

The ECLIPSE

September
2015

The Newsletter of the Barnard-Seyfert Astronomical Society

Next Membership Meeting:
September 16, 2015, 7:30 pm
Cumberland Valley
Girl Scout Council Building
4522 Granny White Pike

Topic: *Theo Wellington:*
*“Moonshine and Earthshadow:
a Lunar Eclipse meets Social
Media Hype”*

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From the President:

First, I hope at least a few of you are sketching constellations. Otherwise you will be jealous when I get a pin!

Next, the big event for September comes right at the end of the month... a Lunar Eclipse, and one at a reasonable time of the night! More, it is Full within an hour of perigee, so that in popular parlance it will be a “Supermoon.” Join us at either the Adventure Science Center or Warner Park for a relaxed evening of Moonlight and Earthshadow. The partial phase begins at 8:07pm, totality runs from 9:11 - 10:23pm, and the Moon will be back to full and bright at 11:27pm. The Adventure Science Center will be open for most of the event, with shows in the planetarium, so there will be a good crowd for telescopes even though a Lunar Eclipse really needs only your eyes. Still, if the night is fair, Saturn will also be making an appearance.

Lunar eclipses are not particularly rare, there are usually at least two a year. The only requirement to see one is that it is a clear night when the eclipse happens. The last one in April began in the pre-dawn sky with the Moon setting before the eclipse was total. The next total lunar eclipse will be in January of 2019 for us. The eclipse of January 31, 2018 will likely get some press...it will be both a “blue Moon” (second full Moon for January) and a perigee (“super”) Moon. Sadly, you won’t see it from here. Good news, though, if you are looking for an excuse to go to Hawaii, that would be a great place to watch it from!

Lots of chances to enjoy the outdoors and the skies this month... come join us at booths at both Nature Fest at Bowie Nature Park in Fairview and the Dragon Boat races on September 12th. Nature Fest runs 10am-4pm, \$5 parking donation (supports the park!), Dragon Boat will inaugurate the East Bank Landing, runs from 8am - 3pm, free. If it is a nice day we will have solar viewing, eclipse information and more. September 19th is Fall Astronomy Day AND International Observe the Moon night. We have a star party



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Observing Highlights September and October

Open Clusters

M6 (*Butterfly*), M7, M23,
M21, M18, M25, M26,
M11 (*Wild Duck*),
M29, M73, M39, M52

Galaxies

M101/M102, NGC 6822 (*Barnard's*)

Globular Clusters

M5, M80, M4, M107, M13, M12,
M10, M62, M19, M92, M9, M14,
M28, M69, M22, M70, M54, M56,
M55, M71, M75, M72, M15, M2, M30

Multiple Star Systems

Epsilon Bootis (*Izar or Pulcherrima*)
Mu Bootis (*Alkalurops*),
Beta Scorpii (*Acrab*),
Alpha Herculis (*Rasalgethi*),
Epsilon Lyrae (*Double Double*),
Beta Cygni (*Albireo*)

Variable Stars

Mu Cephei
(*Herschel's Garnet Star*)

Nebulae

NGC6302 (*Bug*),
NGC6309 (*Box*),
NGC6543 (*Cat's Eye*),
M20 (*Trifid*), M8 (*Lagoon*),
M16 (*Eagle*), M17 (*Swan*),
M57 (*Ring*),
NGC6818 (*Little Gem*),
NGC6826 (*Blinking Planetary*),
M27 (*Dumbbell*),
NGC6888 (*Crescent*),
NGC6905 (*Blue Flash*),
NGC6960/6974/6979/
6992/6995 (*Veil*),
NGC7000 (*North America*),
NGC7009 (*Saturn*),
IC 5146 (*Cocoon*),
NGC7293 (*Helix*),
NGC7635 (*Bubble*),
NGC7662 (*Blue Snowball*)

Other

Barnard's Star
M24 (*Small Sagittarius Star Cloud*)
Cr 399 (*Coat Hanger*)

Upcoming Star Parties

Saturday 9/12	Private Star Party Natchez Trace Parkway Mile Marker 412 (Water Valley Overlook)
Saturday 9/19 8:00 - 10:00 pm	Public Star Party Long Hunter State Park
Sunday 9/27 7:30 - 10:30 pm	Public Total Lunar Eclipse Star Party Adventure Science Center
Saturday 10/10	Private Star Party Natchez Trace Parkway mile marker 433.5



Sep 13
Oct 12



Sep 21
Oct 20



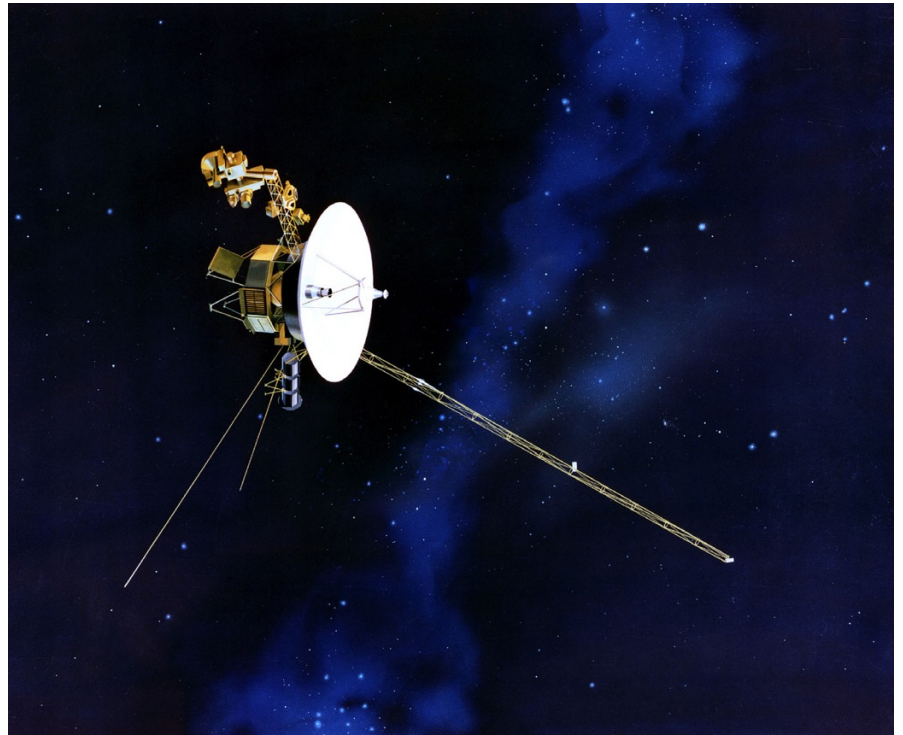
Sep 27
Oct 27



Sep 5
Oct 4

Happy Birthday Voyager 1 by Robin Byrne

Not too many spacecraft elicit much admiration or emotional response, but this month's honoree is an exception. Voyager 1 was launched on September 5, 1977, 3 weeks after its sister craft, Voyager 2, was launched. Despite being launched second, Voyager 1, taking a faster, more direct path, was the first to arrive at its initial destination: Jupiter.



Eighteen months after leaving Earth, in March 1979, Voyager 1 reached Jupiter and began to send back images that would change our ideas about the largest planet in our solar system and its moons. Among its discoveries: finding that Jupiter also has a ring system, although much smaller than Saturn's; Io, one of the 4 Galilean satellites, is the most volcanically active object in the solar system with at least 8 active volcanoes; and Jupiter was found to have 3 previously unknown moons.

In November of 1980, Voyager 1 reached Saturn. It was during this encounter that the enigmatic "spokes" were first glimpsed in the rings of Saturn. These are dark features that rotate with the rings, yet show no sign of breaking apart as would be expected in a region composed of particles moving at different speeds. It is now thought that the magnetic field of Saturn helps to hold these dark particles in the observed patterns. Also discovered in Saturn's rings was the oddly braided F-ring. As with Jupiter, 3 new moons of Saturn were also found. Voyager 1 also flew quite close to Saturn's largest moon, Titan, to get a closer look at the only moon known to have a significant atmosphere. However, this near approach was at a cost: the path would then send Voyager 1 northward out of the plane of the solar system.

Since leaving the plane, Voyager 1 has continued to send back signals for scientific use as the renamed Voyager Interstellar Mission. The fields, particles, and waves

Voyager 1, continued

instruments are still in use. In 1993, the plasma wave experiment began picking up radio emissions from the heliopause, which is the outer boundary of the solar wind. On August 25, 2012, an abrupt change in particle density is being interpreted as the boundary of the Sun's magnetic field, called the heliopause, at a distance of roughly 120 Astronomical Units from the Sun. This means that Voyager 1 is now outside of the Sun's magnetic field (but not its gravitational field). We are expected to continue to receive data from Voyager 1 until the year 2020.

How little we would know about our solar system neighbors if it were not for the space craft that can send us back so much information. We learned much from both the Voyagers, Galileo, Cassini, and now New Horizons. And the Voyagers aren't even done contributing to science. So with Saturn well placed for viewing this month, we can remember the magnificent images and discoveries that were the result of this month's celebrant: Voyager 1.

Resources:

[Voyager Web Page from NASA](#)

[Voyager Web Page from Goddard](#)

[Into the Unknown: Voyager 1 Begins Interstellar Space Adventure by Chris Gebhardt](#)

Next BSAS meeting
September 16, 2015, 7:30 pm
Cumberland Valley
Girl Scout Council Building
4522 Granny White Pike

*Topic: Theo Wellington:
"Moonshine and Earthshadow:
a Lunar Eclipse meets Social Media Hype"*

Send your cool astrophotos to
eclipse@bsasnashville.com!



This new NASA/ESA Hubble Space Telescope shows Messier 96, a spiral galaxy just over 35 million light-years away in the constellation of Leo (The Lion). It is of about the same mass and size as the Milky Way. It was first discovered by astronomer Pierre Méchain in 1781, and added to Charles Messier's famous catalogue of astronomical objects just four days later.

Credit: [ESA/Hubble & NASA and the LEGUS Team](#) Acknowledgement: [R. Gendler](#)

**Barnard-Seyfert Astronomical Society
Minutes of the Monthly Membership Meeting
Held On Wednesday, August 5, 2015.**

The regular meeting of the Board of Directors of the Barnard-Seyfert Astronomical Society was held August 5, 2015, at the Girl Scouts of Middle Tennessee, 4522 Granny White Pike, Nashville, TN 37204. Present were Joe Boyd, Gary Eaton, Bud Hamblen, Kris McCall, Bob Norling and Theo Wellington. A quorum being present, Theo Wellington called the meeting to order at 8:00 PM. Theo Wellington asked for a motion to approve the minutes of the June meeting as printed in the July issue of the Eclipse. Rob Norling so moved, Kris McCall seconded, and the minutes were approved by a unanimous voice vote. Bob Norling reported that there were \$1,573.31 in the regular account and \$1,619.54 in the equipment account.

Discussions included upcoming observing events, the Night Sky Network, on-line payments, solar viewing glasses and succession of directors and officers for 2016. People are needed for at-large directors and treasurer.

There being no further business to discuss, the meeting was adjourned at 9:00 PM.

Respectfully submitted,

Bud Hamblen, Secretary

From the President, continued

scheduled for Long Hunter State Park, 8-10pm, and for anyone with the wish to drive, there will be an event at Pickett Dark Sky Park as well. Next weekend (September 4 - 6) is the Tennessee Fall Star Gaze at Fall Creek Falls State Park (free, but you need your own accommodations and food). Enjoy the early fall skies!

We will shortly be missing one of our long time members. Kris McCall, director of the Sudekum Planetarium and BSAS Board member, is leaving Nashville for her new position as Director of the Cernan Earth and Space Center at Triton College in River Grove, IL. We wish her the best, and if you are up that way, stop by and say hello. Kris has long been a huge supporter of astronomy in Nashville, she will be an wonderful asset to her new home.

Clear skies,

Theo Wellington

**Barnard-Seyfert Astronomical Society
Minutes of the Monthly Membership Meeting
Held On Wednesday, August 19, 2015.**

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 Wednesday, August 19, 2015. 27 members and guests signed in. Theo Wellington called the meeting to order at 7:30 PM. Theo asked for a motion to approve the minutes of the July, 2015, meeting as printed in the August, 2015, edition of the Eclipse. Chuck Schlemm so moved, Bill Griswold seconded, and the minutes were approved with a unanimous voice vote.

Theo noted upcoming star parties and solar observing events at the Dragon Boat Festival (9/12), Bowie Park Nature Fest (9/12), Log Hunter State Park (9/19), Pickett State Park (9/19). Adventure Science Center (9/27) and Warner Parks Nature Center (9/19).

Todd May, Program Manager for the Space Launch System at NASA/Marshall Spaceflight Center, Huntsville, Alabama, presented a talk on the heavy rocket currently under development, and took questions from the audience. Information on the rocket is available at www.nasa.gov/sls, [NASASLS](https://www.facebook.com/NASASLS) on Facebook, [@NASA_SLS](https://twitter.com/NASA_SLS) on Twitter and [@explorenasa](https://www.instagram.com/explorenasa) on Instagram. Information on the Orion spacecraft is available at www.nasa.gov/orion, [NASAOrion](https://www.facebook.com/NASAOrion) on Facebook and [@NASA_Orion](https://twitter.com/NASA_Orion) on Twitter.

There being no further business the meeting was adjourned at 9:00 PM.

Respectfully submitted,

Bud Hamblen, Secretary



This telescope is available to members! A small easy to set up and operate scope to get started with, this is one of our club loaner telescopes. See page 8 for details.



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* 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.

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. If you need more information, write to us at 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.