



# ECLIPSE



*The Newsletter of the Barnard-Seyfert Astronomical Society*

Celebrating our 76th Year

June 2005

**The Membership meeting will be held on June 16, 2005 at the Adventure Science Center at 7:30 pm. The title of the talk will be "How do you know that."**

Our program for June will take a look at how astronomers have determined some of the most basic measurements of the Universe. We will consider, from a historical perspective, how astronomers have measured things like the Astronomical Unit, "c" - the speed of light, the masses of the planets, etc. Our speaker will be Tim Farris, Ph. D. He is a faculty member of the Math & Science Division at Volunteer State Community College.

## FROM THE PRESIDENT

by John Harrington, President

It's finally summertime, and the long succession of cold, cloudy nights is behind us, at least for a while. The BSAS has lots of stargazing activities scheduled in the coming months to take advantage of our clearing skies.

But before I list all of the coming events we can look forward to, I'm happy to report that, after a lengthy effort, the BSAS has obtained a written permit from the National Park Service for all of our dark sky events scheduled through the end of the year on the Natchez Trace. As some of you may have heard, the National Park Service has had a regulation for years allowing it to require permits and fees for organized events in our national parks. Recently, the Park Service has begun to enforce that regulation, leading many middle Tennessee amateurs to wonder if star parties on the Trace would become a thing of the past. I can report that the Park Service does not intend to outlaw amateur astronomy on the Natchez Trace and is willing to issue permits for stargazing events for those willing to comply with the permitting procedure.

So, what exactly do we have to look forward to over the summer? For starters, there are those private star parties on the Natchez Trace. Star parties are planned for all of the following nights: June 4, July 9, August 6, September 3, October 1 and October 29. Most of these star parties will be held at the mile 433.5 loop parking lot near the Trace's intersection with Highway 96. The mile 433.5 lot is 10 miles closer to metro Nashville than the Tennessee Divide parking lot we used to use, and over 20 miles closer than the Water Valley Overlook site. We'll still hold one or two of these star parties at Water Valley Overlook, though, just because it is such an excellent site with quite dark skies. We don't have private star parties scheduled in November or December for the simple reason that those months are among the cloudiest of the year here in middle Tennessee.

What else is there to look forward to? Well, there's just the biggest BSAS star party of the year—TNSP '05! The event runs from October 7-9 and will again be held under the truly dark skies at Camp Nakanawah, located between Cookeville and Crossville. TNSP brings together amateurs from throughout middle Tennessee and beyond and is a wonderful opportunity for good fellowship. You can choose to stay in one of the Camp's cabins, or to camp out on the observing field. The stargazing last year was truly spectacular, despite the hurricane's near miss. Of course, it takes real effort to put on a major star party for 150-200 or even more participants, so I heartily encourage you to volunteer for one of the four committees working on TNSP: signs (Heinrich Tischler), registration (Bob Rice), snack bar (Pam Thomas) or cleanup (yours truly).

Want more? There's always the public star party scheduled for August 12 at Edwin Warner Park (the Perseid meteor shower will peak that night), or the public star parties set for November 4 (at Edwin Warner Park) and November 5 (at ASC), when Mars will be at opposition and shining brightly.

continued on Page 3

## Happy Birthday James Clerk Maxwell

by Robin Byrne

This month we honor a man who untangled the mysteries of light, and so much more. James Clerk Maxwell was born in Edinburgh, Scotland on June 13, 1831. From an early age, Maxwell was intrigued by how things worked. In 1839, Maxwell's mother died, which changed the family's original plan to home school him. Instead, he attended the Edinburgh Academy. Shy, quiet, and interested in odd pursuits, Maxwell was quickly given the nickname of "Dafty." At the age of 14, Maxwell wrote a paper about a mechanical means of drawing ovals, which was read to the Royal Society of Edinburgh in 1846.

When he was 16, Maxwell entered Edinburgh University. He clearly enjoyed all the new ideas he was exposed to in this environment. He wrote two papers while here: "The Theory of Rolling Curves" and "The Equilibrium of Elastic Solids." In 1850, Maxwell went to Cambridge. His talents were quickly recognized by his peers and instructors. He graduated in 1854 with a degree in mathematics. He stayed on as a tutor, and later received a fellowship to continue his education there.

In 1856, Maxwell learned that the Adams Prize for the following year was on the subject of "The Motion of Saturn's Rings." Maxwell had already thought about this problem 9 years earlier, while still a student. After two years of work, Maxwell showed that the rings must be composed of small particles, and for his work, won the Adams prize. At about the same time, Maxwell became interested in electricity. Since he was not confident in his understanding, he studied the works of those who pursued the study of electricity in a conceptual, rather than mathematical, way. Among those were the works of Faraday. Maxwell built upon Faraday's work, and derived equations for, what was then called "the lines of force", and what we now call electric field lines. Thinking of a positive charge as a "source" and a negative charge as a "sink", Maxwell developed the idea of electric potential, with the lines of force "flowing" from the source to the sink.

In 1859, Maxwell married Katherine Mary Dewar, the daughter of the head of Marischal College. Despite that position, Maxwell was denied an opportunity to work there. It was said that, although Maxwell was an excellent lecturer, only those who understood the material got anything out of his lectures. The college needed instructors who could teach to all the students, not just the best in the class. He eventually was appointed to the chair of Natural Philosophy at King's College in London. It was here that he began studying the motions of molecules in a gas. In particular, he found that gases behaved statistically, so that not all molecules move at the same speed, but with a distribution of speeds that followed a bell curve. He also found that the speeds depended only on the temperature of the gas and the rate of heat flow.

However, Maxwell is best known for his study of the relationship between electricity and magnetism. Over the course of 11 years, Maxwell found that if a magnetic field undergoes a change, then there will also be connected to it, a changing electric field. When he performed the calculations, Maxwell found that the speed of propagation of these changing fields was equal to the speed of light. This led him to the conclusion that light is composed of oscillating magnetic and electric fields. In 1864, Maxwell wrote, "light itself (including radiant heat, and other radiations if any) is an electromagnetic disturbance in the form of waves propagated through the electromagnetic field."

In 1871, Cambridge offered Maxwell a position as the first Cavendish Professor of Physics. In this position, Maxwell designed and helped to set up the Cavendish laboratory. By the spring of 1879, Maxwell's health began to fail, even though he continued to lecture. Maxwell's health continued to deteriorate, until his death on October 8, 1879. His attending physician is quoted to have said, "No man ever met death more consciously or more calmly."

James Clerk Maxwell is immortalized forever in the equations of light which now bear his name, but his contributions to science go beyond Maxwell's Equations of Light. The understanding of electrostatics owe him a great debt of gratitude for helping to simplify how electric forces can be visualized. And even planetary scientists should thank Maxwell for definitively proving the nature of Saturn's rings. With Saturn now sinking in the East, take a few more glimpses of it and its rings (or check out the Cassini web page for the latest images). And while you're at it, think about the man who helped to shed some "light" on so many things.

continued on Page 3

From the President, continued from Page 1

And let's not forget our monthly membership meetings. Presentations Committee chairperson JanaRuth Ford has done a terrific job of lining up interesting and informative speakers this year (such as Elizabeth Warner at the May meeting), and our June program speaker promises to be another. Professor Tim Farris of Volunteer State Community College will speak on the subject of "How do you know that?" with the goal of explaining exactly how modern science really knows the distance of an astronomical object or the composition of a distant star.

Finally, I'm also hoping that we can restore our former tradition of hosting an annual summer picnic/stargaze.

As you can see, we have a lot of fun events to look forward to in the next few months. And no doubt we'll schedule additional outings as summer rolls along. So c'mon, let's go stargazing!

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Happy Birthday, continued from Page 2

References:

Maxwell, James (1831-1879)—from Eric Weisstein's World of Scientific Biography <http://scienceworld.wolfram.com/biography/Maxwell.html>

Maxwell by J J O'Connor and E F Robertson <http://www-groups.dcs.st-and.ac.uk/~history/Mathematicians/Maxwell.html>

James Clerk Maxwell (1831-1879) mathematical physicist by Christopher Haley, History and Philosophy of Science, Cambridge University. <http://www.victorianweb.org/science/maxwell1.html>

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#### 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: \$29.00

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). Please call President, John Harrington, (615) 269-5078 if you have questions. Dues can be sent to:

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#### THE ECLIPSE NEWSLETTER

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Pam Thomas, Vice President

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BSAS website: [www.bsasnashville.com](http://www.bsasnashville.com)

BSAS information line: 615 252-4091

BSAS Logo by Tony Campbell

**Barnard-Seyfert Astronomical Society**  
**Minutes of a Regular Meeting of the Board of Directors**  
**Held On Thursday, May 5, 2005**

The board of Directors of the Barnard-Seyfert Astronomical Society met in regular session at the Jefferson Square Club House in Nashville, Tennessee on May 5, 2005. A sign-in sheet was circulated in lieu of a roll call. Board members Mike Benson, Joe Boyd, Tony Campbell, JanaRuth Ford, Bill Griswold, Bob Rice, and Randy Smith, were present; John Harrington and Pam Thomas arrived later. Board members Kris McCall and Gary Wilkerson were absent. In addition to members of the board, BSAS Equipment Committee member Keith Burneson and Equipment Committee Chair Lonnie Puterbaugh were also present. Secretary Bob Rice declared a quorum to be present and called the meeting to order at 7:48 P.M.

Bob Rice noted that Elizabeth Warner from the University of Maryland would speak at the next membership meeting on May 19 about NASA's upcoming July 4<sup>th</sup> Deep Impact Mission. Tony Campbell suggested that the BSAS petition the Astronomical League about establishing new Observing Clubs geared toward an emphasis on imaging.

Vice-President Pam Thomas took charge of the meeting upon her arrival at 8:00 P.M. The minutes of the previous regular board meeting held on April 7, 2005 were approved without objection as published in the May 2005 issue of the *Eclipse* newsletter. The board discussed the next private star party scheduled for Saturday, May 7, in the parking lot near Leipers Fork at the 433 mile marker on the Natchez Trace Parkway.

President John Harrington assumed control of the meeting when he arrived at 8:13 P.M. Mr. Harrington announced that, although he had been given verbal assurances, he had not received a written permit or a fee waiver from the National Park Service for the BSAS to use sites on the Natchez Trace Parkway for star parties. He stated that he would follow up on this matter. Treasurer Randy Smith presented a written financial report showing the BSAS with a checking account balance of \$6,053.63 at April 30, 2005.

Equipment Committee Chair Lonnie Puterbaugh announced that committee member Keith Burneson would take charge of the Society's Meade LX200 telescope. Mr. Puterbaugh stated that, besides having the necessary batteries and invertors, Mr. Burneson would learn to operate this complicated telescope, bring it to BSAS outreach activities, and teach other members how to use it. Tony Campbell suggested that the LX200 might later be designated as a dedicated loaner scope.

Lonnie Puterbaugh announced that he would soon be giving a PowerPoint presentation on video astronomy at the Von Braun Astronomical Society in Huntsville, Alabama. Mr. Puterbaugh noted that this was a single part of a more extensive PowerPoint "Astronomy Channel" project that he has been working on for over a year.

Program Committee Chair JanaRuth Ford reported that this committee would meet on May 12. Ms Ford commented that she would try to contact Channel 4 Meteorologist Lisa Spencer to seek publicity for our May 19 Deep Impact Mission program. Tony Campbell said that he would similarly contact the *City Paper* and the *Nashville Scene* newspapers.

John Harrington asked Webmaster Tony Campbell to send a "blast email" to BSAS members about these events:

- Friday, May 6 - "Radio Jove" radio astronomy presentation at Middle Tennessee State University's Wiser-Patton Science Hall at 6:00 P.M.
- Saturday, May 7 - Private dark sky star party at Natchez Trace mile marker 433.5 at 7:30 P.M.
- Saturday, May 21 - Club visit to Tamke-Allan Observatory at Roane State Community College near Harriman.
- BSAS members can now go to our website to easily look up their membership renewal date.

John Harrington asked the directors and others who had agreed to request door prizes from firms for the Tennessee Star Party (TNSP) to make those contacts. Acting upon Mr. Harrington's suggestion, the board recommended establishing these TNSP sub-committees: Registration, Clean-up, Refreshments, and Signs. Lonnie Puterbaugh suggested that an area be reserved in the Wigwam for BSAS member Chuck Schlemm to set up his informative display for TNSP 2005.

The board discussed establishing an observing awards program within the BSAS in conjunction with those offered by the Astronomical League. The board also considered awarding a digital camera for the most member observing accomplishments in one year. The discussion then turned to establishing a series of basic "Astronomy 101" instructional sessions. John Harrington moved that the BSAS establish an "Introduction to Amateur Astronomy" course covering practical aspects of the hobby to be periodically conducted by interested members. Mike Benson seconded this motion and it was adopted by a unanimous voice vote without further discussion.

There being no further business to discuss, President Harrington declared the meeting adjourned at 9:10 P.M.

Respectfully submitted,  
Bob Rice, Secretary

**Barnard-Seyfert Astronomical Society  
Minutes of the Monthly Membership Meeting  
Held on Thursday, May 19, 2005**

President John Harrington called the meeting to order at 7:39 P.M. at the Adventure Science Center (ASC) and welcomed new members, returning members, and visitors. The minutes of the previous membership meeting held on April 21, 2005 were approved without objection as published in the May 2005 issue of the *Eclipse* newsletter.

John Harrington introduced Elizabeth Warner who is the Director of the University of Maryland's Observatory and Liaison to Amateur Astronomers for NASA's Deep Impact Mission scheduled to occur on July 4, 2005. Ms Warner gave an exiting and widely attended program on this mission to strike comet Tempel 1 with a space probe launched "impactor" that will blast a hole in its surface, thus giving the world a first view of and opportunity to analyze a comet's interior. Ms Warner pointed out that, due the limited number of professional resources available, NASA would be actively seeking images, drawings, and other observational data from amateur astronomers. She also noted that copper was extensively used in the impactor's construction because this element has an easily identifiable spectrum and should not react with the expected ices in Tempel 1. Unfortunately, Ms Warner stated that the Deep Impact event would probably be below the horizon for viewers in middle Tennessee.

John Harrington recalled the meeting to order at 9:04 P.M. Treasurer Randy Smith reported that the BSAS' checking account balance was \$5,681.71. John Harrington reported that, although the BSAS had not received the promised permit to use the Natchez Trace sites for star parties, he would give board members copies of the Society's application to show to inquiring park rangers during upcoming observing events.

Joe Boyd and Lonnie Puterbaugh reported on the very successful daylong program they conducted at Page High School on Tuesday, May 17. Thanks to their effort, 220 students and 8 teachers observed the sun through telescopes in both white light and in hydrogen-alpha. Furthermore, the students asked Mr. Boyd and Mr. Puterbaugh to return in the fall to help them set up an astronomy club.

Lonnie Puterbaugh showed a brief promotional trailer on a new DVD entitled "Hubble: 15 Years of Discovery" that will be released by Amazon.com on May 30. This 84 minute DVD, prepared as a tribute by the European Space Agency, is expected to sell for around \$23.

John Harrington announced that the BSAS' field trip to Tamke-Allan Observatory at Roane State Community College would leave Nashville from the ASC at approximately 1 P.M. on Saturday, May 21. Kris McCall announced that the ASC would host a presentation on NASA's Return to Flight (heralding the resumption of space shuttle operations following the Columbia disaster) at 6 P.M. on May 24. Ms Mc Call noted that NASA's Paul Johnson, who gave an outstanding program at TNSP 2004, would be a featured speaker along with Dr. Todd Gary from Tennessee State University and BSAS member Chuck Schlemm.

John Harrington announced these upcoming events:

- May 25: Presentation by Max Tegmark on "Parallel Universes" at 8 P.M. at the Scarritt-Bennett Center.
- June 4: BSAS private star party at Natchez Trace mile 433.5 parking lot @ 8:30 P.M.
- July 13: Launch window opens for NASA's return to flight with the Shuttle Discovery.

Kris McCall, acting for Deep Sky Committee Chair Powell Hall, announced that this committee would next meet on July 5. John Harrington asked for volunteers to serve on the Registration, Signs, Snack Bar, and Cleanup Committees for TNSP 2005. Since there was no further business to discuss, President Harrington adjourned the meeting at 9:29 P.M.

Respectfully submitted,

Bob Rice  
Secretary

## Activities and Events

June 1 — 30, 2005

6/2 Double shadow transit on Jupiter  
 6/6 NEW MOON; Double shadow transit on Jupiter  
 6/6 Private star party (Natchez Trace Mile 433.5 parking lot)  
 6/7 BSAS Board of Directors mtg., 7:30 p. m  
 6/13 Pluto at opposition  
 6/14 FIRST QUARTER  
 6/16 Jupiter 0.4° N of Moon, occultation  
 6/20 Antares 0.7° S of Moon, occultation  
 6/21 Solstice at 1:46 CDT  
 6/21 FULL MOON; BSAS monthly mtg., 7:30 p. m., at  
 Adventure Science Center  
 6/25 Venus 1.3° N of Saturn (22° E)  
 6/26 Mercury 1.4° N of Saturn (22° E)  
 6/28 LAST QUARTER; Mars 2° S of Moon  
 6/29 Solar viewing for children, Edwin Warner Park

July 1 — 31, 2005

7/1 Double shadow transit on Jupiter  
 7/2 Moon 0.8° S of Pleiades (M45)  
 7/3 Mercury 0.9° S of Beehive (M44) (25° E)  
 7/4 Venus 0.06° N of Beehive (M44) (25° E)  
 7/6 NEW MOON  
 7/7 Mercury 1.6° S of Venus (26° E)  
 7/7 BSAS Board of Directors mtg., 7:30 p. m  
 7/9 Private star party (Natchez Trace Mile 433.5 parking lot)  
 7/13 Jupiter 0.8° N of Moon, occultation  
 7/14 FIRST QUARTER  
 7/21 FULL MOON (largest of 2005)  
 7/21 BSAS monthly mtg., 7:30 p. m., at Adventure Science  
 Center  
 7/28 LAST QUARTER  
 7/29 Moon 0.6° S of Pleiades (M45)

Note: all dates & hours according to Central Time

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