

The ECLIPSE

August
2016

The Newsletter of the Barnard-Seyfert Astronomical Society

Next Membership Meeting:

August 17, 2016, 7:30 pm
Glendale United Methodist
Church - Fellowship Hall
900 Glendale Lane

*Topic: Dr. Spencer Buckner, APSU:
"Ripples in Spacetime: The First
Detections of Gravity Waves"*

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From the President:

August is Perseid Meteor Shower watching month... this year the forecast is for more than the average number of meteors, although the first quarter Moon will light up the early part of the night at the peak on August 12-13. This year it will actually be best to go out near or after midnight to watch for the faint trails of light zipping across the sky, leftover bits of Comet Swift-Tuttle. This shower has a broad peak, so there will be a noticeable pickup in the number of meteors for a week before and after. Look up on any clear night you are outside!

The comet itself was at perihelion in 1992 and is currently outbound to 51AU - beyond Pluto. (One Astronomical Unit, AU, is the Earth-Sun distance of 93 million miles) Swift-Tuttle has an interesting orbit, reaching perihelion at a distance of 0.9595 AU, which means occasionally it comes pretty close to Earth! With a size of 26km and speed at that point 60km/s, a collision would be a bad day on the planet. Calculations indicate that the next pass in 2126 will just be a great view, coming within 0.5AU (14 million miles) of Earth, making it an easy naked eye comet.

This month also marks the beginning of the year long countdown to Eclipse 2017! Make sure you tell your neighbors and friends about this once in a lifetime opportunity to see a total eclipse from our own backyard. Many people think they've seen a total eclipse, but have only seen a partial. From Nashville, the last time you could have viewed totality was the year 1478, just after sunrise; the next time the Parthenon and an eclipse can be seen together is 2566. Although another eclipse will be visible in the US in 2024, we'll have to travel to that one. So ask for the day off (it's a Monday), invite out of town family, and have a great day. True, we'll have to hope for better than average weather, but I'm just going to say it will be so.



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Observing Highlights July and August

Open Clusters

Mel111 (*Coma Star Cluster*),
M6 (*Butterfly*), M7, M23,
M21, M18, M25, M26, M39,
M11 (*Wild Duck*), M29, M73

Galaxies

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*)

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, M75, M72, M15, M2, M30

Multiple Star Systems

Gamma Virginis (*Porrima*),
Alpha Canum Venaticorum,
Zeta Ursae Majoris (*Mizar*),
Epsilon Bootis, M40,
Mu Bootis (*Alkalurops*),
Beta Scorpii (*Acrab*),
Alpha Herculis (*Rasalgethi*),
Epsilon Lyrae (*Double Double*),
Beta Cygni (*Albireo*)

Nebulae

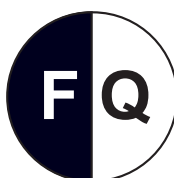
NGC6302 (*Bug*), NGC6309 (*Box*),
NGC6543 (*Cat's Eye*),
M20 (*Trifid*), M8 (*Lagoon*),
M16 (*Eagle*), M17 (*Swan*),
M57 (*Ring*), NGC6818 (*Little Gem*),
NGC6826 (*Blinking Planetary*),
M27 (*Dumbbell*),
NGC6888 (*Crescent*),
NGC6905 (*Blue Flash*),
NGC6960/6974/6979/
6992/6995 (*Veil*),
NGC7000 (*North America*),
NGC7009 (*Saturn*),
IC 5146 (*Cocoon*)

Upcoming Star Parties

Friday 8/5 8:30 pm to 10:30 pm	Public Star Party Bells Bend Outdoor Center
Friday 8/12 8:30 pm to 10:30 pm	Public Star Party Bowie Nature Park (Fairview)
Saturday 9/3	Private Star Party Natchez Trace Parkway mile marker 412 (Water Valley Overlook)
Saturday 9/10 8:00 pm to 10:00 pm	Public Star Party Long Hunter State Park



Aug 2
Sep 1, 30



July 11
Aug 10



July 19
Aug 18



July 26
Aug 24

Book Review: “The First War of Physics” by Robin Byrne

Let us once again explore a science-themed book. “The First War of Physics: The Secret History of the Atom Bomb 1939-1949” by Jim Baggott explores many facets that went into the development of the atom bomb. Baggott has a background in chemistry and science writing and does an excellent job of discussing not only the science of the bomb, but also the human stories involved.

The book begins with an excellent description of the physics involved in both fission and fusion. He shares the original thoughts about how to induce fusion and creating a self-sustaining chain reaction. We see the early experiments that provided tantalizing clues about how to proceed.

With the rise of the Nazi party in Germany, we experience the first wave of scientists leaving Europe for England, Canada, and the United States. As Germany begins its expansion into neighboring countries and the start of World War II, the exodus of scientists grows exponentially. As these new arrivals try to work with their colleagues, they encounter a major roadblock - security clearance. Many of these same scientists were behind the push for America to develop a bomb before Germany. As the programs to develop the atom bomb are established, the countries were faced with an unusual problem - some of the best scientists were foreign nationals. If the program falls under the jurisdiction of national security, how can people from other countries be involved in the research? Some were given complete clearance, while others were pushed to the periphery. Various sites were established to focus on different aspects of the work, with most of the people involved being kept in isolation as a security measure. We follow the work being done at all of the sites throughout the book.

Baggott looks not just at the program in the United States, but also in England, Canada, Germany, and Russia. This approach provides a much broader view of the struggles involved, the discoveries made, and the setbacks encountered around the globe. We see the German program, which was the initial threat that had spurred America’s rush to develop a bomb. Ironically, the German scientists, under the leadership of Heisenberg, met enough obstacles to decide to only pursue development of a reactor, but not a bomb. One reason for this was the concerted effort by the Allies to target facilities that provided needed materiel, especially heavy water. After the fall of Germany, the Allies took into custody many of



THE FIRST WAR
OF PHYSICS
THE SECRET HISTORY OF THE ATOM BOMB
1939-1949
JIM BAGGOTT



continued on next page

Book review, continued

the German scientists to question. They were kept in a safe house, and their conversations were bugged. This was when it was discovered how little progress had been made on a bomb. Some of the German scientists later claimed that they intentionally stalled developing a bomb as a silent protest against the Nazi party and Hitler. The author was not entirely convinced that this was true.

Baggott also explores the world of espionage involved on all sides. This was especially true for people sympathetic to communism. Since Russia was our ally, they saw nothing wrong with sharing their information. Three agents stationed at Los Alamos released enough information to Russia to ensure they would be able to build a bomb soon after the war. Meanwhile, on the other side of the intelligence game were efforts to break codes and decipher messages. The work by intelligence agents in England made a huge difference in this area.

Then we see the development of the different types of bombs, with different approaches to how to trigger a chain reaction. The dropping of the bombs on Hiroshima and Nagasaki were the culmination of many years of effort. While some of the scientists took the aftermath in stride, others would regret their role for the remainder of their lives.

Baggott ends with the beginning of the Cold War and the development of a bomb by Russia. Combined with this was the hunt for the spies who had released information to Russia. Many of those involved with the program, especially those who were not native to America, were under suspicion, including Oppenheimer. Most of the spy rings were eventually discovered and the individuals arrested, but by that time it was too late.

“The First War of Physics” was a very interesting read both from a physics angle, as well as from an historical angle. The only part of the book I had trouble with was keeping track of all the different people involved in each country. When there’s an appendix of key individuals that runs 20 pages, you know you are encountering a cast of characters worthy of Tolkien. So I didn’t try to remember every person, but just let the context provide the information I needed to follow the story. And what a fascinating story it was.

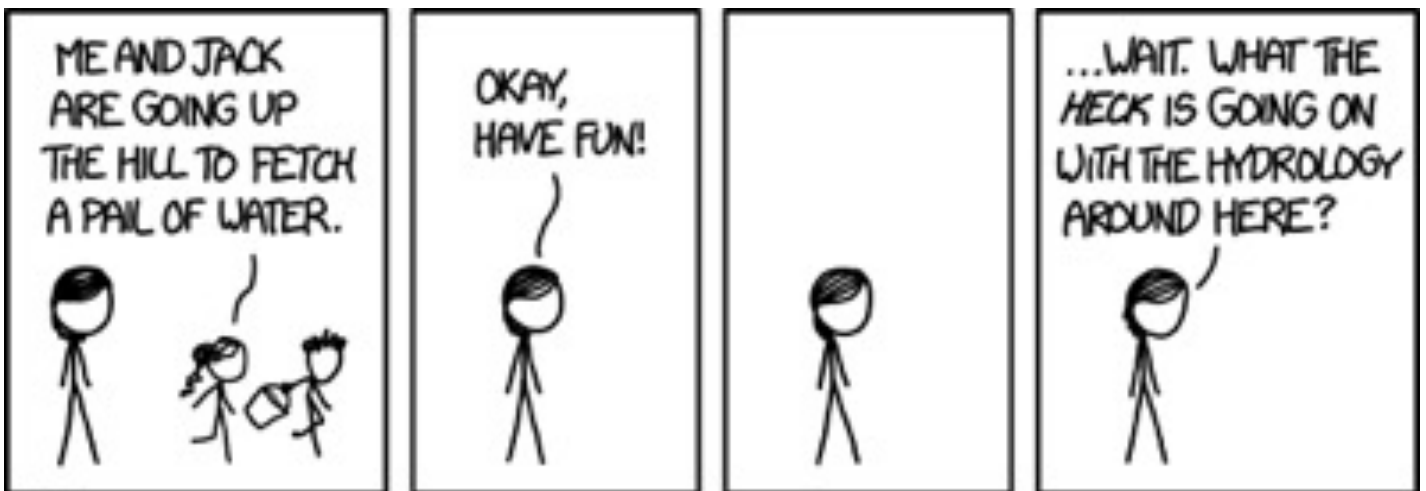
References:

The First War of Physics: The Secret History of the Atom Bomb 1939-1949 by Jim Baggott; Pegasus Books 2010

Send your cool astrophotos to
eclipse@bsasnashville.com!



[xkcd](http://xkcd.com)



Barnard-Seyfert Astronomical Society
Minutes of a Regular Meeting of the Board of Directors
Held On Wednesday, July 6, 2016.

The regular meeting of the Board of Directors of the Barnard-Seyfert Astronomical Society was held July 6, 2016, at Glendale United Methodist Church, 900 Glendale Lane, Nashville, TN 37204. Present were Spencer Buckner, Tom Guss, Bud Hamblen, Rob Mahurin, Kat Underwood and Theo Wellington. Theo called the meeting to order at about 7:30 PM. Theo asked for a motion to approve the minutes for the June 1, 2016, board meeting as printed in the July, 2016, issue of the *Eclipse*. Spencer so moved, Kat seconded, and the minutes were approved by unanimous voice vote. Tom Guss reported that there was \$1,619.84 in the savinfs account and \$1,913.21 in the checking account. About \$256 was expected to be due from PayPal.

The club picnic, which was weathered out in June, is rescheduled for August 6 at Spot Observatory.

We are going to obtain price quotes for eclipse viewing glasses.

There being no further business, Theo asked for a motion to adjourn. Rob so moved, Tom seconded, and the meeting was adjourned at about 8 PM.

Respectfully submitted,

Bud Hamblen
Secretary

Next page: JULY 21, 2016: Celebrating its 50th anniversary this year, the TV series "Star Trek" has captured the public's imagination with the signature phrase, "To boldly go where no one has gone before." The Hubble Space Telescope simply orbits Earth and doesn't "boldly go" deep into space. But it looks deeper into the universe than ever before possible to explore the fabric of time and space and find the farthest objects ever seen. This is epitomized in this Hubble image that is part of its Frontier Fields program to probe the far universe. This view of a massive cluster of galaxies unveils a very cluttered-looking universe filled with galaxies near and far. Some are distorted like a funhouse mirror through a warping-of-space phenomenon first predicted by Einstein a century ago.

Credit: [NASA, ESA, and J. Lotz \(STScI\)](#)



From the President, continued

Fred Espenak's analogy on the difference between a partial and a total eclipse: looking at a picture of an ice cream cone vs. actually eating an ice cream cone. I'll add - on a hot day. I hope all of us get the chance to safely view this celestial wonder. BSAS should have a limited supply of solar glasses for direct viewing, and we'll have resource lists for activities and safe viewing techniques. Good fun observing our own star!

Clear skies,

Theo Wellington

Next BSAS meeting
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900 Glendale Lane

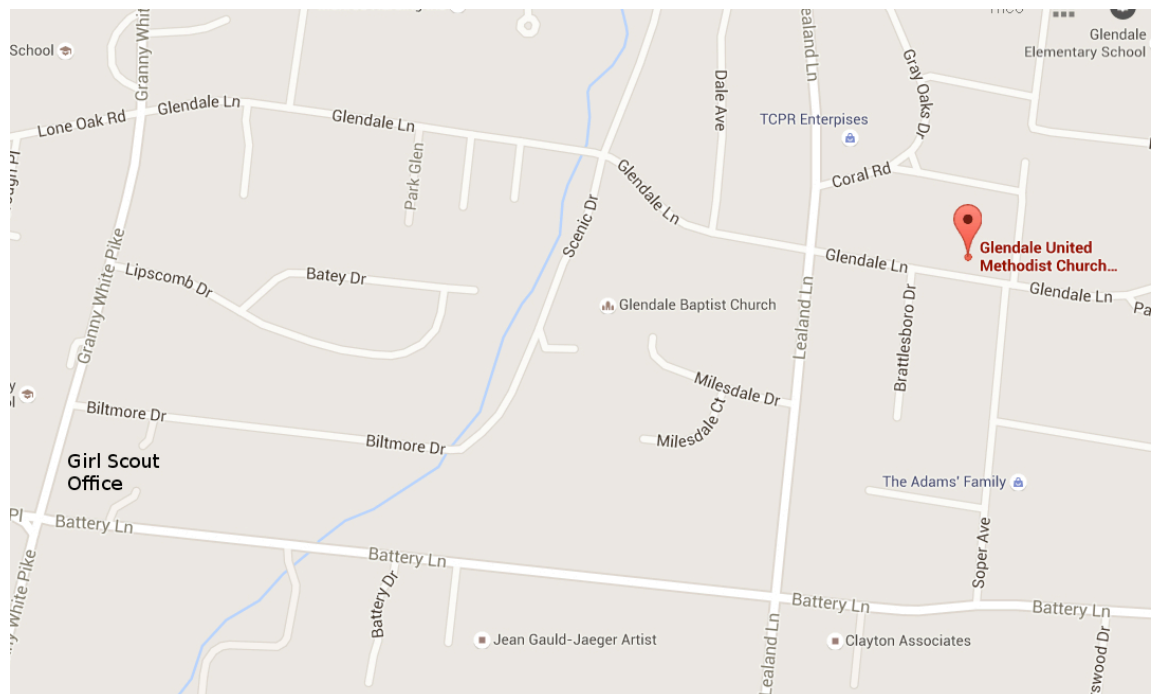
*Topic: Dr. Spencer Buckner, APSU:
 "Ripples in Spacetime: The First Detections of Gravity Waves"*

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

The Girl Scouts are renovating, so we will be at the [Glendale United Methodist Church, 900 Glendale Lane, Nashville 37204](http://www.bsasnashville.com).

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

Please check bsasnashville.com for information about the September meeting.



**Barnard-Seyfert Astronomical Society
Minutes of the Monthly Membership Meeting
Held On Wednesday, July 20, 2016.**

The Barnard-Seyfert Astronomical Society held its monthly membership meeting at the Glendale United Methodist Church, 900 Glendale Lane, Nashville, Tennessee, on Wednesday, July 20, 2016. Twenty-four members and guests signed in. Gary Eaton called the meeting to order at 7:45pm. Gary called for a motion to approve the minutes of the June meeting as printed in the July Eclipse. Mike Benson so moved, Josh Hurt seconded, and the minutes were approved by an unanimous voice vote. Bud Hamblen reported that as of July 6 there was \$1,913.21 in the club's checking account and \$1,619.84 in the savings account.

The following requests for outreach assistance were received:

- Cumberland Paddle on August 18 at Hamilton Creek Recreation Area, Percy Priest Lake.
- A home school group at a date to be determined
- Cheekwood Full Moon Festival in October. Contact Theo for more information.
- Montgomery Bell State Park, July 29 (Contact John Walker or Chuck Schlemm).

The club picnic is scheduled for August 6 at Spot Observatory, by favor of Mark Manner. Bring food! Spot Observatory is located near Bucksport, TN, I-40 Exit 152.

The following star parties were announced:

- Saturday, July 30, Natchez Trace mile marker 435.3 (private).
- Friday, August 5, Bells Bend Outdoor Center, 8:30-10 PM (public).
- Friday, August 12, Bowie Nature Park, 8:30-10:30 PM (public).
- Sunday, August 21, solar observing Centennial Park (pending park approval).

Pickett State Park will have Perseid meteor shower viewing on August 12.

Curt Porter announced the Short Mountain Repeater Club 36th Annual Cedars of Lebanon Hamfest, August 27, at Cedars of Lebanon State Park, starting at 8 AM. The hamfest will feature ham gear, including portable power and sometimes a telescope, for sale.

Katelyn Henke, winner of the BSAS prize at the Middle Tennessee Science and Engineering Fair, presented her project on measuring light pollution photographically.

Bud Hamblen presented how to view the Sun safely with the unaided eye or with telescopes.

There being no further business, the meeting was adjourned at 9:00 PM.

Respectfully submitted,

Bud Hamblen
Secretary



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.