

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

## Upcoming Events

### Board of Directors Meeting

December 4<sup>th</sup> at the  
Cumberland Valley Girl Scout  
Council Building – 7:30 pm

### Public Star Party

December 13<sup>th</sup> at the Warner  
Park Special Events Field –  
7:30 pm

### Membership Meeting & Holiday Party

December 18<sup>th</sup> at the  
Adventure Science Center –  
7:30 pm

### Private Star Party

December 20<sup>th</sup> at the  
Natchez Trace mm 435.5  
parking lot – 7:30 pm

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## December Membership Meeting

Thursday, December 18<sup>th</sup>  
Adventure Science Center  
7:30 pm



Join BSAS for our annual Holiday party and meeting. Our featured speaker will be Charlie Warren, BSAS member and publisher of *Amateur Astronomy* magazine. He will be speaking on *The Seven Wonders of the Universe*.

There will also be a silent auction with the proceeds going to BSAS. See you there!

## From The President

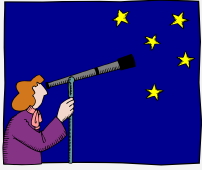


First, I want to thank Spencer Buckner for his presentation at this past month's membership meeting presentation. It's always enjoyable to look at and consider all of the gear that is available to us. (We also know who to blame for the clouded-out star parties this past month.) If you were paying attention, you would have noted that astronomy toys don't have to cost a fortune. Today's average Dobsonian provides better optics and mechanical operation at a price that would have floored most amateurs from just twenty or thirty years ago. And, that is without factoring in inflation. Today's medium-priced eyepieces provide views that quite simply did not exist then at any price. Finally, since I know that budgets are tight this year for many of us, you might consider the plethora of books, observing guides, maps, atlases, small gadgets, etc. that are available when you are making out your Santa wish list this year. I did not mention software here because I think you should check out free programs like Carte Du Ciel and Virtual Moon Atlas before spending money. It might just be that the free programs are good enough.

While we are on the subject of hardware, I would like to suggest to those who own Newtonians that you seriously consider getting some good collimation tools. It is amazing how good many of the mass produced mirrors in even the cheap Dobs are. Unfortunately, many of these scopes do not live up to their potential because the optics are not aligned properly. This is especially true for larger Newtonians due to the smaller f-ratios that these scopes have. Good tools help you get the collimation right. I recently purchased a used set of the Techtron tools off of AstroMart. There is simply no comparison between these tools and the cheap tool I had been trying to use. (It is basically a cap that fits in the eyepiece tube and has a hole in the top to look through.) The Techtron sight tube instantly revealed a rotation of the secondary mirror that I could not see before.

While I am thinking about, I would like to put in a plug for Astronomy Magazine. I have been receiving it for about a year now, and I find myself very much looking forward to each new issue. It is quite different from what you find in Astronomy or Sky and Telescope. The paper is not glossy. The print is black and white unless you get the electronic version. What I think provides the extra value for me is that the authors of the articles feel more like the amateurs that make up our club or the ones you meet at a star party. You get a perspective that is more like what you get when you are talking to a fellow club member. Please understand that I am not putting down the more polished publications. I subscribe to Sky and Telescope, and I read it cover to cover each month. I just appreciate the other voices as well.

Terry Reeves  
President



*"Exploration really is the essence of the human spirit, and to pause, to falter, to turn back on the quest for knowledge is to perish."*

**Frank Borman**  
Commander, Apollo 8  
1928-

### 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

### December 2008

- 12/04 BSAS Board of Directors Mtg.,  
7:30 pm at Girl Scout Office
- 12/05 First Quarter Moon
- 12/12 Full Moon
- 12/13 Public Star Party at the Warner  
Park Special Events Field – 7:30  
pm
- 12/13 Geminid meteors
- 12/18 BSAS Monthly Meeting and  
Holiday Party, 7:30p ASC
- 12/19 Last Quarter Moon
- 12/20 Private Star Party at the Natchez  
Trace mm 435.5 parking lot – 7:30  
pm
- 12/27 New Moon

### OBJECTS VISIBLE THIS MONTH

#### Messier Objects:

- M2 (GC)
- M15 (GC)
- M29 (OC)
- M39 (OC)
- M31-M32-M110 (Galaxies)

#### Caldwell Objects:

- C41 – The Hyades
- C49 – The Rosette Nebula
- C11 – The Bubble Nebula
- C31 – The Flaming Star Nebula

## Outreach Update *Terry Reeves, President*

Both the public and private star parties in November were clouded out. A few of us went to Shelby Bottoms for the public event. I saw the moon about twice before the party started. After that, it was nothing but nimbus. I will say that the site looks promising (at least for lunar and planetary). We have another event scheduled at Shelby Bottoms in February. Hopefully, we will be able to evaluate it under more favorable conditions then.

The December meeting will be our Christmas potluck. We will start arriving at 6:00 PM, and will start eating at 6:30 PM. As is our custom, the club will provide a meat. The rest is up to you. Whatever you bring, we will eat. Whatever you don't bring, we won't miss. Our speaker will be Charlie Warren, club member and publisher of Astronomy Magazine. He will be speaking on "The Seven Wonders of the Universe". We will also be holding our usual silent auction. If you have any old or new astro-stuff that you would like to get rid of, you can donate it to the cause. The proceeds go to the club.

We have a public star party at Warner Park on Saturday, December 13 from 7:30 PM until 9:30 PM. Note that the time is slightly earlier than the normal. We will be primarily showing the moon and planets. There is also a private star party scheduled for December 20 at the turnout near mile marker 435.5 on the Natchez Trace.

# Happy Birthday Deep Space Network

by Robin Byrne

This month we celebrate the anniversary of a group of facilities that make NASA's exploration of the solar system possible. From the beginning of the space program, it was obvious that in order to maintain contact with an object orbiting Earth, receivers stationed around the globe would be necessary. In January 1958, when the Explorer 1 satellite launched, portable tracking stations were set up in Nigeria, Singapore and California. The following December, after the official establishment of NASA, the idea for a permanent set of tracking stations was suggested. Finally, the Deep Space Network came into existence on December 24, 1963 (a mere 4 days after this author came into existence).

The Deep Space Network (DSN) was originally designed for maintaining communications with unmanned space probes exploring other planets and for select Earth-orbiting missions. Currently, the network consists of three stations, placed approximately 120° apart in longitude, allowing for uninterrupted communication with spacecraft. In the United States, the primary DSN location is in Goldstone, California. The next station is in Madrid, Spain, and the last is in Canberra, Australia. The locations were chosen not only for the longitude separation, but also for their bowl-shaped topography, which helps shield the dishes from radio interference. Each station is home to steerable, high-gain, parabolic radio dishes. Among the duties performed by these antennas are: acquiring telemetry data, transmitting commands, and gathering science data.

All three stations began with four antennas, which included a 34 meter High Efficiency antenna, a 34 meter Beam Waveguide antenna, and one each of a 26 meter and a 70 meter antenna. In the 1990's, 5 new 34 meter antennas were built (3 for Goldstone, and one each for Madrid and Canberra). In 2003, Madrid received a second 34 meter antenna. Each station is home to a Signal Processing Center. After processing, all data is transmitted to the Jet Propulsion Laboratory (JPL) for more processing and distribution to science teams.

The DSN antennas are also capable of working with other radio telescopes as part of an array, especially if the signals are weak or extremely important. Since each site has multiple antennas, they can be arrayed together, but they can also be arrayed with other radio facilities. For the final stages of the Voyager 2 mission, Canberra was arrayed with the Parkes Radio Telescope, and Goldstone was arrayed with the Very Large Array (VLA). (On a personal note, I was doing research at VLA prior to the Voyager 2 Neptune fly-by, while the JPL personnel were getting the system set up, and was able to hear Voyager 2's "heartbeat".)

Similar arrays were used for the Galileo mission to Jupiter after it was discovered that the high-gain antenna did not fully deploy.

In addition to the unmanned space probes, DSN also played a role in the Apollo Moon missions. Intentionally located near the DSN antenna locations for redundancy, primary communication fell on the Manned Space Flight Network (MSFN). However, when people were on the Moon, the beam width of the MSFN was too narrow to communicate with both the Command Module orbiting the Moon and the Lunar Lander simultaneously. With two antennas devoted to communication at each location (one from DSN and one from MSFN), there was never a loss of signal from either spacecraft.

The Deep Space Network also is a critical component of both manned and unmanned spaceflight should an emergency occur. If a spacecraft lost power, and was not able to transmit using full power or could not point the antennas, the larger antennas at the DSN locations could be used. This was exactly the case during the Apollo 13 disaster, when the largest DSN antenna (located at the Parkes Observatory in Australia) allowed for vital communication and telemetry. Similarly, when the European Space Agency lost contact with the Solar and Heliospheric Observatory (SOHO), DSN antennas were able to reestablish communications and revive the spacecraft.

For 45 years, the Deep Space Network has been a hidden, but vital, component of the space program. Sending spacecraft to other planets and people to the Moon are awe-inspiring events. Amazing images and scientific data from unmanned missions to the planets, as well as of people walking on the Moon, take our breath away. However, without the Deep Space Network, we never would have seen the variety of vistas found in our solar system, and the world would not have witnessed Neil Armstrong's first step on the Moon. Many of the images that inspired our love of space and astronomy are courtesy of the Deep Space Network, for which we should be truly thankful.

#### References:

DSN: About the Deep Space Network  
<http://deepspace.jpl.nasa.gov/dsn/about.html>

DSN: History  
<http://deepspace.jpl.nasa.gov/dsn/history/index.html>

DSN: Antennas  
<http://deepspace.jpl.nasa.gov/dsn/antennas/index.html>

Deep Space Network - Wikipedia, the free encyclopedia  
[http://en.wikipedia.org/wiki/Deep\\_Space\\_Network](http://en.wikipedia.org/wiki/Deep_Space_Network)

## November 2008 Board of Directors Minutes

*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 November 6, 2008. A sign-in sheet was circulated in lieu of a roll call. Board members Tony Campbell, JanaRuth Ford, Bill Griswold, Kris McCall, Dr. Terry Reeves, Bob Rice, Randy Smith, Theo Wellington, and Steve Wheeler were present. Board members Dr. Spencer Buckner, Keith Burneson, and Dr. Donna Hummell were absent. A quorum being present, President Terry Reeves called the meeting to order at 7:45 P.M.

Dr. Terry Reeves announced these upcoming star parties: a public star party at Shelby Bottoms Municipal Park on November 8th, a private star party at Natchez Trace on November 22nd, and a public star party at Warner Park on December 13th.

Bill Griswold handed out copies of the proposed star party schedule for 2009. Following a brief review and discussion, the board made two suggestions: (1) canceling the private star party on February 28th and (2) further discussing the private astronomy retreat at Spot Observatory on September 18th and 19th with owner Mark Manner. Tony Campbell moved that this revised schedule be adopted and Steve Wheeler seconded his motion that subsequently passed by a unanimous voice vote. Kris McCall reported that the public star party held at the Adventure Science Center (ASC) on October 11, 2008, with BSAS members Lonnie Puterbaugh and Terry Reeves providing telescopes and other equipment, received a good turnout of people to look at the planet Jupiter.

Kris McCall announced that the Southeastern Planetarium Association (SEPA) would hold its annual convention in Nashville on June 18-19, 2009 with a planned excursion to BSAS member Mark Manner's Spot Observatory on June 18th. Since June 18th was also the regular BSAS meeting date, she suggested that the Society hold its monthly membership meeting at Spot Observatory on that evening. Bill Griswold put Ms McCall's suggestion into a motion that was seconded by Steve Wheeler and passed by a unanimous voice vote of the board without additional discussion.

Dr. Terry Reeves announced that Dr. Spencer Buckner would repeat his popular "All I Want for Christmas Are Astronomy Toys" presentation at the November membership meeting. Dr. Reeves also noted that members of CUB Scout Pack #137 in Green Hills had been invited to attend. In addition, he announced that preparations were underway for the annual Christmas Party and Potluck Supper to be held at the ASC on December 18th. Kris McCall stated that this event would be held in the Skyline Room on the second floor. Dr. Reeves said that Amateur Astronomy magazine editor and BSAS member Charlie Warren would be contacted to be the speaker. He also noted that the party would start at 6:30 P.M. and would again include a silent auction.

Treasurer Randy Smith reported that the Society's bank balance was \$2,405.91 and announced that he had copies of the Royal Astronomical Society of Canada's 2009 Observers Handbook and Kalmbach Publishing Corporation's Deep Space Mysteries Calendar for 2009 available for sale.

Kris McCall announced that Dr. Arthur Demarest of Vanderbilt University's Center for Latin American Studies had requested time to make a presentation on archaeo-astronomy in the Sudekum Planetarium (perhaps on June 16th or 17th, 2009) and suggested that BSAS members might be allowed to attend. She said that she would keep the board informed as more details became available. Dr. Terry Reeves reported that the BSAS' Sam's Club credit card was due for renewal. Randy Smith moved that the card not be renewed and Tony Campbell seconded this motion that subsequently passed by a unanimous voice vote.

Dr. Terry Reeves reiterated that the International Astronomical Union (IAU) and the United Nations Educational, Scientific, and Cultural Organization (UNESCO) had designated 2009 as the International Year of Astronomy (IYA). JanaRuth Ford handed out a list of suggested IYA events prepared by the Astronomical Society of the Pacific. She noted that there was a big push for organizations to provide 100 hours of public outreach, but observed that the BSAS might consider altering some of the provided dates and activities to accommodate its schedule. Kris McCall suggested that the BSAS contact the nearby Cumberland Astronomical Society (CAS) to investigate working together on some IYA events; Theo Wellington volunteered to make this contact. Webmaster Tony Campbell stated that he would establish a link to the ASC's website to permit access to IYA information. Dr. Reeves asked for volunteers to serve on a small IYA planning committee; Bob Rice volunteered to serve on this committee.

Kris McCall asked if membership-meeting programs were set up for 2009 and Dr. Terry Reeves replied that they were not yet established. Since there was no further business to discuss, President Reeves declared the meeting to be adjourned at 8:45 P.M.

### OFFICERS

**Dr. Terry Reeves**  
*President*

**Keith Burneson**  
*Vice-President*

**Bob Rice**  
*Secretary*

**Randy Smith**  
*Treasurer*

**Bill Griswold**  
*Past President*

*Directors at Large*

**Dr. Spencer Buckner**  
**Tony Campbell**  
**Jana Ruth Ford**  
**Dr. Donna Hummell**  
**Theo Wellington**  
**Steve Wheeler**  
**Kris McCall** (*ex officio*)

**Steve Wheeler**  
*Newsletter Editor*  
[wsw261@hotmail.com](mailto:wsw261@hotmail.com)

**Monthly meetings**  
**are held at:**



**The Adventure**  
**Science Center**

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

# November 2008 Monthly Meeting Minutes

*Bob Rice, Secretary*

On Thursday, November 20, 2008, President Terry Reeves called the meeting to order at 7:33 P.M. in the Adventure Science Center (ASC). Treasurer Randy Smith reported that the BSAS' bank balance was \$2,475.91. Mike Benson took the names of attendees who wished to purchase copies of Guy Ottewell's *Astronomical Calendar 2009* at a discount from the publisher's retail price. Dr. Terry Reeves asked students from JanaRuth Ford's astronomy class at Middle Tennessee State University to sign in with him to receive credit for their attendance. Dr. Reeves announced that the BSAS' annual Christmas meeting would be held in the ASC's Skyline Room on December 18th and would include a potluck dinner along with a silent auction.

Dr. Terry Reeves announced these upcoming star parties: a private star party at Natchez Trace on November 22nd, a public star party at Warner Park on December 13th, and a private star party at Natchez Trace on December 20th.

Dr. Terry Reeves commenced the annual election of officers and directors by announcing these candidates recommended by the Nominating Committee: Dr. Terry Reeves for President, Dr. Spencer Buckner for Vice-President, Bob Norling for Treasurer, Bob Rice for Secretary, and JanaRuth Ford and Kurt Porter for board members. Dr. Reeves next asked for nominations from the floor and, there being none, then asked for a motion to elect the aforementioned nominees by acclamation. Kris McCall so moved and Bill Griswold seconded this motion that was subsequently approved by a unanimous voice vote of the membership.

Dr. Terry Reeves introduced BSAS member and Austin Peay State University Physics & Astronomy Professor Spencer Buckner who presented the evening's program on "All I Want For Christmas Are Astronomy Toys." Armed with a wide array of telescopes, mounts, accessories, and reference materials that he had brought, Dr. Buckner used a PowerPoint presentation to illustrate these points of interest to potential new buyers:

- Basic types of telescopes – refractors, reflectors, & catadioptric.
- "Aperture Fever,"
- Dedicated solar telescopes as separate type.
- Types of mounts – altazimuth & equatorial.
- Accessories – eyepieces, finder scopes, red lights, & filters.
- Dew heaters, stools, & tables.
- Cases & storage bags.
- Power sources – batteries & ac adaptors.
- Maps, planispheres, & planetarium software.
- New computerized sky pointers & identifiers.
- Red light flashlights.
- Magazines, calendars, books & reference materials.
- List of recommended dealers based upon personal experience, and
- Astronomical apparel.

Following his presentation, attendees were able to personally examine the demonstrated equipment and to ask questions of Dr. Buckner and others.

Since there was no further business to discuss, President Reeves declared the meeting adjourned at 8:47 P.M.

## BSAS Affiliations

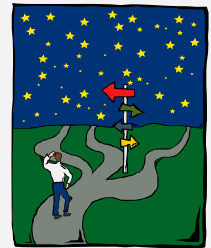
*The Astronomical League*  
<http://www.astroleague.org/>



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



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





Member Contributions:

## Fall Open Star Clusters

Imaged by Steve Wheeler



(left to right) NGC 654, NGC 663, NGC 659



NGC 457 – The Owl Cluster



NGC 869-884 – The Double Cluster



M45 – The Pleiades

**Become a Member of the BSAS!**

Download and print the Application for membership from [www.bsasnashville.com](http://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)
- \$15** Student\*

\* To qualify, you must be 21 or younger & enrolled in an accredited institution.

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](http://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](http://www.bsasnashville.com). If you need more information, write to us at [info@bsasnashville.com](mailto:info@bsasnashville.com) or call Joe Boyd at (615) 386-3134.

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ASTRONOMICAL SOCIETY**  
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