

The ECLIPSE

December
2019

The Newsletter of the Barnard-Seyfert Astronomical Society

Next Membership Meeting:

Wednesday December 18, 6:30 pm

Cumberland Valley
Girl Scout Council Building
4522 Granny White Pike

Topic:

Potluck Dinner and Silent Auction
Theo Wellington: Solar Eclipse in
Chile

From the President:

Were you able to make the November meeting and get some ideas for your Christmas wishlist? I know I added a couple of items. Even if you didn't make it, I am sure you have your own list of eyepieces, cameras, scopes, or accessories that you have made. Whatever it is you are hoping for this Christmas, I hope you get it.

Our annual Christmas pot luck is coming up at the next member meeting. Come join us an hour early at 6:30pm at the Girl Scout Office for some good food and better fellowship. The club will bring a tray of meats and some tea/lemonade to drink. Feel free to bring your favorite side dish or dessert for everyone to enjoy. Once everyone has had a plate, Theo will talk about her trip to Chile earlier this year to see the solar eclipse. I can't wait to hear the stories and see the pictures.

Clear skies and have a great month!

Keith Rainey

In this Issue:

Book Review:

The Ordinary Spaceman
reviewed by Robin Byrne 3

The Orion Nebula:
Window Into a Stellar Nursery
by David Prosper 5

BSAS Board Minutes
November 6, 2019 8

Membership Meeting Minutes
November 20, 2019 9

Membership Information 11

From the Editor:

Every month I seek out some cool space pictures to add to the monthly *Eclipse*. A lot of them are Hubble Space Telescope shots, which are always lovely.

Know what I'd rather post? *Your* space pictures!

I've seen some great astrophotos by BSAS members posted to the Google group over the past several years. But I don't want to include them here without permission. So while you're sharing, please consider copying that email to eclipse@bsasnashville.com. Thanks!

Drew Gilmore



BSASNashville.com



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Some galaxies are closer friends than others. While many live their own separate, solitary lives, others stray a little too close to a near neighbor and take their relationship to the next level.

These two galaxies, named NGC 6285 (left) and NGC 6286 (right), have done just that! Together, the duo is named Arp 293 and they are interacting, their mutual gravitational attraction pulling wisps of gas and streams of dust from them, distorting their shapes. Arp 293 is located in the constellation of Draco (The Dragon), and lies over 250 million light-years from Earth.

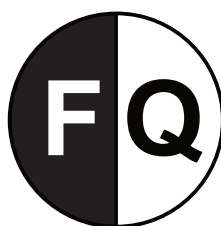
Credit: [ESA/Hubble & NASA, K. Larson et al.](#)

Upcoming Star Parties

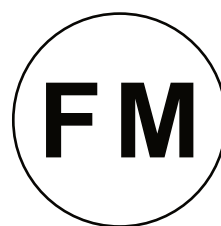
Saturday December 7 6:30 to 8:30 pm	BSAS Public Star Party Shelby Bottoms Nature Center
Saturday December 28	BSAS Private Star Party Natchez Trace Parkway mile marker 412 (Water Valley Overlook)
Saturday January 4 6:30 to 8:30 pm	BSAS Public Star Party Bells Bend Outdoor Center



Dec 25
Jan 24



Dec 4
Jan 2



Dec 11
Jan 10



Dec 18
Jan 17

Book Review: The Ordinary Spaceman Reviewed by Robin Byrne

The Keynote speaker at this year's Southeastern Planetarium Association conference was Astronaut Clayton C. Anderson. A bookstore was on hand selling his books, which he would then sign. So, naturally, I bought one of his books, *The Ordinary Spaceman: From Boyhood Dreams to Astronaut*.

The book, much like Clayton's keynote address, was lively and entertaining. Not strictly presented in chronological order, the book covers snippets of his life from childhood to adulthood. Naturally, the bulk of the stories are about his time at NASA. Clayton talks about growing up in Nebraska during the Apollo era and wanting to go to space. He methodically worked toward that goal, majoring in engineering in college. A NASA internship got his foot in the door, leading to a job at NASA as an engineer after graduation.

Clayton calls himself an "ordinary" spaceman, in part, due to how much trouble he actually had being chosen for the job. He applied a total of 15 times before finally making the cut. Each time, Clayton learned a little more about what to do to make himself stand out. Finally, all the pieces were in place.

Throughout the book, Clayton describes his experiences as a new astronaut. The excitement of being fitted for his spacesuit, learning to fly a jet, and survival training with his fellow astronaut class members. When his name came up for a stay on the International Space Station, learning Russian was added to his duties, with frequent trips to Russia to learn their system, as well. He also spent time aboard the underwater habitat, NEEMO, to get experience working with a group of people in an isolated environment.

Prior to actual spaceflight, he took on many roles within the astronaut corps. One such duty was being assigned as a family escort, which meant accompanying the family of an astronaut on launch and landing days, to help them navigate the NASA system, and to be in the right place at the right time. Little did Clayton know that his responsibilities in that role would go well beyond the ordinary. He was assigned to escort the family of one of the astronauts on, what would become, the last flight of the Columbia Space Shuttle. When Columbia broke up during reentry, due to heat shield damage, Clayton comforted the wife and the children, and continued to accompany them throughout the horrible days following the tragedy, including the funeral.

Once Clayton's time in space arrived, he describes many details about his day-to-day life in ISS, including the ever popular topic of how to go to the bathroom in space. During his stay, Clayton got to perform multiple spacewalks. From his descriptions, it's clear that he relished walking and working in space. After nearly half a year living in weightlessness, Clayton clearly describes the difficulty of adjusting to gravity. Nausea and total weakness of his body were

CLAYTON C. ANDERSON THE ORDINARY SPACEMAN

From Boyhood Dreams to Astronaut

Foreword by NEVADA BARR



Continued on page 4

Book Review, continued

the most obvious initial reactions. An adjustment to being around other people and no longer being in a special environment also took time.

While many biographies of astronauts emphasize the glamorous part of being an astronaut, Clayton made a concerted effort to show both the good and the bad. Not just the bad side of living in space, but also his own bad side. He was frankly honest about times that he overstepped his bounds and upset other people. Clayton had a tendency to want to take matters into his own hands, and circumvented the NASA hierarchy in the process. Needless to say, he pissed off many people that way. Clayton stepped on enough toes that, after his flight, he was told that he would not fly in space again.

I thoroughly enjoyed reading *The Ordinary Spaceman*, and I cherish having had the opportunity to meet Clayton and spend time talking with him. That said, there were a few moments in the book that made me cringe. Presented as amusing anecdotes, in the age of #metoo, some of the stories were particularly uncomfortable to read. A tale of an important individual from Johnson Space Center who insisted on passionately kissing all the women at a party, whether they wanted to be kissed or not. An episode with his fellow astronaut classmates during Mardi Gras, when a female member of their group was encouraged to show her breasts in order to gain entrance to a nightclub. And a description of a female Russian interpreter wearing a sheer dress, with far too much detail about what she had on underneath. I would have been quite happy to have skipped reading about any of those incidents.

Those few stories aside, I'm glad I read *The Ordinary Spaceman* by Clayton Anderson, and I would recommend this book enthusiastically.

References:

The Ordinary Spaceman: From Boyhood Dreams to Astronaut by Clayton C. Anderson; University of Nebraska Press, 2015.

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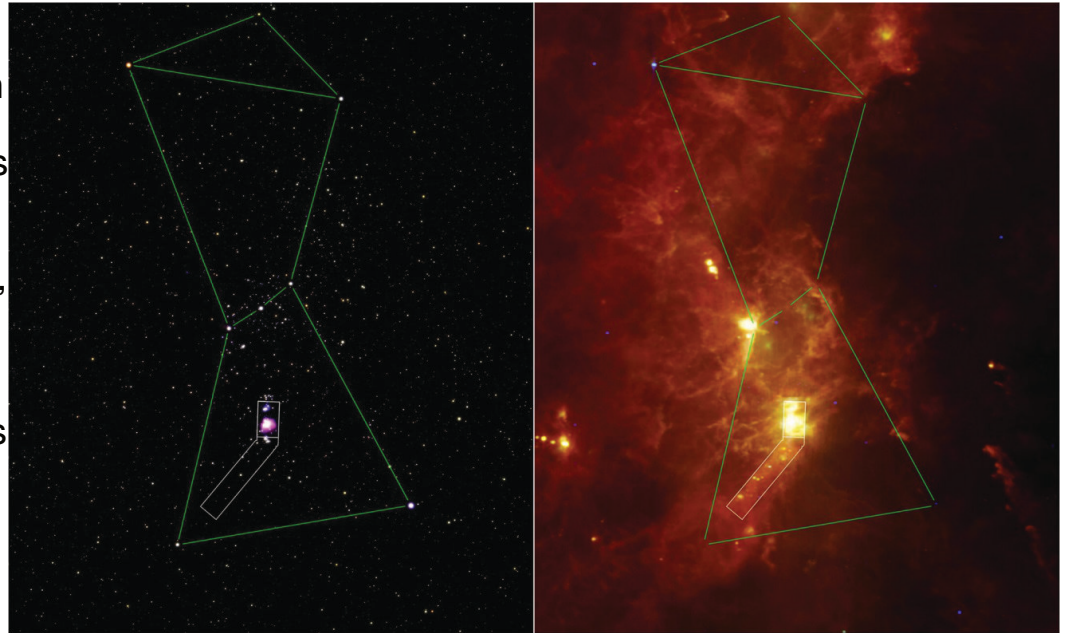
Topic:

Potluck Dinner and Silent Auction
Theo Wellington: Solar Eclipse in Chile

The Orion Nebula: Window Into a Stellar Nursery by David Prosper

Winter begins in December for observers in the Northern Hemisphere, bringing cold nights and the return of one of the most famous constellations to our early evening skies: Orion the Hunter!

Orion is a striking pattern of stars and is one of the few constellations whose pattern is repeated almost unchanged in the star stories of cultures around the world. Below the three bright stars of Orion's Belt lies his sword, where you can find the famous Orion Nebula, also known as M42. The nebula is visible to our unaided eyes in even moderately light-polluted skies as a fuzzy "star" in the middle of Orion's Sword. M42 is about 20 light years across, which helps with its visibility since it's roughly 1,344 light years away! Baby stars, including the famous "Trapezium" cluster, are found inside the nebula's whirling gas



This image from NASA's Spitzer missions shows Orion in a different light – quite literally! Note the small outline of the Orion Nebula region in the visible light image on the left, versus the massive amount of activity shown in the infrared image of the same region on the right.

Image Credit: [NASA/JPL-Caltech/IRAS/H. McCallon](#)

clouds. These gas clouds also hide "protostars" from view: objects in the process of becoming stars, but that have not yet achieved fusion at their core.

The Orion Nebula is a small window into a vastly larger area of star formation centered around the constellation of Orion itself. NASA's Great Observatories, space telescopes like Hubble, Spitzer, Compton, and Chandra, studied this area in wavelengths we can't see with our earthbound eyes, revealing the entire constellation alight with star birth, not just the comparatively tiny area of the nebula. Why then can we only see the nebula? M42 contains hot young stars whose stellar winds blew away their cocoons of gas after their "birth," the moment when they begin to fuse hydrogen into helium. Those gas clouds, which block visible light, were cleared away just enough to give us a peek inside at these young stars. The rest of the complex remains hidden to human eyes, but not to advanced space-based telescopes.

We put telescopes in orbit to get above the interference of our atmosphere, which absorbs many wavelengths of light. Infrared space telescopes, such as Spitzer and the upcoming James Webb Space Telescope, detect longer wavelengths of light that allow them to see

Continued on page 6

The Orion Nebula, continued

through the dust clouds in Orion, revealing hidden stars and cloud structures. It's similar to the infrared goggles firefighters wear to see through smoke from burning buildings and wildfires.

Learn more about how astronomers combine observations made at different wavelengths with the Night Sky Network activity, "The Universe in a Different Light," downloadable from bit.ly/different-light-nsn. You can find more stunning science and images from NASA's Great Observatories at nasa.gov.

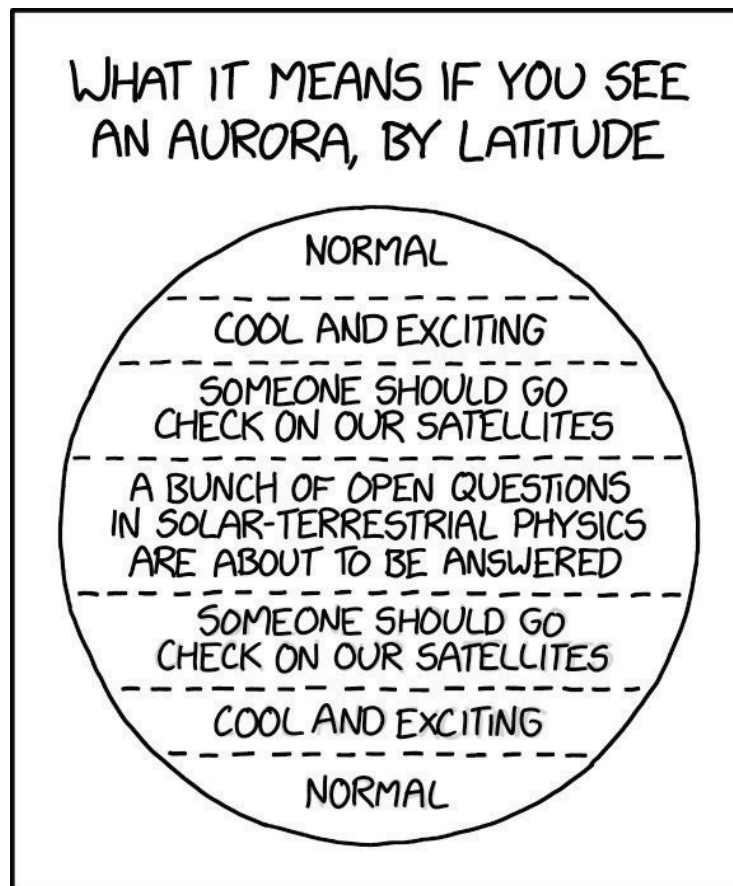
This article is distributed by NASA Night Sky Network.

The Night Sky Network program supports astronomy clubs across the USA dedicated to astronomy outreach.

Visit nightsky.jpl.nasa.gov 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!

xkcd





This image, taken with the NASA/ESA Hubble Space Telescope, shows a massive galaxy cluster, about 4.6 billion light years away. Along its borders four bright arcs are visible; these are copies of the same distant galaxy, nicknamed the Sunburst Arc.

The Sunburst Arc galaxy is almost 11 billion light-years away and the light from it is being lensed into multiple images by gravitational lensing. The Sunburst Arc is among the brightest lensed galaxies known and its image is visible at least 12 times within the four arcs.

Three arcs are visible in the top right of the image, the fourth arc in the lower left. The last one is partially obscured by a bright foreground star, which is located in the Milky Way.

Credit: [ESA/Hubble](#), [NASA](#), [Rivera-Thorsen et al](#)

**Barnard-Seyfert Astronomical Society
Minutes of a Regular Meeting of the Board of Directors
Held On Wednesday, November 6, 2019**

The regular meeting of the Board of Directors of the Barnard-Seyfert Astronomical Society was held November 6, 2019, at the Girl Scouts Center, 4522 Granny White Pike, Nashville, TN 37204. Present were Tom Beckermann, Chip Crossman, Gary Eaton, Bud Hamblen, KC Katalbas, Keith Rainey, Andy Reeves and Theo Wellington. A quorum being present, Keith called the meeting to order at 7:30 PM and asked for a motion to adopt the minutes as printed in the November issue of the Eclipse. Theo so moved, Chip seconded, and the minutes were adopted by unanimous voice vote. Theo reported that there was \$9,635.74 in the bank account and \$301.92 in the PayPal account. A total of 26 Hatch Show Print posters have been sold. Keith reported that there were 142 members.

The program schedule for the general meetings are "All I Want for Christmas ..." by Spencer Buckner in November, the post luck dinner and the 2019 solar eclipse in Chile by Theo in December, the telescope workshop by the members as a whole in January, telescope making by Greg Neaveill in February, and the Messier Marathon at the Adventure Science Center in March.

Previous public outreach included Bells Bend Outdoor Center on October 4 and Edwin Warner Park on November 2. There was a private star party on the Water Valley Overlook on October 26.

Upcoming public outreach includes an event for Station Camp Elementary School on November 19, a public event from 6:30 to 8:30 PM at Long Hunter State Park on November 30, and a public event from 6:30 to 8:30 PM on December 7 at Shelby Bottoms Nature Center. A private star party is scheduled for Natchez Trace Mile Marker 435.3 on November 23.

The numbers of people reached through Facebook was described by Theo as amazing. The club web site has been renewed for next year.

A volunteer for an at-large director is needed.

The star party schedule for 2020 is being finalized.

There being no further business, the meeting was adjourned at 9:45 PM.

Respectfully submitted,

Bud Hamblen
Secretary

Barnard-Seyfert Astronomical Society
Minutes of the Monthly Membership Meeting
Held on Wednesday, November 20, 2019

The Barnard-Seyfert Astronomical Society held its monthly meeting at the Girl Scout Center, Nashville, Tennessee, on Wednesday, November 20, 2019. Twenty-nine members and guests signed in. Keith Rainey called the meeting to order at 7:30 PM. Keith called a motion to approve the minutes of the October 23, 2019, meeting as printed in the November issue of the *Eclipse* and the minutes were approved by a unanimous voice vote. Theo Wellington reported that there was \$9,635.74 in the bank account and \$527.00 in the PayPal account. Keith reported that there were 141 members. Keith recognized new members and guests. Public outreach events at Edwin Warner Park at Station Camp Elementary were blessed with clear skies. The sky at the Water Valley Overlook also were clear for the private star party. Frank LaVarre represented the club at the University of Scouting and recounted a meeting with Arthur J. Dyer, a descendant of the Arthur Dyer who donated property and raised funds for Vanderbilt University's Dyer Observatory. The elder Mr. Dyer was interested in having a sundial installed and contacted Dr. Carl Seyfert, Vanderbilt University, for advice. The Dyer Observatory ultimately grew from that contact. The younger Mr. Dyer said that the sundial probably was the most expensive ever. Upcoming events include a private star party at Natchez Trace Mile Marker 353.3 on November 23, and public events at Long Hunter State Park on November 30 from 6:30 to 8:30 PM, and at Shelby Bottoms Nature Center on December 7 from 6:30 to 8:30 PM.

Dr Spencer Buckner, Austin Peay State University, presented "All I Want for Christmas ...". Among his favorite links for on-line astronomical purchases included Orion Telescopes and Binoculars (telescopes.com), Oceanside Photo and Telescope (optcorp.com), Astronomics (astronomics.com), and the Astronomical Society of the Pacific (astrosociety.org). There is also the Barnard Seyfert Astronomical Society (bsasnashville.com), and the Adventure Society Center (adventuresci.org).

Greg Neaveill did a short stand-up to preview his talk for February on home-built telescopes.

There being no further business, the meeting was adjourned at about 9 PM.

Respectfully submitted,

Bud Hamblen
Secretary



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.



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.