



The ECLIPSE



The Newsletter of the Barnard-Seyfert Astronomical Society

Organized in 1928

July 2012

The Membership meeting will be held on July 18, 2012 at the Cumberland Valley Girl Scout Council Building located at the intersection of Harding Place and Granny White Pike at 7:30 pm.

BSAS members Dr. Terry Reeves & Steve Wheeler will present "What's up in the Summer Sky" a detailed compendium of astronomical sights to see this month. These typically include objects for the naked eye, binoculars, and telescope along with helpful hints, finder charts, and astro-photos.

Upcoming Events

Board of Directors Meeting, July 11 at the Cumberland Valley Girl Scout Building – 7:30 pm

Membership Meeting, July 18 at the Cumberland Valley Girl Scout Building – 7:30 pm

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President's Column

I hope everyone thoroughly enjoyed observing and imaging Venus' transit across the sun last month! It truly was an awesome sight, and I'm thrilled that club members were able to show it off to so many members of the public. BSAS members deployed roughly 20 solar filter-equipped telescopes at four separate venues for this rare event. We estimate that some 3,000 people (!) observed the transit through members' telescopes at the Adventure Science Center (thanks Kris and Theo for hosting us), with hundreds more viewing at Edwin Warner Park, Bowie Park and MTSU. It was heartening to see how many members of the public were interested enough to come out to view this special event. In fact, the crowd at ASC apparently rivaled that at the big Chabot Space and Science Center in Oakland, California! Thanks everyone who participated in our transit-viewing campaign--well done!

The big crowds at the Venus transit event got me thinking--if thousands of middle Tennesseans care enough about science to come out on a work day to view an astronomical event, what can we do to further their interest in science and astronomy? The BSAS schedule is already chock-full of star parties and membership meetings with fascinating lectures. And we now have a revised website (thanks Drew!) and a Facebook site too. But we somehow need to engage more members of the public to follow up their interest in science by joining our club. We're already trying to do this through the big "telescope clinic" event to be held at Edwin Warner Park on August 11th at 7PM--please talk this up to your friends! In addition, we're trying to publicize upcoming BSAS events through additional online sites, including but not limited to TN Astronomy. I think we should also consider implementing a voluntary sign-in sheet for public star parties, so that we develop a list of science-minded middle Tennesseans who might be interested in future BSAS membership. But what else can we do? Please let me or any other board member know your thoughts!

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Observing Highlights

Moon phases

July 2012

07/03 FULL Moon
07/10 LAST Quarter
07/19 NEW Moon
07/26 FIRST Quarter

August 2012

08/01 FULL Moon
08/09 LAST Quarter
08/17 NEW Moon
08/24 FIRST Quarter
08/31 FULL Moon

Objects:

Globular Clusters
M13, M92, M5, M10, M12, M14,
M107, M4, M80, M19, M62, M56

Open Clusters
M6, M7

Nebula
M57 (Ring), NGC 6543 (Cat's Eye)

Asterisms
Cr399 (Coat Hanger)

Multiple Star Systems
Ras Algethi (Alpha Herculis)
Double-Double (Epsilon Lyrae)
Albireo (Beta Cygni)
Graffias (Beta Scorpii)

Planets
Mercury, Mars, Saturn

Star Parties for months of July and August

Jul 20 Public Star Party at Bells Bend Outdoor Center 8:30–10:30 pm
Mars, Saturn, double stars, star clusters, nebulae

Jul 21 Private Star Party at Natchez Trace Parkway mm 412
(Water Valley Overlook)

Aug 10 Public Star Party at Bowie Nature Park 8:30 – 10:30 pm
Perseid meteors (finally a good year with no Moon), Mars,
Saturn, double stars, star clusters, nebulae

Aug 11 Star Party at Edwin Warner Park 8:30 – 10:30 pm
Perseid meteors (finally a good year with no Moon), Mars,
Saturn, double stars, star clusters, nebulae

Aug 18 Private Star Party at Natchez Trace Parkway mm 435.5

How Many Discoveries Can You Make in a Month?

By Dr. Tony Phillips

This year NASA has announced the discovery of 11 planetary systems hosting 26 planets; a gigantic cluster of galaxies known as “El Gordo;” a star exploding 9 billion light years away; alien matter stealing into the solar system; massive bullets of plasma racing out of the galactic center; and hundreds of unknown objects emitting high-energy photons at the edge of the electromagnetic spectrum.

That was just January.

Within NASA’s Science Mission Directorate, the Astrophysics Division produces such a list nearly every month. Indeed, at this very moment, data is pouring in from dozens of spacecraft and orbiting observatories.

“The Hubble, Spitzer, Chandra, and Fermi space telescopes continue to make groundbreaking discoveries on an almost daily basis,” says NASA Administrator Charlie Bolden¹.

NASA astrophysicists and their colleagues conduct an ambitious research program stretching from the edge of the solar system to the edge of the observable Universe. Their work is guided in large part by the National Research Council’s Decadal Survey of Astronomy and Astrophysics, which identified the following priorities:

- Finding new planets—and possibly new life—around other stars.

- Discovering the nature of dark energy and dark matter.

- Understanding how stars and galaxies have evolved since the Big Bang.

- Studying exotic physics in extreme places like black holes.

Observing time on Hubble and the other “Great Observatories” is allocated accordingly.

Smaller missions are important, too: The Kepler spacecraft, which is only “medium-sized” by NASA standards, has single-handedly identified more than 2300 planet candidates. Recent finds include planets with double suns, massive “super-Earths” and “hot Jupiters,” and a miniature solar system. It seems to be only a matter of time before Kepler locates an Earth-sized world in the Goldilocks zone of its parent star, just right for life.

A future astrophysics mission, the James Webb Space Telescope, will be able to study the atmospheres of many of the worlds Kepler is discovering now. The telescope’s spectrometers can reveal the chemistry of distant exoplanets, offering clues to their climate, cloud cover, and possibilities for life.

That’s not the telescope’s prime mission, though. With a primary mirror almost 3 times as wide as Hubble’s, and a special sensitivity to penetrating infrared radiation, Webb is designed to look into the most distant recesses of the universe to see how the first stars and galaxies formed after the Big Bang. It is, in short, a Genesis Machine.

Says Bolden, “We’re on track in the construction of the James Webb Space Telescope, the most sophisticated science telescope ever constructed to help us reveal the mysteries of the cosmos in ways never before possible.” Liftoff is currently scheduled for 2018.

How long will the list of discoveries be in January of that year? Stay tuned for Astrophysics.

For more on NASA’s astrophysics missions, check out <http://science.nasa.gov/astrophysics/>. Kids can get some of their mind-boggling astrophysics questions answered by resident Space Place astrophysicist “Dr. Marc” at <http://spaceplace.nasa.gov/dr-marc-space>.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

Happy Birthday Kennedy Space Center by Robin Byrne

This month we celebrate the 50th anniversary of a place that has become synonymous with the U. S. space program. Although the east coast of Florida had been the site of many space program launches already, it wasn't until July 1, 1962 that NASA officially christened the Launch Operations Center, giving this location a status on a par with Marshall Space Flight Center. The following year, on November 29, the facility was renamed the Kennedy Space Center in honor of President Kennedy, shortly after his assassination.

What was originally a few buildings in the Cape Canaveral Missile Test Annex, quickly grew after Kennedy announced plans to send men to the Moon. NASA began buying up land in the area, adding over 200 square miles to the site. Once the land was purchased, designs for the launch facility were under way. Launch Complex 39 was about to become a reality. Necessary buildings for the ultimate goal of going to the Moon included: the Launch Control Center, NASA KSC Headquarters, Launch Pads A & B, a myriad of support buildings, and the Vehicle Assembly Building (VAB). At the time of its construction, the VAB was the largest structure, by volume, in the world; today it ranks fourth. Almost all of the buildings, including some that were under the control of the Department of Defense, have continued to be used, despite undergoing changes of purpose.

From launching some of our first unmanned spacecraft, to the first American men in space, to the missions to the Moon and the shuttle program, not to mention countless spacecraft sent to explore the planets, the Kennedy Space Center has been where it all started. And, even though the Shuttle program has come to an end, that doesn't mean the space center's usefulness has ceased. For now, it will be the launch facility for unmanned spacecraft. But there are still plans for human spaceflight in the future, with the Orion Crew Vehicle and the Space Launch System. Kennedy Space Center will continue to be a vital component of space exploration.

If you have never been to the Kennedy Space Center, you should plan to go. If you have been there, then you know what an amazing place it is to visit for anyone with an interest in space exploration. So much history in one place is awe-inspiring. With this year marking the 50th anniversary of its beginning, now would be an especially good time to visit, soak up all that has occurred on that hallowed ground, and wish a happy birthday to the Kennedy Space Center.

References

NASA - Kennedy History

<http://www.nasa.gov/centers/kennedy/about/history/index.html>

Kennedy Space Center - Wikipedia

http://en.wikipedia.org/wiki/Kennedy_Space_Center

John F. Kennedy Space Center

by Steve Garber

<http://history.nasa.gov/centerhistories/kennedy.htm>

SHOP AND/OR SWAP

The BSAS is trying out a SHOP AND/OR SWAP section in the Eclipse.

1. Each participant must be a fully paid up member in good standing in the BSAS;
2. She/He must furnish the text in Text, Word or a compatible format. Pictures will be jpeg or equal (640x480).
3. Your contact address must be included so that all negotiations may be done independently of the BSAS or the Eclipse.
4. Your ad will be posted free for a period of two consecutive Eclipses, but must be removed as soon as a sale or swap has occurred. Contact The Eclipse editor, Bill Griswold, at bgriz@comcast.net.

There are no new ads for this month, but this is where it will happen.

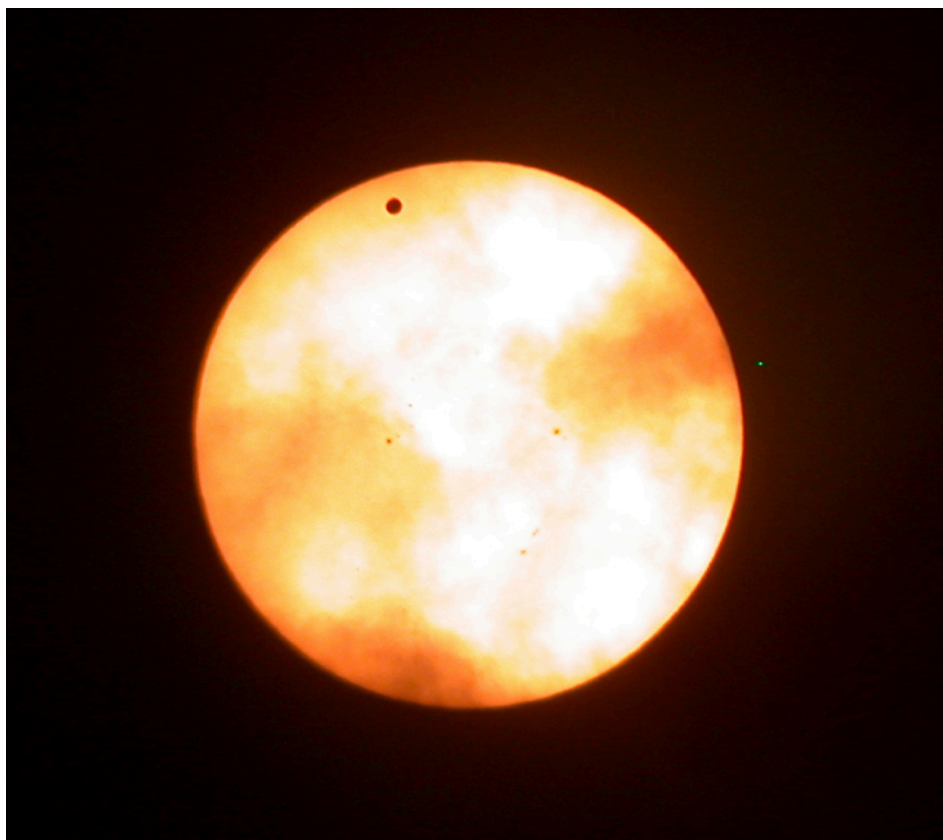
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I'll leave you for now with an image of the Venus Transit, taken from the ASC through a 4" refractor. I continue to be amazed by how relatively inexpensive filters (such as the \$75 solar filter used for this image) allow amateurs to obtain images impossible for the human eye to perceive. I hope to devote a future column to the wonders that infrared and ultraviolet filters can work for imaging the planets.

See you at the telescope clinic on August 11th!!

Clear skies,

John Harrington



**Barnard-Seyfert Astronomical Society
Minutes of a Regular Meeting of the Board of Directors
Held On Wednesday, June 6, 2012**

The board of directors of the Barnard-Seyfert Astronomical Society (BSAS) met in regular session at the Cumberland Valley Girl Scout Council Building in Nashville, Tennessee on June 6, 2012. A sign-in sheet was passed around in lieu of a roll call. Board members Joe Boyd, Bill Griswold, Melissa Lanz, Kris McCall, Bob Norling, Curt Porter, Bob Rice, and Theo Wellington were present. Board members Dr. Spencer Buckner, Steve Cobb, and John Harrington, were absent. A quorum being present, Vice-President Joe Boyd called the meeting to order at 7:30 P.M.

Joe Boyd asked for corrections to the minutes of the previous board meeting held on May 2, 2012 and, there being none, declared them to be accepted as published in the June 2012 *Eclipse* newsletter. Treasurer Bob Norling reported that the BSAS had \$2,321.05 in its regular checking account and \$815.95 in its equipment account.

Joe Boyd asked board members for a recap of the results of their public outreach activities for the June 5, 2012 transit of Venus. Bob Rice reported that they had around 120 viewers at Bowie Nature Park in Fairview. Curt Porter reported that there was a very large crowd – perhaps around 3,000 persons – at the Adventure Science Center (ASC), but that everything went well. Bill Griswold commented that the turnout at the ASC was the biggest celebration ever of Venus’s going from an evening star to a morning star. Theo Wellington noted that the crowd at the ASC was fabulous and that Subway, a caterer at the event, ran out of food. Kris McCall made the observation that the press typically will not pick up on a scientific event until the very last moment, but that this is largely an editorial decision.

Joe Boyd inquired about the whereabouts of the Society’s public address (PA) system and several board members responded that BSAS member Lonnie Putterbaugh may have it. Mr. Boyd commented that the PA system should be available for major public outreach events. He also emphasized that the club’s AED (Automated External Defibrillator) device should be present at such events and noted that he understood that the device’s software needed to be updated. Curt Porter put these suggestions into a motion that was seconded by Theo Wellington and subsequently passed by a unanimous voice vote.

The board agreed that the BSAS should continue to evaluate measures for handling future events. Joe Boyd noted that, besides operating telescopes, people should be available to answer questions at public activities. **Mr. Boyd also stated that to avoid lifting injuries, and liability, no physical assistance should be given to children by anyone other than parents or guardians.** He also stated that Mary Hance, the popular writer of the Ms Cheap column in the local *Tennessean* newspaper, had been very cooperative in publicizing BSAS activities and that the club should send her a letter of appreciation.

The board discussed preparations for the upcoming telescope clinic to be held just before the public star party at Long Hunter State Park on June 23. Curt Porter suggested that everyone bring various small tools. Melissa Lanz said that she would check into putting an announcement on the Nashville Citysearch Guide. Theo Wellington suggested bringing type 2012 button batteries for red dot finder scopes because people so often forget to turn these devices off and run down the batteries. Kris McCall announced that she had set up a Twitter account for the club at bsasnashville.

Bob Rice recounted a suggestion from BSAS member John Walker that those bringing telescopes to star parties discuss, plan, and perhaps even assign the objects to be observed beforehand so that the

public is not looking at the same thing as they go from scope to scope. The board generally agreed that this was a good idea that could best be handled through informal email discussions before a star party.

Curt Porter noted that he had acquired an old Tennessee Star Party sign that was somewhat larger than the club's recently purchased star party signs and suggested that he might give this to BSAS President John Harrington. Mr. Porter said that he will distribute the rest of the new club signs. Joe Boyd officially appointed Mr. Porter to "assign the signs."

Joe Boyd reported that the Committee for Skeptical Inquiry (CSI), an organization that purportedly encourages the critical investigation of paranormal and fringe-science claims from a responsible scientific point of view and disseminates factual information about the results of such inquiries to the scientific community and the public via its *Skeptical Inquirer* magazine, will be holding its annual convention at Nashville's Opryland Hotel in October and has asked the BSAS to bring telescopes to that event. Mr. Boyd cited a recent article in the *Skeptical Inquirer* that had exposed an alleged UFO impact crater in Texas to be a hoax. The board discussed the CSI's request and Bob Norling moved that the President be authorized to contact the CSI, discuss their proposal, and negotiate an agreement if doing so appeared to be in the Society's interest. Melissa Lanz seconded this motion and the board subsequently passed it by a unanimous voice vote.

Theo Wellington announced several changes to the BSAS' star party schedule involving events at Long Hunter State Park, Bells Bend Nature Center, and Edwin Warner Park. Bob Rice said that he would update the schedule and email copies to the board. Melissa Lanz noted that the board meeting scheduled for the first Wednesday in July fell on the July 4 holiday and should be changed. Theo Wellington suggested moving the meeting to the following week on July 11. Bill Griswold said that he would check with the Cumberland Valley Girl Scout Council to determine if the building was available on that date. Joe Boyd noted that the President had discretion under the bylaws to change a meeting date according to site availability. Curt Porter stated that the club needed a list of all board members along with their current preferred email addresses. Bill Griswold said that he would put an article in the *Eclipse* newsletter to address this issue. Lastly, the issue of how to send a mass "blast" email to all BSAS members at once came up and Bill Griswold said to contact him and he would take care of it.

Since there was no further business to discuss Vice-President Joe Boyd declared the meeting to be adjourned at 8:46 P.M.

Respectfully submitted,
Bob Rice, Secretary

Barnard-Seyfert Astronomical Society Minutes of the Monthly Membership Meeting Held on Wednesday, June 20, 2012

Vice-President Joe Boyd called the meeting to order at 7:35 P.M. in the Cumberland Valley Girl Scout Center and welcomed members and visitors. Treasurer Bob Norling reported that the BSAS had \$1,894.05 in its regular account and \$815.95 in its equipment account. Mr. Boyd then announced these upcoming star parties:

- Jun 23 – Public star party & telescope clinic at Long Hunter State Park from

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7:00 to 10:30 P.M.

- Jul 20 – Public star party at Bells Bend Outdoor Center from 8:30 to 10:30 P.M.
- Jul 21 – Private star party at Natchez Trace Parkway mm 412 (Water Valley Overlook).
- Aug 10 – Public star party at Bowie Nature Park in Fairview from 8:30 to 10:30 P.M.
- Aug 11 – Public star party & telescope clinic at Edwin Warner Park from 7:00 to 10:30 P.M.
- Aug 18 – Private star party at Natchez Trace Parkway mm 435.5.

Joe Boyd called upon BSAS board member Curt Porter who announced that the club's new star party signs - which Mr. Porter was instrumental in acquiring - had been handed out. Mr. Boyd announced that President John Harrington was very pleased with the public turnout at the June 5 Transit of Venus where BSAS members supplied telescopes at these venues: Bowie Nature Park with 120 visitors; Warner Park with 200+ visitors; and the Adventure Science Center with 3,000 visitors. He again called upon Curt Porter to comment on the upcoming June 23 telescope clinic at Long Hunter State Park. Mr. Porter stated that the main objective would be to show new telescope owners how to find objects and point their telescopes at them. He suggested that members bring small tools and noted that there would be no major adjustments or tear-downs. Joe Boyd called upon Past-President Dr. Terry Reeves to comment on the June 16 private star party at Past-President Mark Manner's Spot Observatory. Dr. Reeves noted that it was a very pleasant evening and that participants could actually see structure in the Milky Way. Mr. Boyd thanked Mark manner (who was in the audience) for sharing his great facility.

Joe Boyd then turned the meeting over to President John Harrington who encouraged everyone to attend the June 23 telescope clinic and suggested bringing laser collimators, artificial stars, and jewelers tools. Mr. Harrington said that black flocking paper would also be available. He called everyone's attention to the new Swap and Shop section that was recently added to the *Eclipse* newsletter and also asked for volunteers to pick up and drive other members to meetings.

John Harrington introduced Dr. Joshua Pepper, Research Assistant Professor at Vanderbilt University, who delivered the evening's presentation on the "Golden Age of Exoplanet Discovery." Dr Pepper explained that exoplanets were a new field of exploration that was providing a new window on the universe. He stated that there were three ways to find exoplanets: (1) Direct Observation – but this is limited by glare from the star the exoplanet is orbiting; (2) Measuring Radial Velocity – looking for spectral wobble; and (3) Transits – obtaining a light curve to measure variations in brightness over time. Dr. Pepper summarized the findings to date from the various exoplanet discovery methods including the Kepler space telescope: (1) Exoplanets are common – perhaps 30% to 50% of sun-like stars have planets; (2) Metal rich stars were more likely to have gas-giants but not terrestrial planets; (3) Planets come in packs; and (4) Smaller stars such as spectral type M red dwarfs are more likely to have planets.

Dr. Pepper then described the activities of the KELT (Kilodegree Extra Little Telescope) project that uses small remote controlled robotic telescopes located in Arizona and South Africa to hunt for exoplanets orbiting bright stars. The methodology followed by the KELT project is to (1) Monitor many stars; (2) Measure the light curves; (3) Study the light curves for evidence of planets; and (4) Follow up observations with bigger telescopes to verify. Dr. Pepper noted that two universities reviewed all the data to verify the observations. He also pointed out that the KELT project was a very inexpensive initiative because it was ground-based and used off-the-shelf equipment and components. The highlight of Dr. Pepper's presentation was his announcement that the KELT project had just detected and verified two objects (a brown dwarf and an exoplanet) orbiting stars in the constellations Andromeda and Auriga. These results were reported at the recent American Astronomical Society meeting in Anchorage, Alaska and were particularly meaningful because BSAS member and Past-President Mark Manner was a significant contributor to this research. Dr. Pepper followed his presentation by answering questions from the audience.

President John Harrington again invited everyone to attend the telescope clinic on June 23. Since there was no additional business to discuss, he declared the membership meeting to be adjourned at 8:55 P.M.

Respectfully submitted,

Become a Member of the BSAS!

Download and print the Application for membership from www.bsasnashville.com (Adobe® Acrobat Reader® required).

Then fill it out and bring it to the next monthly meeting or mail it along with your first year's membership dues to:

BSAS
P.O. Box 150713
Nashville, TN 37215-0713

Annual dues, which include membership in the BSAS and Astronomical League, and subscriptions to their newsletters, are:

\$20 Individual
\$30 Family
\$15 Senior (+65)
\$25 Senior Family (+65)
\$12 Student*

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

All memberships have a vote in BSAS elections and other membership votes.

Also included are subscriptions to the BSAS and Astronomical League newsletters.

IMPORTANT DUES INFORMATION

To find the expiration date for your current membership, visit our web site at <http://www.bsasnashville.com> and click the Renewals link.

There will be a two month grace period before any member's name is removed from the current distribution list.

About Our Organization

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 www.bsasnashville.com. If you need more information, write to us at info@bsasnashville.com or call John Harrington at (615) 739-4500.

[BSAS on Facebook](#)

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 Lonnie Puterbaugh at 615-661-9540.