The ECLIPSE

March 2017

The Newsletter of the Barnard-Seyfert Astronomical Society

Next Membership Meeting:
March 15, 2017, 7:30 pm
Glendale United Methodist Church - Fellowship Hall
900 Glendale Lane

Topic: Derrick Rohl - Trojan Asteroids
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Barnard-Seyfert Astronomical Society
bsasnashville.com

From the President

Greetings,

BSAS is growing!

We've added several new members recently and our roll has topped 100. Let's welcome all of our new fellow stargazers. Interest in astronomy continues in an age filled with many alternatives for discretionary time (and dollars). Some of our new members might appreciate a quick survey of opportunities for BSAS members. Here is my top 10 list:

1. Attend our public star parties. You don't have to bring a telescope. Binoculars, naked eye observing or sharing a telescope are all encouraged. As a newcomer, I remember Joe Boyd allowing me to use his telescope to show several families the moon. Thanks Joe.
2. Serve on the board or a committee. These responsibilities offer a chance to get to know other BSAS members and only require a small amount of time. Perhaps the equipment, social media or sign committee would be of interest to you?
3. Support our monthly member meeting. Each time we get together, I learn something new from the program and value the interaction with our great people.
4. Help promote BSAS. We don't have the luxury of a large marketing budget to promote star parties and events. But, word of mouth, personal emails and social media can be real effective for getting the word out.
5. Visit our website and read The Eclipse. We all

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BSAS
Barnard-Seyfert Astronomical Society

Officers

Gary Eaton
President
gceaton@comcast.net

Keith Rainey
Vice President
Keith.Rainey@gmail.com

Tom Guss
Treasurer
t_guss@bellsouth.net

Bud Hamblen
Secretary
wrhamblen@comcast.net

Theo Wellington
Ex-officio
tmwellington@comcast.net

Directors at Large

Mike Benson
ocentaurus@aol.com

Spencer Buckner
BucknerS@apsu.edu

Drew Gilmore
eclipse@bsasnashville.com

Rob Mahurin
robert.s.mahurin@gmail.com

Todd Nannie
toddn_us@yahoo.com

Kathy Underwood
katy2222@comcast.net

Observing Highlights March and April

Open Clusters
NGC884/869 *(Double Cluster)*, M34, M45 *(Pleiades)*, M36, M37, M38, M35, M41, M50, M47, M46, M93, M48, M44 *(Beehive)*, M67, NGC2264 *(Christmas Tree)*

Nebulae
NGC1499 *(California)*, M1, M42 *(Orion)*, M43, M78, NGC2392 *(Eskimo)*, NGC3242 *(Ghost of Jupiter)*, M97 *(Owl)*

Globular Clusters
M79

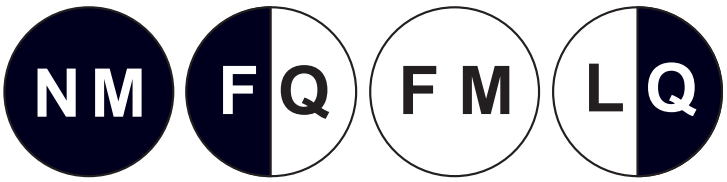
Variable Stars
Beta Persei *(Algol)*, Omicron Ceti *(Mira)*, R Leporis *(Hind's Crimson Star)*

Galaxies
M31 *(Andromeda)*, M32, M110, M33 *(Triangulum)*, M74, M77, M81, M82, NGC3115 *(Spindle)*, M95, M96, M105, M108, M65/M66/NGC3628 *(Leo Triplet)*, M109

Multiple Star Systems
Gamma Andromedae,Beta Orionis *(Rigel)*, Alpha Geminorum *(Castor)*

Upcoming Star Parties

Saturday 3/4 7:00 pm to 9:00 pm	Public Star Party Shelby Bottoms Nature Center
Saturday 3/25	Private Star Party Natchez Trace Parkway mile marker 435.3
Friday 3/31 7:30 pm to 10:00 pm	Public Star Party Bowie Nature Park (Fairview)
Saturday 4/22	Private Star Party Natchez Trace Parkway mile marker 412 (Water Valley Overlook)
Friday 4/28 8:30 pm to 10:30 pm	Public Star Party Bells Bend Outdoor Center



Mar 27 Apr 26 | Mar 5 Apr 3 | Mar 12 Apr 11 | Mar 20 Apr 19

Happy Birthday Friedrich Argelander
by Robin Byrne

This month we celebrate a man who may not be well known, but who made numerous contributions to astronomy.


Friedrich Argelander

Friedrich Argelander was born on March 22, 1799 in East Prussia (later known as Germany). He studied in Elbing and Koenigsberg. His initial plan was to study economics and politics. However, this changed when he attended lectures given by Friedrich Bessel at the University of Koenigsberg. This got him interested in astronomy. Argelander studied under Bessel and received his PhD in 1822.

In 1823 Argelander was given the position of Director of the Abo Observatory in Finland. He worked there for 4 years until the observatory was destroyed by fire. In 1828 he was given a position as Professor of Astronomy at the University of Helsinki and later as Director of the observatory there.

Argelander's early work was mostly a continuation of the work done by Bessel, which was the mapping of stellar positions. While at Abo, he concentrated on measuring the proper motions of more than 500 stars and published a catalog of these measurements.

Argelander then looked at the work done by William Herschel to measure the Sun's motion through space. Herschel had measured the relative velocities of 7 nearby stars. Argelander was known for his thoroughness. He felt that Herschel had used far too few stars for this study. So Argelander measured the relative motion of about 400 stars to determine the Sun's motion. His conclusions confirmed Herschel's finding that our Sun is moving through space toward the constellation of Hercules.

During the upheavals that followed the Napoleonic Wars, the Argelander family housed the young princes of the Prussian Kingdom. The crown prince (who later became King Friedrich Wilhelm IV) promised to build Argelander a new observatory. This was done and Argelander was made Director of the Bonn Observatory in 1837. (Is it just me, or are there an awful lot of Friedrich's in this story?)

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Friedrich Argelander, continued

It was in 1844 that Argelander began studying variable stars. Although this is the field that he is most associated with, there is very little information about what he specifically did. Most likely, he measured the variation in brightness and established the period of variability for the stars he studied. It is known that he was instrumental in establishing the study of variable stars as an independent branch of astronomy.

From 1859 to 1862 Argelander worked on one of his greatest works: a catalog listing the positions and magnitudes of all the Northern Hemisphere stars down to 9th magnitude. Bonner Durchmusterung contained 324,188 stars and was the last catalog of this scope done without the use of photography. It was reissued in 1950.

Friedrich Argelander died February 17, 1875 in Bonn, Germany. Although he is not widely known, Argelander's devotion to precision and thoroughness established him as one of the great astronomers of his time.

References:

The New Encyclopaedia Britannica 1995
The Biographical Dictionary of Scientists - Astronomers; Ed. David Abbott; 1984

Next BSAS meeting
March 15, 2016, 7:30 pm
Glendale United Methodist Church - Fellowship Hall
900 Glendale Lane

Topic: Trojan Asteroids - Derrick Rohl, Adventure Science Center

Derrick Rohl will share his astronomy research, focused on the rotational properties of Jovian Trojan asteroids. This research is part of a longer-term goal of discovering the composition of these asteroids, which could give clues to their formation long ago.

NOTICE: the location for our board and member meetings has changed!

The Girl Scouts are renovating, so we will be at the Glendale United Methodist Church, 900 Glendale Lane, Nashville 37204.

It's just around the block from the Girl Scout office.

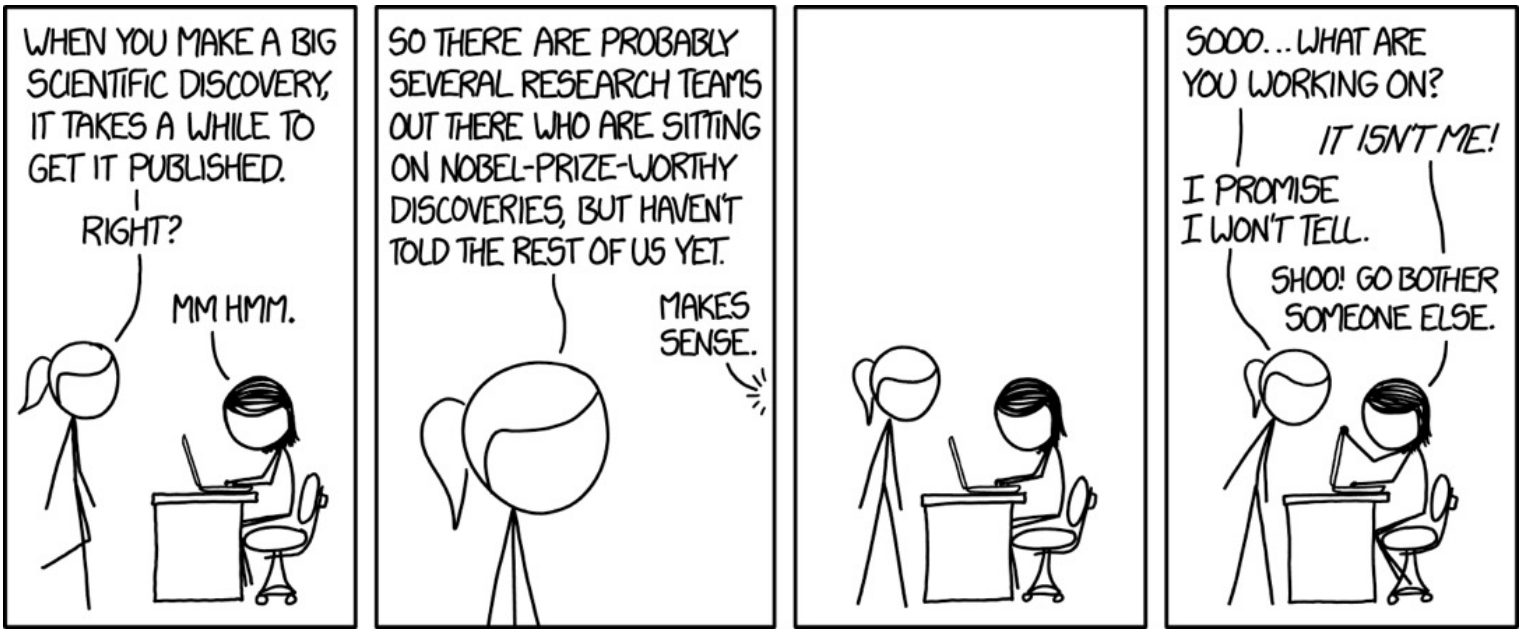
From the President, continued

appreciate our Webmaster, Drew Gilmore and others who help with our site and publish *The Eclipse*.

6. Join other members and their personal guests at private star parties. Few evenings top the relaxed atmosphere and enjoyable social time they provide.
7. Volunteer to represent BSAS at an outreach event. We constantly receive requests from libraries, parks, schools and other organizations. You don't have to be an expert. There is perhaps no better way to learn a topic than to prepare a presentation.
8. Develop a mentoring relationship with a member. All of use either have knowledge to share or need to learn more about a topic or two. One-on-one relationships are a very good approach.
9. Use the Night Sky Network. This NASA/JPL sponsored tool for astronomy clubs has a lot to offer. We hope to have a program about Night Sky Network at an upcoming member meeting.
10. Subscribe and read Astronomy, Sky and Telescope (and The Reflector). You will value the information and stay connected to what's happening in the astronomy field.

Gary Eaton

xkcd



Solar Eclipse Provides Coronal Glimpse
By Marcus Woo

On August 21, 2017, North Americans will enjoy a rare treat: The first total solar eclipse visible from the continent since 1979. The sky will darken and the temperature will drop, in one of the most dramatic cosmic events on Earth. It could be a once-in-a-lifetime show indeed. But it will also be an opportunity to do some science.
Only during an eclipse, when the moon blocks the light from the sun's surface, does the sun's corona fully reveal itself. The corona is the hot and wispy atmosphere of the sun, extending far beyond the solar disk. But it's relatively dim, merely as bright as the full moon at night. The glaring sun, about a million times brighter, renders the corona invisible.

"The beauty of eclipse observations is that they are, at present, the only opportunity where one can observe the corona [in visible light] starting from the solar surface out to several solar radii," says Shadia Habbal, an astronomer at the University of Hawaii. To study the corona, she's traveled the world having experienced 14 total eclipses (she missed only five due to weather). This summer, she and her team will set up identical imaging systems and spectrometers at five locations along the path of totality, collecting data that's normally impossible to get.

Ground-based coronagraphs, instruments designed to study the corona by blocking the sun, can't view the full extent of the corona. Solar space-based telescopes don't have the spectrographs needed to measure how the temperatures vary throughout the corona. These temperature variations show how the sun's chemical composition is distributed—crucial information for solving one of long-standing mysteries about the corona: how it gets so hot.

While the sun's surface is ~9980 Farenheit (~5800 Kelvin), the corona can reach several millions of degrees Farenheit. Researchers have proposed many explanations involving magneto-acoustic waves and the dissipation of magnetic fields, but none can account for the wide-ranging temperature distribution in the corona, Habbal says.

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

Solar Eclipse, continued

You too can contribute to science through one of several citizen science projects. For example, you can also help study the corona through the Citizen CATE experiment; help produce a high definition, time-expanded video of the eclipse; use your ham radio to probe how an eclipse affects the propagation of radio waves in the ionosphere; or even observe how wildlife responds to such a unique event.

Otherwise, Habbal still encourages everyone to experience the eclipse. Never look directly at the sun, of course (find more safety guidelines here: https://eclipse2017.nasa.gov/safety). But during the approximately 2.5 minutes of totality, you may remove your safety glasses and watch the eclipse directly—only then can you see the glorious corona. So enjoy the show. The next one visible from North America won't be until 2024.

For more information about the upcoming eclipse, please see:

NASA Eclipse citizen science page
NASA Eclipse safety guidelines

Want to teach kids about eclipses? Go to the NASA Space Place and see our article on solar and lunar eclipses!

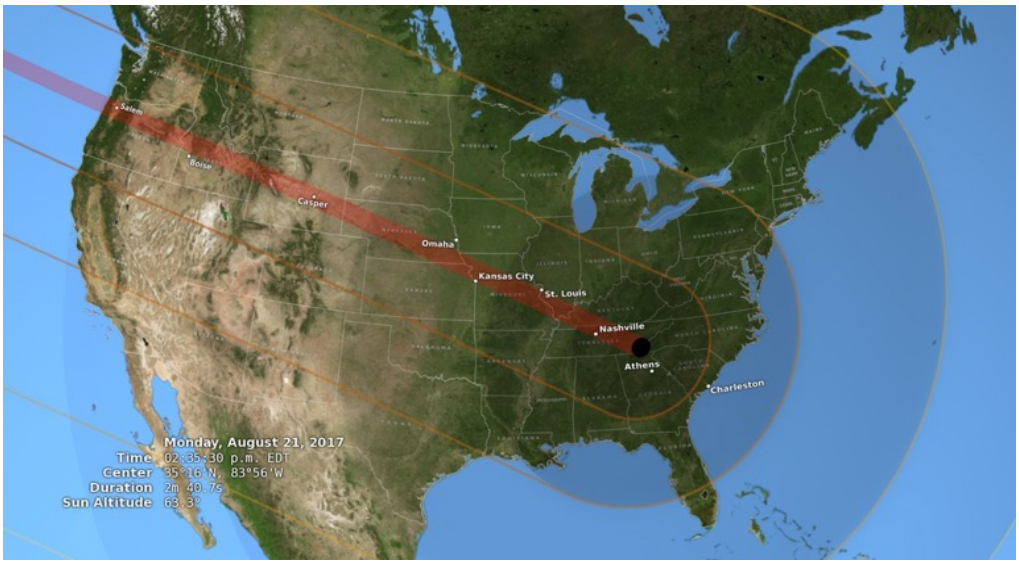

Illustration showing the United States during the total solar eclipse of August 21, 2017, with the umbra (black oval), penumbra (concentric shaded ovals), and path of totality (red) through or very near several major cities. Credit: Goddard Science Visualization Studio, NASA

Send your cool astrophotos to eclipse@bsasnashville.com!

This new image of the supernova remnant SN 1987A was taken by the NASA/ESA Hubble Space Telescope in January 2017 using its Wide Field Camera 3 (WFC3). Since its launch in 1990 Hubble has observed the expanding dust cloud of SN 1987A several times and this way helped astronomers to create a better understanding of these cosmic explosions.

Supernova 1987A is located in the centre of the image amidst a backdrop of stars. The bright ring around the central region of the exploded star is composed of material ejected by the star about 20 000 years before the actual explosion took place. The supernova is surrounded by gaseous clouds. The clouds' red colour represents the glow of hydrogen gas.
The colours of the foreground and background stars were added from observations taken by Hubble's Wide Field Planetary Camera 2 (WFPC2).

Credit:
NASA, ESA, and R. Kirshner (Harvard-Smithsonian Center for Astrophysics and Gordon and Betty Moore Foundation) and P. Challis (Harvard-Smithsonian Center for Astrophysics)

Barnard-Seyfert Astronomical Society
Minutes of a Regular Meeting of the Board of Directors
Held On Wednesday, February 1, 2017.

The regular meeting of the Board of Directors of the Barnard-Seyfert Astronomical Society was held February 1, 2017, at Glendale United Methodist Church, 900 Glendale Lane, Nashville, TN 37204. Present were Mike Benson, Spencer Buckner, Gary Eaton, Drew Gilmore, Tom Guss, Bud Hamblen, Todd Nannie, Keith Rainey and Theo Wellington. Gary called the meeting to order at about 7:40 PM. Gary then asked for a motion to approve the minutes for the January 4, 2017, board meeting as printed in the February, 2017, issue of the Eclipse. Keith so moved, Todd seconded, and the minutes were approved by voice vote. Tom reported that there was $2,251.15 in the checking account and $1,870.15 in the savings account.

Upcoming star parties were discussed. The weather for the February 4 event at Edwin Warner Park will be checked about 3pm that day to decide whether to attempt to hold the event. There will be a private star party at the Water Valley Overlook on February 25. A public star party is scheduled for March 4 at the Shelby Bottoms Nature Center.

We hope to have Dustin with Oceanside Photo & Telescopes and a Santa Barbara Instrument Group representative at the March 15 general meeting.

The February program will be a “what’s up” if Derrick Rohl is not able to present.

The response to adhesive name tags seemed to be positive.

It was noted that Metro Nashville Public Schools will be closed on Monday, August 21, 2017, eclipse day, and that Theo is gathering eclipse information on http://tn2017eclipse.info/.

Sales of eclipse glasses to club members at a reduced price was discussed.

Resolution 2017-02-01: Up to 25 eclipse glasses in addition to the 12 free pair will be available at a price of $1.00 per pair. Additional glasses may be bought at the non-member price of $2.00 per pair.

Spencer moved that Resolution 2017-02-01 be adopted, Todd seconded and the resolution was adopted by voice vote.

Todd volunteer to manage the equipment inventory.

There being no further business, Spencer for adjournment, Todd seconded, and the meeting was adjourned at about 9:00 PM.

Respectfully submitted,

Bud Hamblen
Secretary

Barnard-Seyfert Astronomical Society
Minutes of the Monthly Membership Meeting
Held On Wednesday, January 18, 2017.

The Barnard-Seyfert Astronomical Society held its monthly meeting at the Glendale United Methodist Church, 900 Glendale Lane, Nashville, Tennessee, on Wednesday, February 15, 2017. About 30 members were present.

Gary Eaton called the meeting to order at 7:30pm. Gary Introduced a new member, Glenn, and a guest, Barry Young, director of the Sumner County Convention and Visitors Bureau. Gary asked for a motion to approve the minutes of the January meeting as printed in the February Eclipse. Spencer Buckner so moved, Todd Nannie seconded, and the minutes were approved by unanimous voice vote. It was noted that the club now has more than 100 members.

Gary announced scheduled events:

Saturday, February 25 – private star party at Natchez Trace Water Valley Overlook.

Saturday, March 4 – public star party at the Shelby Bottoms Nature Center.

The weekend of March 24-26 – Dark Sky Celebration Weekend at Pickett State Park.

Saturday, April 22 – International Dark Sky Week Celebration at Pickett State Park.

Saturday, April 22 – Nashville Earth Day Festival at Centennial Park.

Gary announced outreach opportunities:

April 29 – STEM Camp at Boy Scouts of America Boxwell Reservation.

Full Mon weekends, May-October – Full Moon on the Lake, Nashville Paddle Co, Hamilton Creek recreation area.

Plans for the upcoming eclipse on August 21 were discussed. The club has requests for assistance from international, out-of-state and local groups. The question was raised whether the club would like to have a pavilion at Moss Wright Park in Goodlettsville.

Theo Wellington presented a program on how to run a Messier Marathon.

There being no further business, Curt Porter moved for adjourment, Spencer Buckner seconded, and the meeting was adjourned at 9:00pm.

Respectfully submitted,

Bud Hamblen

Secretary

Barnard-Seyfert Astronomical Society

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 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.