

The ECLIPSE

May
2019

The Newsletter of the Barnard-Seyfert Astronomical Society

Next Membership Meeting:

May 15, 2019, 7:30 pm

Sudekum Planetarium
Adventure Science Center
800 Fort Negley Blvd

Topic: *What's Up?*

In this Issue:

Happy Birthday Alexei Leonov by Robin Byrne	3
Watching the Late Spring Skies By David Prosper	6
BSAS Board Minutes April 3, 2019	9
Membership Meeting Minutes April 17, 2019	10
Membership Information	12

From the President

I keep looking at the forecast and getting worried we may never see the sky again! That may be a bit drastic, but I believe I have only had the scope out a handful of times this year. One of those times was last weekend. I received an impromptu email from one of our members that a couple of other members will be out at Water Valley Overlook that night and anyone is welcome to attend. I still had some yard work to do and I didn't give it much thought. However, when I was mowing the lawn, I decided that the clear nights have been few and far between so why not enjoy a night out. I grabbed my scope and equipment to do a little photography and headed out the door with my lawn mowing shoes still on!

I got there a little after sunset and had a few minutes of light to start setting up. There were 4 other people there all ready to go. Two were set up for photography and two were set up for visual. As is usually my luck, I was having problems getting my scope balanced in declination and it showed itself as a terrible screech when slewing. I tried and tried to get the balance right but the screeching continued. So I walked away for a bit to see what the others were doing.

It turns out that there was a little game going on. The sky was great for observing and three scopes had the Leo triplet in their sights. I got to see the triplet from an 8" SCT, a 20" Dob (wow!), and a computer screen showing the progress of an imaging session of the triplet through a refractor. It was amazing to see the difference between the views of the scopes. There was a great view through the SCT and we got to see how much more light the Dob gathers and sends to your eye. I had never experienced that before and it really made the experience a fun one. Then seeing the long exposure image from the computer was the icing on the cake.



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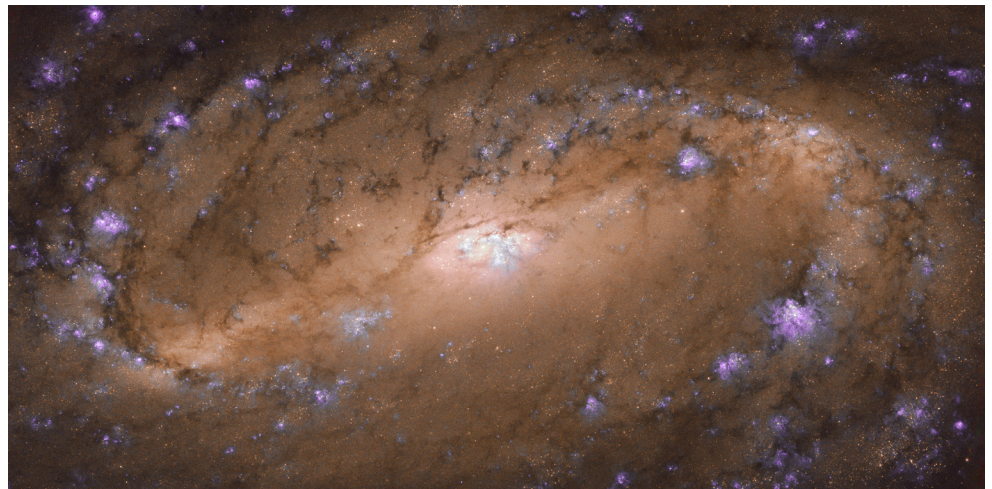
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NGC 2903 is located about 30 million light-years away in the constellation of Leo (The Lion), and was studied as part of a Hubble Space Telescope survey of the central regions of roughly 145 nearby disc galaxies. This study aimed to help astronomers better understand the relationship between the black holes that lurk at the cores of galaxies like these, and the rugby-ball-shaped bulge of stars, gas, and dust at the galaxy's centre — such as that seen in this image.

Credit:

ESA/Hubble & NASA, L. Ho et al.

Upcoming Star Parties

Saturday May 4	BSAS Private Star Party Natchez Trace Parkway mile marker 412 (Water Valley Overlook)
Saturday May 11 9:00 to 11:00 pm	BSAS Public Star Party Long Hunter State Park
Saturday June 1	BSAS Private Star Party Natchez Trace Parkway mile marker 435.3
Friday June 7 9:00 to 11:00 pm	BSAS Public Star Party Bowie Nature Park (Fairview)



May 4
June 3



May 11
June 10



May 18
June 17



May 26
June 25

Happy Birthday Alexei Leonov by Robin Byrne

Continuing in the theme of space firsts as we head toward the Apollo 11 anniversary, this month we celebrate the life and achievements of another pioneer in space. Alexei Leonov was born May 30, 1934 in the Soviet Union in Listvyanka, in Siberia. When Alexei was only 2 years old, his father was declared an “enemy of the people.” In Leonov’s autobiography, he downplays this designation, saying “He was not alone: many were being arrested. It was part of a conscientious drive by the authorities to eradicate anyone who showed too much independence or strength of character. These were the years of [Stalin’s purges](#).” Alexei attended the Soviet Air Force Academy of Arts, as well as the Pilot prep school. Ultimately, he graduated with honors from the Chuguyev Higher Air Force School in 1957. Later, in 1968, Alexei graduated from the Zhukovskiy Air Force Engineering Academy. In 1981, he received a Candidate of Technical Sciences degree.

In 1960, Leonov was one of 20 Soviet Air Force pilots chosen to be the first cosmonauts. On March 18, 1965, Leonov flew with Pavel Belyayev aboard the Voskhod 2 flight. An hour and a half after launch, Alexei Leonov became the first person to walk in space. For twelve minutes, he floated in space while tethered to the spacecraft. Because of the secrecy surrounding the Soviet space program, no one knew ahead of time that he was going to do the spacewalk. Leonov’s father learned about it while watching it live on television. The elder Leonov’s reaction was disbelief, saying, “Why is he acting like a juvenile delinquent?”

Everyone else can complete their mission properly, inside the spacecraft. What is he doing clambering about outside? Somebody must tell him to get back inside immediately. He must be punished for this.” As the capsule approached the night side of Earth, it was time to reenter the spacecraft. However, due to the lack of atmospheric pressure in space, Leonov’s spacesuit had expanded and become stiff, which prevented him from maneuvering back into the capsule. Instead of entering feet-first, as had been the plan, Leonov had to enter head-first while opening a valve on his suit to let some of the air out. Inch by inch, he squeezed back into the spacecraft’s airlock. Once inside, Leonov had to awkwardly reach back around to close the hatch before Belyayev could pressurize the airlock and open the inner hatch. While his spacewalk had been televised live, as soon as it was obvious that



Alexei Leonov, continued

Leonov was having trouble, the transmission was abruptly stopped, replaced by classical music.

The end of the mission was just as, if not more, dramatic. Just minutes before their retro-rockets were set to fire for Earth reentry, Leonov discovered that the guidance computer was not working properly. That meant having to perform their reentry manually. As the mission Navigator, it was Leonov's job to work everything out. He chose a landing site near the city of Perm, figuring that even if they were very off course, they, at least, would still be within the Soviet Union. As they were slowly moving toward Earth, the crew heard a transmission from Yuri Gagarin asking them where they had landed. Mission control thought they had already landed.

Belyayev calmly explained their situation, saying that they had to turn off the automatic landing program, and they were low on fuel for maneuvering into proper position for reentry.

After the final firing of the reentry engines, the orbital module and landing module were supposed to separate. However, that isn't what happened, and they remained connected via a communications cable. That caused the two components to spin around each other so rapidly that the crew experienced close to 10 G's of acceleration, causing some blood vessels in their eyes to rupture. Finally, the heat of re-entry caused the cable

to burn through. Once they were free, the parachute opened, allowing them to float downward until the landing engines fired, and they were safely on the ground. However, they were in six feet of snow, and over 1000 miles away from their expected landing site. As night drew near, the two men, while ecstatic to be safely back on Earth, knew there was still danger. They had opened their hatch to see where they were (which disappeared in the snow), so they were exposed to the cold, not to mention potentially dangerous bears and wolves in the vicinity.

Mission control had not received their signal for where they landed, but various civilian aircraft in the area had. One helicopter tried to have them climb up a rope ladder, which was impossible in their bulky space suits. Another tossed them a bottle of cognac, which immediately broke when hitting the ground. Another plane tossed them boots and clothes. While the clothes got stuck in a tree, the boots were most welcome. Meanwhile, Leonov, who had worked up quite a sweat during his spacewalk, was getting very chilled from the moisture in his suit. The two men had to strip down, wring out the moisture from their underwear, and remove the outer layers from their spacesuits to wear only the



Alexei Leonov (left, back row) with fellow cosmonauts in 1965. Credit: [RIA Novosti](#)

Alexei Leonov, continued

more pliable inner layer. They spent a cold night in the capsule as temperatures dropped to -22 degrees Fahrenheit with no way to cover the hatch while snow fell. The next morning, a search crew found them, but it took another day before enough trees were cleared for a helicopter to land and retrieve the two men. In the meantime, a basic shelter, warm fire, hot bath, dry clothes, and food were provided for the crew. Ultimately, their 26-hour spaceflight turned into a 3-day ordeal. Leonov was given the Hero of the Soviet Union award for his spacewalk.

For the next ten years, Leonov would be assigned to various missions, with each one being cancelled, instead. Finally, in 1975, Leonov was named the Commander of another historic mission, Apollo-Soyuz, the first joint Soviet-US spaceflight. Flying with Leonov in the Soyuz capsule was Valerie Kubasov, while the American crew flying in the Apollo capsule were Tom Stafford, Vance Brand, and Deke Slayton. Despite being chosen as one of the original Mercury astronauts, this was Deke Slayton's first spaceflight after years of being grounded for an irregular heartbeat. The two crews trained together, both in the Soviet Union and America, while each learned the other's language. On July 15, 1975, both spacecraft launched, docking two days later. They spent about two days docked together, spending time on both spacecraft. A couple experiments were conducted together, and then they parted. On July 21, Leonov and Kubasov landed, ending Leonov's space career, but earning him a second Hero of the Soviet Union award.

After retiring from flying in space, for the next six years, Leonov worked as the Chief Cosmonaut and was also the deputy director of the Yuri Gagarin Cosmonaut Training Center. In 1991 Leonov officially retired from government service. Since then, he has filled many roles: chair of an investment corporation, artist, and author. Leonov's artwork has been published in several books. During Apollo-Soyuz, he had taken colored pencils and paper with him and sketched views of Earth, plus portraits of the American astronauts. In 1980, Leonov and Valentin Selivanov co-wrote the script for a movie titled *The Orion Loop*. In 2004, Leonov and US astronaut David Scott began co-writing a book titled *Two Sides of the Moon: Our Story of the Cold War in Space*, which was published in 2006.

Hardly one to rest on his laurels, Alexei Leonov is someone to be admired. From his pioneering spacewalk to his joint mission with the United States to his artwork and writing, Leonov seems to excel at everything he does. There's even a crater on the far side of the Moon named for him. As we get ready to celebrate the moon landing anniversary, it is worth recalling that our space race with the Soviet Union was a driving force behind Kennedy's push to land on the moon before the end of the decade. One of the people who helped nudge us closer to the moon was Alexei Leonov.

References:

[Alexei Leonov - Wikipedia](#)

[Alexei A. Leonov - International Space Hall of Fame](#)

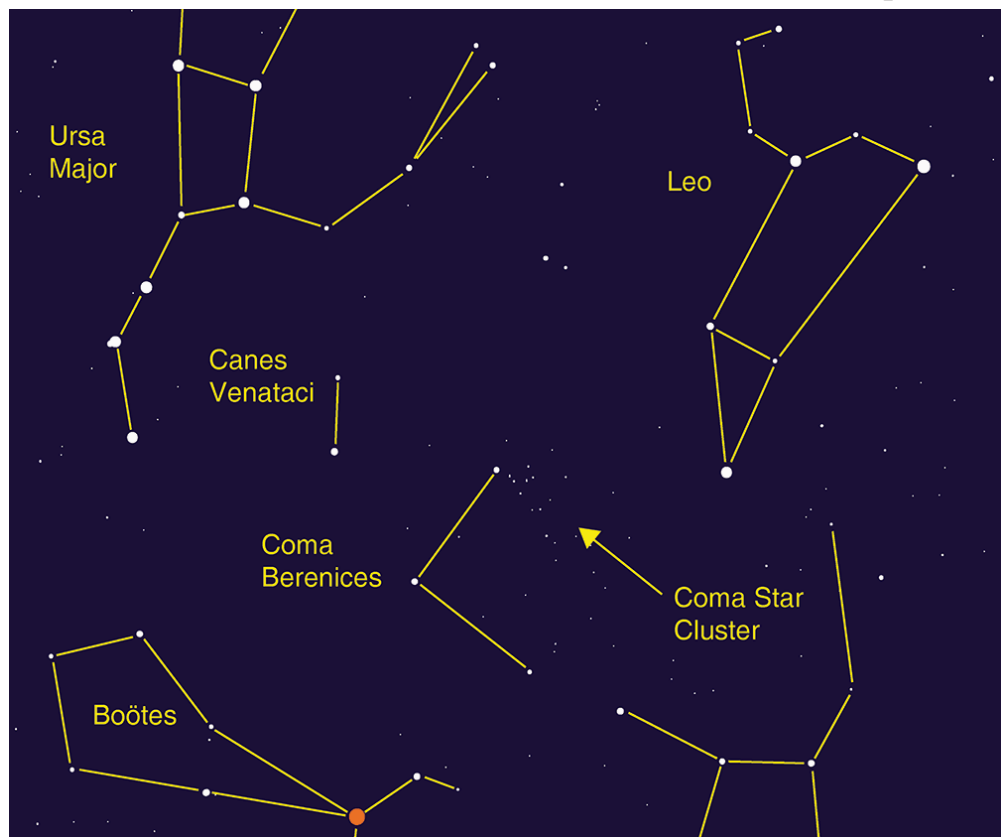
[The Nightmare of Voskhod 2 by Alexei Leonov - Air & Space Magazine, January 2005](#)

Watching the Late Spring Skies by David Prosper

Late spring brings warmer nights, making it more comfortable to observe a good showing of the Eta Aquarids meteor shower. Skywatchers can also look for the delicate Coma Star Cluster, and spot the Moon on the anniversary of Apollo 10's "test run" prior to the Moon landing in 1969.

The Eta Aquarids meteor shower should make a good showing this year, peaking the morning of May 6. This meteor shower has an unusual "soft peak," meaning that many meteors can be spotted several days before and after the 6th; many may find it convenient to schedule meteor watching for the weekend, a night or two before the peak. You may be able to spot a couple dozen meteors an hour from areas with clear dark skies. Meteors can appear in any part of the sky and you don't need any special equipment to view them; just find an area away from lights, lie down on a comfy lawn chair or blanket, relax, and patiently look up. These brief bright streaks are caused by Earth moving through the stream of fine dust particles left by the passage of Comet Halley. While we have to wait another 43 years for the famous comet grace our skies once more, we are treated to this beautiful cosmic postcard every year.

While you're up meteor watching, try to find a delightful naked eye star cluster: the Coma Star Cluster (aka Melotte 111) in the small constellation of Coma Berenices. It can be spotted after sunset in the east and for almost the entire night during the month of May. Look for it inside the area of the sky roughly framed between the constellations of Leo, Boötes, and Ursa Major. The cluster's sparkly members are also known as "Berenice's Hair" in honor of Egyptian Queen Berenices II's sacrifice of her lovely tresses. Binoculars will bring out even more stars in this large young cluster.

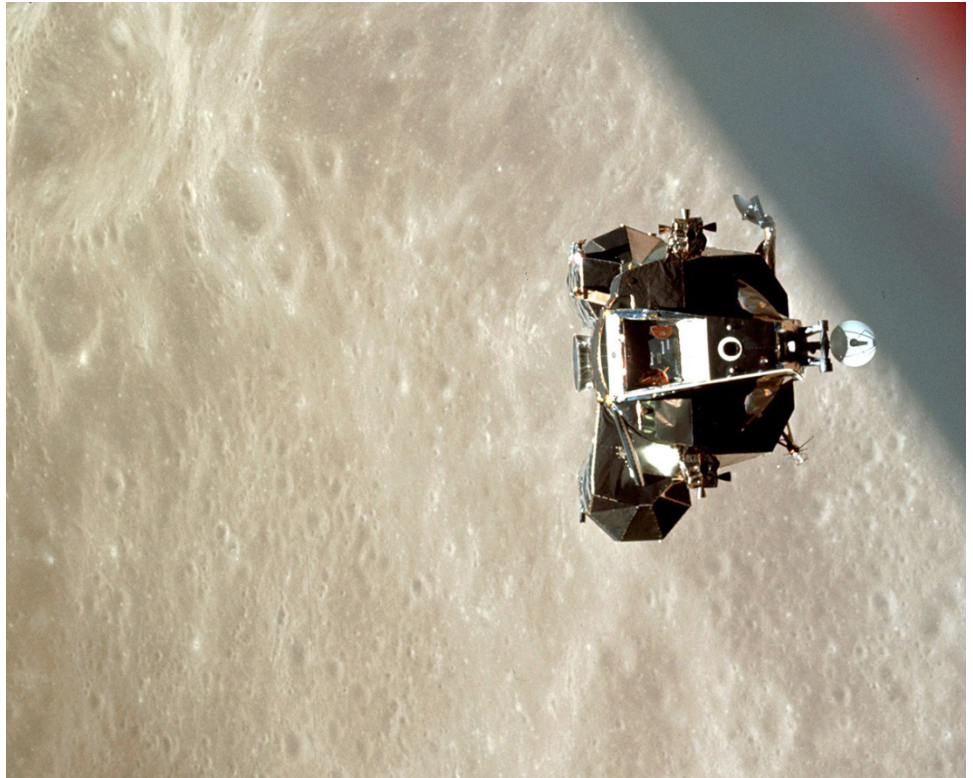


Try to spot the Coma Star Cluster!
Image created with assistance from Stellarium

May marks the 50th anniversary of the Lunar Module's test run by the Apollo 10 mission! On May 22, 1969, NASA astronauts Thomas Safford and Eugene Cernan piloted the Lunar Module - nicknamed

Watching the Late Spring Skies, continued

“Snoopy” - on a test descent towards the lunar surface. Undocking from “Charlie Brown” - the Command Module, piloted by John Young – they descended to 47,400 feet above the surface of the Moon before returning safely to the orbiting Command Module. Their success paved the way for the first humans to land on the Moon later that year with Apollo 11. Look for the Moon on the morning of May 22, before or after dawn, and contemplate what it must have felt like to hover mere miles above the lunar surface. You’ll also see the bright giant planets Saturn and Jupiter on either side of the Moon before sunrise. When will humans travel to those distant worlds?



A view of Apollo 10's Lunar Module from the Command Module as it returned from maneuvers above the lunar surface.

Photo Credit: [NASA](#)

This article is distributed by NASA Night Sky Network.

The Night Sky Network program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.org to find local clubs, events, and more!

You can catch up on all of NASA's current and future missions at nasa.gov.

With articles, activities and games NASA Space Place encourages everyone to get excited about science and technology. Visit spaceplace.nasa.gov to explore space and Earth science!

**Next BSAS meeting
May 15, 2019, 7:30 pm**

**Sudekum Planetarium
Adventure Science Center
800 Fort Negley Boulevard**

Topic: What's Up?



In honor of the club's 90th anniversary we partnered with Hatch Show Print to create a unique poster that would honor the achievement of the club. For those who don't know Hatch Show has been making posters for a variety of events and concerts for 140 years. In all that time we are their first astronomy club.

On the poster at the center is the moon. This was made from a wood grained stencil that the shop has used for over 50 years. To contrast that the telescope that the people are using is a brand new stencil made for our poster. The poster has three colors. First the pale yellow color of the moon was applied. Next the small stars, circles, and figures at the bottom were colored in metallic gold.

The third color is a blue for the night sky. Where it overlaps with the metallic gold it creates a darker blue leaving the figures at the bottom looking like silhouettes. This was a one time printing so the 100 that we have are all that will be printed.

The prints are approximately 13 3/4" x 22 1/4" and are available for \$20 at our membership meetings, or \$25 with shipping by ordering through bsasnashville.com. Frame not included.

Barnard-Seyfert Astronomical Society
Minutes of a Regular Meeting of the Board of Directors
Held On Wednesday, April 3, 2019

The regular meeting of the Board of Directors of the Barnard-Seyfert Astronomical Society was held April 3, 2019, at the Girl Scouts Center, 4522 Granny White Pike, Nashville, TN 37204. Present were Tom Beckermann, Chip Crossman, Gary Easton, Bud Hamblen, Todd Nannie, Andy Reeves and Theo Wellington. Tom called the meeting to order at 7:30 PM and asked for a motion to adopt the minutes of the March meeting as printed in the April issue of the Eclipse. Gary so moved and Theo seconded. The minutes were adopted by unanimous voice vote. Theo reported that there was \$8,377.11 in the bank account (\$4,157.92 for equipment and \$4,219.19 for operations) and \$129.26 in the PayPal account. \$100 has been received for posters since the last report (\$200 total for posters). Keith Rainey had reported to the board on March 31 that there were 148 members on the roster, with 135 being current on dues.

Programs for upcoming meetings were discussed. The topic for April will be either the Event Horizon Telescope or a recorded NEAF talk by Dr Alan Hirshfeld on "History's Best Worst Telescope". The May meeting will be a "What's Up" at the Sudekum Planetarium. June may be the MTSEF winner. July is the 50th anniversary of Apollo 11's landing on the Moon. August will be a "What's Up?" Possibly have a Survey Monkey poll on whether to my the security fee to meet at ASC. September may be a report on the solar eclipse as seen from Chile. October may be on the upcoming transit of Mercury. A volunteer is asked for.

Recent star parties and public outreach were discussed. About 100 people attended the Shelby Bottoms event on March 16. Gary Easton and Tom Proctor were at the Smyrna Public Library on March 28. About 35 people attended, although the sky was overcast. The Messier Marathon on March 31 at Ron Ladd's property was cancelled because of weather. Ron volunteered to have it at his place in 2020.

Upcoming star parties were discussed: April 13 at the Edwin Warner Park Special Events Field, May 4 at Water Valley Overlook (private), and May 11 at Long Hunter State Park at a different location in the park - adjacent to the park office, not the group campground.

On-line and social media: The loaner equipment list is going on Google Files. There are about 1,500 Facebook users following the BSAS.

Marketing: Ten more posters have been sold. Theo has new-ish brochures.

The meeting adjourned at about 8:00 PM.

Bud Hamblen

Secretary

**Barnard-Seyfert Astronomical Society
Minutes of the Monthly Membership Meeting
Held On Wednesday, April 17, 2019**

The Barnard-Seyfert Astronomical Society held its monthly meeting in the City Room of the Girl Scout Center, Nashville, Tennessee, on Wednesday, April 17, 2018. Twenty members and guests signed in. Keith Rainey called the meeting to order at 7:30 PM and asked for a motion to approve the minutes of the March 20, meeting. Spencer Buckner so moved, Chip Crossmann seconded, and the minutes were approved by a unanimous voice vote. Theo Wellington reported that there was \$8,377.11 in the bank and \$258.82 in the PayPal account. Five more posters were sold since the last meeting, bringing in \$100. Posters can be ordered through the club's web site.

Theo mentioned the upcoming Green Bank StarQuest XVI at Green Bank, WV, June 26-29, and the summer reading program at the Shelbyville – Bedford County Public Library June 5 – July 20. Frank LaVarre described the status of the observatory at the Latimer Boy Scouts Reservation.

Keith announced that the May 15 meeting will be at the Adventure Science Center. Keith brought up stary parties and outreach events. Unfortunately it was cloudy for the event at the Smyrna Library. The Tennessee Spring Star Party was held at Fall Creek Falls State Park despite the lodge being rebuilt. The club's private star party is planned for May 4 at the Water Valley Overlook. May 11 sees a public star party at Long Hunter State Park. This event will be near the park office instead of the group campground. Chuck Schlemm mentioned an event on May 28 near the campground at Montgomery Bell State Park. Keith noted the planned event on August 2 at the Timberland nature area for the Williamson County Public Library. Belmont University has an event on the campus on September 24 and 15. Harpeth Hall school will have an event April 25. Chuck will be at the Smyrna Public Library May 4.

There was a viewing the recorded talk, "History's Best Worst Telescope," presented by Dr Alan Hirshfeld at NEAF.

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

Respectfully submitted,

Bud Hamblen
Secretary

From the President, continued

The SCT and Dob kept up the game by going to the same targets and getting to see the difference in the views. It turned in to so much fun that I didn't even worry about getting back to my scope. In hindsight, I wish I had brought my eyepieces for some visual observing and joined in the little game. Maybe next time.

I am really glad that I decided to go to Water Valley that night. I got renewed excitement in observing visually, and we all had some great fun and fellowship. All too often, I am by myself when observing and I forget how nice it is to have a group get together and share a similar interest. This is what the private star parties are for, fellowship and astronomy. Thank you Jim, David, Rich, and Robert for sharing the night and your views with me!

Clear skies and have a great month!

Keith Rainey



Leo Triplet - BSAS Member David Reagan



Become a Member of BSAS!
Visit bsasnashville.com to join online.

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

Annual dues:

Regular: \$25
Family: \$35
Senior/Senior family: \$20
Student:* \$15

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

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.

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.