



ECLIPSE



The Newsletter of the Barnard-Seyfert Astronomical Society

Celebrating our 76th Year in 2004

September 2004

BSAS Program, September 16, 2004

The BSAS Membership monthly meeting will be held at the Adventure Science Center at 7:30 pm on Thursday, September 16. Dr. Rhea Seddon, Assistant Chief Medical Officer of the Vanderbilt Medical Group and an astronaut who flew three space shuttle missions, will be the guest speaker at the regular BSAS meeting on 16 September. Dr. Seddon, who lives in Murfreesboro, is a graduate of the University of California, Berkeley, and the University of Tennessee College of Medicine. She served in NASA from 1978 to 1997. She is active in biomedical research and special projects on astronaut health and the study of bioastronautics for the exploration of the Moon and Mars. Her topic will be "Life Sciences Research in Space".

FROM THE PRESIDENT

Joseph M. Boyd, Jr.

This will be the last "From the President" column I will be writing as your BSAS president, inasmuch as you will be electing a new president before the next column is due. With less than a month still to go on my term of office, this will be my opportunity to review some of our accomplishments over the past two years as well as express my appreciation for the opportunity to work with you. First, thank you for the privilege of serving as your president for these two terms.

Next, I want to tell you a little about the board of directors with whom I have had the privilege of working. No organization could have asked for a harder working or more conscientious board than we have had. I am afraid that you who are not on the board have no real idea of the time and effort the board members have put in during these two years to serve the Society. Our regular monthly board meetings have been attended by almost every member of the board, and I don't recall that we have cancelled a single board meeting. We have always welcomed any BSAS member to attend and to feel free to express him or her self on any issue. Detailed minutes of each meeting have been faithfully kept by Evelyn Wright, Jill Thompson, and Bob Rice, and they have been published in the Eclipse for every member to know what has transpired. You are fortunate to have had this kind of dedication by your elected representatives.

When I first took office as president, I attempted to personally call every member of the Society, to offer each one an opportunity to serve on some committee or in some capacity. Most of you responded eagerly, many saying you had never previously been asked to do anything in the Society. Because of your willingness to serve and your interest in the work of the Society, most of the committees have functioned well, and every member of the BSAS who was willing to do so has had a voice in the activities of the Society. I feel sure that my successor will want to revamp some of the committees, and will want to reshuffle the membership of the committees, and I hope you will lend the same cooperation and support in that effort as you gave to me.

Powell Hall has led the Dark Sky Committee and has tangible results to show for his leadership and efforts, in the forming of a Section of the International Dark Sky Association, in his presentation of programs, and in working with local officials to initiate lighting standards. Our Long Range Planning Committee has almost completed its initial plan for the next five years, and Dennis Williams should present a program on its recommendations soon. Under the aegis of Lonnie Puterbaugh, our Equipment and Facilities Committee has now acquired additional equipment to be loaned out to our members, has repaired and updated some of the donated equipment, and has, with the help of the board, set up a procedure for loaning and keeping track of all of the loaner equipment. Almost all of the equipment is now in the hands of our members, being used as it was intended to be utilized. In a major step forward, the Finance Committee chaired by Bob Rice established budgets for each of the past two years, which were adopted by the board. Under Bill Griswold's direction, and largely due to his own hard work, the Membership Committee has developed a membership tracking program, which enables any of us to know who is current, who is active, whether individual or family membership, and other data. This was a huge undertaking, requiring hours and patience. Our Mentoring and Outreach Committees, under JanaRuth Ford and Heinrich Tischler, have initiated programs to use the experience of many of our members to help our members who are new to astronomy, both in using the various types of equipment and in learning about the sky. Their outreach efforts, assisted by Chuck Schlemm and Spencer Buckner, have been coordinated with Warner Park, Long Hunter Park, Crockett Park, and Adventure Science Center to share our love of astronomy with the public, with Boy and Girl Scouts, and with

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students in the various schools. We now have joint programs with Austin Peay State University, Middle Tennessee State University, and Vanderbilt University Department of Physics and Astronomy. Our Program Committee under John Harrington has provided a variety of outstanding programs, literally something for everyone, and the program at our last meeting was a fitting climax. Our Social Committee, chaired by Pam Thomas, has provided refreshments at some meetings as well as provided an opportunity for us to get together to enjoy each other's company. Kris McCall has steered the Public Relations Committee to prepare a brochure last year and to work on an updated one to be published soon. Tony Campbell, as web site chair, has produced one of the most outstanding astronomy club web sites I have ever seen, and he has maintained it on a daily, or nightly, basis.

Two of our biggest projects in the last two years were the ALCON 03, chaired by Mike Benson and Jill Thompson, the TNSP 2003 chaired by Lloyd Watkins and Rocky Alvey, and the TNSP 2004, which is being run by a committee led by Bill Griswold, Bob Rice, and Lonnie Puterbaugh. The ALCON was so successful because about 61 of our members actively participated in it, some even taking a week of vacation to work in various capacities. The TNSP 2003 engendered good will for the Society and attracted a good crowd. The TNSP 04 promises to be another outstanding event.

I want to thank Dyer Observatory for allowing us to hold our membership meetings there over the years, and Adventure Science Center for furnishing us a year round meeting place. Both of these were generous in allowing us the use of their facilities, and we hope that we can continue good relationships with both of them in the future.

I would be remiss if I did not give special thanks to Bill Griswold. He has faithfully published and distributed the Eclipse each and every month, before the beginning of the month, and with great content. We are fortunate that Bill agreed to take on this project, and to carry it out so faithfully month after month. What you probably don't know is how Bill managed to get the Eclipse out on time every time. Before the due date for our articles, particularly this column, Bill would call to remind us of the date. To make sure we did not forget, he would call the next day to remind us that a day had elapsed. After three or four calls like that, we finally get the message that we will have no peace until that article is received by him. This is what it takes, and I really appreciate him.

So you see, it is really you, the members, who are responsible for the accomplishments of the past two years.

Two people I want to thank in particular. Powell Hall has been not only our immediate past president but a genuine friend as well. He has never tried to force his views on me, but has always had sage advice when I asked for it, which was often. I hope I can be as cooperative with my successor as Powell has been with me. The second person I would like to thank is Mary Boyd. Night after night, she has put up with board meetings, committee meetings, project meetings, and telephone conferences. She is used to being called about 2300 to say I am leaving the committee meeting and starting home, and that she can start worrying now. She has helped me at every star party, at almost every membership meeting, and at social events. She has helped host out of town guests, and has done just about everything she can to help me. Thanks, Mary.

May all of you have clear and dark skies.

Joe

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, Joe Boyd, (615) 386-3134 if you have questions. Dues can be sent to:

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THE ECLIPSE NEWSLETTER

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Joe Boyd, President
John Harrington, Vice President
Jill Thompson, Secretary
Bob Rice, Asst. Secretary
Lonnie Puterbaugh, Treasurer
Powell Hall, Immediate Past President

Board of Directors

Mike Benson
Tony Campbell
JanaRuth Ford
Bill Griswold
Kris McCall
Pam Thomas

Logo BSAS
Tony Campbell

Happy Birthday James Edward Keeler

by Robin Byrne

This month we explore the life of one of the unsung heroes of astronomy. James Edward Keeler was born September 10, 1857 in La Salle, Illinois. As a young man, he left school for several years. However, it was during this time that his interest in astronomy developed, including building astronomical equipment and studying the solar system on his own.

In 1877, at the age of 20, with the financial help of a friend, Keeler entered Johns Hopkins University. The following year, he was part of an expedition that went to Colorado to study a solar eclipse. In 1881, Keeler earned his Bachelors Degree and began working as an astronomer.

After graduation, Keeler was part of an expedition to the summit of Mount Whitney to study solar radiation at high altitudes. One of the peaks near Mount Whitney is now named after Keeler: Keeler Needle.

From 1883 to 1886, Keeler studied in Germany at the University of Heidelberg and the University of Berlin, ultimately earning his Ph.D.. Upon graduation, he worked as an assistant at the, then under construction, Lick Observatory. Once it was complete in 1888, Keeler was made a full astronomer. His first area of research here was the study of the Orion Nebula. He found that the nebula has a very similar spectrum, thus a similar composition, to stars. He also found that nebula move through space in a manner similar to stars. Using the 35-inch refractor at Lick, Keeler tried to confirm Schiaparelli's observation of channels on Mars, but saw no such features.

In 1891, Keeler was named Director of Allegheny Observatory and Professor of Astrophysics. It was here, in 1895, that he began studying Saturn's rings. Using the spectrum of the rings to measure their motion, Keeler found that the rings could not be a single solid object, but rather composed of multiple small particles. This confirmed a theory that had earlier been proposed by James Clerk Maxwell. He also observed a gap in the outer part of the A-ring, which is now known as Enke's Division. Some feel that Keeler should have been given credit, rather than Enke, for this discovery.

In 1898, Keeler returned to Lick Observatory. Here, he began a study of the nebulae catalogued by William Herschel. Keeler photographed many of them and discovered thousands that had not been previously known. Unfortunately, Keeler died suddenly on August 12, 1900 in San Francisco, California.

With the Cassini spacecraft now successfully in orbit within the Saturn system, it is fitting to honor someone who added to our understanding of that planet. As images of Saturn's cloud tops, rings and moons stream back from Cassini, remember the man who proved conclusively that it is indeed Saturn's "rings" rather than "ring" that we are seeing, James Edward Keeler.

References:

James Edward Keeler - Wikipedia, the free encyclopedia
http://www.peacelink.de/keyword/James_Edward_Keeler.php

Encyclopedia - Yahoooligans! Reference
<http://yahooligans.yahoo.com/reference/encyclopedia/entry?id=25547>

Astronomy Bio...James E. Keeler by Jay Bitterman
<http://www.bpccs.com/lcas/Articles/keeler.htm>

Barnard-Seyfert Astronomical Society
Minutes of a Regular Meeting of the Board of Directors
Held On Thursday, August 5, 2004

The Board of Directors of the Barnard-Seyfert Astronomical Society met in regular session at the Jefferson Square Club House in Nashville, Tennessee on August 5, 2004. A sign-in sheet was passed around in lieu of a roll call. President Joe Boyd declared a quorum to be present and called the meeting to order at 7:53 P.M. Board members Mike Benson, Joe Boyd, Tony Campbell, JanaRuth Ford, John Harrington, Lonnie Puterbaugh, and Bob Rice were present. Board members Bill Griswold, Powell Hall, Kris McCall, and Pam Thomas were absent. The minutes of the previous regular board meeting held on July 1, 2004 were approved as published in the August 2004 issue of the *Eclipse* newsletter.

Tennessee Star Party (TNSP) Treasurer Bob Rice reported that 6 persons had pre-registered for this event and that the checking account balance was \$861.10.

Program Committee Chair John Harrington reported that renowned stellar cartographer Wil Tirion would be the speaker at the August 19 membership meeting at the Adventure Science Center. Mr. Tirion's presentation will be on the art and science of star mapping to be followed by a question and answer session and a book signing. Webmaster Tony Campbell announced that he would include this information on the BSAS website and telephone message. Joe Boyd suggested that other astronomy clubs be invited to this meeting. Lonnie Puterbaugh put this suggestion into a motion that was seconded by John Harrington and passed by a unanimous vote.

Mike Benson, the BSAS' Astronomical League Correspondent, reported on his attending the AstroCon in Berkeley, California on July 20-24. In addition to the League, the American Association of Variable Star Observers, the Association of Lunar and Planetary Observers, and the Astronomical Society of the Pacific also sponsored this convention. Mr. Benson noted that he was able to see the 36-inch Alvan Clark refractor at Lick Observatory. He also noted that the rules were changed so that not all members of an affiliated club had to be League members. Mr. Benson pointed out that this would be done on a graduated scale relative to the dues assessed.

Mentoring Committee Chair JanaRuth Ford reported that, although much attention had been focused on the upcoming TNSP, several NightSky Network activities were scheduled including a new galaxy oriented package and telescope treasure hunts. Ms Ford reported that a public star party was scheduled for 8:30 PM on August 13 at Warner Park.

Joe Boyd, reporting for Nominating Committee Chair Bill Griswold who was recovering from surgery, recommended these candidates for officers to be voted upon by the membership in September: President – John Harrington, Vice-President – Pam Thomas, Treasurer – Randy Smith, and Secretary – Bob Rice. Mr. Boyd noted that, if elected, Pam Thomas' vacated director-at-large position with one year remaining would need to be filled.

Equipment Committee Chair Lonnie Puterbaugh reported that parts had come in from Hardin Optical to repair the BSAS' damaged 8-inch Dobsonian telescope. As Treasurer, Mr. Puterbaugh also reported that the BSAS had \$4,651.05 in the bank. Mr. Puterbaugh stated that he planned to submit members' *Astronomy* and *Sky and Telescope* magazine subscriptions this weekend.

Webmaster Tony Campbell reported that he had redesigned the BSAS website to include news updates from Space.com. Mr. Campbell also announced that stellar cartographer Wil Tirion would be featured as our upcoming speaker for August 19. In addition, he announced that a new article would be added about former member Colonel Jack DeWitt's first successful transmission and receipt of a radar signal to and from the moon on January 10, 1946.

Lonnie Puterbaugh suggested that the BSAS purchase a comprehensive first aid kit including a CPR mask for the upcoming TNSP and other events. Mr. Puterbaugh recommended a kit manufactured by Adventure Medical and costing approximately \$200.00. Considerable discussion followed regarding the training required and the cost of various additional features. Mr. Puterbaugh put this recommendation into a motion that was seconded by John Harrington. Following additional discussion, this motion passed by a majority vote.

Board of Directors Minutes, continued from Page 4

The board next developed a tentative schedule of speakers for the TNSP. Speakers tentatively scheduled for Friday (September 17) included Tony Campbell, Lonnie Puterbaugh, and Powell Hall. Speakers tentatively scheduled for Saturday (September 18) included Dr. Fields, Mary Boyd, Greg Henry, Bob O'Dell, and possibly someone from NASA. Kris McCall's starlab portable planetarium activity will be scheduled after conferring with her. Lonnie Puterbaugh announced that his wife worked with an artist who might have some ideas for a tee-shirt design. Mr. Puterbaugh will also contact Camp Nakanawa about acquiring porta-potties for the observing field.

Joe Boyd announced that the BSAS logo – a circular field containing the letters “BSAS” with the “A” forming the tripod for a stylized SCT – was ready. JanaRuth Ford announced that she would email a draft mission statement to board members. John Harrington suggested that a 6-inch dobsonian telescope would be a useful addition for a club loaner scope if one could be found at a reasonable cost on Astro-Mart or from some other source. JanaRuth Ford suggested binoculars as another useful acquisition.

There being no further business, President Boyd declared the meeting adjourned at 9:45 P.M.

Respectfully submitted,
Bob Rice
Secretary

The Surprise Visit of an Astronomical Luminary

by Tony Campbell

Some of the most interesting phenomena in amateur astronomy are ephemera—transient events such as comets, supernovae and meteor storms. They may quickly come and go, but they leave lasting memories that deepen and enrich our love of the hobby. Such was the visit of our August speaker—Wil Tirion, the world's foremost stellar cartographer and an astronomical luminary in his own right.

The creator of such beloved works as *Sky Atlas 2000.0*, *Bright Star Atlas 2000.0*, *The Cambridge Star Atlas* and *Uranometria 2000.0* planned to visit Nashville with his wife for a quilting exposition, and on discovering that he was a month too early to visit TNSP'04 accepted an invitation to speak at our membership meeting.

And what a meeting it was! Mr. Tirion's presentation on the history of uranography (stellar cartography) was as comprehensive as it was entertaining. Wil's retelling of his personal history in the field was also very enjoyable, and gave us an understanding of the staggering amount of work involved. Mr. Tirion graciously stayed after the meeting to answer questions, sign our books and atlases, and visit with our members and visitors.

Like the passing of a bright comet, Mr. Tirion's visit was a wonderful experience for everyone who participated, and will be long remembered by all. *Dank u wel, Wil!*

**Barnard-Seyfert Astronomical Society
Minutes of the Monthly Membership Meeting
Held on Thursday, August 19, 2004**

President Joe Boyd called the meeting to order at 7:40 P.M. at the Adventure Science Center and welcomed new members and visitors.

Program Committee Chair John Harrington introduced renowned stellar cartographer Wil Tirion from the Netherlands who delivered a presentation on the art and science of star mapping. Mr. Tirion's presentation was divided into two parts: the general history of stellar cartography and his personal endeavors in this science and craft. Following a question and answer session, Mr. Tirion graciously autographed copies of his atlases.

President Boyd recalled the meeting to order at 8:33 P.M. The minutes of the previous membership meeting held on July 15, 2004 were approved as published in the August 2004 issue of the *Eclipse* newsletter.

TNSP Treasurer Bob Rice reported that the star party's checking account balance was \$1,960.10 with 29 people already pre-registered. Mr. Rice pointed out that registration forms were available in the back of the room and encouraged members to register that evening. Pam Thomas announced that volunteers were needed for the TNSP and passed around a sign-up sheet. Lonnie Puterbaugh announced that the TNSP schedule of activities would be posted on the BSAS website. Mr. Puterbaugh noted that a preliminary schedule had already been released on Yahoo's Tennessee Astronomy group site. Mr. Puterbaugh stated that a daytime attempt to view Saturn's rings would be made. He also pointed out that many of the speakers' topics were still to be announced. Bill Griswold described the new automated TNSP registration system and reported that a new registration form with a place for three names was now being used.

Dark Sky Committee Chair Powell Hall reported that this committee would meet on the first Tuesday in September. Mr. Hall announced that he would speak about "Sky Royalty" at the TNSP, noting that this group included the most constellations having a common connection. He also announced that he had copies of the 2005 *Astronomical Mysteries* calendar for sale at \$9.00 each.

Mike Benson, the BSAS' Astronomical League Correspondent, reported on his attending the AstroCon in Berkeley, California during July 20-24. Mr. Benson presented a certificate he had received during the convention from Sky & Telescope Editor Kelly Beatty to Kris McCall and the Sudekum Planetarium for the "Best New Idea for Astronomy Day." Mr. Benson noted that the Planetarium's partnering with Nashville's sister city of Magdeburg; Germany on this occasion provided much of the impetus for this award. Ms McCall thanked the BSAS for its participation during this event.

Kris McCall announced that the first episode of the new PBS' NOVA series "Origins" about the origin of the universe would be televised on Tuesday, September 27, 2004. She noted that the Adventure Science Center had been selected to host an "Origins Community Event" for educators on September 25 in anticipation of this episode.

Mentoring Committee Chair JanaRuth Ford reported that five NightSky Network events were completed during this quarter. Joe Boyd commented that approximately 300 people had attended the last event during the public star party at Warner Park on August 13.

Nominating Committee Chair Bill Griswold recommended these candidates for officers and directors at large to be voted upon by the membership at the September election: President – John Harrington, Vice-President – Pam Thomas, Treasurer – Randy Smith, Secretary – Bob Rice, and Directors At Large – Tony Campbell and Mike Benson. Mr. Griswold also recommended Gary Wilkerson as an alternate candidate to be voted upon for Director At Large if the current Director, Pam Thomas, was elected to be Vice-President and vacated her director position.

Equipment Committee Chair Lonnie Puterbaugh reported that every BSAS loaner scope was either currently on loan or about to be picked up by a borrower. Mr. Puterbaugh emphasized that the Society's loaner scope program was one of the major advantages of being a BSAS member. He further noted that one of our two equatorial platforms was also available for loan. Mr. Puterbaugh explained that the BSAS' new loaner scope policy and application were now available.

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Minutes of the Monthly Membership Meeting, continued from Page 6

Joe Boyd handed out written copies of four proposed changes to the BSAS bylaws for consideration by the membership. These proposed changes had been previously adopted for recommendation by the Board of Directors and posted on the BSAS website for approximately one month. The proposed changes were as follows with the affected existing wording shown in *italics* and the proposed changes, additions, or deletions **bolded**:

Section 501. Standing Committees. In addition to the committees of the board of directors authorized above, the corporation shall have two standing committees of the members. They shall be the Program Committee and the Operations Committee. *The Program Committee shall be chaired by the vice president of the corporation* **The italicized last sentence was removed.**

Section 502. Miscellaneous. One member of each committee shall be appointed chair by the president. *Unless otherwise provided, a majority of the whole committee shall constitute a quorum, and the act of a majority of the members present at a meeting at which a quorum is present shall be the act of the committee.* **Unless otherwise provided, the committee members present at a committee meeting shall constitute a quorum for the transaction of business if notice of the meeting was properly given, and the act of a majority of the committee members present at the meeting shall be the act of the committee.**

Section 607. Gifts. The board of directors may accept, on behalf of the corporation, any contribution or gift for the general purpose or for any special purpose of the corporation. **The board of directors may, by resolution, delegate to the Treasurer the authority to accept such gifts, within such limits and upon such terms as the board may set.**

Section 702. Default and Termination of Membership. *When any member shall be in default in the payment of dues for a period of sixty (60) days from the beginning of the fiscal year, his or her membership may be terminated by the board of directors in the manner provided in these bylaws.* **When any member shall be in default in the payment of dues for a period of sixty (60) days from the date of his or her dues renewal, his or her membership may be terminated by the board of directors in the manner provided in these bylaws. Special circumstances may be considered by the board. The board of directors may, by resolution, delegate to the Treasurer or any other officer or director the authority to exercise this authority, on such terms as it shall deem advisable, while complying with the requirements of these bylaws. In addition, the board of directors may, by resolution, provide for a leave or absence with suspension of dues, while continuing membership benefits, to any member(s) who may be called or recalled to active duty in any component of the United States armed forces, on such terms as the board may decide. In addition, special circumstances may be considered by the board.**

Powell Hall moved that all the proposed changes be voted upon together which was seconded by another member. During the discussion Mr. Hall pointed out that these proposed changes were mostly "housekeeping" in nature and intended to reduce the workload of those involved. All four of the proposed changes were approved by a majority voice vote of the members. Webmaster Tony Campbell announced that he would update the bylaws on the BSAS website.

There being no further business, President Boyd declared the meeting adjourned at 9:50 P.M.

Respectfully submitted,
Bob Rice
Secretary

Activities and Events

September 1 — 30, 2004

- 9/1 Venus 1.9° S of Saturn; Mercury stationary; Venus 9° S of Pollux
 9/2 BSAS Board of Directors meeting, 7:30 Jefferson Square
 9/6 LAST QUARTER
 9/7 Moon at apogee (404464 km or 251322 miles)
 9/9 Mercury greatest elongation W (18°); Saturn 5° S of Moon
 9/10 Mercury 0.06° S of Regulus; Venus 7° S of Moon
 9/11 Saturn 7° S of Pollux
 9/12 Mercury 4° S of Moon
 9/13 Vesta at opposition
 9/14 NEW MOON
 9/15 Mars in conjunction with Sun
 9/16 BSAS Membership Meeting, 7:30 pm Adventure Science Center
 9/17-19 **TNSP 2004 at Camp Nakanawa near Crossville TN**
 9/21 FIRST QUARTER; Jupiter in conjunction with Sun
 9/22 Equinox; Moon at perigee; Jupiter in conjunction with Sun
 9/23 Mercury at greatest heliocentric lat. N
 9/24 Neptune 5° N of Moon
 9/25 Uranus 4° N of Moon
 9/28 FULL MOON (the Harvest Moon)

October 1 — 31, 2004

- 10/3 Venus 0.2° S of Regulus
 10/5 Mercury in superior conjunction
 10/6 LAST QUARTER, Jupiter at 0° declination
 10/7 Saturn 5° S of Moon, BSAS Board of Directors meeting, 7:30 Jefferson Square
 10/10 Venus 4° S of Moon
 10/12 Jupiter 1.6° S of Moon
 10/13 NEW MOON, Partial solar eclipse
 10/20 FIRST QUARTER, Orionid meteors peak
 10/21 Neptune 5° N of Moon, BSAS Membership Meeting, 7:30 pm Adventure Science Center
 10/23 Uranus 4° N of Moon
 10/24 Neptune stationary
 10/27 FULL MOON, Total Lunar eclipse (the Hunter's Moon)
 10/31 Daylight Savings Time ends, Mars 3° N of Spica, Vesta stationary

Note: all dates & hours according to Central Time

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