



The ECLIPSE



The Newsletter of the Barnard-Seyfert Astronomical Society

Organized in 1928

June 2012

The Membership meeting will be held on June 20, 2012 at the Cumberland Valley Girl Scout Council Building located at the intersection of Harding Place and Granny White Pike at 7:30 pm.

Our June 20, 2012 Membership meeting program will be an update on “KELT (Kilodegree Extra Little Telescope)” by Dr. Joshua Pepper, Research Assistant Professor of Astronomy at Vanderbilt University, who will describe the use of small robotic telescopes for extrasolar planet research.

Upcoming Events

Board of Directors Meeting, June 6 at the Cumberland Valley Girl Scout Building – 7:30 pm

Membership Meeting, June 20 at the Cumberland Valley Girl Scout Building – 7:30 pm

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FROM THE PRESIDENT

Safe Sun

As surely every BSAS member knows, the orbital mechanics have lined up so that we’re about to have a once-in-a-lifetime opportunity to view the transit of Venus across the face of the sun. As viewed from middle Tennessee, the transit will begin at 5:04PM on June 5th according to the handy www.transitofvenus.org website (the next one isn’t due until 2117). There will be LOTS of transit-viewing parties in the area, as listed elsewhere in this issue of The Eclipse.

My goal today is to cover the basics of safe solar observing with telescopes. The sun’s energy as seen from Earth is about 100,000 times too intense for the naked eye to safely view. Fortunately, ingenious humans have come up with a wide array of filters designed to make direct solar viewing safe. The primary means are white light filters¹ placed over the objective of a telescope, which block 99.999% of the sun’s light. These filters can be either glass or a thin film like Baader AstroSolar (make sure thin-film filters are coated on BOTH sides of the material). Either type will work just fine and produce a yellowish or whitish image of the sun, replete (if the seeing is good) with solar granulation and hopefully some sunspots. Here’s rule #1 for safe solar viewing: **make sure your solar filter is FIRMLY attached to the front of the telescope tube.** My glass solar filter is a good “friction fit” for my telescope’s tube, but also includes nylon screws to make the fit a bit tighter—even so, I still plan to use several pieces of masking tape to be absolutely sure the filter is securely attached.

Note that both glass and film-based white light solar filters can develop pinholes over time, which could still let through enough solar radiation to be dangerous. So, safe solar-viewing rule #2: **before putting any solar filter on your telescope, make absolutely sure to inspect the filter on both sides for pinholes.**

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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.

Observing Highlights

Moon phases

June 2012

06/04 FULL Moon
06/11 LAST Quarter
06/19 NEW Moon
06/26 FIRST Quarter

July 2012

07/03 FULL Moon
07/10 LAST Quarter
07/19 NEW Moon
07/26 FIRST Quarter

Objects:

Galaxies

M63 (Sunflower), M101,
M104(Sombrero)

Globular Clusters

M13, M92

Nebula

M97 (Owl)

Multiple Star Systems

Polaris (Alpha Ursae Minoris)
Mizar and Alcor (Zeta Ursae Majoris)
M40 (in Ursa Major)
Ras Algethi (Alpha Herculis)

Planets

Venus (June 5, transit of Sun),
Mars, Saturn

OFFICERS

John Harrington
President

Joe Boyd
Vice-President

Bob Rice
Secretary

Bob Norling
Treasurer

Spencer Buckner
Ex-officio

Directors at Large

Steve Cobb
Bill Griswold
Melissa Lanz
Kris McCall
Curt Porter
Theo Wellington

Bill Griswold
Newsletter Editor
bgriz@comcast.net

Star Parties for months of June and July

Jun 05 Public Viewing of Solar Transit of Venus at Adventure Science Center
4:00 – 6:30 pm
Transit begins about 5:04 pm through sunset. Not seen again until 2117.

Jun 05 Public Viewing of Solar Transit of Venus at Bowie Nature Park (Fairview)
4:00 – 6:30 pm

Jun 05 Middle Tennessee State University (MTSU) will hold a public viewing of the Transit of Venus at the MTSU Observatory from 5:00 to 8:00 P.M.

Jun 16 Private Star Party at Natchez Trace Parkway mm 435.5

Jun 23 Public Star Party and Telescope Clinic at Long Hunter State Park 8:30 – 10:30 pm Moon, Mars, Saturn, double stars, star clusters, nebulae

Jul 20 Public Star Party at Bell's Bend Outdoor Center 8:30 – 10:30 pm Mars, Saturn, double stars, star clusters, nebulae

Jul 21 Private Star Party at Natchez Trace Parkway mm 412 (Water Valley Overlook)

The Construction of the Heavens: William Herschel's Cosmology, by Michael Hoskins

Reviewed by Robin Byrne

If you are like me, when you think of William Herschel, you think of a purely observational astronomer. However, after reading "The Construction of the Heavens" by Michael Hoskins, I have discovered that there was much more to Herschel than I originally thought.

The book itself is divided into two parts. The first section provides a brief biography of Herschel, but primarily focuses on his astronomical research. The second half of the book is a sampling of papers Herschel wrote from 1783 - 1814. From the biography, you get a glimpse of Herschel's observational side, with mentions of his discovery of Uranus, large telescopes, and catalogues of celestial wonders found in the night sky. This is the side of Herschel that most readily comes to mind.

The remainder of the book exposed me to new insights regarding Herschel. His interest in cataloging deep sky objects went beyond purely amassing a collection of discoveries. Herschel was trying to understand the nature of the universe. His quest for ever larger telescopes was more than "aperture fever." Herschel was hoping to resolve these objects with greater clarity in order to better understand what he was observing. He reasoned, at first, that all nebulae would resolve into collections of stars, if only he could see them in more detail. However, he later decided that some nebulae were composed of some substance other than stars, although he could not understand what would make them glow. This discovery led Herschel to conclude that the objects he catalogued, from nebulae to star clusters, were representing various stages in the development and life of stars. Surprisingly close to the truth, in some cases.

While the book covers a very interesting subject, I was slightly disappointed by Hoskin's writing style. In particular, when summarizing Herschel's writings, Hoskins chose to use Herschel's original terminology, rather than more current wording. As an example, when Herschel described his telescopes, he referenced them by their length, rather than their aperture, as is the modern standard. Rather than including their apertures, Hoskins perpetuated Herschel's style and primarily included only the length. In another instance, Herschel explains why stars in a cluster don't all gravitationally coalesce due to "projectile forces" keeping them in motion. Once again, Hoskins duplicates this strangely archaic terminology, instead of a more accurate description of the stars' motions.

Reading Herschel's original papers, on the other hand, was fascinating. Although not reproduced in their entirety (some of the papers were originally over 100 pages in length), each one helps to illuminate Herschel's thought processes. It was also interesting to see which ideas required extensive explanations, rather than being considered common knowledge. Something as simple as concluding that stars in a cluster are truly associated with each other in space, rather than being a random alignment of disparate bodies, required an extensive statistical analysis to support the conclusion.

All in all, If you enjoy the historical development of ideas in astronomy, and don't mind slogging through some difficult reading, you will likely appreciate "The Construction of the Heavens" by Michael Hoskins.

The Construction of the Heavens: William Herschel's Cosmology, Michael Hoskins, Cambridge University Press, ISBN 978-1-107-01838-9

SHOP AND/OR SWAP (new)

The BSAS is trying out a SHOP AND/OR SWAP section in the Eclipse.

1. Each participant must be a fully paid up member in good standing in the BSAS;
2. She/He must furnish the text in Text, Word or a compatible format. Pictures will be jpeg or equal (640x480).
3. Your contact address must be included so that all negotiations may be done independently of the BSAS or the Eclipse.
4. Your ad will be posted free for a period of two consecutive Eclipses, but must be removed as soon as a sale or swap has occurred. Contact The Eclipse editor, Bill Griswold, at bgriz@comcast.net.

Joe Velasquez



Meade 6" EXT-LS ACF comes with eye pieces, 26mm, 6.4mm, 9.7mm and ac adapter. Asking \$800.00.
Call Joe at 931-801-0641

John Harrington



FOR SALE: 14" F/5.2 dobsonian telescope (truss-tube type). In overall good mechanical and optical shape. Primary mirror sold to me years ago as a Swayze regrind of an amateur mirror, but not signed so can't confirm. Primary has a 3/8" x 3/8" clamshell chip at the edge that can be partially hidden by mirror clip. Secondary is an Antares 3.1" in very good condition. Includes Telrad finder and 2" focuser (older Meade unit). Nice 'scope, but a little more than I need these days. Asking \$750. If interested, please contact John Harrington at 615-739-4500.

Barnard-Seyfert Astronomical Society Minutes of a Regular Meeting of the Board of Directors Held On Wednesday, May 2, 2012

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 May 2, 2012. A sign-in sheet was passed around in lieu of a roll call. Board members Dr. Spencer Buckner, Steve Cobb, Bill Griswold, John Harrington, Melissa Lanz, Kris McCall, Bob Norling, Curt Porter, Bob Rice, and Theo Wellington were present. Board member Joe Boyd was absent. A quorum being present, President John Harrington called the meeting to order at 7:43 P.M.

John Harrington asked for corrections to the minutes of the previous board meeting held on April 2, 2012 and, there being none, declared them to be accepted as published in the May 2012 *Eclipse* newsletter. Treasurer Bob Norling reported that the BSAS had \$2,260.05 in its regular checking account and \$815.95 in its equipment account. John Harrington announced these upcoming events and star parties:

- May 18 – Public star party at Bell’s Bend Outdoor Center from 8:30 to 10:30 P.M.
- May 19 – Private star party at Natchez Trace Parkway mm 412 (Water Valley Overlook).
- Jun 05 – Public viewing of Venus transit at Adventure Science Center from 4:00 to 6:30 P.M.
- Jun 05 - Public viewing of Venus transit at Warner Park Nature Center at 5:00 P.M.
- Jun 05 - Public viewing of Venus transit at Bowie Nature Park from 4:00 to 6:30 P.M.
- Jun 05 - Public viewing of Venus transit at Middle Tennessee State University at 5:00 P.M.
- Jun 16 – Private star party at Natchez Trace Parkway mm 435.5.
- Jun 23 – Public star party & telescope clinic at Long Hunter State Park from 8:30 to 10:30 P.M.

John Harrington reported that he had not yet received a committal from the Cumberland Astronomical Society regarding a tentatively planned joint star party on May 19 at Fort Bledsoe State Park, so the BSAS would revert back to its originally planned private star party for that date. Kris McCall asked if details of the telescope clinic scheduled at Long Hunter State Park on June 23 were available for dissemination to the public. The board discussed this matter and decided to start the clinic at 7:00 P.M. (while it was still daylight) to be followed by the star party at 8:30 P.M. The board also discussed the merits of bringing various tools, fasteners, and other items such as flocking paper and artificial stars. John Harrington said that the Society would get the word out about this on its website. Ms McCall said that she would also put this information on the Adventure Science Center (ASC) website. She additionally emphasized the importance solar viewing safety during the upcoming transit of Venus on June 5. John Harrington said that he would develop a statement about this issue.

Curt Porter reported that he had received a quote from B&B Printing for twelve simple 9 X 24 inch directional signs to be used at BSAS star parties. These would just say “STAR PARTY” and include a prominent directional arrow. Mr. Porter noted that inexpensive stickers with “BSAS” and/or the BSAS logo printed on them could be added later if so desired. He stated that the initial setup cost for the signs would be \$296.00 of which \$95.00 was for the silk screen process. Thereafter additional signs could be prepared for \$16.75 apiece. The board reviewed these details and Steve Cobb moved that Mr. Porter purchase twelve of these signs for the BSAS from B&B Printing as just discussed. Spencer Buckner seconded this motion and it was passed by a unanimous voice vote.

Bill Griswold commented that the new “Swap & Shop” section that began in the May 2012 edition of the *Eclipse* newsletter needed rules and suggested these: each participant should be a fully paid-up member in good standing, provide a contact address, and that items would be listed for free for two

consecutive editions of the newsletter. Curt Porter suggested that submitted pictures of items be limited to 640 to 480 pixels per inch resolution. John Harrison moved that these guidelines be adopted and Spencer Buckner seconded his motion that was adopted by a subsequent unanimous voice vote.

Melissa Lanz suggested that the BSAS should explore ways of using various media sources to advertise its star parties and inquired about a current list of these events. Bob Rice said that he would email her a copy of the latest star party list.

John Harrington asked the board for opinions about the new prototype website that Web Master Drew Gilmore had developed and displayed. All agreed that it looked very good and should be adopted as the BSAS' new website format. John Harrington put this opinion into a motion that was seconded by Bob Rice and subsequently passed by a unanimous voice vote without additional discussion.

Since there was no further business to discuss President John Harrington declared the meeting to be adjourned at 8:45 P.M.

Respectfully submitted,

**Barnard-Seyfert Astronomical Society
Minutes of the Monthly Membership Meeting
Held on Wednesday, May 16, 2012**

President John Harrington called the meeting to order at 7:42 P.M. in the Cumberland Valley Girl Scout Center and welcomed members and visitors. Mr. Harrington introduced BSAS board member Curt Porter who displayed one of the newly purchased star party directional signs containing the words "STAR PARTY" in large letters along with a very prominent red arrow. Mr. Harrington thanked Mr. Porter for his work in procuring these signs. Mr. Harrington then announced these upcoming star parties:

- May 18 – Public star party at Bell's Bend Outdoor Center from 8:30 – 10:30 P.M.
- May 19 – Private star party at Natchez Trace Parkway mm 412 (Water Valley Overlook).
- Jun 05 – Public Viewing of Transit of Venus at the Adventure Science Center from 4:00 – 6:30 P.M.
- Jun 05 – Public Viewing of Transit of Venus at the Warner Parks – specific times not available.
- Jun 05 - Public Viewing of Transit of Venus at Bowie Nature Park (Fairview) from 4:00 – 6:30 P.M.
- Jun 16 – Private star party at Natchez Trace Parkway mm 435.5.
- Jun 23 – Public star party & telescope clinic at Long Hunter State Park from 8:30 to 10:30 P.M.
- Jul 20 – Public star party at Bells Bend Outdoor Center from 8:30 to 10:30 P.M.
- Jul 21 – Private star party at Natchez Trace Parkway mm 412 (Water Valley Overlook).

John Harrington introduced Parker Wellington, a student at Martin Luther King Academic Magnet School, who received the BSAS sponsored 3rd place award for astronomy related projects at the Middle Tennessee Science and Engineering Fair on April 2, 2012. Parker showed printed diagrams and descriptions mounted on a three-part poster board to demonstrate his project that used sunspots to calculate the sun's rotation.

BSAS Web Master Drew Gilmore reminded attendees that the Adventure Science Center will hold its annual Astronomy Day on June 2, 2012. Treasurer Bob Norling reported that the BSAS had \$2,421.05 in its regular bank account and \$815.95 in its equipment account. John Harrington reported that since he had not received a committal from the Cumberland Astronomical Society regarding a tentatively planned joint star party on May 19 at Fort Bledsoe State Park, the BSAS will revert back to its originally planned private star party for that date. Mr. Harrington reminded members about the telescope clinic scheduled just before the public star party at Long Hunter State Park on June 23 and encouraged all to bring their telescopes and appropriate tools. Mr. Harrington announced that a "Swap

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& Sell” section has been added to the *Eclipse* newsletter.

John Harrington introduced BSAS board member and Sudekum Planetarium educator Theo Wellington who presented the evening’s program “Transit Tales” about the history and science related to the upcoming transit of the planet Venus across the sun that can be seen locally on June 5, 2012. Ms Wellington explained that transits of Venus are rare due to the inclination of its orbit relative to that of the Earth’s and that next month’s transit will only be the seventh such event observed since the invention of the telescope. She recounted how astronomers in the 18th century realized – mainly through the work of Sir Edmund Halley – that timing differences of Venus’ ingress and egress as it first touched and left the sun’s disk taken at widely separated distances on the Earth (parallax) could be used to trigonometrically determine the Earth’s distance from the sun (or astronomical unit, AU) – a fact that was not then known. She further noted how this realization prompted the launch of concerted scientific missions and international cooperation during subsequent transits – even among nations at war. Unfortunately, a phenomenon known as the “black drop effect” (apparently a diffraction effect caused by the interference between light waves) prevented the exact timing of Venus’ ingress and egress and thus thwarted the desired accuracy of these measurements. However, the exactness of the AU was gradually improved over several hundred years. Of local interest, Ms Wellington pointed out that Nashville, Tennessee was an observing site used by E.E. Barnard, one of our club’s namesakes, at Vanderbilt University during the transit of 1882. She concluded by describing safe methods for observing the June 5th transit and answering questions from the audience.

President John Harrington reminded attendees about the upcoming star parties. Since there was no additional business to discuss, he declared the membership meeting to be adjourned at 9:11 P.M.

Respectfully submitted,
Bob Rice, Secretary

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And while I’m sure most of you know this already, let me repeat, **never use an old-fashioned solar filter that just screws onto an eyepiece!!** The power of magnified sunlight generates a lot of heat, which can (and has) cracked these old filters. If you find one of these dangerous filters, do the world a favor and smash it.

OK, so you’ve securely attached your handy solar filter in front of the objective of your telescope. Ready to observe? Not yet. You’ve still got to aim your ‘scope at the sun, which brings us to another important rule: **leave all your finderscopes at home when you go solar observing!** The power of the sun is sufficient to do permanent damage to the eye when viewed through any finderscope. To line up your scope with the sun, just use the shadow method—point your telescope generally in the direction of the sun and then look at its shadow. Continue moving your ‘scope around until its shadow is as small as possible. You should then be lined up on the sun.

OK, now you should be set to safely observe the sun. But one last rule: **don’t leave your solar-viewing telescope unattended!** The risk is that a child may decide to try taking off that shiny filter on the front end.

Thanks for listening, and enjoy the transit!

Clear skies to all,

John Harrington

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

We're on the Web!

See us at:

www.bsasnashville.com

[BSAS on Facebook](#)