



ECLIPSE



The Newsletter of the Barnard-Seyfert Astronomical Society

Organized in 1928

June 2006

**The Membership meeting will be held on June 15, 2006
At the Adventure Science Center at 7:30 pm.**

More than three times the size of the United States, Africa is home to 700 million people living in over 50 countries and speaking nearly 2,000 languages. Many African cultures, both past and present, link human affairs to the secrets and mysteries of the heavens through customs, traditions and ceremonies. A great show, *Skywatchers of Africa*, premiered on March 20th, 2002 at the Adler Planetarium & Astronomy Museum. It invited guests to travel throughout Africa and across time to participate in these traditions, and celebrate the astronomy of their cultures.

We will witness this program, "Skywatchers of Africa" in our Sudekum Planetarium at our monthly membership meeting.

continued on Page 4

President's Message

I have just returned from the Society for Astronomical Sciences' 25th Annual Symposium on Telescope Science (<http://www.socastrosci.org/>). The event is held at Big Bear Lake, California, where each year approximately 150 amateur and professional astronomers from the US, Europe, New Zealand, South Africa and elsewhere gather to discuss ways in which amateur astronomers can assist professional astronomers in their research, and to report on the independent research that the SAS members are conducting. This was my second year to attend the conference, and as in the case of the prior year, I attended with Rocky Alvey of Vanderbilt's Dyer Observatory. Rocky is well known to the SAS members, in part because Vanderbilt astronomers were instrumental in establishing the predecessor of the SAS many years ago. Hopefully this brief description of the conference will encourage some of us to get more involved in the science side of amateur astronomy.

At this year's conference, presenters discussed topics ranging from photometry of eclipsing binary star systems to detection of potentially habitable planets and Earth orbit crossing asteroids. Although you might think that this type of work requires expensive equipment, in fact most of the work described at the conference was done with readily available SCTs in the 10-14" aperture range, with a few classic reflectors and RCs with apertures of up to 20" or so. The cameras used also ranged from expensive thinned back-illuminated CCDs to, believe it or not, a 35mm film camera. Most were older model small chip SBIG cameras, which are available on Astromart for very reasonable prices. Having a pristine location was also not a requirement, as many SAS members operate from relatively light polluted areas. For example, a participant from New Zealand presented a paper on her co-discovery of 3 new eclipsing binary star systems using an old 12" Meade SCT in her backyard observatory in the suburbs of Auckland, a city of 1.3 million.

One particularly exciting paper discussed the detection of two new low-mass exoplanets using gravitational microlensing. The work involves the identification of a potential microlensing event by the OGLE survey using a 1.3m telescope in Chile, and the MOA survey using a 0.41m telescope in New Zealand. When either survey telescope determines that a more distant star will pass behind a closer star resulting in gravitational lensing by the closer star, a call for observations is sent out by Ohio State's MicroFUN network. Observations are then made by amateurs at different locations. When an exoplanet happens to be orbiting the closer star, that star's gravitational lens is distorted in a way that is observable using even small ground based telescopes. The detection of the 2 new low-mass exoplanets described in the paper was done in part with a 14" telescope located in an urban setting.

continued on Page 4

How can I learn more about the Astronomical League?

John Jardine Goss
Astronomical League, Secretary

Amateur astronomers from across the country benefit from perusing the many pages of the Astronomical League's website, www.astroleague.org. Naturally, this is the place to go if you're looking for information about upcoming events and League news. But there is so much more...

Want to learn all about one of the great League observing programs? Go to www.astroleague.org/observing.html.

Do you know of a worthy candidate for one of the many League awards? Look at <http://www.astroleague.org/al/awards/awards.html>.

Are you interested in buying a particular book about our fascinating hobby? Then go to www.astroleague.org/al/bookserv/bookserv.html.

There is even something to help your club function better. Try www.astroleague.org/al/socaid/socaidid.html

Make the most of your Astronomical League membership! **To find out more about what the Astronomical League offers you, why not log on to www.astroleague.org today?**

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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: \$37.00

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:

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THE ECLIPSE NEWSLETTER

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BSAS website: www.bsasnashville.com

BSAS Logo by Tony Campbell

Happy Birthday Greenwich Observatory

by Robin Byrne

This month we mark the anniversary of the founding of an astronomical institution. In June of 1675, Charles II founded the Royal Observatory. The first Astronomer Royal was John Flamsteed. One of the main purposes of building the observatory was to help improve the measurement of longitude (position east-west), making navigation much safer.

After a devastating accident at sea killed over 2000 men in 1707, Parliament offered a reward of 20,000 British pounds for developing a reliable method of establishing longitude at sea. In order to do this, it is necessary to accurately measure time on a rolling ship. In the early 18th century, reliable clocks were available, but they were in the form of pendulum clocks. A pendulum will not work properly in an unstable situation (like the high seas), so some sort of alternative was needed. Over the course of nearly 60 years, a variety of alternatives were offered, but none met the exacting standards set by the Board of Longitude. One of the men working on the problem during most of that time was a clock maker named John Harrison. After devoting the majority of his life pursuing this prize, he was finally successful. All four of the clocks he developed over the years are now on display at Greenwich Observatory, and are still in working order.

Because the Royal Observatory was instrumental in establishing measurements of longitude, it became the standard starting point for longitude values, being the location of the Prime Meridian longitude of $0^{\circ} 0' 0''$. This designation did not become official until 1884, when 41 representatives from around the world met at the International Meridian Conference. Greenwich won with a vote of 22 to 1, with 2 countries abstaining. The main reasons cited for its choice were that the United States had already been using Greenwich as its reference point, and 72% of the sea charts used by shipping companies were already based on Greenwich as the Prime Meridian. So, in the end, it was the choice that would make the easiest transition to a standardized system.

The actual location of the Prime Meridian is marked by the crosshairs of an eyepiece located in a large transit circle telescope that had been built by Sir George Airy in 1850. Standing here, you can have one foot in the Eastern Hemisphere and one foot in the Western Hemisphere. This location also marks where each day officially begins. As such, it is also where each new year (or century or millennium) officially begins, as well.

In the late 19th century, Greenwich Observatory became the home of Greenwich Mean Time. This was the first time the world attempted to standardize time keeping on a global scale. The driving force behind this move were the railroads. Having a systematic system for keeping time was necessary for the development of reliable time tables for departure and arrival.

In 1960, the directorship of the Royal Greenwich Observatory was transferred to Cambridge University. At the same time, other buildings on the site became part of the National Maritime Museum. This was when many of the observatory's collections were restored and put on public display for the first time. In 1997, Greenwich Observatory was named a UNESCO World Heritage Site, and in 1998, the Royal Greenwich Observatory officially severed its ties to Cambridge. As a result, it has undergone a name change, and is now officially known as the Royal Observatory, Greenwich.

Since this change, the observatory has undergone a massive redevelopment project. The Time and Space Project, expected to be completed this spring, has not only included upgrades to the existing buildings, but has also seen the opening of a new planetarium, galleries with displays about time and space, and an education center.

From establishing longitude to being a first-class research institution to an international treasure, Greenwich Observatory has seen many changes. However, one thing has remained the same: Greenwich Observatory has been, and will continue to be, an institution important not just to England, but to the world.

References:

History of the Royal Observatory, Greenwich: History of the Museum
<http://www.nmm.ac.uk/server/show/conWebDoc.13496>

Monthly Program, continued from Page 1

We will see the clear night skies of Africa, learning how its peoples used their astronomical observations to help them grow food, tell time, find their way through harsh lands, and mold their spiritual lives. From generation to generation, since the beginning of human experience, Africans have passed down their diverse beliefs and traditions featuring important connections with the heavens. Skywatchers of Africa illustrates several cultures from across the African Continent and highlights their relationships with the cosmos.

Skywatchers takes its audience on a virtual journey to:

Tour the homes of Mali's Dogon people, who pay careful attention to the sky for growing and storing their grains. Sowing crops at the wrong time in their arid region could be life-threatening, but the Dogon calculate when to plant in anticipation of the rainy season signaled by the appearance of the star Sirius.

Find its way along with the Tuareg across the Sahara Desert in western Africa. These nomadic people travel in caravans transporting goods for trade. The intense heat of the desert means that much travel takes place at night. In the vast Sahara it is easy to lose your way among the shifting sand dunes and featureless stony plains. Skywatchers of Africa shows how generations of the Tuareg have navigated across this desert using their knowledge of the night sky to follow trade routes connecting wells and oases.

Experience ancient Egyptian spiritualism, linking the stars with birth, death and the hope for eternal life. Their striking pyramids manifest these beliefs. These monuments were not made for celestial observation, but they are in alignment with the never rising or setting stars, which the Egyptians regarded as the imperishable or undying ones. The orientation of the Great Pyramid to those stars enabled the pharaoh's soul to enter this part of the sky, and live there forever.

As in many cultures throughout the world, the people of Africa continue to use the sky as a guide for bonding their societies and cultures, for laying out their homes and cities and for providing a calendar to steer the future of their communities. Adler's Skywatchers of Africa encourages visitors to share in the common bond that ties all people on Earth, experiencing life under one sky.

President's Message, continued from Page 1

Another very low-tech project involved the determination of the orbits of the ISS and HST using a 35mm film camera. This work was done as a proof of concept in connection with a NASA proposal for amateur monitoring of the orbits of proposed solar sail technology tests. This activity would be accessible to almost any amateur with a film camera, and even more so to those with a low light video camera like a Stellacam.

Prior to the start of the conference, the SAS held a day of workshops on basic CCD camera usage and photometry and light curve software. The presentations were very good, and would be a great introduction to someone interested in getting started. I had a very enjoyable time, and would encourage those with an interest in the science side of our hobby to consider joining the SAS. Please feel free to contact me if you have any questions or if you want to talk more about this exciting area.

As usual, please let me know if you have questions, concerns or suggestions regarding the BSAS.

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**Barnard-Seyfert Astronomical Society
Minutes of a Regular Meeting of the Board of Directors
Held On Thursday, May 4, 2006**

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 May 4, 2006. A sign-in sheet was circulated in lieu of a roll call. Board members Keith Burneson, JanaRuth Ford, Bill Griswold, Mark Manner, Bob Rice, and Gary Wilkerson were present. Board members Mike Benson, Tony Campbell, Kris McCall, Randy Smith, and Pam Thomas were absent. A quorum being present, President Mark Manner called the meeting to order at 7:33 P.M.

Mark Manner reported that former BSAS member Bill Madewell, who lives near Lynchburg, had offered to publicize TNSP 2006. Mr. Manner also reported that there was no great change in the Society's bank balance since the last board meeting. In addition, he stated that within the next ten days he would send announcements about the workshops to be presented at the June 3 BSAS picnic to the membership via email and in the Eclipse. Mr. Manner noted that several members had expressed their interest in receiving bulk emails regarding BSAS activities. He also pointed out that the BSAS' website had been updated. Bill Griswold stated that the website's membership expiration date calculator had been reactivated. Mark Manner queried the board about how many planned to attend the June 3 picnic.

Bill Griswold suggested that Vice-President Keith Burneson was fully involved with his duties as the TNSP Coordinator and could use some help finding speakers for our upcoming membership meetings. To that end, Mr. Manner asked all board members to try to find one potential speaker. He further observed that Vanderbilt's Dr. Stassun, who was featured in a May 4th article in the Tennessean, might be a potential local candidate. Lonnie Puterbaugh commented that he would contact two astronomers that he knew at the University of Memphis via email.

Equipment Committee Chair Lonnie Puterbaugh presented to the board this committee's resolution that the BSAS apply for Astronomy Magazine's "Out-Of-This-World" award for 2006. This \$2,500 award, to be determined by the magazine's editors, will be given to an astronomy club demonstrating the greatest "sustained effort" in public outreach and education. Using a PowerPoint presentation to document the award's requirements and the BSAS' qualifications, Mr. Puterbaugh then proposed that a committee be formed to oversee this effort. The committee would include BSAS members Joe Boyd, Mary Boyd, JanaRuth Ford, Lonnie Puterbaugh, Chuck Schlemm, and Steve Wheeler. Following a brief discussion, the board agreed upon several minor amendments to the proposed resolution. Mark Manner moved that the board adopt the amended resolution and Keith Burneson seconded his motion that passed by a unanimous voice vote. A copy of the adopted resolution is attached below.

Mark Manner informed the board that a projector would be needed for the workshops to be presented at the BSAS picnic next month. Since there was no further business to discuss, President Manner declared the meeting adjourned at 8:55 P.M.

Respectfully submitted,
Bob Rice
Secretary

ATTACHMENT

Resolution Adopted by the Board of Directors

WHEREAS, Astronomy Magazine has this year instituted a nationwide program to recognize and reward the club or organization which does the most outstanding job in astronomy outreach to the public, by awarding a prize of \$2,500.00; and

WHEREAS, the clubs or organizations which believe they have met the requirements of the award must submit an application in the form prescribed by Astronomy Magazine, and it must be postmarked no later than 15 July 2006; and

WHEREAS, inasmuch as the purpose of the award is to encourage and support those clubs and organizations which are or would like to conduct astronomy outreach, or to improve and expand the astronomy outreach already under way, the proposal must specify the proposed use of the funds if awarded to the applicant, which funds must be used only for enhancing the outreach program of the applicant; and

WHEREAS, the Board of Directors of the Barnard-Seyfert Astronomical Society (BSAS) believes that the Society has an outstanding outreach program under development which may have no peer in the entire United States, considering The Astronomy Channel van and its multi-faceted and challenging presentations, the participation of our BSAS members in the Night Sky Network program which has received national recognition, the participation by three of our BSAS members in NASA's Solar System Ambassador program, the outstanding program by one of our members in engaging both children and adults in hands on astronomical and space demonstrations and exhibits, and the large number of our BSAS members in the various outreach programs of the society; and

WHEREAS, the charter and bylaws of the BSAS provide that a major purpose of the BSAS is astronomical outreach;

NOW, THEREFORE, BE IT UNANIMOUSLY RESOLVED by the Board of Directors of the Barnard-Seyfert Astronomical Society that:

(1) The Board of Directors authorizes and directs the preparation and submission of an application for the above-mentioned award, and authorizes the president to appoint a special committee to prepare the above application.

(2) The Board of Directors encourages all BSAS members to assist as called upon in the preparation of the application, and authorize the proper officers of the corporation to execute the application and submit it.

(3) The Board approves the items submitted herewith as the items to be set out in the application for which the funds would be used by BSAS if the BSAS is awarded the grant.

**Barnard-Seyfert Astronomical Society
Minutes of the Monthly Membership Meeting
Held on Thursday, May 18, 2006**

President Mark Manner called the meeting to order at 7:35 P.M. in the Adventure Science Center (ASC) and welcomed new members and visitors.

Mike Benson introduced our evening's speakers: high school science teachers Constance and Michael Brown. Constance Brown, then at McEwen High School, taught the 1st and 2nd place winners in astronomy at the recent 54th Middle Tennessee Science and Engineering Fair at Austin Peay State University. The BSAS sponsored and provided cash awards for these winners. Michael Brown described his efforts at McGavock High School in the GAVRT Project (Goldstone Apple Valley Radio Telescope) to give his students a unique opportunity to command and do research with a 34-meter radio telescope via the Internet. Constance Brown then described her and Michael's involvement in TLRBSE (Teacher Leadership in Research Based Science Education) funded by the National Science Foundation. Both she and Michael had just completed work at Kitt Peak National Observatory under TLRBSE during which time they took one of the first photos of the recent supernova in M51. Both answered questions from the audience following their presentations.

Mark Manner recalled the meeting to order at 8:22 P.M. The minutes of the previous Membership meeting on April 20, 2006 were approved without exception as published in the May 2006 *Eclipse* newsletter. Mr. Manner, reporting for Treasurer Randy Smith, announced that the BSAS' bank balance was approximately \$3,400. JanaRuth Ford stated that she had recently spoken with Mr. Smith and that these numbers were still current. Dark Sky Committee Chair Powell Hall reported that Dr. David Crawford, one of the "founding fathers" of the International Dark-Sky Association, was currently involved in a study of the effect of darkness on human health. Mr. Hall announced that the Dark Sky Committee would next meet on Tuesday, August 1st, 2006. He also announced that he planned to use the BSAS' sky quality meter to test the darkness at various locations around the country during his travels this summer.

Kris McCall thanked the BSAS for its participation in Astronomy Day at the ASC on May 6th and announced that pictures from that event were published in the May 12th edition of the *Tennessean*. Tony Campbell suggested that the BSAS might offer free memberships as prizes at future Astronomy Day events. Mark manner said that he would bring this idea before the board of directors. Mark Manner announced that the BSAS would apply for a \$2,500 award from *Astronomy Magazine* to be given to an astronomy club demonstrating the greatest sustained effort in public outreach and education.

Mark Manner announced these upcoming star parties and events:

- May 20 – Long Hunter State Park Star party
- May 27 – Natchez Trace Star Party
- Jun 03 – BSAS Annual Picnic at Spot Observatory
- Jun 15 – BSAS membership meeting at the ASC
- Jun 24 – Natchez Trace Star Party

Mr. Manner announced that the June 3rd annual picnic would start around 4 P.M. and that a large tent would be provided in case of inclement weather. Bill Griswold pointed out that the main course would be provided at the picnic along with silverware and drinks. Although not required, Mr. Manner noted that attendees could bring a side dish or a dessert if they wished.

Kris McCall announced that she would be unable to attend the May 20th star party at Long Hunter State Park, but that free star charts would be available at the ASC. Since there was no further business to discuss, President Manner declared the meeting adjourned at 8:35 P.M.

Respectfully submitted,
Bob Rice, Secretary

Activities and Events

June 1 — 30, 2006

6/1 BSAS Board of Directors mtg., 7:30 p.m. at Girl Scout Office
 6/3 FIRST QUARTER
 6/3 BSAS Annual Picnic at Spot Observatory, 4:00 p.m. (rain or shine)
 6/4 Mercury 1.2° N of M35 (18° E)
 6/5 Saturn 0.8° S of Beehive (M44)(52° E)
 6/7 Spica 0.1° S of Moon
 6/11 FULL MOON
 6/15 BSAS monthly meeting at ASC: 7:30 p.m.
 6/15 Mars 0.2° S of Beehive (M44)(42° E)
 6/16 Pluto at opposition
 6/17 Uranus 0.6° N of Moon; Mars 0.6° N of Saturn (41° E)
 6/18 LAST QUARTER
 6/20 Mercury greatest elongation E (25°)
 6/21 Solstice, 0726 hours
 6/22 Moon 0.3° N of Pleiades (M45)
 6/24 Private Star Party (Natchez Trace, Mile 412, Water Valley overlook)
 6/25 NEW MOON
 6/28 Vesta 0.2° N of Moon; Mars 2° S of Moon

July 1 — 31, 2006

7/1 Pallas at opposition
 7/3 FIRST QUARTER; Earth at aphelion
 7/4 Spica 0.1° N of Moon
 7/6 BSAS Board of Directors mtg., 7:30 p.m. at Girl Scout Office
 7/8 Antares 0.2° N of Moon
 7/10 FULL MOON
 7/14 Uranus 0.4° N of Moon
 7/17 LAST QUARTER
 7/20 BSAS monthly meeting at ASC: 7:30 p. m.
 7/20 Moon 0.4° N of Pleiades (M45); Venus 1.5° S of M35 (25° W)
 7/22 Mars 0.7° N of Regulus (30° W)
 7/22 Private Star Party (Natchez Trace, Mile 412, Water Valley overlook)
 7/24 NEW MOON
 7/27 Mars 1.1° S of Moon

No meeting of the Dark Sky committee until August
 Note: all dates & hours according to Central Time

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