

## Upcoming Events

### Board of Directors Meeting

July 7<sup>th</sup> at the Cumberland Valley Girl Scout Council Building – 7:30 pm

August 4<sup>th</sup> at the Cumberland Valley Girl Scout Council Building – 7:30 pm

### Membership Meeting

July 21<sup>st</sup> at the Adventure Science Center – 7:30 pm

August 17<sup>th</sup> at the Adventure Science Center – 7:30 pm

### Star Parties

July 2<sup>nd</sup> – BSAS Private Star Party at mile marker 435.5 Natchez Trace Parkway

July 23<sup>rd</sup> – BSAS Public Star Party at Long Hunter State Park

July 30<sup>th</sup> - BSAS Private Star Party at mile marker 412 Natchez Trace Parkway

August 6<sup>th</sup> – BSAS Public Star Party at Edwin Warner Park

August 26-27<sup>th</sup> - BSAS Annual Retreat at Spot Observatory

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## What's Up in the Summer Sky?

Thursday, July 21, 2011  
Adventure Science Center  
7:30 pm



**Dr. Terry Reeves** and newsletter editor **Steve Wheeler** will discuss binocular and telescope objects currently visible in the night sky.

See you there!

## From The President

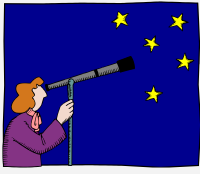


Greetings from your BSAS president. I hope everyone had a safe and happy 4th of July. In addition to viewing the terrestrial fireworks, there are plenty of celestial fireworks to view. SN 2011dh is still visible in M51 with a moderately large telescope. It seems to have peaked at magnitude 12.1 around June 24 and has started to fade. At this time it is being classified as a Type IIb supernova. This type of supernova occurs for massive stars that have lost much of their hydrogen due to interactions with a companion prior to going supernova. Cassiopeia-A is a classical example of a Type IIb supernova. As I mentioned in my message last month, we already have a good idea of what the progenitor star was (an 18-24 solar mass yellow giant) but we won't be absolutely certain for a few years until the supernova fades away enough to take an inventory of the stars in the vicinity and see which one is no longer there. In the meantime, if you imaged M51 during the last month (or slightly more, they need pre-supernova images for comparison), you can contribute to the scientific study of this supernova by sending your image to the Palomar Transient Factory at <http://www.astro.caltech.edu/ptf/>.

I want to extend a special thanks to Dr. C. Robert O'Dell for giving us his presentation on planetary nebulae at the June membership meeting. Planetary nebulae are some of the most popular viewing objects among amateur astronomers and Dr. O'Dell's explanation of what they are, how they form and why they look like they do was excellent. The first object I ever imaged with a CCD camera was the Ring Nebula and I have spent countless hours imaging and viewing the Ring, Dumbbell, Owl, Eskimo, Ghost of Jupiter and other planetary nebula. Since this is how the vast majority of stars end their lives, including our Sun, hearing the science behind their formation makes viewing them even more interesting. Dr. O'Dell has spoken to our club several times and every time it is pleasure listening to him. Hopefully, we can have him back again sometime in the future.

Our speakers for the July 21 public meeting are former BSAS president Dr. Terry Reeves and newsletter editor Steve Wheeler. They will be giving us a "What's Up" talk. We haven't had a "What's Up" since last October. Terry and Steve do an excellent job of guiding us through the season's skies showing us everything from

*Continued on Page 2*



"I was on Atlantis when we opened the payload bay doors right after we got to orbit. I was on the flight deck working in the aft flight deck area opening the payload bay doors, and as the payload bay doors opened I looked down at the Earth for the first time and saw the horizon and, that was very special."

**Sandy Magnus, Mission Specialist, STS-135**

### FREE TELESCOPES!

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, and a waiting list may be 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 all times listed are Central Standard Time

### LUNAR PHASES

#### July 2011

07/01 NEW Moon  
07/08 FIRST Quarter  
07/15 FULL Moon  
07/23 LAST Quarter  
07/30 NEW Moon

#### August 2011

08/06 FIRST Quarter  
08/13 FULL Moon  
08/21 LAST Quarter  
08/29 NEW Moon

### OBJECTS VISIBLE THIS MONTH

#### Messier Objects:

##### **Globular Clusters:**

M3, M4, M5, M53, M68, M80

##### **Galaxies:**

M83

#### Caldwell Objects:

C-60/61 – The Antennae Galaxies

C-6 – The Cat's Eye Nebula (planetary nebula)

### *From the President, cont.*

the easy binocular objects to the challenging telescopic ones. They even have selections which are good for light polluted skies so everyone can enjoy something in the evening skies.

In addition to the talk by Terry and Steve, we will be voting on the proposed changes to the BSAS Bylaws at the July meeting. The changes are posted on the BSAS website and can also be found as an addendum to the June Eclipse. It has been a number of years since the BSAS reviewed and amended the bylaws and a number of items are long overdue for change. Please take a minute to read through the proposed changes and then make a special effort to attend the July 21 meeting. It is important that we have a good turn-out for the vote to make the decision one that all members feel they have participated in.

One more thing for the July meeting: the BSAS has been engaged in negotiations with the Adventure Science Center on a Memorandum of Understanding for the last several months. It looks like the negotiations are reaching their final stage and the MOU should be ready soon. The BSAS board of directors will review the latest revisions at the July board meeting and, hopefully, complete and approve the final version of the document. I will report on the progress at the July membership meeting and, if the board approves, post the final version of the MOU in the August Eclipse.

Finally, the change to the meeting date will begin with the August public meeting. The BSAS will begin meeting on the third Wednesday of each month on Wednesday, August 17, 2011. Please mark your calendars appropriately. I will remind everyone of the change at the July meeting and again in my president's message in the August Eclipse.

See you at the July 21 meeting.

Dr. Spencer Buckner  
President

## Happy Birthday John Glenn by Robin Byrne

This month, we celebrate the life of a man whose exploits in space span three decades, but who did so much more, as well. In Cambridge, Ohio on July 18, 1921 John Glenn was born. When he was two years old, his family moved to New Concord, Ohio, where his father opened a plumbing business. The family built a home that was large enough to also be a rooming house for students from Muskingum College. Between his parents and the students living in his house, John Glenn was inspired with an interest in science, flying, and duty to his country. After public school, Glenn entered Muskingum College to study math and engineering. It was during this time that he earned his pilot's license.

It was while Glenn was in college that the Japanese bombed Pearl Harbor. Glenn's patriotism sprang to life, leading him to drop out of college and enlist in the Army Air Corps. Due to delays from the Army, Glenn moved on to the Navy as an aviation cadet. It was during this time that Glenn married the love of his life, Annie Castor, on April 6, 1943. Once Glenn completed his advanced training, he was assigned to the Marine Corps to fly transport planes. Later, he was assigned to an F4U Corsair, which he flew in 59 combat missions. After the war, he flew patrol missions over North China, and then later, he was a flight instructor. During the Korean War, Glenn flew 63 combat missions, and then, during a second tour, participated in an interservice exchange, flying with the Air Force. His eagerness to shoot down Soviet MiGs earned him the nickname "MiG Mad Marine." Shortly before his tour was up, Glenn finally shot down 3 MiGs.

After Korea, Glenn was stationed at the Naval Air Station in Patuxent River, Maryland, where he entered Test Pilot School. His main task was to test armaments at high altitude. Then, on July 16, 1957, Glenn participated in "Project Bullet." He flew a Vought F8U-1 Crusader from California to New York in a little over 3 hours, making the first supersonic transcontinental flight. This flight guaranteed he would be considered for the manned space program.

When NASA started to search for volunteers, Glenn was quick to respond. In April, 1959, John Glenn was chosen as one of the original seven Mercury astronauts. In addition to training for their space missions, each astronaut had a special assignment related to spacecraft design on which they worked. In Glenn's case, his assignment dealt with cockpit layout and controls. His input influenced, not only the Mercury capsule design, but also Gemini and Apollo.

The first three men chosen to fly the Mercury spacecraft were Al Shepard, Gus Grissom and John Glenn. Shepard and Grissom were to fly the first two suborbital flights, with Glenn as their backup. On February 20, 1962, it was Glenn's turn. Instead of a suborbital flight (straight up and straight back down), Glenn would be America's first man in orbit. To put a spacecraft into orbit requires much more power than a suborbital flight, so, instead of launching on a Redstone rocket, Glenn was propelled into space aboard an Atlas rocket. The Atlas was much more powerful, but also much less reliable. The astronauts had witnessed many Atlas rockets explode during test launches, and, yet, Glenn

was more than ready to ride one into space.

The launch was perfect. Glenn's mission was originally planned for seven orbits. However, a sensor indicated that his heat shield was loose, so the decision was made to bring him down after only three orbits. To ensure that his heat shield remained in place during reentry, the retro pack of rockets (which are normally jettisoned before reentry) were kept in place to help hold on the shield. During the heat of reentry, the retro pack burned spectacularly, engulfing the capsule in flames. A later inspection of the capsule found that the heat shield was NOT loose, and that the signal was due to a faulty sensor. Glenn returned home a hero and was greeted with a ticker tape parade.

After Glenn's flight, it was rumored that NASA didn't want to risk the life of their hero with another space mission. While he remained at NASA for a few years, Glenn became very close to the Kennedy family. Robert Kennedy suggested to Glenn that he should run for one of the Senate seats in Ohio. In January, 1964, Glenn resigned from NASA and entered his first political race. Unfortunately, after slipping, hitting his head and getting a concussion, Glenn had to quit the campaign. Glenn was then given a job as Vice President (and later President) of Royal Crown Cola. He made a second run for office in 1970, but was defeated in the primary. Finally, in 1974, John Glenn became a United States Senator from the great state of Ohio; a post he held for the next 24 years. During his time in the Senate, Glenn authored the 1978 Nonproliferation Act, and served on several committees, including the Special Committee on Aging. On February 20, 1997, John Glenn announced that he would not seek reelection.

It was during his time on the Special Committee on Aging that Glenn noticed similarities between the effects of aging and the effects of weightlessness. That was when he began a different campaign: to go back into space as a guinea pig. To be accepted, Glenn had to meet the physical requirements of the astronauts, which he did. On October 29, 1998, at the age of 77, John Glenn became the oldest person to go into space, aboard the Space Shuttle Discovery. Since NASA continuously monitors the health of all astronauts who flew in space, Glenn provided almost four decades of data. He was an invaluable test subject. Once again, he returned home to a ticker tape parade.

John Glenn's most recent project was to found, with his wife Annie, the John Glenn Institute for Public Service at Ohio State University. The goal is to encourage more young people to pursue careers in public service and government. If anyone embodies the spirit of public service it is John Glenn. From careers in the military, the space program and the U.S. Senate, John Glenn has served this country in so many ways. He serves as an inspiration to us all.

References:  
John Glenn - Wikipedia  
[http://en.wikipedia.org/wiki/John\\_Glenn](http://en.wikipedia.org/wiki/John_Glenn)

Astronaut Bio: John Glenn, Jr. 1/99  
<http://www.jsc.nasa.gov/Bios/htmlbios/glenn-j.html>

The John & Annie Glenn Historic Site | John Glenn  
<http://johnatlenhome.ora/about/john-glenn>

## Board Meeting Minutes – June 2, 2011

*Bob Rice, Secretary*

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 June 2, 2011. A sign-in sheet was passed around in lieu of a roll call. Board members Dr. Spencer Buckner, Bill Griswold, Kris McCall, Bob Norling, Curt Porter, Dr. Terry Reeves, Bob Rice, and Theo Wellington were present. Board members Steve Cobb, Jana Ruth Ford, Dr. Donna Hummell, and Santos Lopez were absent. Past President Joe Boyd was present as a guest. A quorum being present, President Dr. Spencer Buckner called the meeting to order at 7:48 P.M.

Treasurer Bob Norling reported that the BSAS had \$2,166.23 in its regular checking account and \$407.33 in its equipment account. Dr. Spencer Buckner announced these upcoming events and star parties: Jun 03 – Public star party at Bells Bend Nature Center from 8:30 P.M. to 10:30 P.M.; Jun 04 – BSAS Annual Picnic at Mark Manner's Spot Observatory from 5:30 P.M. to whenever; Jul 02 – Private star party at Natchez Trace Parkway mile marker 435.5 - sunset to whenever.

Dr. Spencer Buckner announced that Dr. Bob O'Dell from Vanderbilt University would present a program on "Planetary Nebulae" at the June 16 membership meeting. Dr. Buckner also announced that he planned to meet again with Susan Duvenhage, the President and Chief Executive Officer of the Adventure Science Center (ASC), to continue discussing the Memorandum of Understanding (MOU) being drafted between that organization and the BSAS regarding the Society's use of their facilities. Joe Boyd commented that the BSAS' liability under item number three of the general policies section of the ASC's rental policies that dealt with a rental client's responsibility for physical damages or personal injuries should be negotiated and modified during this discussion.

Kris McCall reported that Drew Gilmore, the BSAS' Webmaster, could not access communications from the Society's domain website vendor because he never received the password from the previous webmaster. She further noted that this situation was creating a number of operational problems and inconveniences. Dr. Spencer Buckner said that he would contact the vendor to resolve this situation. Terry Reeves said that he would also look into the possibility of developing some temporary work-a-rounds. Joe Boyd, a past BSAS president, asked that his name and telephone number be removed from the website as a public contact person.

Joe Boyd, Chairman of the Bylaws Committee, then presented a list of proposed changes to the BSAS' bylaws for the board's review and discussion. During their review, several board members took exception to a proposed change to Article III - Directors, Section 303 – Term of Office regarding the number of consecutive terms that an individual director at large could serve. The proposed change added a provision that a director at large could not serve an additional term until one year had elapsed since his or her last service as a director. This limitation had been added as a measure to prevent an individual from possibly holding that position for an undue or excessive length of time. However, although agreeing in principle, these board members expressed the additional concern that, given the historically small size of the pool of persons willing to actively serve on the board, this might actually severely hinder the filling of these positions. Upon additional discussion, the entire board agreed with this argument especially noting that two compensating controls existed to effectively restrict any possible "perpetuity" in office: (1) a director at large can only be elected by a vote of the general membership, and (2) the general membership is not limited to voting for a proposed candidate for director at large but can also make nominations from the floor. Bob Norling moved that the board abstain from adopting this proposed change and Kris McCall seconded his motion that subsequently passed by a unanimous voice vote without additional discussion. Since the board agreed with all of the other proposed changes to the bylaws, Bob Norling moved that these be adopted without change. Curt Porter seconded his motion that subsequently passed by a unanimous voice vote without additional discussion. Dr. Spencer Buckner then thanked Joe Boyd and the other members of the Bylaws Committee, Dr. Donna Hummell and Bob Rice, for their services. NOTE: a copy of the proposed changes approved by the board is attached as an addendum to these minutes. These proposed changes will be presented to the membership at their June 16, 2011 meeting in addition to being placed on the BSAS' website and in the Eclipse newsletter. The membership will then vote for or against adopting these proposed changes at their July 21, 2011 meeting.

Bob Norling noted that nearby Spring Hill fifth-grade student Benjamin Kulas who recently advanced to the semifinal round of the Scripps National Spelling Bee had told the press that he wanted to be an astrophysicist when he grew up. In light of his amazing accomplishment and expressed ambition, Mr. Norling suggested that the Society should offer this young man a complementary one year family membership in the BSAS. The board briefly discussed this suggestion and decided that it would be a great idea to do so. Curt Porter put this suggestion into a motion that was seconded by Bill Griswold and subsequently approved by a unanimous voice vote of the board.

Since there was no further business possible to discuss, President Dr. Spencer Buckner declared the meeting to be adjourned at 9:53 P.M.

### OFFICERS

**Dr. Spencer Buckner**  
President

**Dr. Donna Hummell**  
Vice-President

**Bob Rice**  
Secretary

**Bob Norling**  
Treasurer

### Directors at Large

**Steve Cobb**  
**Jana Ruth Ford**  
**Bill Griswold**  
**Santos Lopez**  
**Curt Porter**  
**Theo Wellington**  
**Kris McCall** (ex officio)

**Steve Wheeler**  
Newsletter Editor  
wsw261@hotmail.com

**Monthly meetings  
are held at:**



**The Adventure  
Science Center**

**800 Fort Negley Blvd  
Nashville, TN 37203**

## Monthly Meeting Minutes – June 16, 2011

*Bob Rice, Secretary*

President Dr. Spencer Buckner called the meeting to order at 7:37 P.M. in the Jack Wood Hall at the Adventure Science Center (ASC) and welcomed new members and visitors. Treasurer Bob Norling reported that the BSAS had \$2,166.23 in its regular bank account and \$407.33 in its equipment account. Dr. Buckner announced these upcoming star parties:

- Jul 02 – a private star party at Natchez Trace Parkway mile marker 435.5 from dusk to whenever.
- Jul 23 – a public star party at Long Hunter State Park from 8:30 P.M. to 10:30 P.M.

Dr. Spencer Buckner reported that the board of directors had recommended several changes to the Society's bylaws that were published in the June 2011 edition of the Eclipse newsletter and also posted on the Society's website at bsasnashville.com. Dr. Buckner explained that these were mostly of a routine "housekeeping" nature that had accumulated over the years since the previous revision in 2004. He asked that members read through these proposed changes and be prepared to vote for or against their adoption at the July 21, 2011 membership meeting. He also reported that, following a meeting with Susan Duvenhage, the ASC's President, this afternoon, the ongoing negotiation regarding the Memorandum of Understanding (MOU) between our two organizations was nearing completion. He pointed out that the concerns expressed by the BSAS' board at their last meeting had been ironed out satisfactorily and that a final version of the MOU might be signed in July.

Joe Boyd announced that BSAS member Lonnie Puterbaugh had just received the Astronomical Society of the Pacific's Las Cumbres Amateur Outreach Award for 2011 honoring his "...outstanding educational outreach by an amateur astronomer to K-12 children and the interested public" through the development and use of his "Astronomy Channel" minivan mobile display station and observatory. As Mr. Boyd commented, anyone who ever attended an "Astronomy Channel" presentation was completely "blown away" by the experience and would well understand why Mr. Puterbaugh was the recipient of this prestigious award. Mr. Boyd also suggested that the BSAS should nominate another member for next year's Las Cumbres Award.

Dr. Spencer Buckner announced that next month's membership meeting program would be another seasonal "What's Up" presentation by BSAS members Dr. Terry Reeves and Steve Wheeler. These sessions have been very popular because they describe current celestial objects that can be seen in the evening sky with telescopes, binoculars, and the naked eye. In addition to detailed descriptions, they also typically feature locator charts along with astro-images made by BSAS members.

Dr. Spencer Buckner then introduced Dr. Bob O'Dell, Distinguished Research Professor of Physics and Astronomy at Vanderbilt University, who delivered the evening's program on "Planetary Nebulae." Dr. O'Dell began his presentation by explaining that the term "planetary" as used in "planetary nebulae" was a misnomer introduced by early observers who described anything in the sky that looked fuzzy as being "nebulae" and thought that these particular "nebulae" looked somewhat like planets. He then noted that planetary nebulae were actually stars similar to our sun (up to about 10 solar masses) that had run out of the hydrogen fuel being converted to helium in their cores to produce energy. At that point the helium would start being converted into energy – a much hotter process – that through a series of pulses over time caused the surrounding gasses to expand outwards and eventually detach into layers around the former core. This nuclear synthesis of lighter elements into heavier ones might continue until carbon was produced at which point the star would not have enough mass to ignite additional fusion. It would then become a white dwarf with roughly the mass of the sun compressed into degenerate matter about the size of a small city. The white dwarf would still be extremely hot but, since it could no longer undergo nuclear burning, it would slowly cool into a cosmic cinder. Dr. O'Dell pointed out that most planetary nebulae had the same general configuration, but that their appearance depended much upon that angle at which they were observed from earth. He illustrated this "angular projection effect" very adeptly with a bagel much to the delight of the audience. He described several planetary nebulae that were familiar to amateur astronomers such as the Ring Nebula, the Eskimo Nebula, and the Dumbbell Nebula to name a few. He concluded by noting that we still do not know if in at least some cases instabilities within the gaseous atmospheres of stars before they became "planetary nebulae" might account for some of the apparent lumpiness that has been detected within these objects. Dr. O'Dell then graciously answered questions from the audience.

Since there was no additional business for discussion, President Dr. Spencer Buckner declared the meeting to be adjourned at 8:38 P.M.

### BSAS Affiliations

**The Astronomical League**  
<http://www.astroleague.org/>



**The Night Sky Network**  
<http://nightsky.jpl.nasa.gov/>



**International Dark Sky Association**  
<http://www.darksky.org/>





## Finding Planets among the Stars

Space Place Partners Article, June 2011

By Dr. Tony Phillips

Strange but true: When it comes to finding new extra-solar planets, or exoplanets, stars can be an incredible nuisance.

It's a matter of luminosity. Stars are bright, but their planets are not. Indeed, when an astronomer peers across light years to find a distant Earth-like world, what he often finds instead is an annoying glare. The light of the star itself makes the star's dim planetary system nearly impossible to see.

Talk about frustration! How would you like to be an astronomer who's constantly vexed by stars?

Fortunately, there may be a solution. It comes from NASA's Galaxy Evolution Explorer, an ultraviolet space telescope orbiting Earth since 2003. In a new study, researchers say the Galaxy Evolution Explorer is able to pinpoint dim stars that might not badly outshine their own planets.

"We've discovered a new technique of using ultraviolet light to search for young, low-mass stars near the Earth," said David Rodriguez, a graduate student of astronomy at UCLA, and the study's lead author. "These M-class stars, also known as red dwarfs, make excellent targets for future direct imaging of exoplanets."

Young red dwarfs produce a telltale glow in the ultraviolet part of the electromagnetic spectrum that Galaxy Evolution Explorer can sense. Because dwarf stars are so numerous—as a class, they account for more than two-thirds of the stars in the galaxy—astronomers could reap a rich bounty of targets.

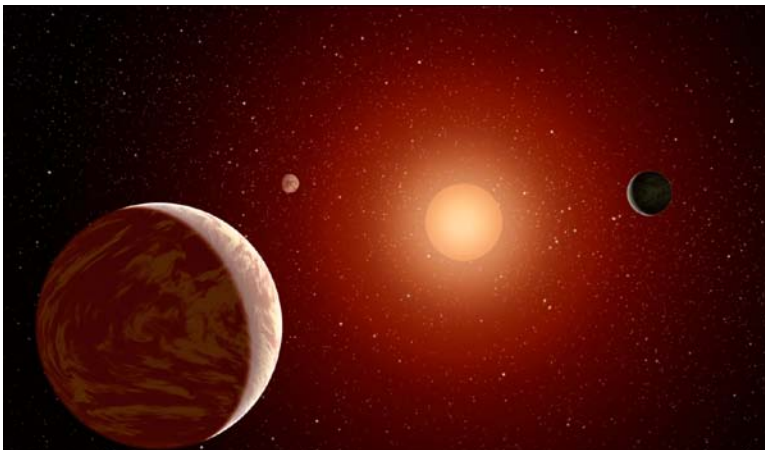
In many ways, these stars represent a best-case scenario for planet hunting. They are close and in clear lines-of-sight, which generally makes viewing easier. Their low mass means they are dimmer than heavier stars, so their light is less likely to mask the feeble light of a planet. And because they are young, their planets are freshly formed, and thus warmer and brighter than older planetary bodies.

Astronomers know of more than five hundred distant planets, but very few have actually been seen. Many exoplanets are detected indirectly by means of their "wobbles"—the gravitational tugs they exert on their central stars. Some are found when they transit the parent star, momentarily dimming the glare, but not dimming it enough to reveal the planet itself.

The new Galaxy Evolution Explorer technique might eventually lead to planets that can be seen directly. That would be good because, as Rodriguez points out, "seeing is believing."

And it just might make astronomers feel a little better about the stars.

The Galaxy Evolution Explorer Web site at <http://www.galex.caltech.edu> describes many of the other discoveries and accomplishments of this mission. And for kids, how do astronomers know how far away a star or galaxy is? Play "How Old do I Look" on The Space Place at <http://spaceplace.nasa.gov/whats-older> and find out!



*Exoplanets are easier to see directly when their star is a dim, red dwarf.*

## Lonnie Puterbaugh Wins ASP Las Cumbres Outreach Award

The Astronomical Society of the Pacific (ASP) awarded the 2011 Las Cumbres Amateur Outreach Award for excellence in astronomy research and education to long time BSAS member **Lonnie Puterbaugh**. Many have been awed and inspired by Lonnie's use of cutting edge imaging technology via *The Astronomy Channel* to show detailed views of deep sky objects in near real time.

Congratulations, Lonnie, for this well deserved recognition!



Lonnie sets up to view the night sky at VSSP 2007

From the ASP web site:

*The Las Cumbres Amateur Outreach Award, honoring outstanding educational outreach by an amateur astronomer to K-12 children and the public, goes to **Lonnie Puterbaugh** of Brentwood, Tennessee.*

*The centerpiece of Puterbaugh's contribution to astronomy outreach is "The Astronomy Channel," a minivan that he modified to function as a mobile display center and observatory. He travels up to hundreds of miles to student and public events sponsored by local and neighboring astronomy clubs and organizations to bring the universe to attendees. His van is equipped with a variety of electronic gear that lets him entertain and inform the public about astronomy even if cloudiness prevents sky observing; his arsenal of programs includes music, video and electronic images of celestial objects.*

*His long-standing work to provide astronomy experiences to a wide-ranging segment of the population merits **Lonnie Puterbaugh** this year's Las Cumbres award.*

**Become a Member of the BSAS!**

Download and print the Application for membership from [www.bsasnashville.com](http://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.



**We're on the Web!**

See us at:  
[www.bsasnashville.com](http://www.bsasnashville.com)

# 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 Thursday of each month at the Adventure Science Center 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](http://www.bsasnashville.com). If you need more information, write to us at [info@bsasnashville.com](mailto:info@bsasnashville.com) or call Dr. Spencer Buckner at (931) 221-6241.

**BARNARD-SEYFERT  
ASTRONOMICAL SOCIETY**  
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NASHVILLE, TN 37215-0713

