

# The ECLIPSE

February  
2014

*The Newsletter of the Barnard-Seyfert Astronomical Society*

## Next Membership Meeting:

February 19, 2014, 7:30 pm  
Cumberland Valley  
Girl Scout Council Building  
4522 Granny White Pike

## Program Topic:

Joshua Emery -  
the "Don Quixote" object  
(*details on page 5*)

## From the President

Professionals vs. amateurs... the distinctions have blurred over the years in different ways. There was a time when mere money could get you the gear to have a professional observatory. Many large telescopes were built with private funds by interested individuals... think of William Hershel and Percival Lowell. Then amateurs were pushed aside by large scale photography and the truly large telescopes that needed institutions to care for and run them... like the Mt. Wilson and Mt. Palomar observatories. Expensive ccd cameras, exotic cooling, the computing power needed even after glass plates were replaced put meaningful observations out of reach of amateurs. Then with the advent of the personal computer and digital cameras, the playing field was leveled by computers that anyone could own, low noise digital cameras and powerful software.

Today, you can take the hobby or second life in astronomy as far as you wish, in partnership with professionals. On any given clear night, enthusiasts around the world are recording not just pretty pictures, but data. Our sheer numbers allow us to look at things in depth and at a frequency not possible if we depended just on the large research telescopes. Amateurs first noticed small lunar meteorite impacts, recorded bruises from impacts on Jupiter, discovered comets, recorded fireballs - what a wonderful lot of science was done with Russian dash cams last year! And quite a number of us are kicking ourselves for not noticing what we had caught in images earlier in January... a new supernova in the often-imaged galaxy M82! At least

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## Observing Highlights February and March

### Planets

Venus

Mars

Jupiter

Saturn

Pluto

### Open Clusters

NGC457 (*ET*), M103,

NGC654, NGC663,

NGC884/869

(*Double Cluster*),

M34, M45 (*Pleiades*),

M36, M37, M38, M35, M41,

M50, M47, M46, M93, M48,

M44 (*Beehive*), M67,

NGC2264 (*Christmas Tree*)

### Variable Stars

Beta Persei (*Algol*),

Omicron Ceti (*Mira*),

R Leporis

(*Hind's Crimson Star*)

### Globular Clusters

M79

### Nebulae

M76 (*Little Dumbell*),

NGC1499 (*California*),

M1, M42 (*Orion*), M43, M78,

NGC2392 (*Eskimo*)

### Galaxies

M31 (*Andromeda*), M32,

M110, M33 (*Triangulum*),

M74, M77, M81, M82

### Multiple Star Systems

Eta Cassiopeiae,

Gamma Arietis,

Gamma Andromedae,

Beta Orionis (*Rigel*),

Alpha Geminorum (*Castor*)

## Upcoming Star Parties

Sat 2/8 7:00-9:00	<a href="#">Shelby Bottoms Nature Center</a>
Sat 3/8 7:30-9:30	<a href="#">Long Hunter State Park</a>
Sat 3/22 7:30-9:30	<a href="#">Edwin Warner Park</a>
Sat 3/29	Private star party at SPOT observatory for Messier Marathon



Mar 1  
Mar 30



Feb 6  
Mar 8



Feb 14  
Mar 16



Feb 22  
Mar 23

## Happy Birthday Bernard Ferdinand Lyot by Robin Byrne

This month we celebrate the life of a man whose name should be synonymous with the Sun. Bernard Ferdinand Lyot was born in Paris, France on February 27 1897 to Alice and Constant Lyot, a surgeon. He attended college at l'Ecole Superieure d'Electricite in Paris to study engineering. While there, his interest in astronomy began. In 1914, he purchased his first telescope, with a 4 inch aperture, and soon upgraded to a 6-inch scope. He even constructed his own dome and set it up near Tours.

Lyot graduated from college in 1918 and got his first job at l'Ecole Polytechnique as a demonstrator in the physics department. Here, he had the opportunity to work with such men as Alfred Perot and Charles Fabry. At the same time, Lyot was taking classes in chemistry, physics and engineering at the University of Paris.

Meanwhile, Lyot took on a second job as the Assistant Astronomer at the Meudon Observatory, which became part of the Paris Observatory in 1926. Lyot left his position at l'Ecole Polytechnique when he was given a full time position as Joint Astronomer of the Observatory in 1929.

It was at Meudon that Lyot began to find his calling. With the encouragement of the observatory's director, Henri Deslandres, Lyot began to put to good use his skills in optics and invention. His first task involved wanted to better study the surfaces of planets. To do this, he invented a polariscope to

measure the amount of polarization of the light being reflected off of their surfaces. He then used this information to determine the characteristics of their surface composition. Lyot conducted his observations at the Pic du Midi Observatory in the French Pyrenees Mountains. Looking at the light from our Moon, Lyot found that the soil is similar to volcanic dust. When studying Mars, he saw evidence for sand storms. Lyot also claimed to observe signs of water on Venus - one of his few incorrect discoveries.

It was his observations of Mercury, however, that led Lyot to the area for which he is best remembered. Because Mercury is always so close to the Sun, the glare makes it very difficult to observe. That led Lyot to think about the Sun and ways to block out its light. One of the features of the Sun that was always difficult to observe was the corona, since it was only visible briefly during a total solar eclipse. Because even a small amount of dust or slight optical imperfection would scatter the light from the Sun's disk, even when trying to block the Sun, the corona would not be bright enough to see in all of the Sun's glare. In 1930, Lyot ground three lenses, 8 cm in diameter and 2 meters in focal length each, to as close to perfection as was possible at the time. The combination of the lenses and diaphragms, plus the crystal clear observing conditions at Pic du Midi, allowed Lyot, on July 12 1931, to be the first person to observe and photograph

## Bernard Ferdinand Lyot, continued

the corona of the Sun without the aid of an eclipse.

Lyot continued to study the Sun and develop more equipment to gather even more information. He built polarizing filters that let through light with a bandwidth of only 1 Angstrom. This allowed him to identify spectral lines in the corona, some of which had never been observed before. He also noticed that the lines were quite wide, which indicates that the corona is incredibly hot - much hotter than expected. These filters are now known as Lyot Filters.

Lyot's device for observing the corona by eliminating the glare from the photosphere, which eventually became known as the coronagraph, went through repeated modifications and improvements throughout the 1930's. He was able to observe that the corona rotates with the rest of the Sun, and even made a motion picture of the corona and prominences, which he showed to the International Astronomical Union.

Lyot's work with the Sun won him many honors, including election to the French Academy of Sciences in 1939, and, in the same year, the Gold Medal of the Royal Astronomical Society. Lyot was also named the Chief Astronomer at the Meudon Observatory in 1943. In 1947, he received the Bruce Medal, and in 1951, the Henry Draper Medal from the National Academy of Sciences. On February 25, 1952, Lyot was observing a total solar eclipse near Khartoum, Sudan. A few days later,

while traveling back to Paris, he suffered a massive heart attack. Bernard Lyot died April 2, 1952 near Cairo, Egypt.

Bernard Lyot continues to be remembered in a variety of ways. There are craters named Lyot on both the Moon and Mars, plus an asteroid named 2452 Lyot. More appropriately, the Bernard Lyot Telescope is a 2 meter Cassegrain that has been housed at Pic du Midi since 1980. In 2007, an echelle spectropolarimeter was added, which allows for the study of the magnetic fields of stars.

Starting back up in March, Bays Mountain will once again host SunWatches every clear Saturday and Sunday. Although the park does not have a coronagraph yet (ahem ... hint, hint), what we can observe and share with the public about the Sun has been aided by the work of this month's honoree: Bernard Lyot.

### References:

Bernard Lyot - Wikipedia  
[en.wikipedia.org/wiki/Bernard\\_Lyot](http://en.wikipedia.org/wiki/Bernard_Lyot)

The Bruce Medalists: Bernard Lyot  
[www.phys-astro.sonoma.edu/BruceMedalists/Lyot/](http://www.phys-astro.sonoma.edu/BruceMedalists/Lyot/)

LCAS - Bernard Lyot by Jay Bitterman  
[www.lcas-astronomy.org/articles/display.php?filename=bernard\\_lyot&category=biographies](http://www.lcas-astronomy.org/articles/display.php?filename=bernard_lyot&category=biographies)

Bernard Lyot  
[www.astro.umontreal.ca/~paulchar/grps/histoire/newsite/bio/lyot\\_e.html](http://www.astro.umontreal.ca/~paulchar/grps/histoire/newsite/bio/lyot_e.html)

The Lyot Project  
[lyot.org/background/coronagraphy.html](http://lyot.org/background/coronagraphy.html)

## From the President, continued from page 1

two BSAS members had images before it was officially “discovered” by an astronomy class in England. Amateur observations will help to define the light curve of this nearby Type 1a supernova. Sure, the big guys will also have a look... but their time is limited. Thousands of observers all over the world will contribute to the science. Who do you contact if you think you have discovered something new? The IAU Central Bureau for Astronomical Telegrams! Even though they don't much send actual telegrams anymore (I have to admit to being old enough to remember when they did), they have kept the name. They have a page on “How to report a discovery” ([www.cbat.eps.harvard.edu/HowToReportDiscovery.html](http://www.cbat.eps.harvard.edu/HowToReportDiscovery.html))

For fireballs, report to the American Meteor Society. ([amsmeteors.org/fireballs](http://amsmeteors.org/fireballs))

Later this year, an asteroid will occult the bright star Regulus, allowing for people in a narrow swath across the Northeast to observe and contribute to science, reporting an accurate location and time with just a smart phone! For a great graphic on how well we can get a complete picture of the outline of an asteroid like this, see the current Sky and Telescope.

Globe At Night will run their sky surveys every month this year... YOU can help survey the brightness of the night sky. It's easy and fun! ([globeatnight.org](http://globeatnight.org))

Clear, dark (perhaps warmer) skies,

Theo Wellington

**Next BSAS meeting  
February 19, 2014, 7:30 pm  
Cumberland Valley  
Girl Scout Council Building  
4522 Granny White Pike**

Our speaker for February is Joshua Emery, Research Assistant Professor at UT Knoxville. His main area of research is the small bodies of the Solar System, better known mostly as asteroids. His research includes the odd asteroid 3552 Don Quixote, which may actually be a comet. He is also involved in NASA's OSIRIS-REx mission that plans to bring back samples from a near-Earth asteroid. Come and learn more about what these small bits can show us about the formation and early history of the Solar System.

**Barnard-Seyfert Astronomical Society  
Minutes of the Regular Meeting of the Board of Directors  
Held on Wednesday, January 8, 2014**

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 January 8, 2014. Board members Joe Boyd, Steve Cobb, Bill Griswold, Bud Hamblen, Jeffrey Horne, Melissa Lanz, Bob Norling, Poppy Simmons and Theo Wellington were present. Bob Rice was a welcome visitor. A quorum being present, Vice-President Joe Boyd called the meeting to order at 7:35 PM CST.

The board welcomed a new director, Jeffrey Horne. Mr. Horne is Marketer/Communicator in Chief for Rustici Software, board member, chairman of marketing for TEDxNashville (<http://www.tedxnapville.com>), and founder, MoxieFlock Social Media Marketing. He has been interested in astronomy since seeing Saturn through his father's telescope as a boy. His astrophotographs can be seen on Facebook (<http://www.facebook.com/jeffreystone>). His father is BSAS member Donald Horne.

Joe Boyd asked for corrections to the minutes of the previous board meeting held on December 11, 2013, as published in the January 2014 edition of the Eclipse newsletter. There being none, Bill Griswold moved their adoption, Bob Norling seconded, and the minutes were approved by unanimous voice vote. No treasurer's report was presented.

Chuck Schlemm has acquired the white light solar filter approved at the December 11, 2013, board meeting.

Gary Eaton and Jim Powers operated telescopes at Pickett State Park, Jamestown, Tennessee, on December 31, 2013. Theo Wellington reported that Jim Powers said he was impressed with the quality of the skies; that the Milky Way was visible 30 minutes after sunset. Theo Wellington reported that Janaruth Ford said that Henry Horton State Park wants a similar event for 2014. The Moon will be in a gibbous phase that date.

It was noted that "Brilliant Sky Toys and Books", 2002 Richard Jones Rd, Nashville, TN 37215, has some astronomy-related items for children.

Theo Wellington mentioned the new, \$200, "Astronomers without Borders" telescope, which despite the name is only being sold in the USA.

Visitor Nolan Starnes introduced himself and his organization, All-in Allstarz, 3008 Hillhurst Dr, Nashville, TN 37207, (615) 573-6631.

## Minutes of the Regular Meeting of the Board of Directors, continued

All-in Allstarz is provided programs for urban youth in Nashville, TN, and asked the BSAS for assistance.

The January 15, 2014, membership meeting has as its program providing assistance to new owners of telescopes. BSAS members are encouraged to participate. Bring extra batteries, small tools and hardware. Theo Wellington said she would ask Chuck Schlemm to bring the society's dob.

The February program will be presented by Josh Emery on the "Don Quixote" object. The March program will be a "What's Up". The April program will be presented by Allyn Smith. Ideas and suggestions are solicited.

There were 58 guests at the public star party held at the Edwin Warner Park Special Events Field on January 4, 2014.

The BSAS will participate in the Nashville Earth Day Festival on April 10, 2014, at Centennial Park. Solar telescopes are needed, weather permitting.

Theo Wellington noted the upcoming Geek Media Expo, Franklin, TN, on October 24-26, 2014.

Steve Cobb noted that Heather Cunningham, Sister Cities International Exchange, may be able to provide expertise in online payments.

Bob Norling noted that he can order two additional Deep Sky calendars, as requested.

Theo Wellington reported that Mike Benson has changed the society's address in the Astronomical League listing.

Upcoming star parties were noted:

January 24: Public Star Party at Bells Bend (7:00 - 9:00 PM)

January 25: Private Star Party at Natchez Trace MM 412 (Water Valley Overlook).

This had been scheduled for February 1.

February 8: Public Star Party at Shelby Bottoms (7:00 - 9:00 PM)

March 1: Private Star Party at Natchez Trace MM 433.5 Bowie

Park: April 25, 8-10 PM July 25, 8:30-10:30 PM September 26,

7-9 PM November 21, 7-9 PM

Volunteers are needed to represent the BSAS at the Boy Scout University on March 15 at Holy Family Catholic Church, Brentwood, from 7 AM to 1 PM.

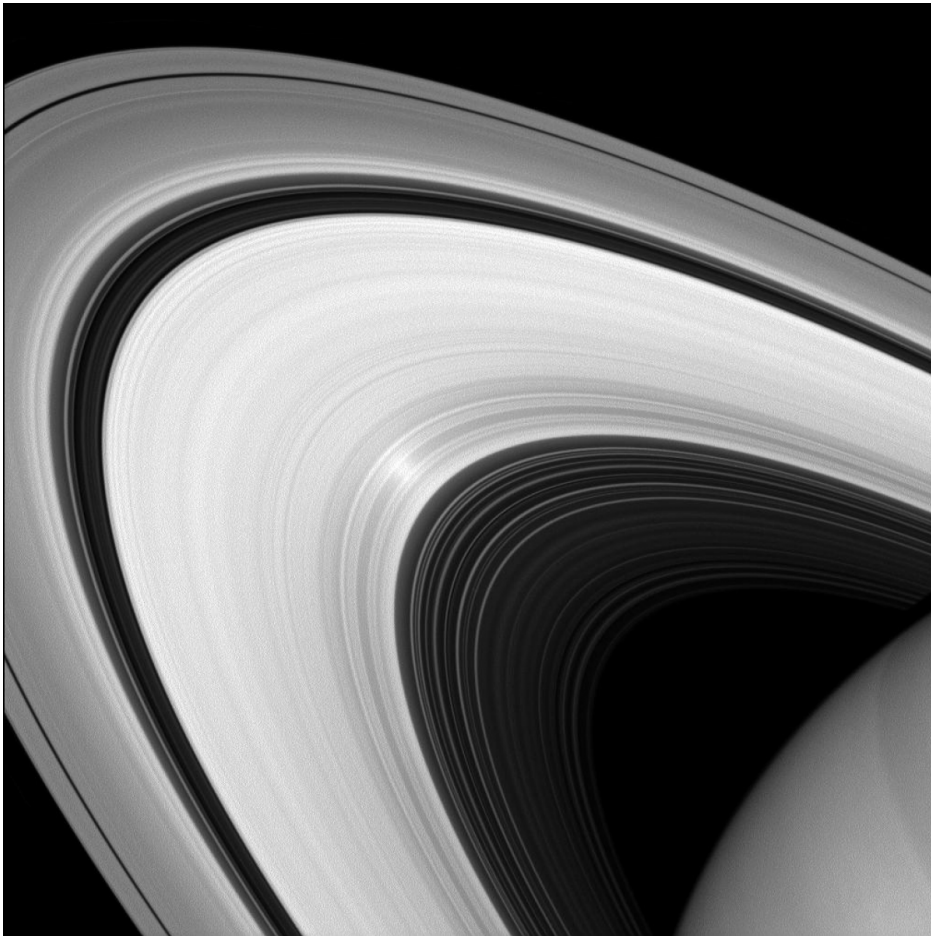
## Minutes of the Regular Meeting of the Board of Directors, continued

Bob Norling will prepare an annual budget for the next board meeting.

Bill Griswold and Drew Gilmore will coordinate the distribution of the Eclipse.

There being no further business to discuss, Theo Wellington asked for a motion to adjourn. Bill Griswold so moved, Steve Cobb seconded and the motion was carried by a unanimous voice vote at 8:44 PM CST.

Respectfully submitted,  
Bud Hamblen, Secretary



### Infrared Image of Saturn's Rings

Although it may look to our eyes like other images of the rings, this infrared image of Saturn's rings was taken with a special filter that will only admit light polarized in one direction. Scientists can use these images to learn more about the nature of the particles that make up Saturn's rings.

The bright spot in the rings is the "opposition surge" where the Sun-Ring-Spacecraft angle passes through zero degrees. Ring scientists can also use the size and magnitude of this bright spot to learn more about the surface properties of the ring particles.

This view looks toward the sunlit side of the rings from about 19 degrees above the ringplane. The image was taken with the Cassini spacecraft wide-angle camera on Aug. 18, 2013 using a spectral filter sensitive to wavelengths of near-infrared light centered at 705 nanometers.

The view was acquired at a distance of approximately 712,000 miles (1.1 million kilometers) from Saturn and at a Sun-rings-spacecraft, or phase, angle of 7 degrees. Image scale is 43 miles (68 kilometers) per pixel.

This space reserved for your cool amateur astrophoto!  
[eclipse@bsasnashville.com](mailto:eclipse@bsasnashville.com)

For more information about the Cassini mission, visit [www.nasa.gov/cassini](http://www.nasa.gov/cassini).

*Image Credit: NASA/JPL-Caltech/  
Space Science Institute*



**Barnard-Seyfert Astronomical Society**  
**Minutes of the Monthly Membership Meeting**  
**Held On Wednesday, January 15, 2014**

The Barnard-Seyfert Astronomical Society held its monthly membership meeting for January at the Girl Scouts of Middle Tennessee, 4522 Granny White Pike, Nashville, Tennessee, on January 15, 2013, with eleven members and nine guests signing in.

President Theo Wellington called the meeting to order at 7:39 PM CST, and asked for changes to the minutes of the December 18, 2013, membership meeting as published in the January, 2014, edition of the Eclipse newsletter. No changes being suggested, the president asked for a motion to approve the minutes. Bud Hamblen made the motion and Joe Boyd seconded. The motion was carried by unanimous voice vote. Treasurer Bob Norling reported that the society had \$1,212.79 in the bank. Theo Wellington called for volunteers to staff the society's table at the upcoming Middle Tennessee Council Boy Scouts of America University of Scouting. The event will be from 7 AM to 1 PM, Saturday, March 15, 2014, at the Holy Family Church, 9100 Crockett Rd, Brentwood, TN. The president noted several planned star parties:

Public star party, Friday, January 24, 2014, 7:00-9:00 PM, Bells Bend Outdoor Center, 4187 Old Hickory Blvd, Nashville, TN.

Private star party, Saturday, January 25, 2014, dusk to dawn, Water Valley Overlook, Natchez Trace Parkway Mile Marker 412.

Public star party, Saturday, February 8, 2014, 7:00-9:00 PM, Shelby Bottoms Nature Center, 900 Davidson St, Nashville, TN.

The sad passing of Mr John Dobson (1925-2114) was noted. Mr Dobson was known for, among many things, designing the Dobsonian style of telescope, and popularizing astronomy through the San Francisco Sidewalk Astronomers. Mr Dobson visited Nashville some years ago and autographed the Dobsonian telescope owned by the society.

The remainder of the program was devoted to assisting new telescope owners in setting up and using their instruments. Theo Wellington provided free planispheres and lists of useful sites on the World Wide Web, and members assisted guests with their new telescopes. Several visitors also joined the society. Hopefully the program helped all get a better start in amateur astronomy. The program continued until about 9:00 PM.

Respectfully submitted,

Bud Hamblen, Secretary

**Become a Member of BSAS!**

Visit [bsasnashville.com](http://bsasnashville.com) to download and print an application for membership.

All memberships have a vote in BSAS elections and other membership votes. Also included are subscriptions to the BSAS and Astronomical League newsletters.

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:**

**\$20 Individual**  
**\$30 Family**  
**\$15 Senior (+65)**  
**\$25 Senior Family (+65)**  
**\$12 Student\***

\* To qualify as a student, you must be enrolled full time in an accredited institution or home schooled.

You can check the status of your membership at [bsasnashville.com](http://bsasnashville.com).

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

**About BSAS**

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 [bsasnashville.com](http://bsasnashville.com). If you need more information, write to us at [info@bsasnashville.com](mailto:info@bsasnashville.com) or call Theo Wellington at (615) 300-3044.

**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 [info@bsasnashville.com](mailto:info@bsasnashville.com).