

The ECLIPSE

August
2017

The Newsletter of the Barnard-Seyfert Astronomical Society

Next Membership Meeting:
August 16, 2017, 7:00 pm
Sudekum Planetarium
Adventure Science Center
800 Fort Negley Blvd.

*Topic: Total Solar Eclipse panel
details on page 8*

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From the President

Greetings,

I hope you are doing great and that you have had several opportunities to do some observing of the summer sky. You may recall receiving an equipment survey several weeks ago from BSAS board member, Todd Nannie. Let me take this opportunity to explain what that was all about. One of the great programs BSAS offers its members is the privilege of borrowing telescopes and other astronomy equipment. Some of that equipment was donated to BSAS and some was purchased. Over the years, equipment has been loaned, returned and loaned out again repeatedly with various board members being responsible for tracking it. As you can imagine might happen, our records have become somewhat out-of-date.

The survey was designed to help us account for all of the equipment that is owned by BSAS and to create a detailed listing. Once finalized we will be circulating the list to our members to give everyone a chance to express interest in borrowing specific items. Going forward, if someone has equipment that has been on loan for six months or longer, and another BSAS member would like to borrow it, we will request that the equipment be turned back in for the waiting member. This will allow us to maximize the use of these assets.

The timing for this effort is great for a couple of reasons. First, BSAS will be receiving \$2,500 from NISSAN Corporation for the upcoming star party on August 20, 2017. We have not decided how the money will be used, but we will certainly consider purchasing additional astronomy equipment. Second, former BSAS member, Robert "Bob" Rice, who passed away last December, left behind some astronomy equipment. His wife of 53 years, Jeannie Rice, recently contacted BSAS about that equipment. We will



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Observing Highlights August and September

Open Clusters

Mel111 (*Coma Star Cluster*),
M6 (*Butterfly*), M7, M23,
M21, M18, M25, M26, M39,
M11 (*Wild Duck*), M29, M73

Galaxies

M98, M99, M106, M61, M100,
M84, M85, M86, M49, M87, M88,
M91, M89, M90, M58,
M104 (*Sombrero Galaxy*),
M59, M60, M94,
M64 (*Black-Eye Galaxy*),
M63 (*Sunflower Galaxy*),
M51 (*Whirlpool Galaxy*),
M83, M101/M102,
NGC 6822 (*Barnard's*)

Globular Clusters

M68, M53, M3, M5, M80, M4,
M107, M13, M12, M10, M62, M19,
M92, M9, M14, M28, M69,
M22, M70, M54, M56, M55,
M71, M75, M72, M15, M2, M30

Multiple Star Systems

Gamma Virginis (*Porrina*),
Alpha Canum Venaticorum,
Zeta Ursae Majoris (*Mizar*),
Epsilon Bootis, M40,
Mu Bootis (*Alkalurops*),
Beta Scorpii (*Acrab*),
Alpha Herculis (*Rasalgethi*),
Epsilon Lyrae (*Double Double*),
Beta Cygni (*Albireo*)

Nebulae

NGC6302 (*Bug*), NGC6309 (*Box*),
NGC6543 (*Cat's Eye*),
M20 (*Trifid*), M8 (*Lagoon*),
M16 (*Eagle*), M17 (*Swan*),
M57 (*Ring*), NGC6818 (*Little Gem*),
NGC6826 (*Blinking Planetary*),
M27 (*Dumbbell*),
NGC6888 (*Crescent*),
NGC6905 (*Blue Flash*),
NGC6960/6974/6979/
6992/6995 (*Veil*),
NGC7000 (*North America*),
NGC7009 (*Saturn*),
IC 5146 (*Cocoon*)

Upcoming Star Parties

Friday 8/11 8:30 pm to 10:30 pm	Public Star Party Bowie Nature Park (Fairview)
Saturday 8/19	Private Star Party Natchez Trace Parkway mile marker 412 (Water Valley Overlook)
Friday 8/25 8:30 pm to 10:30 pm	Public Star Party Bells Bend Outdoor Center
Friday 9/8 7:30 pm to 9:30 pm	Public Star Party Edwin Warner Park



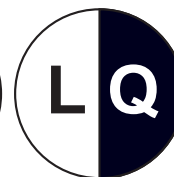
Aug 21
Sep 20



Aug 29
Sep 27



Aug 7
Sep 6



Aug 14
Sep 13

Book Review: “We Have Capture” by Robin Byrne

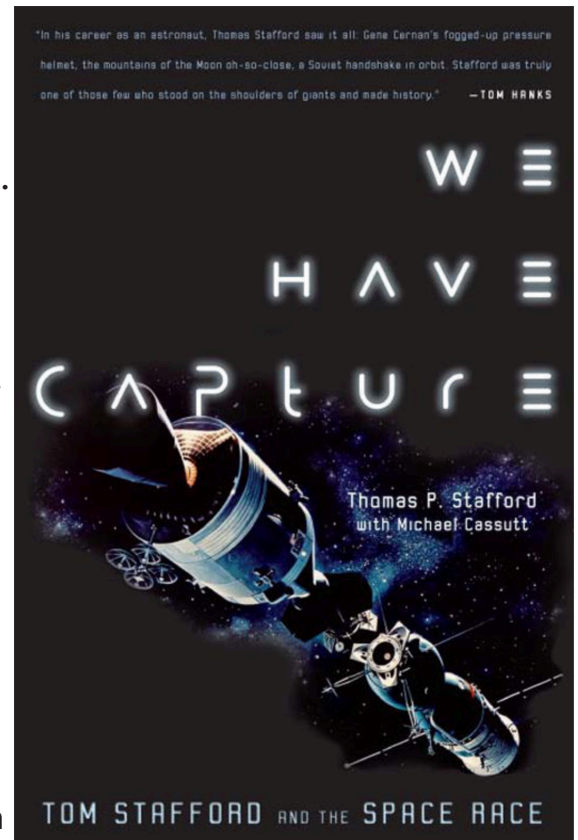
Summer reading means time for another book review. This time around, the book is “We Have Capture: Tom Stafford and the Space Race” written by Tom Stafford and Michael Cassut. Another astronaut biography, to be sure, but about an astronaut who did much, while remaining fairly unknown.

The story begins with Stafford’s upbringing in Oklahoma and attending college at the Naval Academy in Annapolis. Not only did Stafford excel as a student, but also as a pilot. Stafford moved on to the Air Force after graduating in 1953. Stafford tells of the various places he was posted during the Cold War era, and sundry close calls while flying. His skills eventually led to studying at Edwards Air Force Base Test Pilot School, which led to becoming an instructor. Throughout all these years, Stafford had encountered and worked with people whose names would soon become well known: Slayton, Cooper, Borman, Conrad, Lovell, Collins, Young, and more.

Then the space program begins. While the Mercury program gets underway, NASA is already recruiting for the next batch of astronauts. Despite being headed to Harvard Business school, Tom Stafford submits his application in 1962. Even after going through all the tests and interviews, Stafford still moves his family to Massachusetts, expecting to attend college. Three days as a Harvard student, he got a phone call from Deke Slayton - Tom Stafford was an astronaut! Bye bye Harvard. Hello NASA.

Three years of training, working on the development of the Gemini spacecraft, serving on back-up crews, finally 1965 was the year for Tom Stafford to enter space. Along with Wally Schirra on Gemini 6, they were originally scheduled to rendezvous and dock with an unmanned Agena rocket, but a launch delay and an exploded Agena rocket interfered with that plan. Instead, NASA made the bold move of launching Gemini 7 with Frank Borman and Jim Lovell first, and have Gemini 6 rendezvous with them about a week later. Their first launch attempt was unsuccessful, with the engines shutting down just at the moment they should have been lifting off. Thankfully, no one was hurt, the problem was fixed, and they successfully launched a couple days later. The rendezvous was flawless, getting as close as a couple feet apart. The mission was a success.

Stafford’s next flight was the following year aboard Gemini 9 with Gene Cernan. This mission’s goal was an Extravehicular Activity (EVA) by Cernan, during which he would perform some simple tasks in weightlessness. This would be the first EVA that involved actually trying to do something



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Book review, continued

productive. No one realized how difficult that would be. Cernan had so much trouble, he became exhausted and dehydrated, and could barely function. There was some question about whether he would be able to get back into the spacecraft. If he couldn't, Stafford would have had to cut him loose so that he could close the capsule's hatch for reentry. Thankfully, Cernan managed to get back in the capsule on his own, but the mission definitely was a wake-up call.

Stafford's third flight wasn't until 1968 on Apollo 10 with Gene Cernan and John Young. This would be the trial run before the first moon landing. After entering lunar orbit, Stafford and Cernan flew the Lunar Module (LEM) down to less than 10 miles from the lunar surface. They were able to photograph the landing site for the upcoming Apollo 11 mission and test many of the features of the LEM in the lunar environment.

After this last flight in space, Tom Stafford was ready to try something different. Al Shepard had been chief of the Astronaut Office since being grounded with Meniere's syndrome. However, Stafford had told Sheppard about a surgical treatment for the syndrome. The success of the surgery put Shepard back on flight status, and there was a position to fill in the Astronaut Office. Stafford stepped in. Among his duties was to help oversee the Apollo Applications Project, which involved using existing Apollo hardware for other purposes. One of those would become Skylab. Stafford also coordinated the work done on the ground during the Apollo 13 crisis.

Stafford's next, and final, mission would be the Apollo-Soyuz Test Project (ASTP) - the first joint mission between the United States and the Soviet Union in 1973. Many years went into the eventual success of this mission. Astronauts and Cosmonauts had to learn each other's language, hardware had to be developed that would allow the two vehicles to dock, and both crews needed to train with each other and with both US and Soviet ground crews. Despite many differences in style and philosophy, the mission accomplished not only a successful flight, but opened doors for future joint ventures.

After ASTP, it was time for Stafford to move on. He was offered the position of commanding general of the Air Force Flight Test Center at Edwards Air Force Base, and Stafford leapt at the chance. His management skills were just what Edwards needed. One section under his command was "Area 51," also known as Dreamland. Although no aliens, they did have lots of Soviet military aircraft to study and analyze. The people who flew the Soviet machines were known as Red Hats, and Stafford joined their ranks to fly a MiG-17. Stafford was also at Edwards when the first space shuttle, the Enterprise, was being evaluated at the facility for its ability to coast and land (this shuttle never went to space).

Stafford's next job was with the Pentagon as deputy chief of staff for research, development, and acquisition. Here he encountered the role of politics first-hand in relation to military spending. Joining the Pentagon in 1978, Stafford was faced with an era of very low enthusiasm for military spending. Work wasn't his only obstacle at this time. His wife, Faye, had always struggled with

continued on next page

Book review, continued

social anxiety. While in D.C. it got progressively worse, and she needed to move back to Oklahoma for her sanity. Stafford officially retired at the age of 49 from the Air Force and the Pentagon to move back home. This turned out to be the first step toward their marriage eventually ending in 1985.

Stafford's retirement was hardly quiet. He filled his time on the boards of various companies, and then he opened a consulting business with two former Pentagon colleagues. Stafford, Burke, and Hecker was born. Meanwhile, President Reagan asked Stafford to join the National Research Council's Aeronautics and Space Engineering Board (ASEB), which was an independent committee overseeing NASA. Prior to Stafford joining the group, it had been dominated by people more interested in unmanned spaceflight than in manned spaceflight. Stafford hoped to provide more balance. Meanwhile, because of his experience with ASTP and Russian language skills, Stafford found himself more frequently called upon to act as an unofficial ambassador to the Soviet space program. Other duties included serving on the panels that investigated both the Challenger and Columbia tragedies, plus other NASA advisory panels. That included overseeing the development of the International Space Station, ultimately heading up a team, called the Synthesis Group, which evaluated the various space station proposals. Once the idea of making it truly "international" with the Soviet Union's involvement was decided, Stafford's long experience was once again called upon. While ISS was being developed, we started sending astronauts to the Mir Space Station. Yep, Stafford was part of the oversight group for that, too. Once the first crew, Expedition One, inhabited the space station, Stafford could actually have a retirement that looked like a retirement, including plenty of travel with his second wife.

Throughout the book, in addition to plenty of behind-the-scenes stories from NASA, Stafford also included what Alexei Leonov (his ASTP counterpart) and the Soviet space program were up to along the way. Stafford's friendship with Leonov, first developed during ASTP, continues on to the present, and that is clear through the stories shared.

For someone who has been involved in the space program since 1962, flown four space missions, and who has been involved with NASA at almost every step of the way, you would think Tom Stafford's name would be better known. Clearly it deserves to be. "We Have Capture" is an enjoyable read for anyone who has an interest in the history of both the US and Soviet space programs, and who would like to learn more about this unsung titan of the space program.

Reference:

We Have Capture: Tom Stafford and the Space Race, written by Thomas P. Stafford and Michael Cassut; Smithsonian Institution Press, 2002.

Send your cool astrophotos to
eclipse@bsasnashville.com!

Barnard-Seyfert Astronomical Society
Minutes of a Regular Meeting of the Board of Directors
Held On Wednesday, July 5, 2017.

The regular meeting of the Board of Directors of the Barnard-Seyfert Astronomical Society was held July 5, 2017, in the board room at the Girl Scouts office, Nashville, TN 37204. Present were Mike Benson, Spencer Buckner, Gary Eaton, Drew Gilmore, Bud Hamblen, Rob Mahurin, Todd Nannie and Theo Wellington. A quorum being present, Gary called the meeting to order at 7:33 PM. No treasurer's report was presented. No membership report was presented.

Meeting programs: Chuck Schlemm will be asked to make a presentation at the July membership meeting. The August meeting will be held at the Sudekum Planetarium with a 7 PM start time instead of 7:30. At 6 PM before the meeting the Adventure Science Center will present an eclipse show that has a \$8 admission charge. Spencer Buckner, Theo Wellington and Billy Teets will make presentations on the solar eclipse. Drew suggested that photos of the solar eclipse be sent to eclipse@bsasnashville.com for the September meeting. Keith Rainey is still on for the October meeting, Spencer for the November meeting and JanaRuth Ford for the December meeting.

Star parties and outreach: Sixty people have registered to attend the July 12 solar program at Edwin Warner Park. It was felt that the BSAS can deal with 100 people if the park wanted to increase the number of registrants. BSAS members are invited to a public star party to be at the Pogue Creek trail head field, near Pickett State Park, on Saturday, July 15, 2017, starting at 9:30 PM. The Camp Idyllwild event has been moved back to July 21-22. The private star party at MM 535.3 (the parking area south of the Hwy 96 bridge) is still scheduled for July 22. Other star parties include a public one at Bowie Nature Park, August 11, and a private one at Water Valley Overlook, August 19. Nissan North America has requested the BSAS to be at a company event on August 20. Nissan will be hosting 35 national press reporters for Nissan's product line roll-out. Location will be at Owl's Hill Nature Sanctuary, Brentwood. The club will do a 40 minute presentation and have about 5-6 telescopes for attendees. The event includes live music and dinner for members and spouses. Nissan will make a \$2,500 donation to the club. The makeup date for the Cornelia Fort Airpark star party will be October 14. The public star party at Long Hunter State Park on October 28 will be at a site different from the group campground in the park. The BSAS is asked to help host the astronomy weekend at Pickett State Park next year on April 13-15. The Knoxville Observers also are going to host.

The club's supply of solar glasses was discussed. It was the consensus that the July general meeting probably would be the last date we could distribute solar glasses, and that we could increase the number of solar glasses to be sold to members for \$1 from 25 to 50.

Resolution 2017-07-05: Increase the number of solar glasses available at the \$1 member price from 25 to 50. Spencer made the motion, Todd seconded, and the motion carried on a unanimous voice vote.

There being no further business, Gary asked for a motion to adjourn. Spencer made the motion, Rob seconded, and the meeting was adjourned at 8:55 PM.

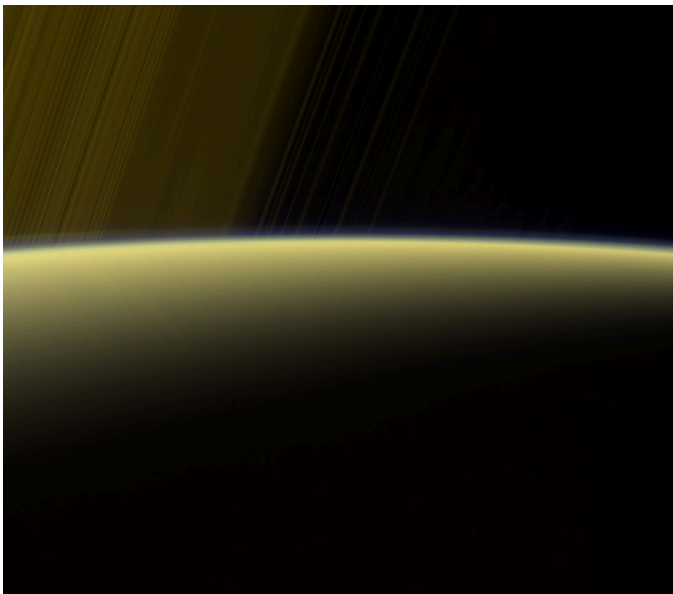
Respectfully submitted,

Bud Hamblen



With Cassini's exploration of Saturn coming to a dashing end in a few months, the mission team scheduled an "All Cassini Plus Alumni" group photo on Wednesday, June 21, 2017 to commemorate the event. The photo shoot provided a great opportunity for people to catch up with co-workers and old friends. While they readied for the camera, past and present team members sipped coffee and reminisced, sharing Cassini highlights and war stories as well as their feelings about the coming end of the long, productive mission.

Image credit: [NASA/Jet Propulsion Laboratory-Caltech](#)



This false-color view from NASA's Cassini spacecraft gazes toward the rings beyond Saturn's sunlit horizon. Along the limb (the planet's edge) at left can be seen a thin, detached haze. This haze vanishes toward the left side of the scene. Cassini will pass through Saturn's upper atmosphere during the final five orbits of the mission, before making a fateful plunge into Saturn on Sept. 15, 2017. The region through which the spacecraft will fly on those last orbits is well above the haze seen here, which is in Saturn's stratosphere. In fact, even when Cassini plunges toward Saturn to meet its fate, contact with the spacecraft is expected to be lost before it reaches the depth of this haze.

Image credit: [NASA/JPL-Caltech/Space Science](#)

Erratum: Your humble newsletter editor incorrectly 'corrected' the spelling of Baily's Beads in last month's President's message. Be assured that our club president knows how to spell the name correctly, whereas I should know better.

- Drew

From the President, continued

likely provide BSAS and its members the opportunity to purchase Bob's equipment through an auction process at a future meeting.

If you have equipment that is owned by BSAS but have not had a chance to respond to Todd's survey, it is not too late to do so by emailing him at: equipment@bsasnashville.com. Also, if you own equipment that you are not using, please consider donating it to BSAS, which is incorporated as a 501 (C) (3) organization. Our members would appreciate it so very much.

Gary Eaton

Next BSAS meeting * SPECIAL TIME *

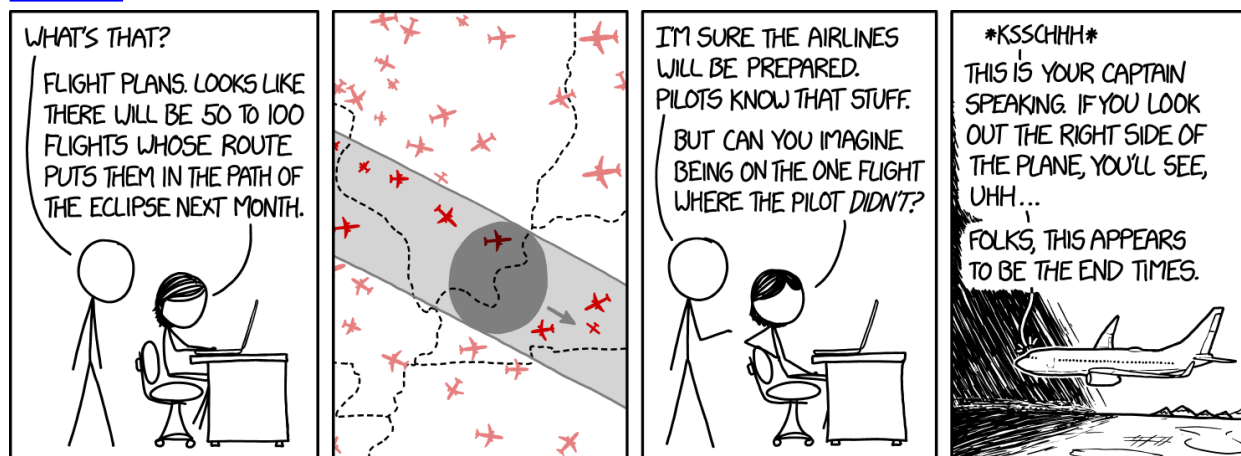
August 16, 2017, 7:00 pm
Sudekum Planetarium at Adventure Science Center
800 Fort Negley Blvd

Topic: Total Solar Eclipse Panel Discussion with NASA Solar System Ambassador Theo Wellington, Dr. Spencer Buckner (APSU), and Dr. Billy Teets (Vanderbilt University). We will be meeting in the Sudekum Planetarium.

Come early for an optional 6:00 pm presentation of 'Eclipse: The Sun Revealed' in the planetarium. Tickets for the planetarium show are \$8.

Please RSVP at adventuresci.org/eclipsepanel

[xkcd](http://xkcd.com)



**Barnard-Seyfert Astronomical Society
Minutes of the Monthly Membership Meeting
Held On Wednesday, July 19, 2017.**

The Barnard-Seyfert Astronomical Society held its monthly meeting in the City Room at the Girls Scout office, 4522 Granny White Pike, Nashville, Tennessee, on Wednesday, July 19, 2017. 36 members signed in.

Gary Eaton called the meeting to order at 7:30pm. Mark Coleman moved to approve the minutes of the June 21 meeting as printed in the July issue of the Eclipse, Spencer Buckner seconded, and the minutes were approved by unanimous voice vote. Gary relayed the report from Tom Guss that there was \$1,870.38 in the savings account and \$1,859.24 in the checking account. Gary reported that the solar eclipse review program at the Edwin Warner Park Special Events Field was a success.

Gary announced the following star parties: Saturday, June 22, private star party at Natchez Trace Parkway mile marker 435.3; Friday, August 11, from 8:30 to 10:30 pm, public star party at Bowie Nature Park, Fairview; Saturday, August 19, private star party at Natchez Trace Parkway mile marker 412 (Water Valley Overlook).

Gary asked for volunteers to crew the BSAS booth at the Adventure Science Center on August 19 and 20, and for volunteers at the Nissan North America event at Owl's Hill Nature Sanctuary on August 20. Other requests for volunteers included Camp Idyllwild (7/21), City of Tullahoma (8/16), Hattie Cotton STEM Magnet Elementary School (Date to be determined). Other opportunities / requests are shown on the club's website.

Gary reminded us that the August 16 meeting will be at the Adventure Science Center instead of the Girl Scout office, and will begin at 7 PM instead of 7:30. The Sudekum Planetarium will present a solar eclipse program at 6 PM, before the meeting. Reservations are needed for the meeting, which is free, and the planetarium show, which is \$8. The RSVP link is on the club's web page: bsasnashville.com.

Celestron LLC has solar eclipse related videos at [youtube.com/user/CelestronDotCom](https://www.youtube.com/user/CelestronDotCom).

James Mims remarked that Books-A-Million is selling a nice magazine covering the upcoming eclipse, The Great American Eclipse.

Chuck Schlemm made a presentation surveying space exploration over the nearly 50 years since the first Apollo landing. The presentation was informative and well illustrated with model spacecraft. There being no further business the meeting was adjourned at 9:26 PM.

Respectfully submitted,

Bud Hamblen
Secretary



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.