

The December membership meeting will be held on Thursday, December 20, 2007 at 6:00 pm at the Adventure Science Center

On Thursday, December 20, 2007 we will hold our regularly scheduled membership meeting and annual holiday potluck at the Adventure Science Center.

The BSAS will be providing the entrée, ham and turkey from Honey Baked Ham as well as beverages. As in years past, we are asking our attending members to bring their favorite pass around dish or dessert. We will also have a very entertaining presentation.

This year's December BSAS meeting will feature The Astro Jeopardy Game with Charlie Warren, Editor of Amateur Astronomy Magazine, as our Master of Ceremonies. His after-dinner presentation will include a compilation of astro-images including his 25 favorite objects to view with binoculars, small scopes, and large scopes. His program will conclude with a discussion of Astronomical Trends from an editor's perspective.

This is a great way to end a very fun and successful BSAS year, so please plan on attending!

Message from the President

President's Message

This has been a short year. Already it is December. It seems that only yesterday it was January and I was just starting the year as president of the BSAS. Now, just a month from now, Terry Reeves will be taking the helm to guide the BSAS members and board of director's throughout the year of 2008.

The main regret I have is that I was not as aggressive as I should have been. However on a whole, the year has had some good things to happen for the BSAS. We had our annual big star party, TNSP 07. We made some money although not very much, but at least we did not lose any money. The attendance was low which was the main reason for the small financial returns. The weather was just great, wonderful seeing and we had six outstanding speakers. The food was prepared by a professional caterer and we all got plenty to eat.

We did a lot of out-reach astronomy programs and observing sessions. We also had several very good private star parties under the guidance of Steve Wheeler. The Messier Marathon was held at Spot Observatory, Mark Manner's home site and observatory.

We made some progress on the worldwide problem of light pollution. The guidance of Powell Hall and Joe Boyd led to several meetings with Nashville Electric Service and Nashville Metropolitan Public Works Department. The Public Works Dept. was more in accord with our interest to conserve the large power now being lost to illuminating the night sky, while the NES was more interested in selling electricity for streetlights than any method to help the light pollution problem.

The election of officers and board members was held at the November Membership Meeting.

Our officers for 2008 are:

Terry Reeves, president
Keith Burneson, vice-president
Bob Rice, secretary

Board members for 2008 are:



Message from the President

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Randy Smith, treasurer
 Bill Griswold , ex-officio

Spencer Buckner
 Tony Campbell
 Jana Ruth Ford
 Donna Hummell
 Theo Wellington
 Steve Wheeler
 Kris McCall, board member at-large

The board meetings are held on the first Thursday in each month and visitors are always welcome.

The December meeting of the BSAS will be held at the Adventure Science Center on the third Thursday (December 20). This will be a potluck dinner and each attendee should bring a dish to share with the other members. The BSAS will furnish the drinks, meat and silver ware, cups, napkins, etc. We should arrive about 6:00 pm and we plan to start eating about 6:30. You all come.

by Bill Griswold,
 President

FREE TELESCOPE OFFER!!!

Did someone say free telescope? Yes, you did read that correctly.

The BSAS Equipment & Facilities Committee has free telescopes ranging in size from 2.6” to 8” that current members can actually have to use for up to 60 days at a time. We also have some other items in the loaner program such as a photometer, H-alpha solar telescope, educational CDs, tapes, DVDs, and books. Some restrictions apply. A waiting list is applicable in some cases. The BSAS Equipment Committee will not be held responsible for lost sleep or other problems arising from use of this excellent astronomy gear. For information on what equipment is currently available, contact Lonnie Puterbaugh at (615) 661-9540

**MAGAZINE SUBSCRIPTIONS FOR
 BSAS MEMBERS**

We are always able to accept requests for new and renewal yearly subscriptions to SKY AND TELESCOPE and ASTRONOMY from our members in good standing.

The current yearly rates are as follows:
 SKY AND TELESCOPE: \$32.95
 ASTRONOMY: \$34.00

Checks or Money Orders should be made out to the Barnard-Seyfert Astronomical Society (BSAS) and sent to the following address:
 BSAS
 P. O. Box 150713
 Nashville, TN 37215-0713

DUES INFORMATION

On your Eclipse mailing label is the expiration date for your current membership in the BSAS. There will be a two month grace period before any member’s name is removed from the current mailing list. You will be receiving a number of warnings informing you that your membership is expiring.

Dues per year are \$20.00 Regular (1 vote); \$30 Family (2 votes); \$15.00 Student (under 22 years of age)(1 vote); \$15 Seniors (65 years or older)(1 vote); \$25 Senior Family (65 years or older)(2 votes).

Contact president@bsasnashville.com if you have questions. Dues can be sent to:
 BSAS
 P. O. Box 150713
 Nashville, TN 37215-0713

THE ECLIPSE NEWSLETTER

Editor: Pam Thomas
 pam.thomas@charter.net

BSAS Officers:

Bill Griswold, President
 Terry Reeves, Vice President
 Bob Rice, Secretary
 Randy Smith, Treasurer
 Mark Manner, Immediate Past President
 Board of Directors
 Keith Burneson
 Donna Hummell
 Steve Wheeler
 Mike Benson
 Tony Campbell
 JanaRuth Ford
 Kris McCall, Ex Officio
BSAS website:www.bsasnashville.com
BSAS Logo by Tony Campbell

Happy Birthday Kristian Olaf Bernhard Birkeland

by Robin Byrne

This month we celebrate the life of a man considered one of Norway's greatest scientists, but who is largely unheard of elsewhere. Kristian Olaf Bernhard Birkeland was born December 13, 1867 in what is now Oslo, Norway. From early on, Birkeland showed an interest in science, and published his first scientific paper at the age of 18. His college years were spent studying mathematical physics in France, Switzerland and Germany, where he studied under Heinrich Hertz.

During the 1890's, Birkeland's true work began. His first publication dealt with solutions of Maxwell's Equations of Light. That was followed by a series of expeditions led by Birkeland to the polar region of Norway. These expeditions were the first to use measurements of the magnetic field on the ground to determine the pattern of electric currents around the pole. A geophysical observatory was established at a latitude of 70°N, which was used to observe the northern lights or aurora borealis.

It was the study of northern lights that would lead to Birkeland's fame. Using a vacuum tube, he created a model of the Earth and its magnetic field. He then directed a beam of electrons toward the model. What occurred provided Birkeland with his insight. The beam of electrons were funneled by the magnetic field toward the model Earth's poles, where a circle of light appeared. Birkeland hypothesized that something similar occurs to form the northern lights. The source of charged particles, he surmised, was our Sun. When they become trapped by our magnetic field, they are guided toward the poles. Once the charged particles encounter Earth's atmosphere, the auroral glow occurs. This also generates currents along the magnetic field lines. Birkeland outlined these ideas in his book, titled *The Norwegian Aurora Polaris Expedition 1902 - 1903*. However, it wasn't until 1963 that Birkeland's ideas were confirmed and accepted by the scientific community. The confirmation came from a U.S. Navy satellite that had a magnetometer on board, which measured the electric currents along the magnetic field lines. His discovery is so valued by Norway that it is honored on the 200 Kroner bank note. The back of the bank note depicts his experiment with the vacuum chamber showing the field lines, and his face appears as a water mark, also on the back of the note.

In addition to his work with aurora, Birkeland was also pragmatic enough to pursue research areas that could help fund his enterprises. With his interest in electromagnetism, it isn't too surprising that one of his inventions would make use of just that: an electromagnetic cannon. In 1901, Birkeland developed and patented this cannon with the intent of marketing it to the military. However, after multiple test firings without a single glitch, of course his big demonstration for the military brass would go spectacularly, and serendipitously, wrong. One of the coils shorted, which created a huge arc of electricity. That arc would lead to Birkeland's next big venture.

At this time, an alternative source for nitrogen was desperately needed to make cheaper fertilizers and explosives. Saltpeter from Chile was the only natural source of nitrogen, and the supply was rapidly running out. However, nitrogen is abundant in our atmosphere. If a method for extracting nitrogen from the air and combining it with other elements could be found, then the problem would be solved. At Birkeland's explosive demonstration was an engineer named Sam Eyde, who had been working on the nitrogen problem. He had a method that would theoretically work, but it required a large electrical arc, which they hadn't figured out how to produce. Birkeland had unintentionally solved the problem. So, together, Birkeland and Eyde started their own company, Norsk Hydro, which is still one of Norway's largest industrial companies. Birkeland continued with both research and inventions, including an improved hearing aid and a new way to make margarine. His many innovations led to seven Nobel Prize nominations, but not a single win.

Birkeland's private life was not nearly as successful. He was known to keep notes on scrap paper, which he stored under seat cushions, and he would wear a fez and slippers while working in his lab. He scheduled an important talk on the morning of his wedding day, so he had to rush through his speech in order to make it to the wedding ceremony on time. Not too surprisingly, his marriage only lasted five years.

In 1913, Birkeland went to Egypt to study the zodiacal lights. When he was ready to return to Norway, however, it was not possible, due to World War I. His frustration at being stranded compounded two of his vices: drinking and taking Veronal (a sleeping pill). He finally had an opportunity to return home with the Danish consul via Asia. During a stop in Tokyo, Birkeland died on June 15, 1917, after taking an overdose of sleeping pills.

Today, we take the connection between the northern lights and the Sun as a given fact, but in the early 1900s, that connection was anything but obvious. It was the work of an eccentric and brilliant man to finally solve the mystery. Despite not being recognized immediately, Kristian Birkeland's work lives on today. Norway has every right to be proud.

References:

Birkeland, Kristian Olaf Bernhard (1867 - 1917)

<http://www.daviddarling.info/encyclopedia/B/Birkeland.html>

Kristian Birkeland - Wikipedia, the free encyclopedia

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

NORDLYS - Northern Lights

<http://www.northern-lights.no/english/science/birkeland.shtml>

Kristian Birkeland Summary

http://www.bookrags.com/Kristian_Birkeland

Barnard-Seyfert Astronomical Society
Minutes of a Regular Meeting of the Board of Directors
Held on Thursday, November 1, 2007

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 1, 2007. A sign-in sheet was circulated in lieu of a roll call. Board members Tony Campbell, JanaRuth Ford, Bill Griswold, Donna Hummell, Bob Rice, and Steve Wheeler were present. Board members Mike Benson, Keith Burneson, Kris McCall, Mark Manner, Randy Smith, and Terry Reeves (who arrived just as the meeting adjourned) were absent. Also attending was BSAS member Joe Boyd. A quorum being present, President Bill Griswold called the meeting to order at 7:39 P.M.

Bill Griswold reported that the Tennessee Star Party (TNSP) study committee established at the October board meeting had not met yet. Star Party Coordinator Steve Wheeler presented the board with a preliminary list of private and public star parties for 2008 including suggested dates with probable good seeing. Mr. Griswold said that he would review this list and suggest locations. He also said that he would contact the National Park Service to seek a more general permit that did not specify exact dates for the two Natchez Trace sites that we have been using.

Webmaster Tony Campbell reported that he was maintaining the BSAS calendar of events on our website. Mr. Campbell noted that he had also inserted a detailed announcement promoting the upcoming November membership-meeting program on how to select a new telescope. Bill Griswold said that he would contact Kris McCall to try to reserve the big room at the ASC for what would hopefully be a larger attendance. Mr. Campbell stated that he was also working on a website press release section containing appropriate links for the news media to use.

Program Coordinator JanaRuth Ford reported that Dr. Spenser Buckner would present the November 15th program on "All I Want For Christmas Are Astronomy Presents" to be followed at the December 20th meeting and potluck holiday dinner by *Amateur Astronomy* editor Charlie Warren who will again present his popular astronomy related version of the *Jeopardy* quiz show game.

Bill Griswold suggested that board establish a committee to oversee the December 20th holiday potluck dinner. Tony Campbell volunteered to procure the meat and Bob Rice volunteered to procure the other necessary supplies. Both will seek assistance and advice from *Eclipse* editor Pam Thomas who has considerable prior experience handling both areas.

Tony Campbell suggested that the board consider playing a recording of Orson Welles' classic 1938 radio broadcast of "The War of the Worlds" at a public star party during the December opposition of Mars. There being no further business to discuss, President Griswold declared the meeting adjourned at 8:29 P.M.

Respectfully submitted,
Bob Rice, Secretary

**Barnard-Seyfert Astronomical Society
Minutes of the Monthly Membership Meeting
Held On Thursday, November 15, 2007**

President Bill Griswold called the meeting to order at 7:40 P.M. in the Adventure Science Center (ASC). Kris McCall reminded the audience about the public star party to be held on December 15 at the Warner Parks and the silent auction planned for the holiday potluck supper on December 20 at the ASC. Bill Griswold welcomed everyone and asked guests to introduce themselves. He then explained that the BSAS met on the third Thursday of each month and briefly outlined membership categories and fees.

Mike Benson announced that the publishers of the *Illustrated Guide to Astronomical Wonders* had donated a copy of that book for a door prize at the holiday potluck supper. JanaRuth Ford announced that BSAS Treasurer Randy Smith would also have copies of the Royal Astronomical Society of Canada's 2008 *Observers Guide* and Kalmbach's *Deep Space Mysteries* calendar for sale at the potluck supper. In addition, Mike Benson stated that he would have copies of Guy Ottewell's 2008 *Astronomical Calendar* for sale at that same event.

Bill Griswold called for corrections to the October 18 meeting minutes as published in the November 2007 edition of the *Eclipse* newsletter and, there being none, then asked for a motion of approval. A member so moved, a second member seconded this motion, and the minutes were approved by a unanimous voice vote. Star Party Coordinator Steve Wheeler announced that a private star party would be held on December 8 at the Natchez Trace Parkway mile marker 433 site.

Bill Griswold commenced the annual election of officers and directors by announcing these candidates recommended by the Nominating Committee: Dr. Terry Reeves for president; Keith Burneson for vice-president; Bob Rice for secretary; Randy Smith for treasurer; and Dr. Spencer Buckner, Tony Campbell, and Theo Wellington for the three director-at-large positions. Explaining that there were no nominations from the floor when this proposed slate was introduced at the October 18 meeting, he then asked for a motion to elect all nominees by acclamation. A member so moved and a second member seconded this motion that was subsequently approved by a unanimous voice vote.

JanaRuth Ford announced that the BSAS was currently ranked eighth in the nation among astronomy clubs participating in NASA's Night Sky Network public outreach program. Then, as the Program Committee Chair, Ms Ford 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 Presents." 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
- Types of mounts – altazimuth & equatorial
- Accessories – eyepieces, finder scopes, red lights, & filters
- PST (Personal Solar Telescope) as a specialized instrument
- Cases & storage bags
- Power sources – batteries & ac adaptors
- Maps, planispheres, planetarium software, & freeware
- Magazines, calendars, books & reference materials
- List of recommended dealers based upon personal experience

Dr. Buckner then graciously answered questions from the audience following his presentation.

Kris McCall announced that the Dark Sky Committee would hold their next meeting on Tuesday, January 2 instead of in December. Bill Griswold, commenting on a point made during Dr. Buckner's presentation, noted that green laser pointers could be effectively used in light-polluted areas instead of a finder scope. Billy Teets, who assisted Dr. Buckner with his presentation, announced that Vanderbilt's Dyer Observatory had initiated a Star Catchers program geared toward beginning amateur astronomers. JanaRuth Ford announced that the BSAS' January program would be on "How to Use Your New Telescope." Ms Ford reiterated that the December meeting would include the holiday potluck supper, a silent auction, an astronomy based Jeopardy Game, and most likely a presentation by *Amateur Astronomy* magazine editor Charlie Warren.

Since there was no further business to discuss, President Griswold declared the meeting adjourned at 9:15 P.M.

Respectfully submitted,
Bob Rice, Secretary

ACTIVITIES and EVENTS*December 1—31, 2007*

12/2 LAST QUARTER, Saturn 2° N of Moon
12/6 BSAS Board of Directors mtg., 7:30 p.m. at Girl Scout Office
12/8 Private star party 8:30 p.m. Natchez Trace, mile marker 435
12/9 NEW MOON
12/14 Geminid meteors peak, conj. of Neptune & Moon
12/15 Star Party 8:00-10:00 p.m. Edwin Warner Park
12/17 FIRST QUARTER
12/20 BSAS Membership mtg. & annual holiday event 6:00 p.m. at ASC
12/22 Winter Solstice
12/24 FULL MOON
12/28 Saturn 3° N of Moon

January 1—31, 2008

1/3 BSAS Board of Directors mtg., 7:30 p.m. at Girl Scout Office
1/5 Venus 7° N of Moon
1/7 Jupiter 7° N of Moon
1/8 NEW MOON
1/15 FIRST QUARTER
1/17 BSAS Membership mtg. 7:30 p.m. at ASC
1/20 Conj. of Moon & Venus
1/22 FULL MOON
1/23 Conj. of Mercury & Neptune
1/24 Conj. of Venus & Pluto
1/25 Saturn 3° N of Moon
1/30 LAST QUARTER

*All times listed are Central Time

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