



The ECLIPSE



The Newsletter of the Barnard-Seyfert Astronomical Society

Organized in 1928

October 2012

The Membership meeting will be held on October 17, 2012 at the Cumberland Valley Girl Scout Council Building located at the intersection of Harding Place and Granny White Pike at 7:30 pm.

Listed on the National Register of Historic Places, Vanderbilt University's Dyer Observatory has been looking at the skies since 1953. But, like other of our nation's observatories, it has had to reorient its mission away from pure scientific research toward public outreach and education in the wake of urban expansion and light pollution. Come join us as Rock Alvey, Dyer's Director and long-time friend of the BSAS, tells us about that institution's latest efforts to better educate, entertain, and serve our region's public.

Upcoming Events

Board of Directors Meeting, October 3 at the Cumberland Valley Girl Scout Building – 7:30 pm

In this issue

Membership meeting	1
President's Message	1
Observing Highlights	2
Star Parties	2
Peekskill Meteorite Fall –Robin Byrnes	3
Board Meeting Minutes September 5, 2012	4
Membership Meeting Minutes, September 19, 2012	6
About BSAS	8

FROM THE PRESIDENT

As the nights grow cooler and longer and 2012 begins to wind down, I'm in a reflective mood. So, I'm going to revisit the themes of two past columns.

I wrote back in April about webcams and "exploiting technology on the cheap." As many of you know, my particular passion in astronomy is observing and imaging solar system objects. I've obtained some reasonably good images with my aging webcam, but have hankered for something more sensitive that would better record the often-subtle markings on planets. I'm pleased to report that the cost for vastly better cameras (from Imaging Source, for example) on the second-hand market has recently dropped to around \$200 as even newer cameras with updated chips come on the market.

The attached image is a reasonable example of what the new(ish) cameras can do. This image was compiled in the freeware Registax processing software tool from a mere 20-second video, which consisted of only a few hundred video frames. The 'scope used for this image was a common 8" F/6 reflector, albeit one with upgraded optics. This Jupiter image has substantially better detail than my previous webcam images in large part because the camera's sensor is simply more sensitive to small differences in contrast.

On a less happy note, last month I wrote about the need for an open and honest budgetary debate in the wake of looming cuts for NASA and for the National Science Foundation (which funds many U.S. ground-based observatories). This month I'm sad to report that Britain—likely still the second-most active nation in astronomy after the U.S.—is making similar major cuts. Britain's Science and Technology Facilities Council will close the James Clerk Maxwell Telescope (JCMT) and the UK Infrared Telescope (both located on Mauna Kea in Hawaii) when their current observing campaigns end in 2013-2014. The JCMT is the largest single-dish telescope in the world dedicated to research in the submillimeter

Continued on Page 7
Continued on Page 7

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Observing Highlights

Objects:

Moon phases

Globular Clusters
M56, M71, M55, M75, M15, M2, M72, M30

October 2012

Open Clusters
M11 (Wild Duck), M26, M73, M29, M39, M52

10/08 LAST Quarter

10/15 NEW Moon

10/21 FIRST Quarter

10/29 FULL Moon

Nebula
M57 (Ring), NGC 6543 (Cat's Eye), NGC6826 (Blinking), M27 (Dumbbell), NGC7000 (North America), IC5146 (Cocoon), NGC7293 (Helix)

November 2012

Asterisms
Cr399 (Coat Hanger)

11/06 LAST Quarter

11/13 NEW Moon

11/20 FIRST Quarter

11/28 FULL Moon

Multiple Star Systems
Double-Double (Epsilon Lyrae)
Albireo (Beta Cygni)
Gamma Delphini

Variable Stars

Mu Cephei (Herschel's Garnet Star)

Planets

Uranus, Neptune, Jupiter

Star Parties for months of October and November

Oct 13 Private Star Party at Natchez Trace Parkway mm 435.5

Oct 20 Public Star Party at Edwin Warner Park 8:00 – 10:00 pm
Orionid meteors (finally a good year with minimal Moon),
Moon, double
stars, star clusters, nebulae

Oct 27 Private Star Party with Skeptical Inquirer staff at Sheraton Music City

Nov 10 Private Star Party at Natchez Trace Parkway mm 412 (Water Valley Overlook)

Nov 16 Public Star Party at Bowie Nature Park (Fairview) 7:30 - 9:30 pm
Leonid meteors, Moon, Jupiter, Andromeda

Nov 17 Public Star Party at Shelby Bottoms Nature Center 7:30 - 9:30 pm
Leonid meteors, Moon, Jupiter, Andromeda Galaxy

Happy Birthday Peekskill Meteorite Fall

by Robin Byrne

This month we celebrate the anniversary of one of the most famous meteorite falls ever recorded. The night of October 9, 1992 will be a night Michelle Knapp will likely never forget. On that night, a visitor from outer space paid a visit and demolished her car!

Residents of Kentucky were the first to see the bright, "greenish" fireball in the sky. Barely grazing the atmosphere, it quickly broke up into over 70 pieces, triggering a sonic boom. The meteor pieces continued to be sighted as it traveled north-northeast, passing over West Virginia, Maryland, Pennsylvania, and, finally, landing 40 seconds later in Peekskill, New York.

What makes this meteor fall so unusual is that it was captured by not just one video camera, but by 16! This was largely due to its timing - high school football games were underway, and proud parents were armed with video cameras at the opportune moment. Only a handful of other meteorite falls have been filmed, with only one camera each, and this was the first time an actual meteorite was recovered. The first shot captured was in West Virginia at 7:48 pm, and others caught its path across Maryland, Pennsylvania and New York.

The variety of angles of shots from all of the cameras provided an unprecedented amount of information concerning the meteor's trajectory. Prior to entering Earth's atmosphere, it was determined that the meteoroid was traveling at 14.72 km/s (~33,000 mph). It's orbit around the Sun took it from 0.886 AU out to 2.1 AU (where 1 AU = Earth's distance from the Sun). At the time of impact, the meteorite had slowed to a mere 164 mph.

But the main reason this meteorite fall is so well known is not the trajectory through the atmosphere nor the video footage, but the landing. At approximately 7:50 pm, the meteorite landed on a parked 1980 red Chevy Malibu. The loud crash left a large hole in one corner of the trunk of the car, which is what the owner, 18 year old high school student Michelle Knapp, first noticed, so she called the police. Upon investigating what was assumed to be a criminal mischief case, the police smelled gasoline from the leaking gas tank, so the fire department was brought in. That's when the 26 pound, one foot across meteorite was discovered. The police impounded the "criminal" and opened it, to be sure of what they were dealing with. As soon as they knew it wasn't dangerous, they returned it to Ms. Knapp. Because of the notoriety, and offers from around the world, Ms. Knapp decided to sell the meteorite and car at an auction, where the high bid was close to \$100,000. Small pieces of the meteorite have been broken off for sale and to share with various museums, but the largest piece, which weighs 890 grams, belongs to a meteorite collection.

The meteorite itself is nothing special. It is an H6 chondrite, which are very common, but the notoriety of this particular meteorite has driven prices for pieces to over \$125 per gram. Chondrite meteorites are stony meteorites that contain chondrules of once molten silicate minerals (usually olivine and pyroxene) that were floating around in our forming solar system. Because these materials date back to the formation of our solar system, the meteorite is estimated to be 4.4 - 4.5 billion years old. The "H" designation means that this meteorite has a 30% iron content, which is the highest percentage for all chondrites. The structure of the meteorite indicates that it experienced heating and shocking as the result of two asteroids colliding at some time in its past.

Meanwhile, the 1980 Chevy Malibu has had an interesting time traveling around the world and visiting various museums. Places visited include: New York City, Tucson, Paris, Tokyo, Germany and Switzerland.

Continued on Page 4

The Peekskill Meteorite certainly earned its fame, coming to Earth 20 years ago, literally, with a bang. Although I would never wish anyone's car to be damaged under normal circumstances, I can't help but think that it sure would be wonderful to find a large hole caused by an interplanetary traveler. Since most meteorites are magnetic, I recommend that if you want to get rid of an old clunker, you should cover your car with magnets and hope for the best. May you make a big impact!

References:

Peekskill meteorite - Wikipedia

http://en.wikipedia.org/wiki/Peekskill_meteorite

Peekskill Meteorite Car

<http://www.nyrockman.com/peekskill.htm>

Peekskill Meteorite - Hudson Valley Geologist

by Steven Schimmrich

<http://hudsonvalleygeologist.blogspot.com/2011/06/peekskill-meteorite.html>

Peekskill meteorite

by David Darling

http://www.daviddarling.info/encyclopedia/P/Peekskill_meteorite.html

Barnard-Seyfert Astronomical Society Minutes of a Regular Meeting of the Board of Directors Held On Wednesday, September 5, 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 September 5, 2012. A sign-in sheet was passed around in lieu of a roll call. Board members Joe Boyd, Steve Cobb, Bill Griswold, John Harrington, Melissa Lanz, Kris McCall, Bob Norling, Curt Porter, Bob Rice, and Theo Wellington were present. Board member Dr. Spencer Buckner was absent. A quorum being present, President John Harrington called the meeting to order at 7:42 P.M.

John Harrington asked for corrections to the minutes of the previous board meeting held on August 1, 2012 and, there being none, pronounced them to be accepted as published in the September 2012 edition of the *Eclipse* newsletter. Treasurer Bob Norling reported that the Society had \$1,729.23 in its regular checking account and \$1,016.00 in its equipment account. Mr. Norling also announced that the new 2013 editions of Kalmbach Publishing Company's *Deep Space Mysteries Calendar*, Guy Ottewell's *Astronomical Calendar*, and the Royal Astronomical Society of Canada's *Observer's Handbook* would be available to members at a discounted price. The board will discuss required deposits at their next meeting on October 3, 2012.

Continued on Page 5

John Harrington announced these upcoming star parties:

- Sep 15 – Private star party at mm 412 (Water Valley Overlook) on the Natchez Trace Parkway.
- Sep 21 – Public star party at Bells Bend Nature Center at 8:00 P.M.
- Oct 13 – Private star party at Natchez Trace Parkway mm435.5
- Oct 20 – Public star party at Edwin Warner Park at 8:00 P.M.
- Oct 27 – Private star party with Skeptical Inquirer Magazine staff at Sheraton Music City at approximately 9:00 P.M.

John Harrington announced that the club's Automated External Defibrillator (AED) had been outfitted with new batteries and pads and was now fully operational. Mr. Harrington announced that Blake Sheilde, a professional acquaintance of his, had asked the BSAS to perform an astronomy related activity for a group of boy scouts. Mr. Harrington suggested that this be an informal event to take place on October 26, 2012. Joe Boyd put this suggestion into a motion that was seconded by Curt Porter and subsequently passed by a unanimous voice vote of the board without additional discussion. Mr. Harrington also reported that club members had received an invitation from Mount Lemmon SkyCenter in Arizona to attend a CCD image processing workshop on November 6-9, 2012. The cost of the workshop is \$875.00 including accommodations. A scheduled item for discussion regarding the club's use of NASA's Night Sky Network (NSN) Materials was postponed to a future date because Jana Ruth Ford, our NSN representative, was unable to attend this current board meeting.

John Harrington announced that a senior participant at the 7th annual Huntsville Gamma Ray Burst Symposium to be held in Nashville on April 14-18, 2013 will speak to the BSAS at its April 17 public membership meeting. Mr. Harrington also announced that three BSAS members will be able to attend the conference at no charge; details will be reported later. In addition, he reported that he had received a new DVD entitled "Undaunted: The Forgotten Giants of Allegheny Observatory" that, in addition to covering aspects of naval aviation, also included a great explanation of spectroscopy. Curt Porter announced that the Navy Museum LST 325 will come to Nashville on September 18-24. John Harrington announced that on September 9th the Discovery Channel will present "Scanning the Skies" about its new Discovery Channel Telescope housed at Lowell Observatory in Arizona. Mr. Harrington also noted that he would send the board a draft copy of his letter to Alan Traino regarding starting a Midwest Astronomy Fair.

Since there was no additional business to discuss, Steve Cobb moved that the meeting be adjourned and Curt Porter seconded his motion that was subsequently passed by a unanimous voice vote. President John Harrington declared the meeting to be adjourned at 8:55 P.M.

Respectfully submitted,
Bob Rice, Secretary

Barnard-Seyfert Astronomical Society Minutes of the Monthly Membership Meeting Held On Wednesday, September 19, 2012

Vice-President Joe Boyd called the meeting to order at 7:40 P.M. on September 19, 2012 at the Cumberland Valley Girl Scout Council Building in Nashville, Tennessee and welcomed members and visitors. Mr. Boyd pointed out that one of the major advantages of membership was the BSAS' telescope loaner program and then asked the club's officers to stand and introduce themselves. Treasurer Bob Norling reported that the BSAS had \$1,729.23 in its regular account and \$1,016.00 in its equipment account. Mr. Norling announced that 2013 editions of Kalmbach Publishing Company's *Deep Space Mysteries Calendar*, *Guy Ottewell's Astronomical Calendar*, and the Royal Astronomical Society of Canada's *Observer's Handbook* would be available to members at a discount from the regular cover price; each will require a \$5.00 deposit. Joe Boyd introduced the club's board of directors at-large and then asked for corrections to the minutes of the previous membership meeting held on August 15, 2012. There being no corrections, Mr. Boyd asked for a motion that these minutes be accepted as published in the September 2012 edition of the *Eclipse* newsletter. Bob Norling so moved, Chuck Schlemm seconded his motion, and the minutes were subsequently approved by a unanimous voice vote of the membership.

Joe Boyd announced these upcoming star parties:

- Sep 21 – Public star party at Bells Bend Nature Center from 8:00 – 10:00 P.M.
- Oct 13 – Private star party at mm 435.5 on the Natchez Trace Parkway.
- Oct 20 – Public star party at Edwin Warner Park from 8:00 – 10:00 P.M.
- Oct 27 – Private star party with Skeptical Inquirer staff at Sheraton Music City.
- Nov 10 – Private star party at mm 412 (Water Valley Overlook) on the Natchez Trace Parkway.

Chuck Schlemm announced that he would have a display of space travel related models at the upcoming star party with the Skeptical Inquirer staff at Sheraton Music City on October 27. Theo Wellington announced that the BSAS will provide telescopes for daytime solar viewing at the Cumberland River Dragon Boat Festival held at Riverfront Park in Nashville on September 29. Joe Boyd announced that the club's Automated External Defibrillator (AED) device had been equipped with new batteries and software and was fully operational again. Mr. Boyd stated that the club needed volunteers to be trained in cardiopulmonary resuscitation (CPR) and in the use of this device. He also noted that the BSAS was interested in attracting college students and others as new members and emphasized that all current members should aid in this effort. Theo Wellington reminded the audience that the BSAS had a Facebook account. Ms Wellington also announced that she had been contacted by a woman with a telescope for sale on Facebook and that anyone interested in additional information could contact her after the meeting.

Joe Boyd introduced Lonnie Puterbaugh, a current BSAS member and former officer and board member, who delivered the evening's program on "The Astronomy Channel." Mr. Puterbaugh, an electrical engineer, developed The Astronomy Channel (or TAC, for short) - a state of the art multi-media assembly of audio equipment, video monitors, computers, and telescopes using high-quality video cameras all housed in the back of a minivan - over the last several years to bring astronomy to many people at once with no lining up to peer through an eyepiece. This accomplishment has earned him many admirers in addition to the Astronomical Society of the Pacific's prestigious Las Cumbres award for public outreach in 2011. The electronic gear in his minivan lets him entertain and inform the

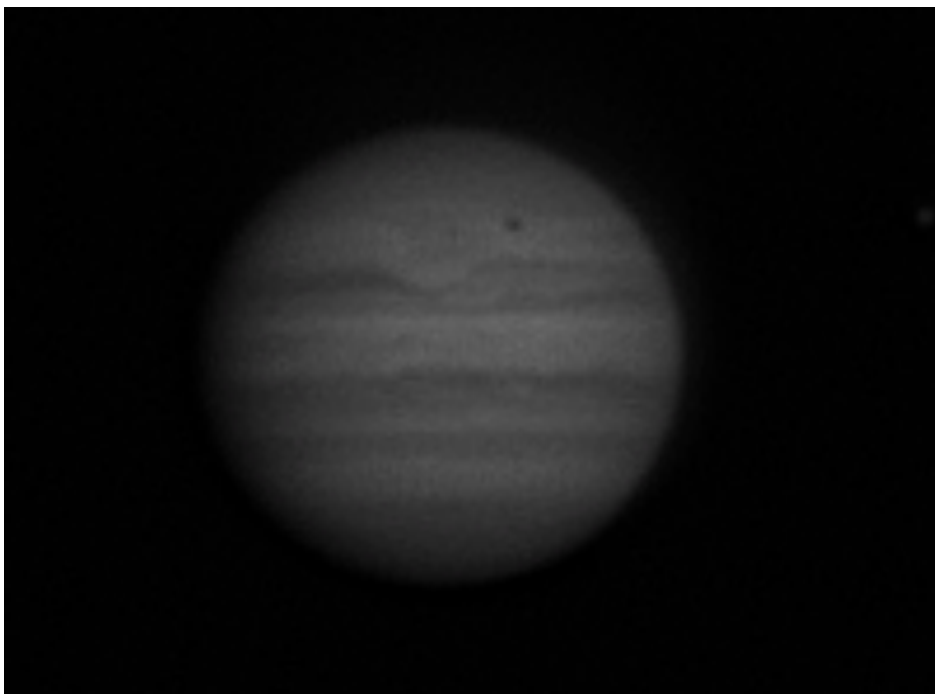
public about astronomy even if cloudiness prevents sky observing; his arsenal of programs includes music, video and electronic images of celestial objects. And even under the most light-polluted skies, his video camera equipped telescopes can deliver great real-time computer stacked images of faint celestial objects that would otherwise be completely invisible even through a much larger eyepiece-equipped instrument. And not only that, these images can be viewed simultaneously by a large number of people through twin 47 inch video monitors at the two corners of the minivan's tailgate.

Mr. Puterbaugh emphasized that light pollution is getting worse every year and has now reached the point that many astronomy clubs are only viewing the moon and planets at public outreach events. As he noted, it is taking longer and getting harder to get to dark sky sites. Mr. Puterbaugh clearly sees video astronomy – as provided by the TAC – as a viable technology-to-the rescue means of overcoming these obstacles. As he pointed out, this methodology offers a number of impressive advantages: (1) You can reach a many more people at once; (2) Split screen technology can be used to show a real time image of an object next to a Hubble Space Telescope image; (3) Power-Point presentations can be used to reduce or eliminate speaking errors; (4) No dark adaptation is needed as would be the case with eyepiece equipped telescopes; and (5) Anyone can see a TV screen! Mr. Puterbaugh noted that with the current modifications to the TAC, he can easily handle 700 public observers per hour and give each one five minutes of visual and audio information. However, he also warned attendees not get so wrapped up in technology that that they forget to look up! Mr. Puterbaugh concluded by enthusiastically answering the many questions from the audience.

Since there was no further business to discuss, Vice-President Boyd declared the meeting to be adjourned at 9:35 P.M.

Respectfully submitted,
Bob Rice, Secretary

President's Message, cont. from page 1



band, while the UKIRT is among the largest infrared 'scopes on Earth. Both are highly productive instruments and their loss will be one for global astronomy, not just the UK. The British will continue on with major 'scopes in Australia, Chile and in the Canary Islands. And so it goes...

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.

[BSAS on Facebook](#)

Free Telescope Offer!

Did someone say free telescope? Yes, you did read that correctly. The BSAS Equipment & Facilities Committee has free telescopes ranging in size from 2.6" to 8" that current members can actually have to use for up to 60 days at a time. We also have some other items in the loaner program such as a photometer, H-alpha solar telescope, educational CDs, tapes, DVDs, and books. Some restrictions apply. A waiting list is applicable in some cases. The BSAS Equipment Committee will not be held responsible for lost sleep or other problems arising from use of this excellent astronomy gear. For information on what equipment is currently available, contact Lonnie Puterbaugh at 615-661-9540.