

# The ECLIPSE

July  
2015

*The Newsletter of the Barnard-Seyfert Astronomical Society*

## Next Membership Meeting:

July 15, 2015, 7:30 pm  
Cumberland Valley  
Girl Scout Council Building  
4522 Granny White Pike

Topic: Mitzi Adams, “*Jets and the Many Scales of Solar Phenomena*”

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## From the President:

Tom Murdic, an active local astrophotographer, a leader in the African American Heritage Society in Franklin, and a wonderful person passed away earlier this year. To honor his memory, the Society is holding a fundraiser called “Prom Night.” (see the ad in the newsletter) This will provide the foundation for the Tom Murdic Educational Scholarship. What a wonderful way to remember Tom! You can purchase tickets (by July 10) or just make a donation.

Will it dry out in July? Seems like we asked the same question in June, only to look at the next week’s weather and see nothing but clouds with lightning bolts. If it does, we can watch Jupiter and Venus gently move apart in the sunset, and enjoy the summer Milky Way after dark. If you have the time, come up to Pickett State Park on July 11 to enjoy our new Dark Sky park, we’ll be visiting the Pogue Creek trailhead to set up. Are you traveling this summer? If you visit somewhere with nice dark skies, please send us a picture of the night sky.

There are some epic journeys to small bodies in our Solar System that are returning unique data about worlds we’ve never seen before. The New Horizons spacecraft flies by Pluto and its system of moons on July 14... we hope for detail of the landscape and data about the atmosphere and surface composition. This is a once in a lifetime event, so tune in and see what we discover! At



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## Observing Highlights July and August

### Nebulae

NGC3242 (*Ghost of Jupiter*),  
M97 (*Owl*), 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*)

### Multiple Star Systems

Gamma Leonis (*Algieba*),  
M40, Gamma Virginis  
Alpha Canum Venaticorum  
Zeta Ursae Majoris (*Mizar*),  
Epsilon Bootis (*Izar or Pulcherrima*)  
Mu Bootis (*Alkalurops*),  
Beta Scorpis (*Acrab*),  
Alpha Herculis (*Rasalgethi*),  
Epsilon Lyrae (*Double Double*),  
Beta Cygni (*Albireo*)

### Galaxies

NGC3115 (*Spindle Galaxy*),  
M95, M96, M105, M108,  
M65/M66/NGC3628 (*Leo Triplet*),  
M109, M98, M99, M106, M61, M100,  
M84, M85, M86, M49, M87, M88, M91,  
M89, M90, M58,  
M104 (*Sombrero Galaxy*),  
M59, M60, M94,  
M64 (*Black-Eye Galaxy*),  
M63 (*Sunflower Galaxy*),  
M51 (*Whirlpool Galaxy*),  
M83, M101/M102,  
NGC 6822 (*Barnard's*)

### Open Clusters

Mel111 (*Coma Star Cluster*),  
M6 (*Butterfly*), M7, M23,  
M21, M18, M25, M26,  
M11 (*Wild Duck*)

### Globular Clusters

M68, M53, M3, M5, M80, M4,  
M107, M13, M12, M10, M62, M19,  
M92, M9, M14, M28, M69, M22,  
M70, M54, M56, M55, M71

## Upcoming Star Parties

Saturday 7/18	Private Star Party <a href="#">Natchez Trace Parkway</a> <a href="#">Mile Marker 412</a> <a href="#">(Water Valley Overlook)</a>
Saturday 7/25 8:30 - 10:30 pm (revised date!)	Public Star Party <a href="#">Bowie Nature Park</a> <a href="#">(Fairview)</a>
Friday 8/14 8:30 - 10:30 pm	Public Star Party <a href="#">Bells Bend Outdoor Center</a>
Saturday 8/15	Private Star Party <a href="#">Natchez Trace Parkway mile</a> <a href="#">marker 433.5</a>
Saturday 9/12	Private Star Party <a href="#">Natchez Trace Parkway</a> <a href="#">Mile Marker 412</a> <a href="#">(Water Valley Overlook)</a>

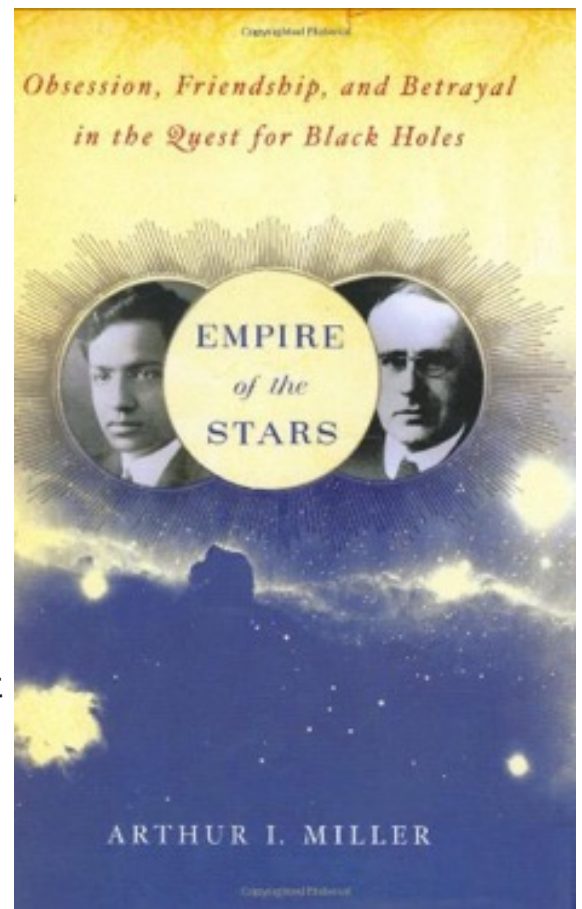
**Book Review:****Empire of the Stars: Obsession, Friendship, and Betrayal in the Quest for Black Holes  
Reviewed by Robin Byrne**

This month, we return to the ol' bookshelf. A recent trip included a stop in a used book store, where I found "Empire of the Stars" written by Arthur I. Miller. The book is about Subrahmanyan Chandrasekhar and his life, focusing on his discovery that there is a limit to the mass of a white dwarf.

We begin with Chandra's early life. He was brought up in a very proper Indian household. His father was a civil servant working for the railroad, but Chandra's uncle, Raman, was a well known physicist, and there was clearly a rivalry between Chandra's father and Raman. Chandra began to show signs of greatness while in school, when he performed research with his uncle, published his first papers, and gave public lectures. By the time he finished college, he was clearly a rising star, so it was natural that he would travel to England to attend Cambridge, where he would work on his PhD. It was on the ship, traveling to England, that Chandra made his discovery: beyond a certain mass, a white dwarf will collapse to nothingness. He couldn't wait to share this breakthrough with the world.

At Cambridge, Chandra worked with Arthur Eddington. Eddington was considered the preeminent expert on stars, so it was natural for Chandra to latch onto him. However, Eddington had his own ideas about stars, and the notion that a white dwarf, or anything, could collapse into nothingness was outrageous. He was not supportive. It all came to a head at a meeting of the Royal Astronomical Society in 1935. Chandra presented his work, and Eddington tore his arguments apart. If Chandra had won his audience at first, Eddington made sure Chandra had no supporters by the time he was through. It was a slaughter. Chandra never fully recovered from this public humiliation.

The book takes us through all of Chandra's life and work, but this early setback clearly left its mark. Even after Chandra was vindicated, and won the Nobel Prize in Physics for this discovery, he didn't feel appreciated. While at Cambridge, Chandra did not



### Empire of the Stars, continued

receive the same offers of positions as his white colleagues. Prejudice against his color was at work. When he came to America, within the scientific community, his treatment was better, but discrimination in other settings was still a regular occurrence. Although he continued to work in a wide variety of areas in astrophysics, and published several books, he resented only being remembered for his earliest work.

The life of Chandrasekhar spans a time when astronomers went from knowing next to nothing about stars to having detailed models of stellar interiors and their life cycles. When Chandra began his work, the idea of nuclear fusion powering stars had not yet been proposed. The concepts of neutron stars and black holes had not been dreamt of, let alone accepted.

While the author's goal was to tell the story of Chandra, and clearly had a bias in his favor, his depiction of Eddington paints a very unpleasant picture. Eddington is presented as being pompous, malicious, and completely certain in his own righteousness. Chandra is not the only one who ends up being intellectually bullied by Eddington. But at the same time, Chandra continued to consider Eddington as a friend throughout his career, which may be why Eddington's betrayal cut so deep. Both men had their flaws, and Miller is not afraid to give the reader a glimpse of these imperfections.

For an enjoyable read about the history of stellar astronomy, the people who ultimately figured it all out, and especially the life of Subrahmanyan Chandrasekhar, I highly recommend "Empire of the Stars."

*Empire of the Stars: Obsession, Friendship, and Betrayal in the Quest for Black Holes* by Arthur I. Miller, Houghton Mifflin, 2005

Send your cool astrophotos to  
[eclipse@bsasnashville.com!](mailto:eclipse@bsasnashville.com)

## From the President, continued

At the same time, the Dawn spacecraft is in orbit around the other easy to reach “dwarf planet” Ceres, and already some very unusual things (very bright white areas, mountains) visible on the surface. Not to be outdone, Rosetta is orbiting Comet 67P/Churyumov-Gerasimenko as it comes to perihelion in August, listening for the lander Philae which appears to be awake again on the surface! Watching a comet become increasingly active as it gets closer to the Sun is better than science fiction...you could not make this stuff up.

As we move into fall, we are looking for topics for our meetings. Have a topic you would like to see discussed? Or maybe you have a favorite astronomical theme you would like to talk about? Let us know! Should we bring cookies? We’ll have some speakers from Marshall Space Flight Center in July and August, and then take a look at what we can look forward to in our fall sky in September. Come on out to the third Wednesday night meetings!

Remember that you don’t have to own a telescope to come on out to a star party! Come on out and enjoy the night sky with fellow BSAS members and our guests. Bring a lawn chair, a cool drink, maybe bug spray, and we’ll see you at the next star party!

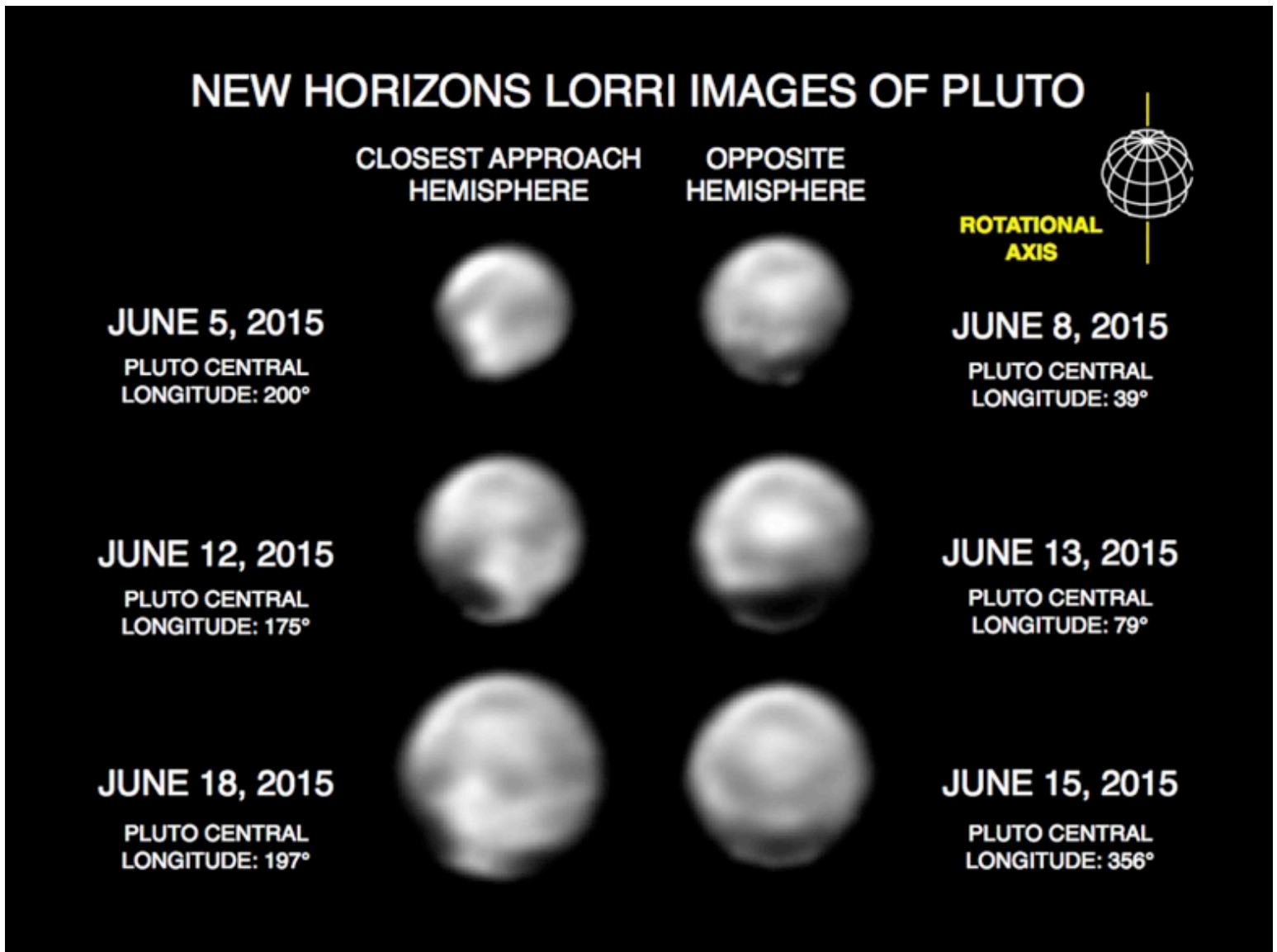
Clear dark skies,

Theo Wellington

Next BSAS meeting  
June 17, 2015, 7:30 pm  
Cumberland Valley  
Girl Scout Council Building  
4522 Granny White Pike

*Topic: Mitzi Adams from Marshall Space Flight Center will present  
“Jets and the Many Scales of Solar Phenomena.”*

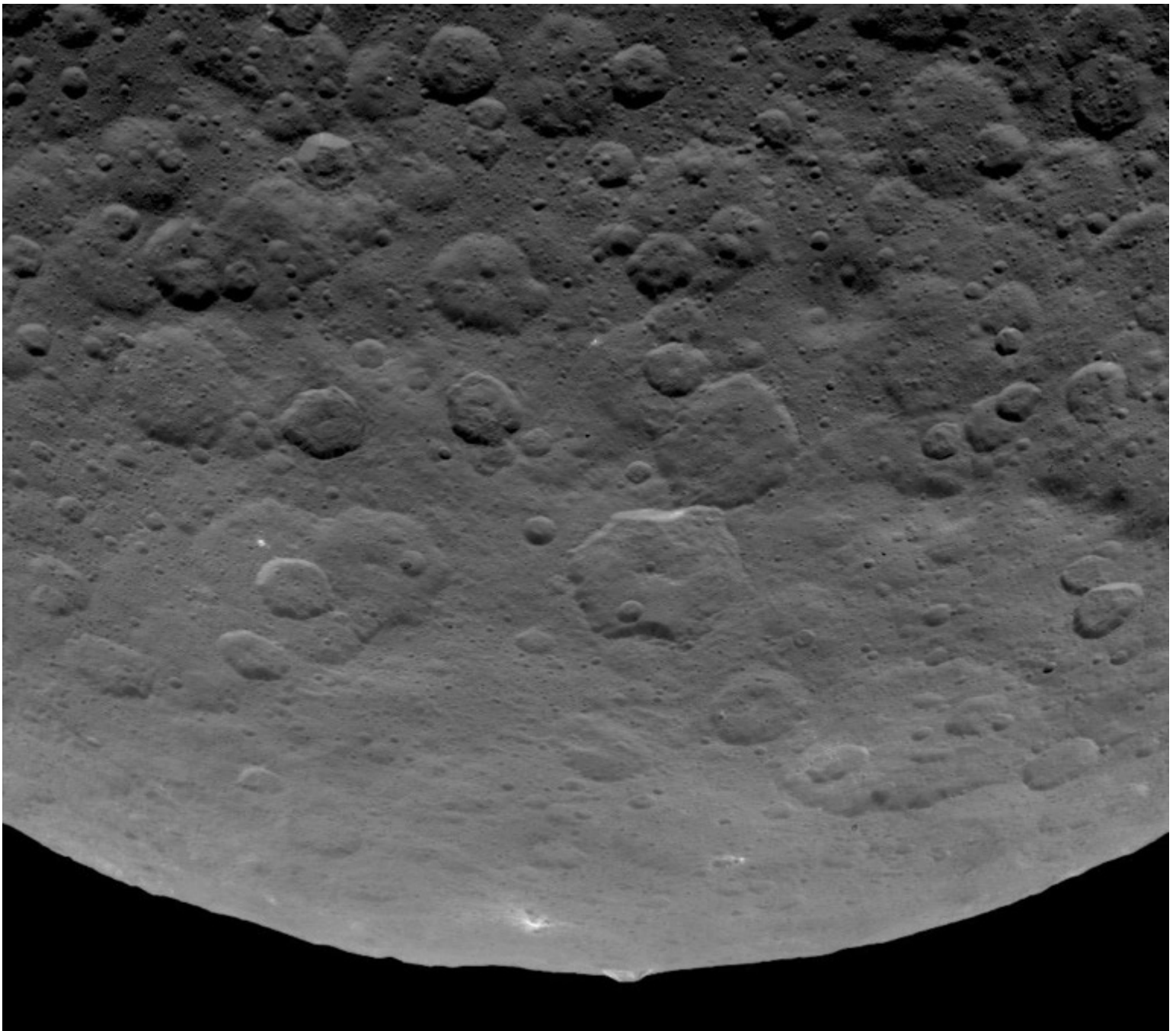
*Mitzi is part of the Heliophysics and Planetary Science Office at Marshall, where she has conducted research for a variety of solar missions, including work with Marshall’s vector magnetograph, a pioneering instrument that studied magnetic fields in sunspots; SOHO, a mission to study the sun from its deep core to the outer corona; and Hinode, a project to improve our understanding of the sun’s magnetic field and the mechanisms that drive solar eruptions.*



These images, taken by New Horizons' Long Range Reconnaissance Imager (LORRI), show numerous large-scale features on Pluto's surface. When various large, dark and bright regions appear near limbs, they give Pluto a distinct, but false, non-spherical appearance. Pluto is known to be almost perfectly spherical from previous data. These images are displayed at four times the native LORRI image size, and have been processed using a method called deconvolution, which sharpens the original images to enhance features on Pluto.

Credits:

[NASA/ Johns Hopkins University Applied Physics Laboratory/Southwest Research Institute](http://www.nasa.gov/jhuapl/swri)



This image, taken by NASA's Dawn spacecraft, shows an intriguing mountain on dwarf planet Ceres protruding from a relatively smooth area. Scientists estimate that this structure rises about 3 miles (5 kilometers) above the surface. Dawn captured this image from an altitude of 2,700 miles (4,400 kilometers). The image, with a resolution of 1,400 feet (410 meters) per pixel, was taken on June 14, 2015.

Credits: see <http://dawn.jpl.nasa.gov/multimedia/images/image-detail.html?id=PIA19578>

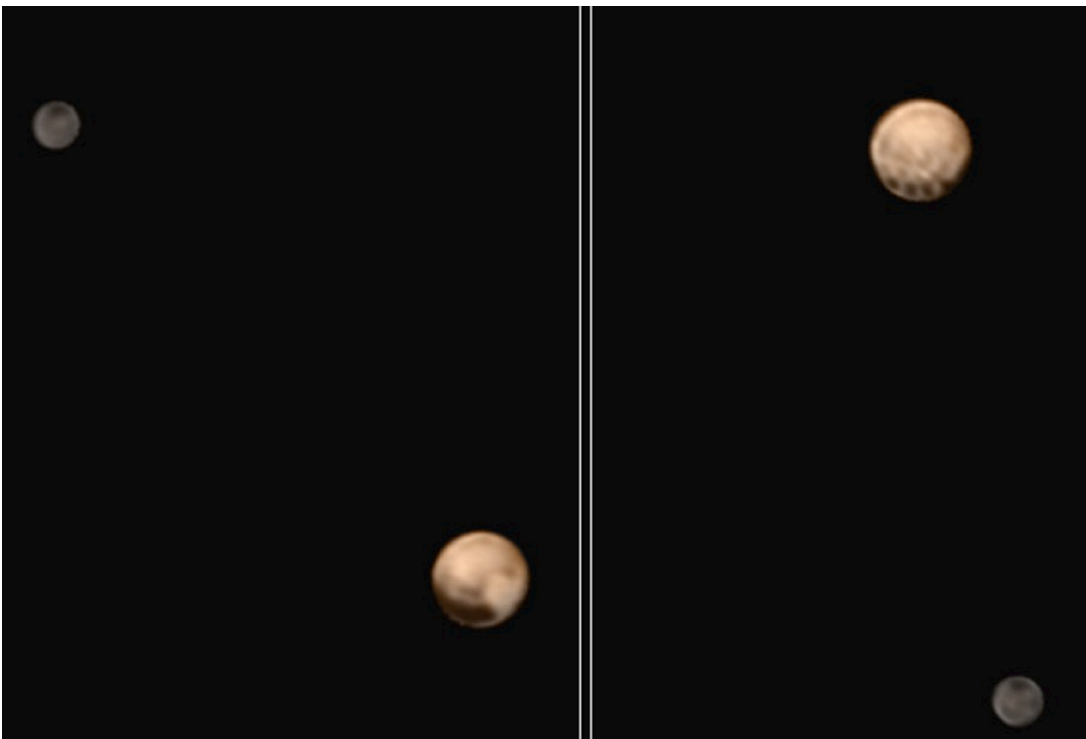
**Barnard-Seyfert Astronomical Society  
Minutes of the Regular Meeting of the Board of Directors  
Held On Wednesday, June 3, 2015.**

The regular meeting of the Board of Directors of the Barnard-Seyfert Astronomical Society was held June 3, 2015, at the Girl Scouts of Middle Tennessee, 4522 Granny White Pike, Nashville, TN 37204. Present were Joe Boyd, Gary Eaton, Bud Hamblen, Jeff Horne, Rob Mahurin, Kris McCall, Bob Norling, Kathy Underwood, and Theo Wellington. Theo Wellington called the meeting to order at 7:35 PM. Theo Wellington asked for a motion to approve the minutes of the May meeting as printed in the June issue of the Eclipse. Rob Mahurin so moved, Bob Norling seconded, and the minutes were approved by a unanimous voice vote. Bob Norling reported that there were \$1,533.31 in the regular account and \$1,619.44 in the equipment account.

Resolution 2015-06-03: Resolved by the board to port the membership data to the Night Sky Network. Joe Boyd so moved, Rob Mahurin seconded, and the resolution was adopted by unanimous voice vote.

There being no further business to discuss, the meeting was adjourned at 8:37 PM.

Respectfully submitted,  
Bud Hamblen, Secretary



New color images from NASA's New Horizons spacecraft show two very different faces of the mysterious dwarf planet, one with a series of intriguing spots along the equator that are evenly spaced. Each of the spots is about 300 miles in diameter, with a surface area that's roughly the size of the state of Missouri.

Credit: [NASA/ Johns Hopkins University Applied Physics Laboratory/ Southwest Research Institute](http://www.nasa.gov/johns-hopkins-university-applied-physics-laboratory-southwest-research-institute)



**Barnard-Seyfert Astronomical Society  
Minutes of the Monthly Membership Meeting  
Held On Wednesday, June 18, 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, June 17, 2015. 17 members and guests signed in. Theo Wellington called the meeting to order at 7:30 PM. Theo Wellington recognized Alan as a new member. Theo Wellington asked for a motion to approve the minutes of the June membership meeting as published in the July, 2015, issue of the Eclipse. Spencer Buckner so moved, Bill Griswold seconded, and the minutes were adopted by a unanimous voice vote. Theo Wellington reported that there was \$1,669.31 in the regular account and \$1,619.44 in the equipment account.

Theo announced upcoming star party dates: June 20 at Long Hunter State Park, July 11 at Pickett State Park, and July 18 at Bowie Nature Park.

Chuck Schlemm announced that he and John Walker would be conducting a program at the Dickson County Public Library, June 20, 2015.

It was announced that the annual Nature Fest would be held at Bowie Nature Park on September 12, 2015. This event draws a large crowd.

Theo Wellington presented the new membership program on the NASA/JPL Night Sky Network. The Night Sky Network offers BSAS members a means to keep in contact with other club members and self-service for each member to keep their own membership data up to date.

There being no further business the meeting was adjourned at 8:30 PM.

Respectfully submitted,

Bud Hamblen, Secretary

# Prom Night

## "A Midsummer Night's Dream"

### Benefit To Kick Off The Tom Murdic Educational Scholarship



This event kicks off an exciting award in honor of Tom Murdic, a great community leader, who was President of the African American Heritage Society for many years. Tom believed in the importance of education and the importance of African American History and its role in the rich history and heritage of Franklin and Williamson County. It will help to provide an educational scholarship to a deserving youth in our community, as well as provide opportunities to further educate the community on African American History in Franklin and Williamson County. "Prom Night" will also rekindle some awesome memories of the times of prom kings and queens of the former Franklin Training and Natchez High School students, who raised funds, with the highest fundraiser, being crowned King and Queen, as we are reviving with this event. It also gives those who never attended a prom an opportunity to do so!! Go FTS, NHS and all advocates of education, history and for our great community. Come out on the 18th to show support to your school, your community and your youth and in honor of Tom!

Presented by The African American Heritage Society

Saturday, July 18th, 2015

Beginning at 6:00 p.m.

At Embassy Suites Cool Springs

820 Crescent Centre Drive, Franklin, TN

Tickets \$50.00 per person or \$500.00 per table of 10

Music by Julius Fisher and the Genius Band

Call Paulette Johnson at 615-243-7751 or Ashley Patterson at 615-521-4116 for ticket information or if you would like to make a donation to the Tom Murdic Educational Scholarship Fund.



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).