

The newsletter of the Barnard Seyfert Astronomical Society, PO Box 150713, Nashville, TN 37215-0713

Upcoming Events

Board of Directors Meeting

October 7th at the Cumberland Valley Girl Scout Council Building
– 7:30 pm

November 4th at the Cumberland Valley Girl Scout Council Building
– 7:30 pm

Membership Meeting

October 21st at the Adventure Science Center – 7:30 pm

November 18th at the Adventure Science Center – 7:30 pm

Star Parties

October 9th – BSAS Private Star Party at Natchez Trace mile marker 412 – Water Valley Overlook

October 16th – BSAS Public Star Party at Long Hunter State Park - 8:00-10:00 pm

November 6th – BSAS Private Astronomy Retreat – Spot Observatory

November 13th – BSAS Public Star Party at Shelby Bottoms Park – 7:30 pm

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Monthly Membership Meeting

Thursday, September 16, 2010
Adventure Science Center
7:30 pm



Join former BSAS president Dr. Terry Reeves and newsletter editor Steve Wheeler for an informative "What's Up?" tour of the night sky, including objects visible in binoculars and telescopes. Don't miss this informative presentation!



From The President

Greetings and clear skies from your BSAS president. Fall has definitely arrived. While the leaves haven't started turning yet, the temperature has certainly caught up to the season. The first day of fall may have been in the 90's but the first days of October were more like what we expect the fall to be: lows in the 40's and comfortable days in the 70's. We may warm back up into the 80's occasionally but we have probably seen the last of the 90's until next year.

I would like to thank Rocky Alvey for his very informative talk on the Dyer Observatory and the history of Vanderbilt astronomy. After the program ended a guest came up to me and told me he never knew Nashville had such a rich history of astronomy. I think Rocky's program showed us all how Nashville has been and still is involved in world class astronomy. I was also surprised at the number of people going up to the Dyer for their public nights. Perhaps members of the BSAS could help out on some of these nights. I invited Lynn McDonald, the Dyer program coordinator, to come to our star party committee meeting at the end of the year to explore the possibility of joint star parties or adding the Dyer public nights to our star party list. I would very much like to see the BSAS become more involved with the Dyer in the coming years.

Our program for this month is "What's Up in the Fall Skies" by Dr. Terry Reeves (past president) and Steve Wheeler (newsletter editor). It has been quite some time since we had a "What's Up" and I am looking forward to this one. If past experience is any clue of what's to come, Terry and Steve will give us a good list to go out and find this fall ranging from binocular objects to challenges in an 8" telescope. Be sure to bring a friend (or two) with you to the meeting on the 21st at the Adventure Science Center.

The buzz in the astronomy world this month has been the announcement of the discovery of an earth-sized planet that is squarely in the middle of its stars habitable zone. The habitable zone is the "Goldilocks" region around a star where liquid water can exist. Too far from the star and you end up like Mars: frozen. Too close and you become Venus-like with a runaway greenhouse effect and hellish surface temperatures. The newly discovered planet, Gliese 581g, is right in the middle of its stars habitable zone. The planets mass is estimated to be about 3.18 times the mass of the Earth.

Continued on Page 2



"Science is a perception of the world around us. Science is a place where what you find in nature pleases you."

Subrahmanyan Chandrasekhar
1910 - 1995

FREE TELESCOPES!

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, and a waiting list may be 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.

Observing Highlights

all times listed are Central Standard Time

LUNAR PHASES

October 2010

10/01 LAST Quarter
10/07 NEW Moon
10/14 FIRST Quarter
10/23 FULL Moon
10/30 LAST Quarter

November 2010

11/06 NEW Moon
11/13 FIRST Quarter
11/21 FULL Moon
11/28 LAST Quarter

OBJECTS VISIBLE THIS MONTH

Messier Objects:

Open Clusters: M11, M18, M25, M26
Nebulae: M16, M17
Globular Clusters: M55, M75

M24 – The Sagittarius Star Cloud

Caldwell Objects:

C-09 – Cave Nebula
C-63 – Helix Nebula
C-65 – Sculptor Galaxy

Orionid Meteor Shower October 21-22 – radiant in Orion (SE)

From the President, cont.

If it is a rocky body like Earth, it would have a diameter slightly larger than Earth's and a surface gravity slightly higher than ours but not too high. Five other planets have also been found orbiting Gliese 581 with two of them lying just inside and just outside the habitable zone. The star Gliese 581 is an M-class red dwarf star with a surface temperature of only 3200 Kelvin, just over half the surface temperature of our Sun. Since the star is so much smaller than our Sun, the planets orbit very close and are probably tidally locked on the star. That means one side of the planet has perpetual daylight and the other is in perpetual night. There should be a narrow strip of twilight that would have relatively pleasant conditions, though. Evidence indicates that the star is at least 7 billion years old and as stable as our Sun. It is fascinating to imagine what kind of life might have evolved on such a world. It probably wouldn't be much like us since the star puts out much more infrared light than visible. After the two planets just inside and outside the habitable zone were discovered in 2007, a radio signal from Earth was sent in their direction in 2008, hoping to establish contact with any intelligence that may have evolved there. The star is about 20 light-years away so perhaps in another 40 years or so we will hear back from them. The first extra-solar planet was only discovered in 1995 so we are only in the infancy of exo-planet discoveries. To have found a planet so like Earth so soon in the process bodes well for the likelihood of finding one even more like Earth in the near future. We certainly live in exciting times.

Before I close, I must mention of our upcoming star parties. The first is a private star party on the Natchez Trace at the Water Valley Overlook (mile marker 412) on Saturday October 9. We start at dusk so come out and observe the dark skies with us. Our public star party this month is at Long Hunter State Park on the 16th. It starts at 8:00pm but if you are bringing a 'scope you will want to arrive a bit early. Even if you aren't bringing a telescope, come out and see what all the fun is about. Next month we have our members retreat at Mark Manner's Spot observatory on November 6. A link to Mark's website can be found in the Calendar on the BSAS website. This is a chance to view from a really dark site and maybe get a tip on how to do astrophotography. I'll talk more about it at the October meeting. Finally, the November public star party is on the 13th at Shelby Bottoms Greenway and Park. It starts at 7:30pm. See you at the October meeting.

Dr. Spencer Buckner
President

Happy Birthday Subrahmanyan Chandrasekhar

by Robin Byrne

This month we celebrate the life of a man whose studies of stars has tremendously advanced our understanding of stellar evolution. Subrahmanyan Chandrasekhar (known as Chandra to his friends), was born October 19, 1910 in Lahore, Punjab, British India (now Pakistan). He was the third of ten children, and the first of four sons. His father was an auditor for a railway company, but he was also a violinist, who wrote several books on music. His mother was quite intellectual, even translating Ibsen's "A Doll's House" into Tamil. For the first 12 years of Chandra's life, he was either home schooled by his parents, with his mother playing a crucial role in sparking his curiosity, or by a professional tutor. Chandra then went to public schools for the remainder of his middle and high school years. In 1925, Chandra entered Presidency College, from which he earned a Bachelors of Science in physics in 1930. Chandra was awarded a scholarship to then pursue his graduate studies at the University of Cambridge, Trinity College. He received his Ph.D. in 1933, and spent the next four years at Trinity College under a Prize Fellowship. During this time, in 1936, Chandra married Lalitha Doraiswamy, whom he met while at Presidency College.

Also in 1936, Chandra was visiting Harvard University. While there, he was offered a Research Associate position at the University of Chicago. Chandra took the position, and remained there for the rest of his career.

Chandra was among the first to combine the study of physics with the study of astronomy, developing the field of astrophysics. His areas of interest each fell into distinct periods of his life. The first area of study involved white dwarfs and stellar structure, which he studied from 1929 - 1939. One of Chandra's most notable discoveries was developed during his voyage in 1930 from India to England. It was on this journey that he worked out the limit to how much mass a white dwarf could have before it collapsed under its own weight. The limit of 1.44 solar masses is now known as the Chandrasekhar Limit. What becomes of a star that exceeds this limit? It will become either a neutron star or a black hole.

From 1938 - 1943, Chandra studied stellar dynamics. In particular, this area involves how gasses and energy move inside of stars. This included the application of Brownian motion, which Einstein had studied, and involves looking at how individual atoms move when in a cloud of gas. This led to his work from 1943 - 1950 on radiative transfer, which is looking at the specifics of how radiation travels through different gases of different densities. This then was applied to light from a star's interior traveling through the outer atmosphere of the star. (On a personal note, his subsequent book on radiative transfer was the most unreadable book from my graduate career.) From 1952 - 1968, Chandra studied various problems involving stability in stars. In 1962, he began looking at applications of relativity to astrophysics, and in 1974, began to apply this to black holes, which he studied until 1983. In the late 1980's he wrapped up his career by studying gravity waves and the consequences of two such waves colliding. The last project Chandra worked on was to take Newton's "Principia," and rewrite it using modern calculus. The work was published in

1995 in the book "Newton's Principia for the Common Reader."

In 1983, Chandra was awarded the Nobel Prize in Physics, along with William Alfred Fowler, for their work on the structure and evolution of stars. Although Chandra was honored by the award, he felt that it focused on a small portion of his lifetime of work, and felt that he had contributed much more that should have been recognized.

Chandra was, in many ways, a citizen of the world. He began life as a citizen of British India. When India was partitioned in 1947, and Pakistan was formed, Chandra became an Indian citizen. Many years after moving to the United States, Chandra became a U. S. citizen in 1953.

Subrahmanyan Chandrasekhar died of heart failure on August 21, 1995 at the age of 84. However, his legacy of studying stars lives on. The Chandra X-Ray Observatory was launched by NASA in 1999. By following a highly elliptical orbit, this observatory is carried well beyond Earth's belt of charged particles, allowing an unobstructed view to collect x-ray radiation from astronomical sources, in particular, black holes. His life is also being celebrated this coming October. To commemorate the hundredth anniversary of his birth, the Chandrasekhar Centennial Symposium will be held. In addition to reviewing Chandra's contributions, talks on recent discoveries concerning stellar astronomy will also be given. It is clear that the life work of Subrahmanyan Chandrasekhar lives on and continues to inspire us all.



References: Subrahmanyan Chandrasekhar - Wikipedia
http://en.wikipedia.org/wiki/Subrahmanyan_Chandrasekhar

Chandrasekhar Centennial Symposium | Department of Physics
<http://physics.uchicago.edu/events/chandra100/>

Subrahmanyan Chandrasekhar - Autobiography
http://nobelprize.org/nobel_prizes/physics/laureates/1983/chandrasekhar-autobio.html

Chandra :: About Chandra :: Chandra Mission
http://chandra.harvard.edu/about/axaf_mission.html

Chandra :: About Chandra :: Subrahmanyan Chandrasekhar - The Man Behind The Name
<http://chandra.harvard.edu/about/chandra.html>

Board Meeting Minutes – September 2, 2010

Bob Rice, Secretary

The board of directors of the Barnard-Seyfert Astronomical Society met in regular session at the Cumberland Valley Girl Scout Council Building in Nashville, Tennessee on September 2, 2010. A sign-in sheet was passed around in lieu of a roll call. Board members Dr. Spencer Buckner, Tony Campbell, Jana Ruth Ford, Bill Griswold, Dr. Donna Hummell, Santos Lopez, Kris McCall, Bob Norling, Bob Rice, and Theo Wellington were present. Board members Curt Porter and Dr. Terry Reeves were absent. A quorum being present, President Dr. Spencer Buckner called the meeting to order at 7:35 P.M.

Treasurer Bob Norling reported that the BSAS had \$2,059.01 in its regular checking account and \$166.29 in its equipment account. Mr. Norling announced that he had received a publisher's notice that the 2011 edition of Kalmbach's Deep Space Mysteries Calendar was available for order. Dr. Spencer Buckner suggested that we order the same number as last year. Dr. Buckner further suggested that we order copies of the Royal Astronomical Society of Canada's 2011 Observers Handbook and Guy Ottewill's 2011 Astronomical Calendar by member subscription only. All of these publications would be made available to BSAS members for purchase at a discounted price.

Dr. Spencer Buckner announce these upcoming star parties:

- Sep 11 Private star party at Natchez Trace Parkway mile marker 435.5 starting at sunset
- Sep 17 Public star party at Bells bend Outdoor Center from 8:00 -10:00 P.M.
- Sep 18 Public "International Observe the Moon Night" star party at the Adventure Science Center (ASC) from 8:00 to 10:00 P.M.

Dr. Spencer Buckner announced that Rocky Alvey would deliver the September 16 membership meeting program on "Vanderbilt Dyer Observatory - Past, Present, and Future" and that Dr. Terry Reeves and Steve Wheeler would present the October 21 membership meeting program on "What's Up in the Fall Sky." Dr. Buckner noted that these two programs were being reversed from their originally scheduled dates. Kris McCall announced that the September 16 meeting would be held in a yet-to-be-determined room at the ASC instead of in the Sudekum Planetarium.

Dr. Spencer Buckner reminded that board about the ongoing contest to select a member's astro-photo image for the cover of the new BSAS public information brochure that was being finalized. Dr. Buckner stated that an announcement would soon be posted on the BSAS' website. He noted that sufficient copies of the old brochure were still available to be used during the interim. Dr. Buckner also pointed out that the Nominating Committee needed to provide recommendations for 2011 officers and directors at the October board of directors meeting. The board noted that members Tony Campbell and Theo Wellington would be leaving the board when their terms expired this year.

Dr. Spencer Buckner suggested holding the BSAS' Fall Retreat at Mark Manner's Spot Observatory in early November but said that he wanted to check with Mr. Manner first because we had just recently held our annual picnic there. Santos Lopez suggested the possibility of having a brief instructional session on imaging at the Retreat.

Dr. Spencer Buckner commented on the need for the BSAS to have a permanent address even though it lacked an actual physical location primarily because of demands stemming from its memberships in the Astronomical League and NASA's Night Sky Network. He noted the possibility of using the ASC's address since the BSAS regularly met there and Kris McCall stated that the ASC's President and CEO was consulting legal counsel about doing this. Dr. Buckner suggested forming a committee to review the BSAS' bylaws regarding this matter and other potential issues that might require updates to the bylaws. Bob Rice and Dr. Donna Hummell volunteered to serve on this committee; Dr. Buckner said that he would also contact past-president and attorney Joe Boyd about serving.

Kris McCall announced that the ASC was considering moving its observance of Astronomy Day in 2011 to early April - possibly April 9 or April 12 - to avoid potential conflicts with the Music City Marathon and the Iroquois Steeplechase. She also noted that April 12, 2011 would mark "Yuri's Night" and the fiftieth anniversary of the first manned space flight by Russian Cosmonaut Yuri Gagaran. In addition, Ms McCall pointed out that the June 6, 2012 solar transit of Venus might be a good daytime public observing opportunity. Ms McCall announced that the ASC was cosponsoring one of the Nashville Symphony's Pied Piper concert series on "Halloween in Space" for kids on October 30, 2010 at David Lipscomb University's Collins Auditorium at 11:00 A.M. and 12:30 P.M. She noted that this might be a good opportunity for a public outreach solar observing event. Ms. McCall also announced that she would not be able to attend the next board meeting on October 7, 2010.

Since there was no further business to discuss, Dr. Spencer Buckner declared the meeting to be adjourned at 8:37 P.M.

OFFICERS

Dr. Spencer Buckner
President

Dr. Donna Hummell
Vice-President

Bob Rice
Secretary

Bob Norling
Treasurer

Directors at Large

Tony Campbell
Jana Ruth Ford
Bill Griswold
Santos Lopez
Curt Porter
Theo Wellington
Kris McCall (ex officio)

Steve Wheeler
Newsletter Editor
wsw261@hotmail.com

**Monthly meetings
are held at:**



**The Adventure
Science Center**

**800 Fort Negley Blvd
Nashville, TN 37203**

Monthly Meeting Minutes – August 19, 2010

Bob Rice, Secretary

President Dr. Spencer Buckner called the meeting to order at 7:35 P.M. in the Adventure Science Center (ASC) and welcomed Middle Tennessee State University students, Austin Peay State University students, new members, and visitors. Treasurer Bob Norling reported that the BSAS had \$2,094.01 in its regular bank account and \$166.29 in its equipment account. Dr. Buckner announced these upcoming star parties:

- Sep 17 Public star party at Bells Bend Outdoors Center from 8:00 - 10:00 P.M.
- Sep 18 Public "Observe the Moon" Star Party at the ASC from 8:30 to 10:30 P.M.
- Oct 09 Private star party at Natchez Trace Parkway mile marker 412 starting at sundown.
- Oct 16 Public star party at Long Hunter State Park from 8:00 - 10:00 P.M.

Dr. Spencer Buckner announced that that the BSAS Fall Retreat would be held on Saturday, November 6 at member Mark Manner's Spot Observatory weather permitting. Dr. Buckner noted that there demonstration sessions on astro-imaging and photography might be conducted. He stated that an alternate date would be announced if inclement weather caused a cancellation.

Dr. Spencer Buckner announced that copies of Kalmbach Publishing Company's 2011 Deep Space Mysteries calendar, the Royal Astronomical Society of Canada's 2011 Observer's Guide, and Guy Ottewell's 2011 Astronomical Calendar could be ordered from Treasurer Bob Norling at a discount from the published price during October and November. Dr. Buckner informed the membership that nominations were being received for BSAS officers and board of directors' positions for 2011. In addition, he announced that BSAS members Dr. Terry Reeves and Steve Wheeler would present a program on "What's Up in the Autumn Sky" for the October 21 meeting.

Dr. Spencer Buckner introduced Vanderbilt University's Dyer Observatory Director Rocky Alvey who delivered the evening's program on the observatory's past and future. Mr. Alvey began by showing a brief promotional movie prepared by former director Dr. Arnold M. Heiser during the 1970's intended to inform the public about the observatory and to attract new students. Explaining that Dyer Observatory was constructed in 1953 largely through the enthusiastic efforts of its first director, Dr. Carl Seyfert, Mr. Alvey showed a collage of recently discovered old movie footage depicting Dr. Seyfert with the architect, Morehead Tree Surgery employees clearing the hillside, and other construction details. Mr. Alvey pointed out that interested citizens of Nashville donated all of the observatory's components including urinals for the restrooms. One of the major donors was Arthur J. Dyer, former president of Nashville Bridge Company and for whom the observatory is named, who provided the dome that was formed from steel left over from Liberty Ship construction during World War II. Jack DeWitt, former president of Nashville's first television station (now WSMV), was also a major contributor of both materials and electronic expertise. Mr. Alvey also mentioned the enormous influence of Edward Emerson Barnard, Vanderbilt University's first professor of astronomy, who established an early tradition of excellence in that science and was later recognized as one of the nation's pre-eminent astronomers in the late eighteenth and early twentieth centuries. Lastly, Mr. Alvey described how encroaching urban light pollution had forced Dyer Observatory - like many others including Yerkes in Chicago - to revise its longtime role as a research institution. Noting Dyer's recent administrative transfer from Vanderbilt's Department of Physics and Astronomy to the Public Affairs Division, he described its physical renovations as it was transformed into a successful public outreach and entertainment venue while still providing informative telescopic views of the night skies.

Since there was no additional business to discuss, Dr. Buckner declared the meeting to be adjourned at 8:28 P.M.

BSAS Affiliations

The Astronomical League
<http://www.astroleague.org/>



The Night Sky Network
<http://nightsky.jpl.nasa.gov/>



International Dark Sky Association
<http://www.darksky.org/>



The Hunt is On!

by Carolyn Brinkworth

Space Place Partners Article, September 2010

The world of astronomy was given new direction on August 13, 2010, with the publication of the Astro2010 Decadal Survey. Astro2010 is the latest in a series of surveys produced every 10 years by the National Research Council (NRC) of the National Academy of Sciences. This council is a team of senior astronomers who recommend priorities for the most important topics and missions for the next decade.

Up near the top of their list this decade is the search for Earth-like planets around other stars—called “extrasolar planets” or “exoplanets”—which has become one of the hottest topics in astronomy.

The first planet to be found orbiting a star like our Sun was discovered in 1995. The planet, called “51 Peg b,” is a “Hot Jupiter.” It is about 160 times the mass of Earth and orbits so close to its parent star that its gaseous “surface” is seared by its blazing sun. With no solid surface, and temperatures of about 1000 degrees Celsius (1700 Fahrenheit), there was no chance of finding life on this distant world. Since that discovery, astronomers have been on the hunt for smaller and more Earth-like planets, and today we know of around 470 extrasolar planets, ranging from about 4 times to 8000 times the mass of Earth.

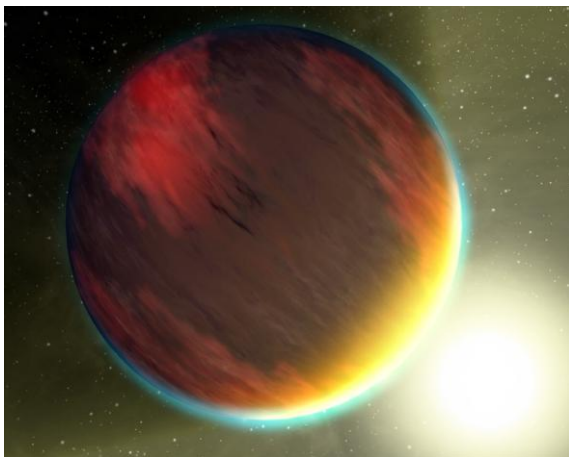
This explosion in extrasolar planet discoveries is only set to get bigger, with a NASA mission called Kepler that was launched last year. After staring at a single small patch of sky for 43 days, Kepler has detected the definite signatures of seven new exoplanets, plus 706 “planetary candidates” that are unconfirmed and in need of further investigation. Kepler is likely to revolutionize our understanding of Earth’s place in the Universe.

We don’t yet have the technology to search for life on exoplanets. However, the infrared Spitzer Space Telescope has detected molecules that are the basic building blocks of life in two exoplanet atmospheres. Most extrasolar planets appear unsuitable for supporting life, but at least two lie within the “habitable zone” of their stars, where conditions are theoretically right for life to gain a foothold.

We are still a long way from detecting life on other worlds, but in the last 20 years, the number of known planets in our Universe has gone from the 8 in our own Solar System to almost 500. It’s clear to everyone, including the Astro2010 decadal survey team, that the hunt for exoplanets is only just beginning, and the search for life is finally underway in earnest.

Explore Spitzer’s latest findings at <http://www.spitzer.caltech.edu>. Kids can dream about finding other Earths as they read “Lucy’s Planet Hunt” at <http://spaceplace.nasa.gov/en/kids/storybooks/#lucy>.

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



Artist's rendering of hot gas planet HD209458b. Both the Hubble and Spitzer Space Telescopes have detected carbon dioxide, methane, and water vapor—in other words, the basic chemistry for life—in the atmosphere of this planet, although since it is a hot ball of gas, it would be unlikely to harbor life.

Member Contributions



NGC 7635 – The Bubble Nebula & Messier 52
 DSLR Image by Steve Wheeler (<http://wsw26..zenfolio.com>)



Jupiter & Uranus Near Conjunction
 CCD Image by Mark Manner (<http://spotastro.com>)

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

On your Eclipse mailing label is the expiration date for your current membership. There will be a two month grace period before any member's name is removed from the current mailing list.



We're on the Web!

See us at:
www.bsasnashville.com

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 Thursday of each month at the Adventure Science Center 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 Dr. Spencer Buckner at (931) 221-6241.

**BARNARD-SEYFERT
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