



The ECLIPSE



The Newsletter of the Barnard-Seyfert Astronomical Society

Organized in 1928

November 2012

The Membership meeting will be held on November 28, 2012 at the Cumberland Valley Girl Scout Council Building located at the intersection of Harding Place and Granny White Pike at 7:30 pm.

Austin Peay State University Associate-Professor of Astronomy and Physics and past BSAS President Dr. Spencer Buckner will present the November membership meeting program on "What I Want for Christmas Are Astronomy Toys." Dr. Buckner will describe and display many of the latest types of telescopes, viewing aids, accessories, printed and digital resources, and other gizmos that would make welcomed additions to anyone's holiday gift list.

Upcoming Events

Board of Directors Meeting,
November 7 at the
Cumberland Valley Girl
Scout Building – 7:30 pm

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From the President

The neighborhood's filling up. Sort of. What I'm referring to is the recent parent detection of a roughly Earth-sized planet in close orbit around Alpha Centauri B, the second-closest star to our home planet ("only" 4.3 light years away) and part of the Alpha Centauri triple star system. This exoplanet was found by a team of European astronomers after a grueling effort that involved 100 observations made over four years with the 3.6 meter telescope at the European Southern Observatory's La Silla Observatory in Chile.

This detection is on the ragged edge of what is technologically possible today. The Doppler "wobble" induced in Alpha Centauri B's spectrum by the newfound planet amounts to merely half a meter per second. That's the smallest stellar wobble yet detected by astronomers. If the discovery holds up, you can add this newcomer to the 800+ other exoplanets currently known (plus other 2,300 strong candidates identified by NASA's Kepler space observatory).

Many will say: "So what! We don't have the technology to ever get there!" True enough, today. Alpha Centauri's distance of 4.3 light years equals about 25.6 trillion miles (or 300,000 astronomical units). NASA's fastest-ever spacecraft, the Voyagers launched back in 1977, needed 35 years to reach the outermost layer of the heliosphere surrounding our sun (about 120 astronomical units away from Earth) and are today flying away at a speed of around 38,000 miles per hour. To reach the Alpha Centauri system, a probe traveling at that speed would need about 80,000 years. Even *Saturday Night Live* and *General Hospital* would be off the air by then. Probably. But perhaps clever engineers will come up with a way to vastly boost spacecraft speeds by using ion thrusters, nuclear propulsion, or some other even more exotic energy sources.

OK, suppose a probe could reach the Alpha Centauri system in a reasonable period (say, one generation or 30 years). Many people would still argue, "Why bother? The Alpha Centauri B planet orbits so close to its star

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Observing Highlights

Moon phases

November 2012
11/06 LAST Quarter
11/13 NEW Moon
11/20 FIRST Quarter
11/28 FULL Moon

December 2012
12/06 LAST Quarter
12/13 NEW Moon
12/20 FIRST Quarter
12/28 FULL Moon

Objects:

Globular Clusters
M56, M71, M15, M2, M72, M75, M30

Open Clusters
M73, M29, M39, M52, NGC457 (ET), M103, NGC654, NGC663, NGC884/869 (Double Cluster), M34, M45 (Pleiades)

Nebula
M57 (Ring), NGC 6543 (Cat's

Eye), NGC6826 (Blinking), M27 (Dumbbell), NGC7000 (North America), IC5146 (Cocoon), NGC7293 (Helix), NGC1499 (California)

Galaxies
M31 (Andromeda), M32, M110, M33 (Triangulum), M74

Asterisms
Cr399 (Coat Hanger)

Multiple Star Systems
Double-Double (Epsilon Lyrae)
Albireo (Beta Cygni)
Gamma Delphini

Variable Stars
Mu Cephei (Herschel's Garnet Star),
Beta Persei (Algol), Omicron Ceti (Mira)

Planets Uranus, Neptune, Jupiter

Star Parties for months of November and December

Nov 10 Private Star Party at Natchez Trace Parkway mm 412 (Water Valley Overlook)

Nov 16 Public Star Party at Bowie Nature Park (Fairview) 7:30 - 9:30 pm

Leonid meteors, Moon, Jupiter, Andromeda

Nov 17 Public Star Party at Shelby Bottoms Nature Center 7:30 - 9:30 pm

Leonid meteors, Moon, Jupiter, Andromeda Galaxy

Dec 08 Private Star Party at Natchez Trace Parkway mm 435.5

Dec 15 Public Star Party at Edwin Warner Park 7:30 - 9:30 pm
Geminid meteors (finally a good year with no Moon), Jupiter, Andromeda

Happy Birthday Sputnik 2

by Robin Byrne

This month, we celebrate a milestone in the history of space exploration. The Soviet Union had started the space race with the launch of the first satellite on October 4, 1957, but they weren't finished with achieving firsts. November 7, 1957 would mark the 40th anniversary of the Bolshevik Revolution, and Khrushchev wanted another satellite in space when the anniversary arrived, so he contacted the head of the space program, Sergei Korolev, and expressed his wishes. When the leader of the Soviet Union suggests you do something, you don't have much choice. Korolev feared that such a rush would result in a disaster marking the anniversary rather than a triumph, but he proceeded anyway.

With only a month, there was no time for the usual procedures. Although a preliminary design probably already existed, it was far from its final form. Working from sketches instead of blueprints, the engineers worked with the construction crew to design the spacecraft while it was being built. What they ended up with was a cone-shaped capsule 13 feet high and 6.6 feet wide equipped with many components, and a sealed cabin to contain a canine passenger.

The equipment on board would transmit data to Earth for only 15 minutes at a time (when the spacecraft was passing over Soviet ground stations). This served two purposes: saving energy and preventing other countries from having access to their data. There were two photometers designed to measure UV and x-ray radiation from the Sun, and a Geiger counter to detect charged particles. There were also sensors that would relay biological data from the dog on board, including: respiration rate, blood pressure and temperature. The plan was to receive data for 7 days (until the equipment no longer functioned) and then track the satellite with telescopes and radar for the remainder of its flight.

On November 3, 1957 Sputnik 2 was launched into Earth orbit, completing one orbit every 104 minutes. On board was a dog named Laika (meaning "Barker"), a 13 pound Samoyed-terrier mix, chosen from a field of 10 for her even temperament. The cabin design was based on containers used in earlier ballistic missile flights that carried dogs. To accommodate a living passenger, a life support system had to be designed. However, due to weight considerations, there was only enough for 7 days in space. The air quality was controlled with an apparatus designed to absorb carbon dioxide, and a separate device to produce oxygen. There was also a fan to help regulate the internal temperature. Food was provided by an instrument that had separate containers, each holding a day's supply of food, timed to open at 24 hour intervals. The food was in the form of a jelly, to avoid floating in the cabin. Early telemetry indicated that Laika was eating. Waste was contained in a special bag attached to the dog. Despite the cabin's small size, there was room for Laika to stand, sit and lay down.

When the spacecraft entered orbit, the nose cone successfully jettisoned, but another part did not detach, which interfered with the thermal control system. Some of the thermal insulation also tore. The combination of the two caused the cabin temperature to exceed 100 °F. In 2002, Russia finally revealed that the combination of high temperatures and stress led to Laika's death only a few hours and 4 orbits after launch. The original story said she had survived a few days and died of suffocation. There never was a way to return Laika alive to Earth, and the original plans included giving her poisoned food before the life support system failed. Despite the death of Laika, Sputnik 2 did prove that a living creature could survive in space.

The sensors on board also detected charged particles in Earth's magnetic field. However, the importance of this detection was not realized until after the United States launched their first satellite, Explorer 1. The U.S. satellite detected the same radiation, but recognized its importance, which is why they are named after the scientist who designed the instrument package, James Van Allen. When the discovery of the Van Allen Belts was announced, some in the Soviet Union tried to get them named

Vernov's Belts, after the Soviet designer of their detector.

By its sixth day in orbit, Sputnik 2 had used up all of its power. All data transmission ceased, and its orbit began to decay. On April 14, 1958, Sputnik 2 reentered Earth's atmosphere and burned up. There were many reports of seeing its reentry from New York to the Amazon.

Sputnik 2's flight is a tale of success and failure, of discoveries and missed opportunities, and of life and death. The satellite launched successfully, but not all parts performed as planned. It detected the radiation belts, but the significance was ignored. And the mission proved that a living creature could survive in space, but that proof cost the life of a dog. A strong reminder that not every space mission will go as planned, and that mistakes will be made, and lives will be lost. However, if we want to continue to pursue our role in space, we must be willing to accept the failures and mistakes and loss of life if we are ever to eventually succeed. That is the lesson of Sputnik 2.

References:

Sputnik 2 - Wikipedia

http://en.wikipedia.org/wiki/Sputnik_2

Sputnik 2

<http://www.astronautix.com/craft/sputnik2.htm>

Sputnik-2

by Anatoly Zak

<http://www.russianspaceweb.com/sputnik2.html>

Barnard-Seyfert Astronomical Society Minutes of the Regular Meeting of the Board of Directors Held On Wednesday, October 3rd, 2012

The board of directors of the Barnard-Seyfert Astronomical Society (BSAS) met in regular session at the Cumberland Valley Girl Scout Council Building in Nashville, Tennessee on October 3rd, 2012. A sign-in sheet was passed around in lieu of a roll call. Board members Joe Boyd, Steve Cobb, Bill Griswold, Melissa Lanz, Bob Norling, Curt Porter, and Theo Wellington were present. Board members Dr. Spencer Buckner, John Harrington, Kris McCall, and Bob Rice were absent. A quorum being present, Vice-President Joe Boyd called the meeting to order.

Joe Boyd asked for approval of the minutes of the September Board meeting and September membership meeting held on September 5th and 19th, respectively, and, there being no corrections, declared them to be approved as submitted. Treasurer Bob Norling reported that the BSAS had \$1908.23 in its regular checking account and \$1,016.07 in its equipment account.

Joe Boyd announced these upcoming star parties:

- Oct 13 – Private star party @ mm435.5 on the Natchez Trace Parkway
- Oct 20 – Public star party @ Edwin Warner Park from 8:00 to 10:00 P.M.
- Oct 27 – Private Star party with Skeptical Inquirer magazine staff at Sheraton Music City at 9:00 P.M. (approx)
- Nov 10 – Private star party @ mm412 (Water Valley Overlook) on the Natchez Trace Parkway
- Nov 16 – Public star party @ Bowie Nature Park (Fairview) at 7:30 P.M.
- Nov 17 – Public star party @ Shelby Bottoms Nature Center at 7:30 P.M.

Joe Boyd reported that there is a need for two guest speakers on the solar system for a 5th grade group of home school students at the Heritage Christian Academy in Mt. Juliet, from 10 A.M. to noon, with the date to be decided. Joe reported that John Harrington could serve as one speaker; Joe Boyd and Theo Wellington are also willing, dependent on the date.

Joe Boyd reported that Pickett State Park (Jamestown, TN) desires to become a dark-sky area. They are next to a national forest and Big South Fork Park. Park Ranger Monique contacted Joe Boyd, an IDA representative. BSAS could act as a corporate sponsor, which would involve measuring the light with a light meter. It takes several months to get the designation. After some discussion of the pros and cons, and whether we are the closest astronomical society, Curt Porter moved, and Bill Griswold seconded, that we cooperate with Pickett State Park to get their dark sky designation.

The board members then discussed plans to collect money and orders at the next meeting for the Observer's Handbook and astronomy calendars. The handbook sells for \$27.95 on the internet; we get a group discount. The Astronomy Calendar sells for \$10. A \$5 deposit is required for either. Curt will take up money and names at the October membership meeting, as Bob Norling will not be able to be there.

Joe announced that there is a need for members with telescopes for a Boy Scout event at Camp Boxwell on Friday, October 26. It is a day-time event. It is an opportunity for the boy scouts to get an

astronomical badge. Theo volunteered to help.

John Harrington's agenda included an item to ask if the BSAS should begin a major outreach to all local universities with astronomy programs. We believe the following colleges and universities in the immediate area offer astronomy classes: NSTI, Vol State, Belmont. Curt Porter suggested we get the professors involved. Students may join for the discounted price of \$12. We need to get a hook on the universities' web-sites. Joe Boyd suggested setting up a committee to make recommendations about what we have to offer. Steve Cobb so moved, and Bill Griswold seconded it.

Theo Wellington reported that she and Bud Hamblen set up solar telescopes at the Dragon Festival at Riverfront Park on September 29th. Poppy Simmons assisted with directing passers-by. Theo gave away all of her literature to the approximately 200 people who took advantage of the opportunity to view the sun.

Theo also stated that the Hume Fogg Magnet School astronomy people will be camping at Bells Bend, and she will take a telescope. There is also a group of Special Needs kids that will be at Bells Bend on October 19th, and she plans to take a telescope.

Curt Porter stated that he has trouble with the BSAS web-site on his computer, which runs XP and SP3. The calendar links on the left and right-hand sides don't always show the same events. No one else has experienced any difficulty.

Since there was no further business to discuss, Steve Cobb moved that the meeting be adjourned. Bill Griswold seconded the motion, which was then approved by a unanimous voice vote without additional discussion. Vice-President Joe Boyd declared the meeting to be adjourned.

Respectfully submitted,
Melissa Lanz, substituting for Bob Rice, Secretary

**Barnard-Seyfert Astronomical Society
Minutes of the Monthly Membership Meeting
Held On Wednesday, October 17, 2012**

President John Harrington called the meeting to order at 7:44 P.M. on October 17, 2012 at the Cumberland Valley Girl Scout Council Building in Nashville, Tennessee and welcomed members and visitors. Treasurer Bob Norling reported that the BSAS had \$2,058.23 in its regular account and \$1,016.07 in its equipment account. Mr. Norling announced that the 2013 editions of these popular publications will again be available to members at a discount from the regular cover price: Kalmbach Publishing Company's *Deep Space Mysteries Calendar* - \$10.00; *Guy Ottewell's Astronomical Calendar* - about the same as last year; and the Royal Astronomical Society of Canada's *Observer's Handbook* - \$25.00. Each will require a \$5.00 deposit. John Harrington asked for corrections to the minutes of the previous membership meeting held on September 19, 2012 and, there being none, then asked for a motion that these minutes be accepted as published in the October 2012 edition of the *Eclipse* newsletter. Such a motion was made and seconded and the minutes were subsequently approved by a unanimous voice vote of the membership.

John Harrington announced these upcoming star parties and events:

- Oct 20 – Public star party at Edwin Warner Park from 8:00 – 10:00 P.M;
- Oct 26 – Special star party for Boy Scouts at Camp Boxwell;
- Oct 27 – Private star party with Skeptical Inquirer staff & members at Sheraton Music City;
- Nov 10 – Private star party at mm 412 (Water Valley Overlook) on the Natchez Trace Parkway;
- Nov 16 – Public star party at Bowie Nature Park from 7:30 P.M. to 9:30 P.M; and
- Nov 17 – Public star party at Shelby Bottoms Nature Center from 7:30 P.M. to 9:30 P.M.

John Harrington introduced Dr. Billy Teets, Vanderbilt University's Dyer Observatory Outreach Astronomer, who delivered the evening's program on "Happenings at Dyer Observatory." Dr. Teets began by giving a brief history of astronomy at Vanderbilt University starting with the school's first Chancellor, Landon C. Garland, who was also a professor of physics and astronomy in the late 1800's, and continuing into the early 20th century with famed astronomer E.E. Barnard. He then described the interactions between Vanderbilt astronomer Carl Seyfert, Nashville Bridge Company President Arthur J. Dyer, and WSM Television Station President Jack DeWitt that led to the construction of Dyer Observatory and its 24 inch Cassegrain telescope in the early 1950's.

Noting that Dyer Observatory's mission changed from pure research to public outreach and education in 2006, Dr. Teets explained that the institution was now serving over 20,000 visitors a year through these ongoing and planned activities:

- Daytime public tours and solar observing;
- The Star Chamber – a giant camera obscura constructed of rocks in the form of spiral galaxy;
- A sundial garden currently under construction;
- Astro Cantus – (Latin for "star song") a smart phone app that will play music based upon 3000 naked eye stars' respective spectral classes as they transit;
- The Bergquist Telescope – a robotic 14 inch telescope to be accessed online by the public when completed;
- Space Science summer camps for kids;
- Opera on the Mountain and Concerts at Dyer musical and observing programs;
- Various private events including weddings; and
- Public nights (2nd Friday nights of each month).

Dr. Teets concluded by enthusiastically answering questions from the audience.

Since there was no further business to discuss, President Harrington declared the meeting to be adjourned at 9:41 P.M.

Respectfully submitted,
Bob Rice, Secretary

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

To find the expiration date for your current membership, visit our web site at <http://www.bsasnashville.com> and click the Renewals link.

There will be a two month grace period before any member's name is removed from the current distribution list.

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 Wednesday of each month at the Cumberland Valley Girl Scout Building at the intersection of Granny White Pike and Harding Place in Nashville. Experienced members or guest speakers talk about some aspect of astronomy or observing. Subjects range from how the universe first formed to how to build your own telescope. The meetings are informal and time is allotted for fellowship. You do not have to be a member to attend the meetings.

Membership entitles you to subscriptions to *Astronomy* and *Sky & Telescope* at reduced rates; the club's newsletter, the *Eclipse*, is sent to members monthly.

BSAS members also receive membership in the Astronomical League, receiving their quarterly newsletter, the *Reflector*, discounts on all astronomical books, and many other benefits.

In addition to the meetings, BSAS also sponsors many public events, such as star parties and Astronomy Day; we go into the schools on occasion to hold star parties for the children and their parents. Often the public star parties are centered on a special astronomical event, such as a lunar eclipse or a planetary opposition.

Most information about BSAS and our activities may be found at www.bsasnashville.com. If you need more information, write to us at info@bsasnashville.com or call John Harrington at (615) 739-4500.

[BSAS on Facebook](#)

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.