

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

## Upcoming Events

### Board of Directors Meeting

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

December 2<sup>nd</sup> at the Cumberland Valley Girl Scout Council Building – 7:30 pm

### Membership Meeting

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

December 16<sup>th</sup> at the Adventure Science Center – 7:30 pm

### Star Parties

November 6<sup>th</sup> – BSAS Private Astronomy Retreat – Spot Observatory

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

December 11<sup>th</sup> – BSAS Public Star Party at Warner Park – 7:30 pm

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## Monthly Membership Meeting

Thursday, November 18<sup>th</sup>, 2010

Adventure Science Center

7:30 pm



Join BSAS president **Dr. Spencer Buckner** as he shares the latest in astronomy equipment. If you have an astronomy enthusiast on your Christmas list you will not want to miss "**All I Want for Christmas is Astronomy Toys.**" See you there!



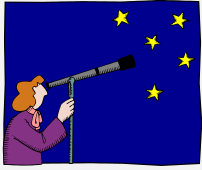
## From The President

Greetings and clear skies from your BSAS president. I hope everyone is enjoying the Indian summer we are experiencing during the first half of November. The warm days and the cool nights make for excellent observing conditions. Such was the case at the BSAS fall retreat at Mark Manner's Spot observatory on Saturday November 6. The drive through the country to Mark's rural Hickman County residence in the early afternoon was pleasant. The trees still held a bit of color, although many had lost their leaves. The evening was quite cold with temperatures falling through the 30's and into the 20's with frost forming on the telescopes by the time people started to pack up. There was chili provided by Donna Hummel and Spencer Buckner to warm you up when the chill started to get to you. All in all, it was an excellent observing night. Thanks to Mark and Ann for being such great hosts and allowing us to enjoy the wonderful skies at Spot Observatory.

If you missed last month's program by Steve Wheeler and Terry Reeves, you missed a good one. Steve's advice on appropriate observing gear for the cold nights was especially appropriate for preparing for the fall retreat. The list of observing targets covered by Steve and Terry was a good summary of the objects viewed by members at the fall retreat. It has been some time since we had a "What's Up" program and I thoroughly enjoyed this one.

The Thursday November 18 meeting is our annual election meeting. The elections will be held at the beginning of the meeting followed by one of our more popular programs. I will be doing my annual "All I Want For Christmas Are Astronomy Toys" presentation. One of the main reason people join an astronomy club is because they are interested in getting into the hobby and want advice on what kind of equipment to buy. This presentation is directly aimed at those wanting to know what kind of telescope or astronomy toy to buy themselves, a spouse or a child. While much of what I will talk about is telescopes and mounts, I will also cover many of the less expensive stocking stuffers you can get your favorite amateur astronomer. If you know someone that is thinking about getting a telescope or astronomy gadget be sure to invite them to this month's meeting. Hopefully, they will buy something that they will get out and enjoy on a regular basis rather than store away in a closet.

*Continued on Page 2*



"The history of astronomy is a history of receding horizons."

**Edwin P. Hubble**  
1889-1953

### 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

#### November 2010

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

#### December 2010

12/05 NEW Moon  
12/13 FIRST Quarter  
12/21 FULL Moon  
12/28 LAST Quarter

### OBJECTS VISIBLE THIS MONTH

#### Messier Objects:

*Planetary Nebula:* M27, M57  
*Globular Cluster:* M30, M56, M71, M72,  
*Asterism:* M73

#### Caldwell Objects:

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

**Leonid Meteor Shower November 10-23**  
– maximum November 17th

### From the President, cont.

The December 16 meeting is also an annual tradition: the potluck dinner and silent auction. The BSAS supplies the meat, drinks and utensils and everyone brings a side dish to share. Once again Charlie Warren has agreed to present a program for us which I am sure will be a good one. The silent auction relies on member donations so if you have an old astronomy book, gadget or gizmo you want to let loose of bring it to the December meeting. It doesn't even really have to be astronomy related, just something that might bring a buck or two at the auction.

We have a few public star parties coming up that I would like to mention. The first is Saturday November 13 at Shelby Bottoms Park. Other than at the Adventure Science Center, Shelby Bottoms is the star party closest to downtown of any of the locations we do star parties at. Located down by the river and with a hill between the park and downtown, the site is surprisingly dark. We start at 7:30pm so if you plan on bringing a telescope you will want to arrive early to give yourself time to set-up before the public starts arriving. The December public star party is on Saturday December 11 at the Warner Park model airplane field. Again, we start at 7:30pm so come early for set-up.

Finally, the BSAS now has a Facebook page! The younger generation spends a lot of time online and Facebook is one of the places they go to most often. Santos Lopez recently set up a Facebook page for the club and we will be using it to promote our meetings and star parties. Check us out online and tell your friends (especially the younger ones) to make friends with the BSAS.

See you Thursday November 18!

Dr. Spencer Buckner  
President

# Happy Birthday Leonid Meteor Shower

by Robin Byrne

This month we celebrate a meteor shower that, although not annually spectacular, played a large role in our understanding of meteor showers. In 1833, meteors and meteor showers were not understood. They had only been studied by scientists for about a decade. It was clear that showers at different times of the year radiated from different parts of the sky, and that showers had been recorded for thousands of years. But what were they? Why did they occur? Where did they come from? These questions had not yet been answered.

The night of November 12, and the morning of November 13, 1833 marked the actual "discovery" of the Leonid meteor shower. This night had such a remarkable display of meteors, with estimates of as many as 200,000 meteors per hour, with meteors bright enough to awake people, that hardly anyone in the Eastern United States could have missed it if they tried. Many thought this display heralded the end of the world, while others were simply amazed by the fireworks.

Early attempts to explain the phenomenon included the idea that the Sun had caused dead plants to release gases, including hydrogen, which were ignited by "electricity or phosphoric particles in the air." Another hypothesis was that winds from the North had brought in electrified air, which, when discharging, put on the light show. However, Denison Olmstead had a very different idea. He spent weeks collecting eyewitness accounts. Those who were more analytical in their observation of the shower recognized that all of the meteor trails could be traced back to the constellation Leo. The outburst itself lasted a relatively brief period of time, since no one in Europe saw the event. Looking at historical accounts, he found that November of the previous year had hosted a strong shower visible in Europe and the Middle East. Olmstead hypothesized that the showers were due to Earth passing through a cloud of dust particles in space. Although Olmstead did not explain where the dust particles originated, this was the beginning of the astronomical study of meteor showers.

Historical records started to show a pattern of strong meteor showers in November every 30 years or so. H. A. Newton used 2000 years of meteor shower observations to calculate that the Leonids returned at a rate of every 33.25 years. He predicted a storm would occur November 13, 1866. His prediction came true, with observations of up to 5000 meteors per hour. There were also strong displays for the next two years.

In 1867, the pieces started to finally fall into place. At the end of 1865 and the beginning of 1866, two individuals, E. W. L. Tempel and H. Tuttle, independently discovered a 6th magnitude comet. On January 6, 1866, it was officially named Comet Tempel-Tuttle. The comet rapidly faded after passing the Sun, and was not seen after February of that year. However, enough observations were made to calculate its orbit. By 1867, T. von Oppolzer had determined the comet to have a period of 33.17 years. Meanwhile, Urbain LeVerrier had calculated an orbit for the dust associated with the Leonids. Several astronomers, including von Oppolzer and Giovanni Schiaparelli noticed a remarkable similarity between the two orbits. For the first time, the connection between comets and meteor showers had been made.

This discovery led to many confident predictions for future meteor shower displays. Unfortunately, the Leonids didn't always behave as predicted. Some years were right on target, while others were horribly disappointing. It was later realized that Jupiter and Saturn cause deviations in the meteor stream,

sometimes pushing them out beyond Earth's orbit. Some predicted the Leonids were gone for good. This dismal outlook led to many people missing the beginning of the return in 1961. With a peak predicted for 1966, some were pessimistic about what to expect. Optimistic predictions were for, at most, 100 meteors per hour. In some places this was true, but, the morning of November 17, the Western United States was treated to rates of 40 to 50 meteors per second.

In 1981, D. K. Yeomans made a study of the Leonids and of Comet Tempel-Tuttle. He found that the dust mostly was outside and behind the comet's orbit. This led him to postulate that the solar wind interacted with the dust particles. This, in addition to interactions with planets, greatly affected the orbits of the streams. With a strong return expected at the end of the 1990's, many plans were made. NASA's Ames Research Center organized an airborne observing campaign. Others attempted to observe impacts on the Moon. At the start of 1999, David Asher and Robert McNaught published their techniques for predicting the Leonids. Because of Jupiter affecting the comets' orbit, each pass of the Sun produced a new stream of particles, in a slightly different orbit, producing a series of ring fragments, each orbiting the Sun independently. Over time, the older fragments would dissipate and merge with other fragments, but recent filaments would be highly concentrated. When we pass through one of the concentrated segments, that is when the fireworks really fly. They predicted that November 18, 1999, Earth would pass through a fragment dating to Tempel-Tuttle's 1899 pass of the Sun. They had predicted a peak of activity to occur at 2:10 Universal Time. They were off by 4 minutes, with a peak of 3000 meteors per hour. Their technique of tracing particular streams has proven so successful, that it is now being used to make predictions for other meteor showers.

Typically, the Leonids span November 13th to the 21st, with a peak the evening of November 17. For years without a storm, expect up to 10 meteors per hour. The meteors themselves are ranked among the fastest, with speeds up to 72 km/s, which leads to a very bright display. Larger pieces, with sizes 9 mm or more across, have been known to explode midair, producing enough light to cast shadows. The shower itself delivers about 12 or 13 tons of material to Earth each year.

Even though this year will not have a predicted spectacular display, you may still want to enjoy the night and watch for these pieces of Comet Tempel-Tuttle. While you're enjoying the occasional streak of light, think about how this one meteor shower helped us to understand the origins and nature of all meteor showers. Not bad for a small, faint comet and its dusty, dirty trail around the Sun.

## References:

Leonids  
<http://meteorshowersonline.com/leonids.html>

Meteors of November - St. Louis astronomy | Examiner.com  
<http://www.examiner.com/astronomy-in-st-louis/meteors-of-november>

Leonids - Wikipedia  
<http://en.wikipedia.org/wiki/Leonids>

## Board Meeting Minutes – October 7, 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 October 7, 2010. A sign-in sheet was passed around in lieu of a roll call. Board members Dr. Spencer Buckner, Jana Ruth Ford, Bill Griswold, Bob Norling, Curt Porter, Dr. Terry Reeves, Bob Rice, and Theo Wellington were present. Board members Tony Campbell, Dr. Donna Hummell, Santos Lopez, and Kris McCall were absent. Past-President Joe Boyd attended also as a guest. A quorum being present, President Dr. Spencer Buckner called the meeting to order at 7:37 P.M.

Treasurer Bob Norling reported that the BSAS had \$2,144.01 in its regular checking account and \$166.30 in its equipment account. Mr. Norling also reported that plans were underway to order 2011 editions of Kalmbach's Deep Space Mysteries Calendar, the Royal Astronomical Society of Canada's Observers Handbook, and Guy Ottewell's Astronomical Calendar that will be made available to BSAS members at a discount from the published price. He noted that he was checking the quantities of each that were ordered last year.

Dr. Spencer Buckner announced these upcoming star parties and events:

- Oct 09 - Private star party at Natchez Trace Parkway mile marker 412 (Water Valley Overlook) starting at dusk.
- Oct 16 - Public star party at Long Hunter State Park from 8:00 -10:00 P.M.
- Nov 06 - Annual BSAS Retreat at Past-President Mark Manner's Spot Observatory with possible afternoon programs on astrophotography to be followed by evening observing. Details will be announced at the October 21 membership meeting.

Dr. Spencer Buckner also announced 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 asked board members review the BSAS' website on an ongoing basis and report any needed corrections to Webmaster Drew Gilmore.

Dr. Spencer Buckner announced that the Nominating Committee had recommended these candidates for 2011 officer and board positions to be voted upon by the membership at the November 18 annual election: President - Dr. Spencer Buckner; Vice-President - Dr. Donna Hummell; Secretary - Bob Rice; Treasurer - Bob Norling; and board members at large - Theo Wellington and Steve Cobb. Bill Griswold moved that the board accept these recommended candidates; Curt Porter seconded his motion; and all were approved without additional discussion by a unanimous voice vote. Other nominations will also be accepted from the floor at the annual election.

Dr. Buckner reported that the Adventure Science Center (ASC) had politely but formally refused to allow the BSAS to use the ASC's address as its own. This need for the BSAS to cite a street address even though it lacks a permanent physical location has arisen from demands of its memberships in the Astronomical League and NASA's Night Sky Network. The board surmised that both organizations were requesting this so they could provide online maps to their member societies' meeting places on their own websites. Following some discussion, the board decided to at least temporarily continue using the somewhat ambiguous reference of "Nashville, Tennessee" to designate its location.

Dr. Spencer Buckner reported that Past-President and attorney Joe Boyd will chair a committee to review the BSAS' bylaws regarding the address issue described above and other potential matters that might require updates to the bylaws. Dr. Donna Hummell and Bob Rice will also serve on this committee. The board discussed the need to identify and possibly re-designate the BSAS' official Registered Agent for Service and Process. Curt Porter moved that this be done and Bob Norling seconded his motion that was subsequently approved by a unanimous voice vote. Mr. Boyd's committee will take up this issue.

Curt Porter inquired about the status of handling the BSAS' archives and historic materials. Terry Reeves informed the board that he had taken possession of historic documents from former member Dudley Pitts along with materials from Joe Boyd. Theo Wellington volunteered to contact a professional service about digitizing the BSAS' records. The board noted that emphasis should be placed upon protecting materials of potential legal interest. Dr. Spencer Buckner suggested that the newly elected officers and board members for 2011 should undertake this matter next year.

Bill Griswold moved that the meeting be adjourned at 8:31 P.M and, since there was no further business to discuss, Dr. Spencer Buckner declared this to be done.

### 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 – October 21, 2010

*Bob Rice, Secretary*

President Dr. Spencer Buckner called the meeting to order at 7:33 P.M. in the Adventure Science Center (ASC) and welcomed members and visitors. Treasurer Bob Norling reported that the BSAS had \$2,144.01 in its regular bank account and \$166.30 in its equipment account. Dr. Buckner announced these upcoming events and star parties:

- Nov 05 - Public star party at West End IB World School starting at 7:00 P.M.
- Nov 06 - BSAS Fall Retreat at Mark Manner's Spot Observatory. Demonstration sessions on astro-imaging may be conducted & attendees may get to look at a prototype telescope that Mr. Manner is testing for the manufacturer. Bring your own food & drink. This event will start in the late afternoon.
- Nov 13 - Public star Party at Shelby Bottoms Nature Center from 7:30 - 9:30 P.M.

Dr. Spencer Buckner announced that the annual election of BSAS officers and directors for 2011 would be held at the next membership meeting on November 18, 2010. Dr. Buckner reported that the BSAS Nominating Committee had recommended these candidates: President - Dr. Spencer Buckner; Vice-President - Dr. Donna Hummell; Secretary - Bob Rice; Treasurer - Bob Norling; and board members at large - Theo Wellington and Steve Cobb. He then asked for nominations from the floor and, there being none, announced that nominations would also be solicited at the election next month. In addition, Dr. Buckner reported that he would again deliver the popular "All I Want For Christmas Are Astronomy Toys" session for the November program.

Dr. Spencer Buckner announced that members could order copies of the Royal Astronomical Society of Canada's 2011 Observer's Guide and Guy Ottewell's 2011 Astronomical Calendar from Treasurer Bob Norling at a discount from the published price. He also announced that copies of Kalmbach Publishing Company's 2011 Deep Space Mysteries calendar could also be purchased at a discount without a pre-order.

Kris McCall announced that the ASC was cosponsoring one of the Nashville Symphony's Pied Piper concert series for kids entitled "Halloween in Space" on October 30, 2010 at David Lipscomb University's Collins Auditorium at 11:00 A.M. and 12:30 P.M. She invited BSAS members to bring telescopes for solar observing since this would be a good opportunity for public outreach. Chuck Schlemm announced that that he was bringing a telescope to the "Full Moon Pickin' Party" on October 22 at the Warner Park's Equestrian Center from 7:00 to 11:00 P.M. and invited other BSAS members to join him with their scopes.

Dr. Spencer Buckner introduced BSAS members Dr. Terry Reeves and Steve Wheeler who presented the evening's program on "What's Up in the Fall Sky." Steve Wheeler began the session by dramatically handing Treasurer Bob Norling a check for his belated membership dues to the great amusement and applause of the audience. He then opened his part of the program on fall binocular objects by offering some cold weather observing tips. These included dressing in layers; avoiding wearing cotton or polyester items next to the skin; wearing insulated shoes, boots, and hats; using hunter's gloves with fold-down flaps so you can use your fingers; setting up out of the wind; using chemical hand & feet warmers; taking breaks; drinking warm beverages without caffeine; and to keep moving around. Next, he displayed "star-hopping" finder charts and descriptions of these suggested binocular objects: M31 (Andromeda Galaxy) along with companions M32 & M110; the Double Cluster in Perseus (NGC 869 & NGC 884); Comet 103/P Hartley; Brocchi's Cluster (a.k.a. the Coat Hanger) asterism in Cygnus; and lastly the double star Albireo (Beta Cygni) as a challenge object for binoculars.

Dr. Terry Reeves continued the program with a session on selected telescopic objects that included: M33 (Triangulum Galaxy) near M31 in Andromeda; M74 galaxy in Pisces; M15 globular cluster in Pegasus; open clusters NGC 663 & M103 in Cassiopeia; and NGC 7293 (Helix Nebula) planetary nebula in Aquarius as a challenge object for small telescopes. Dr. Reeves also described these interesting stars: Herschel's Garnet Star (a red super-giant) in Cepheus; double star Eta Cassiopeae; and variable stars Algol in Perseus and Mira in Cetus. He concluded by showing how the planet Jupiter could be used as a finder object for the much fainter planet Uranus that is within three degrees of its brighter neighbor. Following their program, the presenters answered questions from the audience. Dr. Terry Reeves explained that a "planetary nebula" was the puffed out gaseous remnants from a solar mass type star at the end of its life cycle that only looked somewhat like a planet to early observers. Dr. Spencer Buckner pointed out that a "nebula filter" could be used to increase contrast between an observed object and the background field of view. Steve Wheeler also suggested using higher power eyepieces (he uses a zoom eyepiece for convenience) to darken the observed background.

Dr. Spencer Buckner asked board members to remain after the membership meeting for a brief board of directors meeting. Since there was no additional business to discuss, he declared the membership meeting to be adjourned at 8:53 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/>



## Close Encounter With Jupiter

by Dr. Tony Phillips

Space Place Partners Article, October 2010

Jupiter and Earth just had a close encounter—and it was a good one. In late September 2010, the two worlds were 31 million km (about 19 million miles) closer than at any time in the past 11 years. Soaring high in the midnight sky, Jupiter shone six times brighter than Sirius and looked absolutely dynamite through a backyard telescope.

Planetary scientist Scott Bolton of the Southwest Research Institute isn't satisfied. "I'd like to get even closer," he says. Bolton will get his wish in July 2016. That's when a NASA spacecraft named "Juno" arrives at Jupiter for a truly close-up look at the giant planet. Swooping as low as 5,000 km (about 3,000 miles) above the cloud tops, Juno will spend a full year orbiting nearer to Jupiter than any previous spacecraft.

The goal of the mission is to learn what lies inside the planet. Astronomers have been studying Jupiter since the invention of the telescope 400 years ago, but in all that time the planet's vast interior has remained hidden from view. Even the Galileo probe, which dived into the clouds in 1995, penetrated no more than about 0.1% of Jupiter's radius. "Our knowledge of Jupiter is truly skin deep," says Bolton, Juno's principal investigator. "There are many basic things we just don't know—like how far down does the Great Red Spot go? And does Jupiter have a heavy core?"

Juno will improve the situation without actually diving into the clouds. Bolton explains how. "Juno will spend a full year in close polar orbit around Jupiter, flying over all latitudes and longitudes. We will thus be able to fully map Jupiter's gravitational field and figure out how the interior is structured."

But that's not all. Researchers have good reason to believe that much of Jupiter's interior is filled with liquid metallic hydrogen, an exotic metal that could form only in the high-pressure, hydrogen-rich core of a giant planet. Jupiter's powerful magnetic field almost certainly springs from dynamo action inside this vast realm of electrically conducting metal. "Juno's magnetometers will precisely map Jupiter's magnetic field," says Bolton. "This map will tell us a great deal about planet's inner magnetic dynamo—what it's made of and how it works."

Finally, Juno will probe Jupiter's atmosphere using a set of microwave radiometers. "Our sensors can measure the temperature 50 times deeper than ever before," says Bolton. Researchers will use that information to figure out how much water is underneath Jupiter's clouds. "Microwave measurements of Jupiter's water content are particularly exciting because they will help discriminate among competing theories of the planet's origin." Now that's a close encounter. Stay tuned for Juno.

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



*The Juno mission, arriving at Jupiter in July 2016, will help to solve the mystery of what's inside the giant planet's core.*

## Special Board of Directors Meeting, October 21, 2010

The board of directors of the Barnard-Seyfert Astronomical Society met in special session at the Adventure Science Center (ASC) in Nashville, Tennessee on October 21, 2010 immediately following the monthly membership meeting at that location. Board members Dr. Spencer Buckner, Bill Griswold, Santos Lopez, Kris McCall, Curt Porter, Dr. Terry Reeves, Bob Rice, and Theo Wellington were present. Board members Tony Campbell, Jana Ruth Ford, and Dr. Donna Hummell were absent. BSAS member Ken Mayor also attended as a guest. A quorum being present, President Dr. Spencer Buckner called the meeting to order at 8:55 P.M.

Dr. Spencer Buckner reported that the domain registration company overseeing the BSAS' named website had asked for updated contact information. Dr. Buckner stated that BSAS Webmaster Drew Gilmore would handle this update. Curt Porter moved that Mr. Gilmore be cited as our website's official contact person. Santos Lopez seconded his motion that passed by a subsequent unanimous voice vote without additional discussion.

Kris McCall reported that the ASC's management had decided to charge the BSAS \$20.00 per month to meet and use its facilities and suggested that the Society draw up a Memo of Understanding (MOU) to outline its expectations. Heretofore, there had been no charge for the BSAS to use the ASC's facilities. In addition, Ms McCall informed the board that the ASC would limit the BSAS' access to the Sudekum Planetarium where it had most often been meeting. Dr. Spencer Buckner commented that, although this was more appropriately an issue for a future board meeting, board members should start thinking about the matter now. The board was of the general opinion that \$20.00 per month was a small fee for using a facility like the ASC.

Curt Porter suggested that any composed MOU should quantify what the BSAS does for the ASC. Kris McCall stated that as the Director of the Sudekum Planetarium she would recuse herself from additional discussions or decision-making on this issue to avoid the appearance of any conflict of interest. Dr. Spencer Buckner said that he would email past-president and attorney Joe Boyd about the matter. Santos Lopez asked if perhaps the BSAS' membership dues should be raised to cover the additional expense resulting from the new monthly charge. Other board members expressed the opinion that dues should remain the same for a year to see the effect on the budget. Bob Norling mentioned the possibility of using Vanderbilt University's Dyer Observatory for future meetings. Santos Lopez suggested the possibility of holding meetings during BSAS sponsored star parties. However, upon additional discussion, the board decided that too many star parties had to be cancelled because of inclement weather for this to be a viable option.

Since there was no additional business to discuss, Dr. Spencer Buckner declared the meeting to be adjourned at 9:15 P.M.

## Member Contributions



**NGC 6960 – The Witch's Broom Nebula**

*By Steve Wheeler*

28 x 300 sec @ iso1600 – modified DSLR

**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)
- \$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](http://www.bsasnashville.com)
- [BSAS on Facebook](#)

# 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 Dr. Spencer Buckner at (931) 221-6241.

**BARNARD-SEYFERT  
ASTRONOMICAL SOCIETY**  
PO BOX 150713  
NASHVILLE, TN 37215-0713

