



The ECLIPSE



The Newsletter of the Barnard-Seyfert Astronomical Society

Organized in 1928

July 2013

The Membership meeting will be held on July 17, 2013 at the Cumberland Valley Girl Scout Council Building located at the intersection of Harding Place and Granny White Pike at 7:30 pm.

THE PROGRAM HAS NOT BEEN DETERMINED AT THE TIME OF PUBLISHING. IF YOU HAVE ANY IDEAS PLEASE LET US KNOW.

Upcoming Events

Board of Directors Meeting, July 10 at the Cumberland Valley Girl Scout Building – 7:30 pm

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Eclipse photograph by
Francisco Diego

From the President

We have had a number of new members join in the last few months, welcome!

Sometimes clubs have their own vocabulary, and after a time we forget that not everyone might know what we mean. So thanks to all who have asked, I’ll see if I can answer for everyone!

What is the difference between a Public and Private Star Party? You might think that a “private” event is more exclusive, like only the people on the “A” list...but not really in this case. At a Public star party, we set up telescopes and then have invited the general public to come and look. Often I sit on one or two objects all evening, looking only to make sure the view hasn’t drifted. On a good night I stay busy all evening long repeating information about what is being seen, hold the ladder not the eyepiece, etc.

A Private star party is a chance for club members to gather and just look. We try to get a bit out of town to a darker sky, mostly along the Natchez Trace. The club has a permit from the Park Service that allows us to be there, mostly that just lets the rangers know to expect a group at the appropriate mile marker pulloff. Members can then take the time to hunt for the fainter objects they might be interested in. Entertaining ourselves, rather than others, might be a good way to put it. But I’m sure that if someone stopped by and asked, they would get a look at whatever was in the scope.

Does a member need to bring a telescope? No...just come prepared to enjoy the night sky with fellow astronomy buffs.

Do I need to own a telescope to join? No! Just an enthusiasm for looking at the night sky. Although if you can stay with us and not buy a scope, you are doing better than me...please do not ask how many are in my garage.

Do I have to come to public star parties? No, and certainly not all of our members do. Some simply don’t have the time, or their scopes are not

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Observing Highlights July & August

Moon phases

July 2013

07/08 NEW Moon
07/15 FIRST Quarter
07/22 FULL Moon
07/29 Last Quarter

August 2013

08/06 NEW Moon
08/14 FIRST Quarter
08/20 FULL Moon
08/28 LAST Quarter

Objects:

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

Open Clusters

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

Nebula

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)

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)

Other

Bardnard's Star (star with
fastest proper motion)
M24 (Small Sagittarius Star
Cloud)
Cr 399 (Coat Hanger)

Multiple Star Systems

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

Planets

Venus
Saturn
Pluto

Happy Birthday Christoph Scheiner

by Robin Byrne

This month we celebrate the life of a man whose contributions to astronomy were marred by controversy. Christoph Scheiner was born in Wald, Swabia (in what is today known as Germany) on July 25. His year of birth has been reported as either 1573 or 1575. From 1591 to 1595 he attended a Jesuit school and entered the Jesuit order upon graduation. In 1600 Scheiner entered the university at Ingolstadt, where he studied metaphysics and mathematics.

Scheiner's main interest was in instrumentation. Early on, he studied the mathematics of sundials. In 1603, Scheiner invented the pantograph. This device made it possible to perfectly copy, and enlarge or reduce, a drawing or diagram. It made use of a parallelogram design. One end would be used to trace the image, while the other end had a stylus to draw the duplicate. This invention gave Scheiner somewhat of a celebrity status and garnered him invitations by royalty to demonstrate the device.

In 1609, Scheiner finished his studies and earned the equivalent to a PhD in theology. He was assigned to the university at Ingolstadt to teach mathematics (which included physics and astronomy) and Hebrew. Topics covered included: sundials, geometry, optics and the newly invented telescope. For the benefit of his students, Scheiner organized debates on various topics, including whether the universe was geocentric or heliocentric.

When Scheiner heard of Galileo's telescopic observations, he was intrigued enough to purchase a telescope for himself. He started by recreating Galileo's observations of the Moon, Jupiter, Saturn and Venus. Next, he began observing the Sun using a filter of colored glass and only observing through dense fog. His observation of sunspots in 1611 was the start of his rocky relationship with Galileo. Scheiner published his observations in 1612 in a document titled "Three Letters on Sunspots." The Jesuit order firmly followed the principles of Aristotle, including the idea that the heavens are perfect and unchanging. Scheiner's publication strove to reconcile his sunspot observations with this idea. His solution was that sunspots were not on the Sun at all, but were instead the silhouettes of objects between us and the Sun, either moons of the Sun, or possibly even very small moons of Earth.

Galileo responded by saying that the spots were either directly on the Sun's surface, or very near it. He also pointed out that they change shape over time, and that some appear or disappear while well within the disk of the Sun. By Galileo's reasoning, it was obvious that the Sun was not nearly as perfect as Aristotle had proposed. Scheiner responded with more publications reasserting that the spots were satellites. Galileo responded in kind. The entire correspondence was then published under the title "History and Demonstrations Concerning Sunspots and Their Properties." Despite their disagreements, Scheiner and Galileo had a cordial relationship and frequently corresponded by mail. Galileo even sent Scheiner a telescope in 1618. At the same time, Galileo appears to have plagiarized some of Scheiner's work, while accusing Scheiner of being the plagiarist. Definitely a complicated relationship.

In 1614, Scheiner was summoned by Archduke Maximilian III for discussions about astronomy and mathematics. The Archduke received a telescope, but was disappointed that the image was inverted. Scheiner modified the instrument by adding an additional lens, thus rendering erect images. The Archduke was very pleased. Having the Archduke as a supporter helped Scheiner to establish a new Jesuit college in Silesia.

Following in the footsteps of Kepler, Scheiner became interested in the optics of the eye and published a book on this topic in 1619. Divided into three parts "Oculus" begins with the anatomy of the eye,

then covers how light is refracted in the eye, and concludes with the role of the retina.

Later in his career, Scheiner studied atmospheric phenomena, such as sun dogs and solar haloes, using laws of optics to explain their formation. He continued to study the Sun, and was able to measure the tilt of the Sun's axis relative to Earth. He also used refraction to explain why the Sun looks oblong near the horizon.

In 1624, after the death of his patron, the Archduke, Scheiner moved to Rome to continue studying the Sun. Here he published "Rosa Ursina," which was considered the quintessential book on sunspots for the next 100 years. In response to some of Galileo's comments (which some believe may not have even been directed toward Scheiner), the first part of Scheiner's book was written to disparage Galileo and his ideas, and to claim priority in the discovery of sunspots. Some believe that it was Scheiner's attacks that ultimately led to the Church turning against Galileo. Oddly, while disputing Galileo, Scheiner also underwent a change of mind and agreed with Galileo that sunspots are on the surface of the Sun, rendering the Sun imperfect. The second part of the book covered the telescope and ways of observing the Sun. The third part covers Scheiner's observations and discoveries. In particular, his sunspot observations allowed Scheiner to determine the Sun's rotation rate, including the fact that the Sun rotates faster at the equator than at the poles. He was also one of the first to observe solar flares and granulation on the photosphere. One of the reasons this book was the standard sunspot text for so long is that shortly after its publication, the Sun entered an extended period with few if no sunspots. This was a period of time now called the Maunder Minimum, which lasted from 1645 to 1710.

In 1633, Scheiner returned to the region in and around Germany to oversee the construction of the Jesuit college. His last written work continued to dispute Copernicus' heliocentric model, and to continue to affirm the geocentric system. The book, titled "Introductory Treatise in Favor of a Moving Sun and a Stable Earth against Galileo Galilei" was published posthumously in 1650, but appears to not have influenced anyone on either side of the debate. Scheiner died in Neisse, in what is now Poland, on July 18, 1650.

Forever remembered as the man who was in a dispute with Galileo, Christoph Scheiner, despite his entrenched geocentric views, did manage to add quite a bit of knowledge to our understanding of the Sun. As we approach solar maximum, take some time to view our nearest star and to remember one of the pioneers in solar astronomy: Christoph Scheiner.

References:

Christoph Scheiner - Wikipedia

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<http://galileo.rice.edu/sci/scheiner.html>

Christopher Scheiner, S.J. Fairfield University

<http://www.faculty.fairfield.edu/jmac/sj/scientists/scheiner.htm>

Christoph Scheiner

<http://www.surveyor.in-berlin.de/himmel/Bios/Scheiner-e.html>

Barnard-Seyfert Astronomical Society
Minutes of the Regular Meeting of the Board of Directors
Held On Wednesday, June 5, 2013

The board of directors of the Barnard-Seyfert Astronomical Society (BSAS) met in regular session at the Cumberland Valley Girl Scout Council Building in Nashville, Tennessee on Wednesday, June 5, 2013. A sign-in sheet was passed around in lieu of a roll call. Board members Joe Boyd, Steve Cobb, Bill Griswold, Melissa Lanz, Bob Norling, Bob Rice, Poppy Simmons, and Theo Wellington were present. Board members Dr. Spencer Buckner, John Harrington, and Kris McCall were absent. A quorum being present, President Theo Wellington called the meeting to order at 7:36 P.M.

Theo Wellington asked for corrections to the minutes of the previous board meeting held on May 15, 2013 and, there being none, asked for a motion declaring them to be approved as published in the May 2013 edition of the Society's *Eclipse* newsletter. Joe Boyd so moved and Bill Griswold seconded his motion that was subsequently passed by a unanimous voice vote without discussion. Treasurer Bob Norling reported that the BSAS had \$2,157.81 in its regular checking account and \$1,251.20 in its equipment account.

Theo Wellington announced these upcoming star parties:

- Jun 08 – Private star party @ Natchez Trace Parkway mm 412 (Water Valley Overlook),
- Jun 22 – Public star party @ Long Hunter State Park @ 8:30 P.M.,
- Jun 28 – Public star party @ Nathan Bedford Forest State Park from 7:30 to 10:30 P.M. and
- May 03 – Public star party @ Bells Bend Park from 8:30 P.M. to 10:30 P.M.

Ms Wellington also noted that the BSAS had been asked to put on star parties on (1) June 7 @ Camp Idyllwild on the Duck River (contact Mr. Ward at 931-729-2012 if interested), and (2) Jun 08 with East Tennessee groups at Pickett State Park at 9:00 P.M.

Bill Griswold noted that the Middle Tennessee chapter of the International Dark Sky Association had been reorganized. Joe Boyd, Bill Griswold, and Theo Wellington recently met with Laurel Creech, the Sustainability contact in Metro Mayor Carl Dean's office, regarding the loss of the night sky and the waste of light and electricity by current city lighting fixtures. Joe Boyd stated that he had last contacted the Nashville Electric Service (NES) to discuss similar issues in 2007 with the emergence of these details among others: (1) proper lighting directed downward can use less power and save money, (2) Metro does not own the Convention Center and can't control the lighting there, (3) Metro Parks choose lighting fixtures for their areas, not NES, and (4) Metro Council Woman Barry was supportive of measures to control light pollution. Steve Cobb suggested that we identify appropriate individuals from Metro Government and invite them to a board meeting to discuss these issues. Joe Boyd noted that Metro Council-Man-At-Large Ronnie Stein had an interest preserving dark skies.

Bob Norling thanked Theo Wellington for her well-received recent presentation to the Kiwanis Club.

Theo Wellington reported that Webmaster Drew Gilmore was investigating the possibility of using credit cards for online membership dues payments. Since there was no further business to discuss, Bob Norling moved that the meeting be adjourned. Bill Griswold seconded his motion that passed by a unanimous voice vote of the board at 8:43 P.M. without additional discussion.

Respectfully submitted,
Bob Rice, Secretary

Barnard-Seyfert Astronomical Society Minutes of the Monthly Membership Meeting Held On Wednesday, June 19, 2013

President Theo Wellington called the meeting to order at 7:40 P.M. on Wednesday, June 19, 2013 at the Cumberland Valley Girl Scout Council Building in Nashville, Tennessee and welcomed members and visitors. Ms Wellington asked for corrections to the minutes of the previous membership meeting held on April 17, 2013 and, there being none, asked for a motion to approve these minutes as published in the May 2013 edition of the Society's *Eclipse* newsletter. Bob Norling so moved, Bill Griswold seconded this motion, and the minutes were approved by a unanimous voice vote. Treasurer Bob Norling reported that the BSAS had \$2,119.81 in its regular account and \$1,251.20 in its equipment account.

Theo Wellington announced these upcoming star parties:

- Jun 22 – Public star party at Long Hunter State Park from 8:30 PM to 10:30 PM,
- Jun 28 – Public star party at Bells Bend Park from 8:30 PM to 10.30 PM,
- Jul 07 – Private star party at mm 435.5 on the Natchez Trace Parkway,
- Jul 19 – Public star party at Bowie Nature Park from 8:30 PM to 10:30 PM.

Ms Wellington reported that she and other BSAS members had contacted Metro Government's Sustainability Director regarding improved city lighting for preserving night sky observing and that they were "working up the chain" of other departments to contact. She showed slides of typical lighting fixtures on what were described in literature as being "complete streets" and, although the light fixtures looked nice, there was no mention of lighting effectiveness. Ms Wellington said that she planned to take pictures of these same lights at night. She also noted the International Dark Sky Association had completed a video called "Losing the Night Sky."

Mike Benson announced a new film entitled "Undaunted: The Forgotten Giants of Allegheny Observatory" about the role that this institution has played in astronomical research since 1860. Mr. Benson also announced that the 2013 ALCON (Astronomical League Convention) would be held in nearby Atlanta, Georgia on July 24-27, 2013.

Ms Wellington began the evening's program by showing a humorous You Tube video on the "C14 SCT as a Portable Telescope." This was a "tongue in cheek" demonstration about how this large and heavy scope could be handled in such a way as to make it portable. Some of the methods demonstrated included using an observing chair as an intermediate step in raising the optical tube from the ground to the mount. There was much laughter and groaning from the audience as it watched this process.

Bob Rice then introduced a DVD about Lick Observatory on Mount Hamilton near San Jose, California by explaining that there was a connection between the BSAS and this institution because one of our club's namesakes – Edward Emerson Barnard – had worked there when it opened in 1887. The DVD covered these points about Lick Observatory:

- The donation of funds by San Francisco businessman James Lick,
- Construction of the observatory with materials being hauled up the mountain by mules,
- Acquisition of the 36 inch refractor (then the largest in the world),
- E.E. Barnard's discovery of the 5th moon of Jupiter there in 1892 which was world-wide news,
- The acquisition of the 120 inch Shane reflector in 1959,
- The observatory's use in training and research within the University of California system, and
- Research and development of "adaptive optics" at Lick Observatory.

Since there was no further business to discuss, the meeting was adjourned at 8:45 P.M.

Respectfully submitted,
Bob Rice, Secretary

portable. Or maybe you come to the parties nearer where you live. That's just outreach done by those of us who can. I think its fun, though, to see the reactions of kids who are just seeing the Moon for the first time through a telescope, you can make a difference in how they view science.

Do I need to have a degree or formal training in astronomy? No! We have many different professions and backgrounds represented in the club. I'll warn you, though, that if you come to meetings you will learn some science, it's just a hazard of enjoying the night sky. The fun thing about astronomy is that it is the one science that is totally accessible to everyone. Most of us wouldn't go out and buy a dissection kit, or do chemistry experiments....but all you need to do for astronomy is go outside and look up!

Do take advantage of club benefits....ask about a loaner telescope, enjoy the quarterly *Reflector* magazine, and please let me know if you have ideas for programs, or any other areas you would like to donate time and talent to. If you enjoy a challenge, see the Astronomical League's observing clubs for things you can observe in the night sky with recognition after you complete one of their lists. Join the tnastronomy group on yahoo, many of our local astrophotographers post there. Like us on our facebook page!

Most of all, just have fun enjoying the universe the next clear night....

Clear, dark skies,

Theo Wellington, President

Star Parties July and August

Sat 7/6	BSAS trace	NM is 7/8	mile marker 435.5
Sat 7/13	ASC	830 to 1030 FQ is 7/16	2 nd Saturday - Moon and Saturn
Fri 7/19	Bowie Park	830 to 1030NM is 7/22	Moon, Saturn, double stars
Sat 8/3	BSAS trace	NM is 8/6	mile marker 412 water valley overlook
Fri 8/9	Bells Bend	830 to 1030 FQ is 8/14	Saturn, star clusters, nebulae, double stars, etc

Become a Member of the BSAS!

Download and print the Application for membership from www.bsasnashville.com (Adobe® Acrobat Reader® required).

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, which include membership in the BSAS and Astronomical League, and subscriptions to their newsletters, are:

\$20 Individual
\$30 Family
\$15 Senior (+65)
\$25 Senior Family (+65)
\$12 Student*

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

All memberships have a vote in BSAS elections and other membership votes.

Also included are subscriptions to the BSAS and Astronomical League newsletters.

IMPORTANT DUES INFORMATION

To find the expiration date for your current membership, visit our web site at <http://www.bsasnashville.com> and click the Renewals link.

There will be a two month grace period before any member's name is removed from the current distribution list.

About Our Organization

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 www.bsasnashville.com. If you need more information, write to us at info@bsasnashville.com or call John Harrington at (615) 739-4500.

[BSAS on Facebook](#)

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 Lonnie Puterbaugh at 615-661-9540.