

## Upcoming Events:

**Board of Directors Meeting**  
September 4<sup>th</sup> at the  
Cumberland Valley Girl Scout  
Council Building – 7:30 pm

**BSAS Private Star Party**  
September 6<sup>th</sup> at mm 433.5  
parking lot, Natchez Trace  
Parkway

**Membership Meeting**  
September 18<sup>th</sup> at the  
Adventure Science Center –  
7:30 pm

### Next Month:

**BSAS Astronomy Retreat**  
October 3-4 at Spot  
Observatory  
(see Outreach Update, page  
2 for more details)

**BSAS Public Star Party**  
October 4 at Long Hunter  
State Park

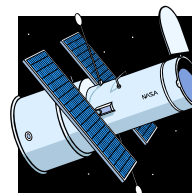
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## September Membership Meeting

Thursday, September 18, 2008  
Adventure Science Center  
7:30 pm



### *Creating the Hubble Space Telescope*

Our special guest this month is distinguished astronomer Dr. C. Robert O'Dell, who will present a talk about the history of the Hubble Space Telescope.

Dr. O'Dell was the founding Project Scientist for the Hubble Space Telescope, serving from 1972 to 1983 during the project's initial design and construction. He will describe what it took to convince politicians and others of the value of this program and to really get the Hubble Space Telescope off the ground.

## From The President



First, I would like to thank Joe Boyd and Jana Ruth Ford for providing the program for the August meeting. I have only heard good things about it. I would also like to thank Bill Griswold for running the meeting in my absence.

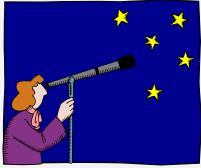
Just in case you were wondering, the Kenai Peninsula of Alaska is absolutely magnificent. If you get the chance, you really should consider going. However, do not go there in August expecting to see stars. It is the rainy season. While my friends and I did not see a lot of rain, the Nimbus Nebula was present in full force. I think I managed to see about three stars total and the moon. I'll have to check the pictures to see if we ever saw the sun. There were two things I was really hoping to see: the Northern Lights and Polaris at sixty degrees up. Maybe I'll get another chance sometime.

Even though I did not get to see much in the way of astronomical sights, I did get the chance to do some reading. I have now finished two books on variable stars, and have started a third. (I hope to write a book review later.) One of the things that I found surprising is how strongly visual observing is encouraged. Visual observing with the naked eye, binoculars, or a telescope is still an important part of the data collected by the American Association of Variable Star Observers (AAVSO). Actually, my impression is that the quantity of visual data far exceeds the quantity of data taken with photometers and CCD cameras.

If you have any interest in variable stars, don't let the lack of a camera stop you. You can make scientifically useful measurements with just your eyeball, brain, and whatever optical aid you need to see the star and any comparison stars. In addition, you will force yourself to learn parts of the sky rather well.

Our program in September is being presented by Dr. C. R. O'Dell. Dr. O'Dell was the founding Project Scientist for the Hubble Space Telescope. He is also an acknowledged expert on the Orion Nebula. He will be speaking on the history of the Hubble Space Telescope and will be including some of the "behind the scenes" tidbits that should make for a very informative evening. You really want to be there for this meeting!

Terry Reeves  
President



*"All truths are easy to understand once they are discovered. The point is to discover them."*

**Galileo Galilei**  
1564 – 1642

### 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

### September 1—30, 2008

- 9/4 BSAS Board of Directors Mtg.,  
7:30 pm at Girl Scout Office
- 9/4 Saturn in conjunction with the Sun
- 9/6 BSAS Private Star Party – mm 435.5  
Natchez Trace Parkway – 8:00 pm
- 9/7 FIRST QUARTER – Moon at apogee
- 9/13 Mercury at greatest elongation in  
the evening sky
- 9/13 The mostly full Moon occults  
Neptune
- 9/13 Uranus at opposition
- 9/15 FULL MOON
- 9/18 BSAS Membership Meeting  
7:30 pm at ASC
- 9/19 The Moon occults the Pleiades as  
seen from eastern North America
- 9/20 Moon at perigee
- 9/22 LAST QUARTER
- 9/22 Autumn equinox
- 9/29 NEW MOON

### OBJECTS VISABLE THIS MONTH

#### MESSIER OBJECTS

Globular Clusters M13, M92, M14, M22, M28,  
M69, M70, M54

#### CALDWELL OBJECTS

- C16 – Open Cluster
- C57 – Barnard's Galaxy (Irregular Barred)
- C15 – Blinking Planetary (Planetary Nebula)
- C19 – Cocoon Nebula (Emission Nebula)
- C20 – N. American Nebula (Emission Nebula)
- C27 – Crescent Nebula (Emission Nebula)
- C33 – Network Nebula (Supernova Remnant)
- C34 – Veil Nebula (Supernova Remnant)

## Outreach Update *Terry Reeves, President*

August was a great month for the club's star parties. The club picnic at Mark and Anne Manner's home was a lot of fun. We should all remember to thank them for their kind hospitality. I also enjoyed the public star party last month at Warner Park. The new special events field worked out really well.

There are several upcoming events that deserve mention. We currently have a private star party planned for Saturday, September 6. It will be at the turnout at mile marker 435.5 on the Natchez Trace, weather permitting.

We have a special treat planned for October 3-4. We are holding a BSAS astronomy retreat at Mark Manner's home. This will be a very low-key weekend. We currently don't have any activities planned other than star gazing. If you haven't yet been to the Manner's property, rest assured that the skies are dark and the viewing is spectacular (also weather permitting). There are some beds available at Mark's in his cabins, but we will need to know who would like to reserve bed space. Some of us will be using tents and there are restroom facilities available for campers. There is also a small kitchenette in one cabin with a microwave and stove for use. You will be responsible for your own food. The only exception to that is Saturday evening. We are still working on the menu. There will be a small charge to cover any expenses. Send me an e-mail at [terry.reeves@comcast.net](mailto:terry.reeves@comcast.net) or leave me a message at (615) 833-6759 if you would like to reserve a bed or want to participate in the Saturday evening meal. I will respond in like manner. So, if you do not hear back from me, assume that I missed the message. While we do not currently have any programs planned, we are open to any ideas.

There is also public star party at Long Hunter State Park on Saturday, October 4. (Yes, I do realize there is a date conflict. These things happen.) We will need about four telescopes to cover the public star party. I will be one of them. (My substitute Sunday School teacher will appreciate me not making her teach yet again this year.) If you would like to help out at the Long Hunter event, let me know so that I can make sure we will have enough people there.

# Happy Birthday 1992 QB1

by Robin Byrne

This month we celebrate the first in a series of discoveries that confirmed the existence of the Kuiper belt. In 1949, Kenneth Edgeworth predicted the existence of a belt of objects beyond the orbit of Neptune. Gerard Kuiper made a similar prediction in 1951. The basis for their predictions had to do with comets. Jan Oort had already proposed that the solar system was engulfed in a huge, spherical halo of comet nuclei. By analyzing comet orbits, and extrapolating back in time, Oort showed that long-period comets (comets with orbital periods lasting thousands of years) originated far from where the planets are found. However, the number of short-period comets (with orbital periods less than 200 years) could not be accounted for simply by altering the orbits of long-period comets, since the alteration is too time-consuming to generate the number of known short-period comets. This is what led Edgeworth and Kuiper to suggest that another comet reservoir existed closer to home, in the region just beyond the orbit of Neptune.

In 1987, David Jewitt at MIT began a search for objects in the outer solar system, and recruited his graduate student, Jane Luu, to help. Using telescopes at both Kitt Peak and Cerro Tololo, they originally performed the search using methods similar to the hunt for Pluto. Taking two images a few days apart, the images were compared in a blink comparator, in an attempt to spot tiny motions of non-stellar objects. When CCD's became more common, their hunt became much more efficient. Exposure times were drastically reduced, and the comparing of images could now be done using computers. When Jewitt took a position at the University of Hawaii, Luu soon joined him to continue their search using the 2.24 meter telescope at Mauna Kea.

After 5 years of searching, their efforts finally paid off. During August, 1992, while observing in the direction of Pisces, they found the faint, moving speck they were hoping for. On August 30 they announced the "Discovery of candidate Kuiper belt object (15760) 1992 QB1." Since Jewitt and Luu had been reading John le Carre novels, they had tentatively named it Smiley, after the character George Smiley central in many of the le Carre novels. However, the name Smiley had already been used to name an asteroid, although named after an astronomer of the same name. Six months later, they had discovered a second object in the same region. Since then, thousands of Kuiper belt objects have been discovered.

Very little is known about 1992 QB1. Estimates place its diameter at approximately 100 - 200 kilometers (roughly 1/10 the size of Pluto). Based on other objects in the region, the composition is guessed to be roughly half rock and half ice. Its orbit is a little larger than Pluto's, has a slight tilt, and is almost circular. It takes 289 years to orbit once around the Sun. Like many other subsequently discovered Kuiper belt objects, 1992 QB1 has a red color. This is thought to be due to hydrocarbons on its surface that are similar in composition to what is found in Titan's atmosphere. 1992 QB1 still has no name.

Although the Kuiper belt was proposed as a source of short-period comets, it has now been found that there are two parts to the Kuiper belt. Where 1992 QB1 is located is called the "Classical Kuiper Belt." In this region, the orbits are fairly stable, circular, and are closer to Neptune. A more distant, less stable, "scattered" belt is thought to be the source of short-period comets. It is thought that Neptune's gravity disrupted what was originally one belt into the two components.

In 2015 we will get our first up-close glimpse of the Kuiper belt. Launched on January 19, 2006, the New Horizons spacecraft will visit Pluto and, hopefully, at least one other Kuiper belt object. As New Horizons gets closer to the belt, it will begin scanning for potential objects to study. Some of the criteria are for an object between 25 and 50 miles across, and with a grey or white color. The color criterion is because Pluto is the same reddish color as is found on 1992 QB1, and they are hoping to observe objects with a different composition.

The discovery of 1992 QB1 ultimately led to the controversy surrounding Pluto's planetary status. With the discovery of thousands of Kuiper belt objects, including the larger-than-Pluto Eris, it became clear that Pluto was no longer a unique object in that part of the solar system. Just as the original asteroids were called planets until it became clear that the asteroid belt was swarming with objects, we now know that Pluto is just one of the myriad of Kuiper belt objects. No matter your feelings about what happened to Pluto, the confirmation of the Kuiper belt is an important milestone in planetary science, and we have the, still, unnamed 1992 QB1 to thank.

## References:

The Planetary Society: Trans-Neptunian Objects (15760) 1992 QB1  
[http://www.planetary.org/explore/topics/our\\_solar\\_system/trans\\_nep\\_tunian\\_objects/1992qb1.html](http://www.planetary.org/explore/topics/our_solar_system/trans_nep_tunian_objects/1992qb1.html)

(15760) 1992 QB1 - Wikipedia  
[http://en.wikipedia.org/wiki/\(15760\)\\_1992\\_QB1](http://en.wikipedia.org/wiki/(15760)_1992_QB1)

Kuiper belt - Wikipedia  
[http://en.wikipedia.org/wiki/Kuiper\\_belt\\_object](http://en.wikipedia.org/wiki/Kuiper_belt_object)

Classical Kuiper belt object - Wikipedia  
<http://en.wikipedia.org/wiki/Cubewano>

The 'planet' that came in from the cold: The discovery of a world beyond Pluto, some six billion kilometres from the Sun, shows that our inventory of the Solar System has been missing a vital component; New Scientist, 14 November 1992; Nigel Henbest

<http://www.newscientist.com/article/mg13618474.400-the-planet-that-came-in-from-the-cold-the-discovery-of-a-world-beyond-pluto-some-six-billion-kilometres-from-the-sun-shows-that-our-inventory-of-the-solar-system-has-been-missing-a-vital-component-.html>

## August 2008 Board of Directors Minutes

*Steve Wheeler, Board of Directors Member at Large*

*(Club secretary Bob Rice is on vacation, and Steve Wheeler has volunteered to submit the minutes for August.)*

The BSAS Board of Directors held their monthly meeting on August 7th, 2008. Dr. Terry Reeves, presiding President, opened the meeting at 7:30 p.m. In attendance were Board members Dr. Donna Hummell, Dr. Spencer Buckner, Jana Ruth Ford, Mr. Steve Wheeler, Mr. Randy Smith, Mr. Bill Griswold, Theo Wellington, and Kris McCall.

Dr. Reeves opened the meeting citing several agenda items for the evening. First, treasurer Randy Smith indicated our bank balance was \$2019.40. Two checks for membership dues had been returned from the bank unpaid, which he will attempt to contact the members to resolve the issue. He also indicated that 15 calendars and 15 Observer's Handbooks will be ordered for purchase by the club membership later this year.

Dr. Reeves then listed the upcoming outreach opportunities, including:

- Public star party August 9th at the Warner Park Special Events field
- Private star party September 6th at the Natchez Trace mm 433.5 parking lot
- Members-only astronomy retreat October 3-4th at Spot Observatory
- Public star party October 10th at Long Hunter State Park

The October astronomy retreat garnered further discussion. Dr. Hummell raised the question of programs, workshops, etc., to be offered – no specific decision was made, however it was noted by Dr. Buckner that any programs/workshops would likely be conducted by club members. Dr. Reeves raised the topic of supplying food, and if so, how much and when. Dr. Buckner indicated a pot luck dinner would probably be best, and Kris McCall noted Saturday evening might be better for a pot luck dinner as it will not likely interfere with attendee's work schedules. Dr. Buckner also noted that the retreat should be limited to club members and their guests. Definite plans will be ironed out in the coming weeks and relayed to all club members via normal communication channels.

Dr. Reeves then reviewed the scheduled topics for the upcoming monthly club meetings.

August 2008:	Joe Boyd and Jana Ruth Ford will be discussing light pollution
September 2008:	Dr. Robert Odell will discuss the Orion Nebula
October 2008:	Terry Reeves will host another What's Up? observing highlights seminar
November 2008:	Dr. Spencer Buckner will host a forum on buying astronomy gifts for Christmas
December 2008:	BSAS Annual Christmas Party

Kris McCall indicated that the forum on buying astronomy gifts should include some time for hands-on demonstrations, and if the club hosts a telescope/equipment care and usage overview in January, then the focus should be hands-on rather than lecture only. She also asked if there were any other meetings scheduled in 2009. Dr. Reeves responded that February 2009 would be another installment of What's Up? or a Messier Marathon overview. March 2009 was also mentioned as an option for a Messier Marathon overview given the timing of the date for the event.

Dr. Reeves asked for volunteers to help out with the What's Up? meeting in October. Mr. Steve Wheeler indicated he would be willing to help. Kris McCall indicated that in order to more fully utilize the planetarium facilities, a list of targets to be discussed at the meeting should be made available to her as soon as possible.

Dr. Reeves then mentioned that Joshua Pepper (Vanderbilt) may be available to do a presentation on the KELT project either at a monthly meeting or at some other time.

Dr. Reeves then asked for volunteers to form a Nominating Committee to select officers to fill upcoming vacancies. Dr. Reeves, Dr. Buckner, Mr. Bill Griswold, and Dr. Donna Hummell volunteered to serve. It was also noted that Jana Ruth Ford would be rotating off the board this year. Dr. Hummell indicated that in years past an announcement regarding the positions is made at the October meeting, and that the vote will occur during the November meeting.

Jana Ruth Ford relayed to the board information about the GRITS (Girls Raised In Tennessee Science) program looking for groups to work with in regards to science, mathematics, and engineering. She indicated they might want to attend a monthly club meeting, star party, or other outreach event. Kris McCall indicated a similar group, TWISTER (Tennessee Women In Science, Technology, Engineering, and Research) will be hosting an event at the Adventure Science Center slated for February 2009.

Kris McCall advised the board of the evening planetarium scheduled monthly on the second Saturday of each month beginning August 9th. She indicated that there might be opportunities to have a telescope or two set up outside the Adventure Science Center for those in attendance during these evening activities. Interested club members can contact her should they want to participate.

Dr. Reeves advised the board that the TNSP trademark has been secured.

There being no further business, Dr. Reeves called the meeting adjourned at 9:10 pm.

### OFFICERS

**Dr. Terry Reeves**  
President

**Keith Burneson**  
Vice-President

**Bob Rice**  
Secretary

**Randy Smith**  
Treasurer

**Bill Griswold**  
Past President

*Directors at Large*

**Dr. Spencer Buckner**  
**Tony Campbell**  
**Jana Ruth Ford**  
**Dr. Donna Hummell**  
**Theo Wellington**  
**Steve Wheeler**  
**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**

# August 2008 Monthly Meeting Minutes

*Steve Wheeler, Board of Directors Member at Large*

*(Club secretary Bob Rice is on vacation, and Steve Wheeler has volunteered to submit the minutes for August.)*

Former President Bill Griswold called the meeting to order at 7:32 P.M. in the Adventure Science Center (ASC) and welcomed new members and guests. Via an email report from Treasurer Randy Smith read by Kris McCall, it was reported that the Society's bank balance was \$2,054.40, and that the 2009 Astronomy calendars should be available at the next meeting. Mr. Griswold then asked for corrections to the minutes of the last membership meeting held on July 24, 2008 and, there being none, declared them to be approved without exception as published in the August 2008 edition of the Eclipse newsletter.

Mr. Steve Wheeler reported that the next private star party is scheduled for September 6th at the mm 433.5 parking lot at the Natchez Trace Parkway. Mr. Chuck Schlemm informed the group of multiple outreach opportunities in conjunction with the Rippavilla Corn Maze.

Mr. Griswold then introduced Mr. Joe Boyd and Jana Ruth Ford, who gave a presentation on Light Pollution. The presentation began with a look at energy concerns related to irresponsible use of outdoor lighting, and how shielded fixtures and full cutoff lighting can reduce glare and light scatter. It was also mentioned that lighting triggered via motion detectors can also save energy and reduce light pollution. Approximately 70% of the world's population cannot see the Milky Way, and many have never seen it.

Next, the health effects of light pollution were discussed. These included disrupted circadian rhythms, immune systems issues, and the higher risks of certain types of cancers. Also, the adverse effects on plant and animal life were mentioned.

Finally, the economic and social issues of light pollution were discussed, including loss of privacy due to "light trespass", the economic impact of wasted energy resources, and the environmental impact of dependency on energy from coal fired plants. To combat these issues, cities and states are enacting light pollution ordinances, embarking on various public education campaigns, and seeking to create dark sky reserves.

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

## BSAS Affiliations

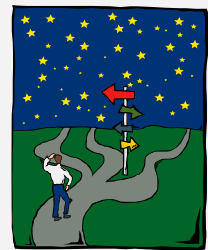
*The Astronomical League*  
<http://www.astroleague.org/>



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



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



# BSAS Annual Picnic and Star Gaze *Saturday, August 8<sup>th</sup>, 2008 – Spot Observatory*





*M31 - The Andromeda Galaxy*

*Imaged by Steve Wheeler at the BSAS Picnic*

**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)
- \$15** Student\*

\* To qualify, you must be 21 or younger & enrolled in an accredited institution.

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**

On your Eclipse mailing label is the expiration date for your current membership. There will be a two month grace period before any member's name is removed from the current mailing 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 Joe Boyd at (615) 386-3134.

**BARNARD-SEYFERT  
ASTRONOMICAL SOCIETY**  
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