

The May membership meeting will be held on Thursday, May 17, 2007 at 7:30 pm at the Adventure Science Center

On Thursday, May 17, 2007 we will hold our regularly scheduled membership meeting at the Adventure Science Center. Our speakers this month will be Lonnie Puterbaugh, Joe Boyd and Kris McCall.

Lonnie will spend some time discussing Radio Telescopes, specifically, the Very Large Array (VLA), one of the world's premier astronomical radio observatories, consisting of 27 radio antennas in a Y-shaped configuration on the Plains of San Agustin fifty miles west of Socorro, New Mexico.

Kris McCall and Joe Boyd will discuss the Robert C. Byrd Green Bank Telescope (GBT), the world's largest fully steerable single aperture antenna, located in Green Bank, West Virginia. Along with the GBT, there are several other telescopes located at the Green Bank site.

This promises to be a very entertaining and informative meeting, please plan on attending.

Message from the President

In last month's "President's Message", I spoke about the vernal equinox, the fact that it is really the instant that the Sun passes across the equator from the Southern Hemisphere to the Northern Hemisphere and that it is the instant time that the number of daylight hours is equal to the night time hours. It is the result of the tilt of the earth's rotational axis from the plane of revolution about the sun.

The measurement of time we normally use is based on the time to rotate 360° with respect to the Sun. There are approximately 365+ days in the solar year. With this method of measuring time, sunrise is always in the morning and sun set is always in the evening. We set our clocks and watches by this method of timing and is called local time. Universal Time is the same measure but at the meridian at Greenwich England which will be either five or six hours ahead of our local time (five hours, daylight time or six hours, standard time). Sidereal time is the measure of time of one revolution of the earth about the sun with respect to the star background. On this time scale, one year is approximately 364+ days. We lose one day per year in a Sidereal year when compared to solar time.

If we are above the ecliptic plane and looking down at all of the planets and most moons, we see them move around the sun in their own orbits in a counter clockwise direction. We also see the moon rise in the east and set in the west as the earth spins in a counterclockwise direction on its axis. A result of these motions, we see the moon rise in the east and set in the west nightly but the moon is really moving from the west to the east during a lunar month as it revolves around the earth. So we see the moon rise later each night. Also the moon has a



Message from the President

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rotation period of one lunar month and a revolution period around the earth of one lunar month, therefore it keeps its same face toward the earth at all times.

The moon and the sun are slowing down the rotation of the earth on its axis. The drag of the tides produced by the sun and moon is the culprit. The gravity of the moon and sun cause the water and the land masses to raise their levels (which we call tides) and the earth rotates, dragging these water and land masses causing friction which is slowing the earth on its axis. This slowing down is now readily measured with our atomic clocks and corrections to the time are made as necessary.

Well, maybe some time we will be able to get our telescopes out and do some observing. This will be more fun than reading the dry comments above

by Bill Griswold,
President

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

MAGAZINE SUBSCRIPTIONS FOR BSAS MEMBERS

We are always able to accept requests for new and renewal yearly subscriptions to SKY AND TELESCOPE and ASTRONOMY from our members in good standing.

The current yearly rates are as follows:

SKY AND TELESCOPE: \$32.95

ASTRONOMY: \$34.00

Checks or Money Orders should be made out to the Barnard-Seyfert Astronomical Society (BSAS) and sent to the following address:

BSAS
P. O. Box 150713
Nashville, TN 37215-0713

DUES INFORMATION

On your Eclipse mailing label is the expiration date for your current membership in the BSAS. There will be a two month grace period before any member's name is removed from the current mailing list. You will be receiving a number of warnings informing you that your membership is expiring.

Dues per year are \$20.00 Regular (1 vote); \$30 Family (2 votes); \$15.00 Student (under 22 years of age)(1 vote); \$15 Seniors (65 years or older)(1 vote); \$25 Senior Family (65 years or older)(2 votes).

Contact president@bsasnashville.com if you have questions. Dues can be sent to:

BSAS
P. O. Box 150713
Nashville, TN 37215-0713

THE ECLIPSE NEWSLETTER

Editor: Pam Thomas
pam.thomas@charter.net

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BSAS website: www.bsasnashville.com

BSAS Logo by Tony Campbell

Happy Birthday Aurora 7

by Robin Byrne

This month we celebrate another milestone in the history of manned spaceflight. It is early morning on May 24, 1962. Three months earlier, John Glenn had become the first American to orbit the Earth. Now Malcolm "Scotty" Carpenter was about to become the second. Carpenter was not the prime crew member. Donald K. "Deke" Slayton was scheduled to fly the fourth Mercury mission, but had been grounded due to an irregular heartbeat. Although Wally Schirra had been Deke's backup, NASA decided that Carpenter was better prepared, since he had been Glenn's backup. For that reason Carpenter flew with Schirra as his backup. And so, this early morning found Scotty on board the Mercury spacecraft he named Aurora 7 (after the street he grew up on), waiting to launch into space.

With only a 45 minute delay due to some low cloud cover, the launch was the smoothest yet. The Atlas D booster performed perfectly and Carpenter was in orbit. The main goal of the mission was to confirm what had been learned from John Glenn's flight and to perform a few small experiments. The first experiment involved deploying a balloon to see if it produced any drag in the near-airless environment. However, the balloon didn't inflate fully, so the experiment couldn't be carried out. Other experiments involved photographing cloud formations, analyzing how liquids behave in a weightless environment, and observing the airglow layer of the atmosphere. These were all successful.

Carpenter also inadvertently solved a mystery from Glenn's flight. During his flight, John Glenn had reported seeing what looked like "fireflies" outside his capsule. No one knew what they were. Could they be alive? Are they some kind of luminous material not found on Earth? During one of his orbits, Scotty bumped into the side of the capsule, and suddenly the "fireflies" were there. After some maneuvering and tests, he realized that they were ice particles from the capsule that were reflecting sunlight.

The mission did have some problems, though. In orbit, Carpenter noticed a discrepancy between what his instruments said his orientation should be compared to what he saw out of his window. To compensate, he had to go to "fly-by-wire" or manual control to keep the capsule positioned correctly. Unfortunately, this meant using more fuel than planned. There was also a problem with his suit temperature getting uncomfortably warm. At one point, Scotty's biomedical telemetry showed his body temperature at 104° F. This put an end to an experiment that called for him to exercise with a large rubber band.

However, the real cliffhanger occurred during reentry. Because of the orientation problems, the automatic system didn't fire the retrorockets to initiate reentry at the scheduled time. When Carpenter realized what had happened, he manually fired the rockets, but it was 5 seconds later than planned. That meant landing way off course, by about 250 miles. Meanwhile, he was still manually controlling the capsule's position and running out of fuel, which meant that if he couldn't maintain the correct orientation, he could burn up as he plunged through the atmosphere.

During reentry there is a radio blackout due to the heat of the capsule ionizing the air around it. Usually after 3 or 4 minutes, communications return. Nine minutes of silence made everyone concerned. Then a few pieces of biomedical telemetry were received, but nothing more. It wasn't until an hour later that the capsule and its occupant were spotted by one of the recovery helicopters, and, finally, everyone could breathe a sigh of relief. After three orbits and just shy of 5 hours of spaceflight, Scotty Carpenter had safely returned home.

Scott Carpenter never flew in space again, but those few hours were exhilarating enough to last him a lifetime. Upon his return, he couldn't wait for the debriefing to share his excitement over what he had just experienced, repeatedly throwing his head back and saying "Wow".

Even in those early days of the space program, the general public became complacent about the flights. Carpenter flew only the second U.S. orbital mission, and people were already uninterested and confident that all would go well. His harrowing return brought the nation back to the reality of how dangerous spaceflight really is. We are guilty of the same overconfidence today concerning the Space Shuttle, until something like the Columbia disaster provides an awful reminder of the risks that all astronauts take. Yet, astronauts like Scott Carpenter feel it is worth taking some risks for the knowledge that can be gained, and for that personal feeling of "Wow".

References:

Aurora 7

<http://www-pao.ksc.nasa.gov/kscpao/history/mercury/ma-7/ma-7.htm>

Mercury-Atlas 7 - Wikipedia, the free encyclopedia

http://en.wikipedia.org/wiki/Aurora_7

Aurora 7, Do You Read Me? Time

<http://www.time.com/time/magazine/article/0,9171,938363,00.html>

Barnard-Seyfert Astronomical Society
Minutes of a Regular Meeting of the Board of Directors
Held On Thursday, April 5, 2007

The board of directors of the Barnard-Seyfert Astronomical Society met in regular session at the Cumberland Valley Girl Scout Council Building in Nashville, Tennessee on April 5, 2007. A sign-in sheet was circulated in lieu of a roll call. Board members Mike Benson, Keith Burneson, Bill Griswold, Donna Hummell, Terry Reeves, Bob Rice, and Steve Wheeler were present. Board members Tony Campbell, JanaRuth Ford, Kris McCall, Randy Smith, and Mark Manner were absent. Also attending were BSAS members Joe Boyd and Lonnie Puterbaugh. A quorum being present, President Bill Griswold called the meeting to order at 7:38 P.M.

Noting that the Society had awarded a \$100.00 1st prize and a \$50.00 2nd prize for astronomy related entries, Mike Benson asked for volunteers to attend the April 14 awards ceremony for the Middle Tennessee Science and Engineering Fair at Austin Peay State University. Bill Griswold volunteered to do this and suggested that the winners may be invited to attend a subsequent BSAS membership meeting. Terry Reeves announced that he had, as earlier authorized by the board, purchased a Maxtor hard disk drive for \$79.98 to be used to back-up BSAS data files.

Bill Griswold announced that BSAS members were invited to attend the Earth Day "Hike Through the Solar System" ceremony at Warner Park on April 21. Mr. Griswold pointed out that Warner Park had extended its thanks to the BSAS for donating the solar system markers and to Girl Scout Troop 2427 for its assistance at this Earth Day event.

Tennessee Star Party (TNSP) Coordinator Keith Burneson reported these preparatory developments for the fall 2007 event:

- a contract had been prepared for presentation to the TAG site management
- three speakers had committed (Scott Hawley, Bill Keel, & Alan Smith)
- the website design was completed
- a new updated logo was prepared
- the t-shirt design was underway
- a preview dinner from the proposed new caterer would be held on April 11
- we may invite other clubs to put on workshops

Donna Hummell announced that she knew of some potential vendors in Atlanta. Lonnie Puterbaugh commented that high gasoline prices might cause vendors to be selective about which star parties they attended this year.

Lonnie Puterbaugh displayed a clever application of weighted plastic drink bottles to demonstrate differences in what people would weigh on different planets in the solar system that he plans to incorporate this design into a presentation on Astronomy Day.

There being no further business to discuss, President Griswold asked for a motion to adjourn the meeting. Mike Benson so moved, Steve Wheeler seconded the motion, and the meeting was adjourned at 8:40 P.M. by a unanimous voice vote.

Respectfully submitted,

Bob Rice
Secretary

Barnard-Seyfert Astronomical Society
Minutes of the Monthly Membership Meeting
Held on Thursday, April 19, 2007

President Bill Griswold called the meeting to order at 7:38 P.M. in the Adventure Science Center (ASC) and welcomed new members and guests. Mr. Griswold asked for any corrections to the minutes of the previous meeting held on March 15, 2007 as published in the April 2007 edition of the *Eclipse* newsletter. There being none, Mr. Griswold asked for a motion for approval; Randy Smith so moved, Joe Boyd seconded the motion, and the minutes were approved by a unanimous voice vote.

Treasurer Randy Smith reported that the Society had a bank balance of \$3,117.17. Mr. Smith also asked that membership renewals be given to Bill Griswold. JanaRuth Ford reported that a BSAS member would a program on radio astronomy at the May membership meeting.

Tennessee Star Party (TNSP) Coordinator Keith Burneson reported these developments for the scheduled September event:

- Four speakers have agreed to present programs
- A sample meal from a probable caterer has been taste-tested
- A contract will be presented to the TAG site management on May 26
- A means to control last year's annoying security light is being investigated

Steve Wheeler reported these upcoming public and private events for May:

- May 4th – public night at Middle Tennessee State University
- May 5th - Astronomy Day (ASC) public star party emphasizing viewing Saturn & Venus
- May 19th - Private star party at the Natchez Trace site
- May 31st – Blue Moon Family Night at Warner Park

Mr. Wheeler announced that more detailed notices would be posted on the tnastronomy website.

Bill Griswold introduced BSAS member Lonnie Puterbaugh who delivered dual programs on the Astronomical League's (AL) new outreach awards and about his recent trip to Mt. Palomar Observatory. Mr. Puterbaugh first described the three-tiered AL outreach awards that were introduced in 2006 as being "new" to us only. He explained that each tier required an incrementally greater number of two hour sessions of showing people celestial objects through telescopes; these would be accompanied by varying levels of reporting to the AL. Mr. Puterbaugh encouraged BSAS members to participate and noted that the AL believed this outreach effort was of paramount importance for growing the hobby and for inspiring youngsters to a greater interest in science and mathematics.

Lonnie Puterbaugh next gave a PowerPoint presentation about his recent trip to see the 200 inch Hale telescope on Mt. Palomar which he described as being the fulfillment of a childhood dream. Owned by the California Institute of Technology, the Hale scope was built to go beyond the reach of the 100 inch Hooker telescope atop Mt. Wilson. However, constructing a similar 200 inch mirror today would simply be economically unfeasible. Mr. Puterbaugh emphasized that, although the telescope was now over 50 years old, it had been kept technically up-to-date and in good repair – unlike many other vintage instruments around the country. For example, the telescope is equipped with the latest computerized "adaptive optics" to enhance its images. Mr. Puterbaugh's comments were often accompanied by 3-D photos that gave viewers the sense of actually being in the scenes. Noting that it took a PHD and a grant just to get on the waiting list to use the scope, he emphasized Mt. Palomar's ongoing role as a place of science rather than for outreach.

Since there was no further business to discuss, President Griswold declared the meeting adjourned at 9:19 P.M.

Respectfully submitted,
Bob Rice, Secretary

ACTIVITIES and EVENTS

May 1 — 31, 2007

5/2 FULL MOON
 5/3 BSAS Board of Directors mtg., 7:30 p.m. at Girl Scout Office
 5/4 Star Party MTSU 6:30 p.m. to 9:00 p.m.
 5/5 Star Party Adventure Science Center 8:30 p.m. to 10:30 p.m.
 5/10 LAST QUARTER
 5/12 Conj. of Moon & Uranus
 5/13 Mars 3° S of Moon
 5/16 NEW MOON
 5/17 BSAS Membership mtg. 7:30 p.m. at ASC
 5/19 Private Star Party Natchez Trace (mile marker 435) 8:30 p.m.
 5/20 Venus 1.7° S of Moon
 5/21 Conj. of Saturn & Moon
 5/23 FIRST QUARTER
 5/30 Mercury 1.1° N or M35

June 1—30, 2007

6/1 FULL MOON, Jupiter 6° N of Moon
 6/7 BSAS Board of Directors mtg., 7:30 p.m. at Girl Scout Office
 6/8 LAST QUARTER
 6/10 Mars 5° S of Moon
 6/13 Moon 0.9° N of M45
 6/15 NEW MOON
 6/16 BSAS Annual Picnic Spot Observatory 4:00 p.m.
 6/18 Conj. of Venus & Moon
 6/19 Conj. of Saturn & Moon
 6/21 BSAS Membership mtg. 7:30 p.m. at ASC
 6/22 FIRST QUARTER
 6/28 Jupiter 6° N of Moon
 6/30 FULL MOON

*All times listed are Central Time

BSAS**P. O. Box 150713****Nashville, TN 37215-0713**