of the Dipper's bowl, draw a line pointing to the twin stars of Castor and Pollux in Gemini.
- 3 Directly below the Dipper's bowl reclines the constellation Leo with its primary star, Regulus.
- 4 Follow the arc of the Dipper's handle. It first intersects Arcturus, then continues to Spica.
Confirm Spica by noting that two moderately bright stars just to its southwest form a straight line with it.
- 5 Arcturus, Spica, and Denebola form the Spring Triangle, a large equilateral triangle.
- 6 Draw a line from Arcturus to Vega. One-third of the way sits "The Northern Crown." Two-thirds of the way hides the "Keystone of Hercules." A dark sky is needed to see these two dim stellar configurations.

Binocular Highlights

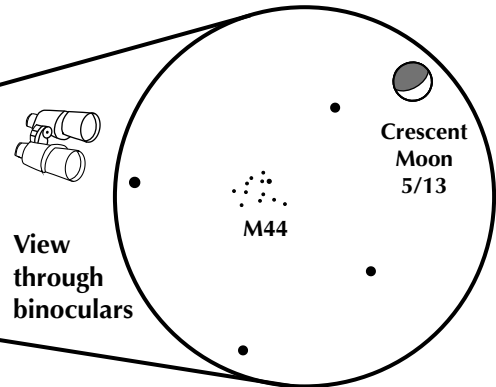
A: M44, a star cluster barely visible to the naked eye, lies to the southeast of Pollux. **B:** Look near the zenith for the loose star cluster of Coma Berenices. **C:** M13, a round glow from a cluster of over 500,000 stars.



In the early evening on May 13, try this challenge:



**View to the west
on May 13
90 minutes after sunset**



**View
through
binoculars**

Crescent moon meets the Beehive

On the evening of May 13, the crescent moon floats right of M44, the Beehive star cluster. Look in the west 90 minutes after sunset.

Be sure to use binoculars to spot the many stellar bees of M44. The cluster has over 1 000 stars, but only two dozen will be picked out with binoculars.



Even though they lie near each other in binoculars, they are nowhere near each other in three-dimensional space. M44 is 150 million times farther than the moon!

It has taken the light from M44's stars over 600 years to reach your eyes!

Next Membership Meeting:

Wednesday, May 15 at 7:30 pm

Dyer Observatory
1000 Oman Drive
Brentwood TN 37027



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 Dyer Observatory 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.