



ECLIPSE



The Newsletter of the Barnard-Seyfert Astronomical Society

Celebrating our 76th Year in 2004

April 2004

BSAS MEMBERSHIP MEETING, APRIL 15, 2004

The Membership meeting of the BSAS will be held at the **Adventure Science Center** on Thursday, April 15th at 7:30 pm.

The program for the April 15th meeting of the Barnard-Seyfert Astronomical Society will be a talk on an event so infrequent that it has been observed only five times in recorded history. No one now alive has seen this occurrence, which took place most recently in the year 1882. It is a transit of Venus, and it will occur on June 8, 2004. Powell Hall will talk of transits and review Eli Maor's book *VENUS IN TRANSIT*.

FROM THE PRESIDENT

Joseph M. Boyd, Jr.

This past month has seen a flurry of BSAS activity and some genuine successes in our programs. Various committees have conducted important business, and we are moving closer to applying for funding to help finance some of our outreach plans.

The Long Rang Planning Committee, the Equipment and Facilities Committee, and the Grants Committee have met, and have had a joint meeting with the Mentoring and Outreach Committees. The result has been a very early stage plan for a mobile observatory, as well as plans for taking our programs to schools and other groups, particularly where children are involved. Plans are being formulated for training our members in the use of the Society equipment, and then certifying those who complete the training to take the equipment and demonstrate both astronomy to non members and how to use that equipment to our other members who want to become more proficient in its use. Outreach is planning for "sidewalk astronomy" which means our members, either individually or in pairs, would go to various stores and restaurants at night, set up telescopes or video equipment, and show the wonders of the night sky to the patrons of those businesses as they arrive or depart.

Speaking of "sidewalk astronomy", Dennis Williams has been leading the way recently, as he has gone to various businesses in Murfreesboro and set up his equipment to show the night sky to the patrons of those businesses. The response has been outstanding. Not only have the viewers enjoyed this, but the business owners as well have been very pleased, and one even offered to turn off the parking lot lights to enable the people to see more. Good job, Dennis!

Our star party at Warner Park on Saturday, 27 March, was a huge success. Warner Park personnel counted 570 people who came to the event. Although the weather was a little cloudy at first, the sky eventually cleared completely, and all who came had the opportunity to view Saturn, Venus, Jupiter, the Moon, The Pleiades, and the Orion Nebula. Many gasps of "Wow", "It really does have rings", and "Cool" punctuated the viewing, as many first timers got to view the various objects as they never had before. Several adults expressed an interest in joining the BSAS, many of them accompanied by teenagers who said they were fascinated by astronomy but did not know about our Society. Incidentally, this is the first time we have utilized the "lower" model airplane field for our star parties. Lonnie Puterbaugh and Dennis Williams set up their video equipment on the lower field, while all of the rest of the BSAS members set up on the upper field which we have used in the past. The park personnel set up blinker lights between the two fields so the visitors could easily move from one to the other. The park rangers also told us that they had not received one single complaint about the event, and that they could not have been more pleased with our working relationship. And I want to express my appreciation to all of you who turned out to help with the event, either by bringing your own equipment, helping guide the crowd, or being available to explain to the people what they were seeing.

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Only two nights before, JanaRuth Ford, Lonnie Puterbaugh, and I went to Harpeth Valley School to put on a program for a Boy Scout troop. The 50 scouts and their siblings, plus the 20 adults who accompanied them, provided an enthusiastic audience, as we showed them Saturn, Venus, and Jupiter through broken clouds which obstructed almost everything else. After we told the audience about the upcoming star party on Saturday night, some of the parents who were there said they were interested in bringing their children to the star party, and it was encouraging that several of them came and informed us in the dark that they were at the Scout program and wanted to come and be with us again.

The interest by the public is there. We just need to encourage it and fill the need to "take astronomy to the people". With two possible naked eye comets coming into view at the same time and with the outstanding activities planned for Astronomy Day, we can fill that need. **I urge every member of the BSAS to participate in these upcoming programs.**

End

Astronomy Day at the Adventure Science Center

by Kristine McCall

- 11:00 AM to 5:00 PM - displays and exhibits - inside and outside ASC
- 11:00 AM to 5:00 PM - pony rides - in lower parking lot
- 11:00 AM to 5:00 PM - concessions just outside front door
- 11:00 AM to 5:00 PM - solar observing and video astronomy just outside front door
- 11:00 to 11:20 AM - SciBites - Pump, Pressure, Pull! In Goldner Gallery
- 11:00 AM to 12:00 PM - RingWorld in Sudekum Planetarium
- 12:00 to 1:00 PM - Skies Over Nashville - in Sudekum Planetarium
- 1:00 to 1:30 PM - speeches and ceremony - outside on the field
- 1:00 to 1:20 PM - SciBites - Pump, Pressure, Pull! In Goldner Gallery
- 1:30 to 3:00 PM - reenactment - outside on the field when reenactment is complete, OVG will invite the Mayors into his carriage to ride up to ASC to see the exhibit
- 3:00 to 3:30 PM - ceremonial opening of OVG exhibit with OVG actor and both Mayors
- 3:00 to 4:00 PM - Rusty Rocket's Last Blast in Sudekum Planetarium
- 3:30 to 4:00 PM - Dr. Streitenberger give a talk about OVG
- 4:00 to 4:20 PM - SciBites - Pump, Pressure, Pull! In Goldner Gallery
- 4:00 to 5:00 PM - ???

Also see **SO MANY on Page 7**

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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**The Barnard-Seyfert Astronomical Society
Minutes of a Regular Meeting of the Board of Directors
Held On Thursday, March 4, 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 March 4, 2004. President Joe Boyd determined that a quorum was present and called the meeting to order at 7:40 P.M. Board members Mike Benson, Joe Boyd, Tony Campbell, JanaRuth Ford, Bill Griswold, John Harrington, Kris McCall, Lonnie Puterbaugh, and Pam Thomas were present. Board members Powell Hall and Jill Thompson were absent. In addition to members of the Board, Assistant Secretary Bob Rice and Outreach Chair Heinrich Tischler were also present. The minutes of the previous regular board meeting held on February 5, 2004 were approved as published in the March 2004 issue of the *Eclipse* newsletter.

Joe Boyd commented that the Dark Sky, Equipment, Mentoring, and Public Relations committees had met during the week. Hospitality Committee Chair Pam Thomas reported that they were planning a 75th anniversary mid-spring picnic that would include a recap of the year's accomplishments.

Public Relations Chair Kris McCall displayed a prototype of the new BSAS logo printed in various sizes. The prototype depicted a stylized dobsonian reflector under a circular swath of purple sky with stars. Following much discussion, the prototype was considered to be generally acceptable with two suggested modifications: (1) to change the telescope to an equatorially mounted refractor that would be more recognizable to the general public and (2) to add a comet and a galaxy to the overhead background. Ms McCall said that she would consult with the graphic designer about including these changes.

Ms McCall also reported that the Public Relations Committee was still working on an updated informational brochure for the BSAS. She commented that the committee needed photographs of the public and BSAS members using the society's telescopes and equipment. She also reported that the last copy of the RASC Observers Handbook was sold and being held for a BSAS member.

Equipment Committee Chair Lonnie Puterbaugh reported that they were working with the Grants Committee on specifications for a mobile observatory. They are now considering the possibility of a trailer based unit housing a 12 to 14 inch "go-to" telescope with video capability. This unit would be used for outreach to literally "take astronomy to the people." Mr. Puterbaugh also commented that Coronado had recently introduced a 40 mm H-Alpha personal solar telescope for \$499.00 that would be perfect for daytime outreach programs. He noted that this scope would be a good acquisition for next year's budget.

Mentoring Committee Chair JanaRuth Ford reported that the new member kits were nearing completion. She pointed out that the kits for novices would differ from those intended for more advanced new members. Ms Ford commented that the BSAS had been accepted into NASA's Nightsky Network program and that the Network's first kits on the planets should be available for the March 27th public star party at Warner Park. She also reported that the committee was planning several PowerPoint based workshops along with a survey.

Outreach Committee Chair Heinrich Tischler recommended that the BSAS form teams of three to four members to be available for public outreach demonstrations or instruction at schools, scout meetings, or other events. After a brief discussion, the board unanimously agreed that this was acceptable and that the setting up of teams should be presented at the next membership meeting on March 18th.

Lonnie Puterbaugh recommended that the March 20th Messier Marathon be held at the Natchez Trace dark sky site because this location was convenient and well known. Bill Griswold put this recommendation into a motion that was seconded by Pam Thomas. After deciding to issue a special limited edition of the *Eclipse* newsletter to inform the membership, the board passed the motion unanimously.

Board of Directors, continued from Page 3

Webmaster Tony Campbell reported that he was unaware of any directive or suggestion to develop a statement of web site policy. Mr. Campbell also related that Loren Ball, who presented the February program, had offered to name a future newfound asteroid for the BSAS. In addition, Mr. Campbell noted that Dyer Observatory had modified its web site to include live-streaming video classes and an announcement about the formation of a Dyer Observers group. Kris McCall stated that the BSAS could partner with the Adventure Science Center to conduct video conferencing for schools including those located out of state.

Joe Boyd reported that Vanderbilt University would provide documentation regarding a lost check that the BSAS issued to the school some time ago as reimbursement for printing the *Eclipse* newsletter and other expenses. Mr. Boyd noted that the University contended that the amount owed was \$1504.11 while the society's records indicated that it was \$1003.00. He promised a thorough review of the matter upon receipt of the promised documentation.

Kris McCall announced that the Adventure Science Center would feature a reenactment of Otto von Guericke's 1657 vacuum-joined hemispheres demonstration for Astronomy Day on April 24th. Ms. McCall commented that the German von Guericke Society would conduct the demonstration in period costumes. She noted that this would be the first such reenactment ever held in the United States and would receive TV coverage in addition to being attended by Nashville Mayor Bill Purcell. The BSAS will participate as a cosponsor.

Ms McCall then asked what the BSAS wanted to do as part of the Astronomy Day program. After some discussion, the board decided upon these possibilities: solar observing, daytime observing of Venus, Loren Ball presenting a program on asteroids, showings of "Asteroids - Deadly Impact," and requesting the NASA educational trailer. JanaRuth Ford commented that the BSAS could also obtain Nightsky Network materials from NASA. These proposed activities will be presented at the March 18th membership meeting. Ms Ford also suggested that the BSAS acquire distinctive t-shirts to identify our participants at Astronomy Day. Pam Thomas put this suggestion into a motion that was seconded by John Harrington and unanimously approved.

Joe Boyd reported that the loaner scope policy was partially completed. Mr. Boyd also announced that post cards were available to notify members of upcoming committee meetings. Kris McCall presented public observing updates to the BSAS' schedule of events for May through June.

Joe Boyd pointed out that the society was committed to holding the March 18th membership meeting at Dyer Observatory. A lengthy discussion arose concerning possibilities for a more convenient and centrally located meeting place. Tony Campbell moved that the BSAS start meeting at the Adventure Science Center and Pam Thomas seconded the motion. Following considerable debate, the President called for a vote and the motion passed with seven board members in favor, one against, and one abstaining.

Outreach Chair Heinrich Tischler related details about his March 1st meeting with Metro Parks Superintendent Bob Parrish regarding the use of externally powered equipment and handicapped access during public star parties at Warner Park's model airplane fields. Mr. Tischler displayed a copy of the follow up memorandum he sent to Mr. Parrish on March 3rd recapping the BSAS' suggestions.

There being no further business, the President declared the meeting adjourned at 10:40 P.M.

Respectfully submitted,
Bob Rice
Assistant Secretary

End

John Bradford

This month marks the one year anniversary of the death of John Bradford, former Vice President of BSAS. °We continue to miss John's wise leadership, good fellowship and irrepressible wit. °A good way to honor John's memory would be to borrow the 8" dobsonian telescope that the BSAS purchased in John's name—he would like that.

Happy Birthday Space Shuttle

by Robin Byrne

This month we remember the very first flight of the Space Shuttle. On April 12, 1981, STS-1 Columbia became the first reusable spacecraft to fly into space. However, the mission really began much earlier.

In March of 1979, the orbiter arrived at Kennedy Space Center to have its systems checked and for final installation of the thermal protection system. In July of that year, the external tank arrived from New Orleans, LA. Assembly of the "stack" began in December of 1979. It was at this time that the solid rocket boosters were erected in the Vehicle Assembly Building (VAB). In early November of 1980, the external tank and boosters were mated, with the orbiter being attached by the end of the month. Several tests were conducted while in the VAB, and in December the assembly was moved to Launch Pad 39-A for a final set of tests. Once everything checked out, it was time to go to space.

The original launch on April 10 was delayed due to an error in the computer system. Countdown was resumed the morning of April 12. At 7:00:03 a.m., EST John Young (Commander) and Robert Crippen (Pilot) rode the first Space Shuttle into orbit. This was the first time a manned flight used solid rocket boosters for launch, and the first time the maiden flight of a space vehicle was conducted with a crew on board. The objectives of this mission were to test out the shuttle and its systems. The payload consisted of the Development Flight Instrumentation (DFI) package. Two main experiments were conducted: the Aerodynamic Coefficient Identification Package (ACIP) and the Infrared Imagery of Shuttle (IRIS). The purpose of ACIP was to measure and collect aerodynamic data during launch, entry and landing. IRIS was used to take detailed infrared images of the shuttle during entry. The images were taken from the Gerald P. Kuiper Airborne Observatory.

During the flight, a number of experiments were conducted by the crew, as well. One such test concerned the ability for the shuttle to radiate away excess heat, both with the payload bay doors open and closed. The payload doors were opened and closed twice during the flight to test both the shuttle's thermal response and the reliability of the mechanisms controlling and latching the doors. Maneuverability was tested by the firing of the shuttle thrusters. All objectives of the mission were met successfully.

Amenities for the crew were minimal during this first flight. The shuttle's galley was not yet ready, so Young and Crippen "made do" with a carry-on food warmer. Their sleeping arrangements were to sleep in their flight deck seats, because the sleep restraints in the lower deck were not yet installed.

On April 14, after 2 days, 6 hours, 20 minutes and 53 seconds in space, Young and Crippen brought Columbia safely back to Earth, performing a completely manual landing. The landing took place at Edwards Air Force Base in California on Rogers Dry Lake. Later flights would use the main runway at Edwards until the Shuttle Landing Facility at Kennedy was ready for use.

Columbia returned to Kennedy on April 28 on top of a modified 747 aircraft. Upon inspection, it was found that during firing of the Solid Rocket Boosters, the pressures on the shuttle were so high that 16 heat shield tiles were knocked off and 148 others were damaged. It was determined that this could be corrected in future flights by modifying the water sound suppression system.

After 22 years of successful use, the Columbia shuttle tragically burned up during entry on February 1, 2003. The loss of Columbia and the seven crew members on board has brought the shuttle program to a grinding halt, while modifications and improvements are made to improve the safety of the remaining shuttles and their crews. Although America's shuttle program will continue, sadly it will do so without our first shuttle in space, Columbia.

References:

STS-1 Web Page <http://science.ksc.nasa.gov/shuttle/missions/sts-1/mission-sts-1.html>

STS-1 PRESS KIT Web Page <http://www-pao.ksc.nasa.gov/kscpao/presskit/sts1.htm>

Background Information on the Columbia Space Shuttle Mission STS-107 <http://www.nasa.gov/columbia/mission/index.html>

End

Minutes of the Monthly Membership Meeting of the Barnard-Seyfert Astronomical Society Held on Thursday, March 18, 2004

President Joe Boyd called the meeting to order at 7:35 P.M. at the Vanderbilt Dyer Observatory and welcomed new members and visitors. Mr. Boyd and Program Committee Chair John Harrington jointly introduced the speaker, Dr. David Ernst, recently retired Chairman of Vanderbilt University's Physics and Astronomy Department. Mr. Boyd commented that the BSAS had enjoyed a very productive working relationship with Dr. Ernst noting that he was responsible for our society's cosponsoring the recent Seyfert Lecture at Vanderbilt. Dr. Ernst replied that it was mutually beneficial whenever two groups had good ideas. Dr. Ernst delivered an outstanding lecture on "Nervous" Neutrinos touching on basic particle physics, elementary mathematical implications, and specific detection methodologies. Judging from the many questions that were asked, Dr. Ernst's presentation was enthusiastically received by everyone attending.

President Boyd recalled the meeting to order at 9:05 P.M. The minutes of the previous membership meeting held on February 19, 2004 were approved as published in the March 2004 issue of the *Eclipse* newsletter. Mr. Boyd reminded all members to return their nametags after the meeting. Mr. Boyd reported that these BSAS committees had recently met: Equipment, Long Range Planning, Dark Sky, Grant Acquisitions, Mentoring, Outreach, Program, and Public Relations.

Dark Sky Committee Chair Powell Hall reported that he had attended the annual Dark Sky Association meeting in Tucson, Arizona last week. Grant Acquisitions Committee Co-Chair Bob Rice reported that they were working with the Equipment Committee to establish specifications for a mobile observatory. Joe Boyd commented that this mobile observatory would be used for public outreach.

Dennis Williams reported on his recent effort to "take astronomy to the people" by setting up mounted binoculars with filters at a strip mall in Murfreesboro during the day to observe sunspots. He returned later that night to set up a telescope in the parking lot to observe Saturn. He reported that both sessions attracted many lookers with the latter occasion almost turning into a "drive through astronomy" affair. Following this report, Mr. Williams received a well deserved round of applause for his one-man public outreach initiative.

Mentoring Committee Chair JanaRuth Ford reported that they were working on programs for certification and training. Ms Ford noted that the first NightSky Network tool kits on planets had arrived and that they hoped to make a presentation at Harpeth Valley School next week. She also mentioned that they would start mentoring classes soon. Lastly, Ms Ford passed out a survey to identify members' zip codes along with preferences for both teaching and learning.

Joe Boyd commented that the BSAS was scheduled to participate in the Sun-Earth Connection Day program at the Warner Park visitor's center on Friday, March 19th from 10:00 A.M to 11:30 A.M. He further noted that attendance was limited to 100 individuals and that Lonnie Puterbaugh had developed a PowerPoint presentation for this occasion.

Outreach Committee Chair Heinrich Tischler reported that the zip codes from the Mentoring Committee survey would be used to group members by location in an effort to develop outreach teams of three to four individuals for public demonstrations and instruction. Mr. Tischler further remarked that the BSAS' participation at the upcoming public star party at Warner Park on March 27th would mark expanded service by using the Park's two model airplane fields. Under an arrangement agreed upon with the Park's management, the upper model airplane field will be used for traditional eyepiece viewing while the lower field will be set up for video screen observation. Joe Boyd explained that this was a concerted effort to accommodate those who were sight impaired or confined to wheelchairs noting that the BSAS was one of few clubs to do this.

Kris McCall commented that the April 24th Astronomy Day celebration to be held at the Adventure Science Center and cosponsored by the BSAS would be a good public relations opportunity. This event will feature a reenactment of Otto von Guericke's 1657 vacuum-joined hemispheres demonstration and will kick off German Culture Week in Nashville. Nashville Mayor Bill Purcell will attend as will the mayor of Magdeburg, Germany, Nashville's sister city. Ms McCall noted that a full dress rehearsal of the hemispheres demonstration would be held

Membership Meeting, continued from Page 6

the day before on April 23rd. She reiterated the BSAS' scheduled activities that included solar observing, daytime observing of Venus, Loren Ball presenting a program on asteroids, and showings of "Asteroids - Deadly Impact." Dr. Spencer Buckner volunteered to provide telescopes from Austin Peay State University for an exhibit. Joe Boyd also asked for volunteers to set up and maintain the BSAS' booth.

Public Relations Committee Chair Chris McCall reported that the BSAS' new logo was being refined and suggested that, upon adoption, it should be printed on club tee shirts. Webmaster Tony Campbell reported that the BSAS website had been updated to include continuous news updates

Joe Boyd commented that inclement weather was predicted for Saturday night, March 20th and suggested that the scheduled Messier Marathon be moved to Friday, March 19th at the Natchez Trace Water Valley Overlook. Mr. Boyd explained that Marathon Coordinator Lonnie Puterbaugh, who was not at this meeting, had recommended this change. Vice President John Harrington suggested that Saturday night still be retained as a "fall back" date. These suggestions were put into a motion, seconded, and passed by a unanimous vote.

Joe Boyd stated that an out of town astronomical tour had been suggested during an earlier board meeting and asked for a showing of hands from the membership to indicate their interest. Twenty members raised their hands to express interest in having such a tour.

President Boyd announced that the April 15th membership meeting would be held at the Adventure Science Center. There being no further business, the President declared the meeting adjourned at 10:03 P.M.

Respectfully submitted,
Bob Rice
Assistant Secretary

End

So Many

by Kristine McCall

So Many Planets...

This month you'll be able to see four, maybe even five, planets with the naked eye all at the same time! Go out about 8:00 pm. Most obvious of the five are Venus and Jupiter. Venus appears low in the west after sunset and is the brightest thing in the sky apart from the Moon. Meanwhile, the second-brightest object, Jupiter, is high in the east, just below Leo the Lion. Saturn can be located by using the two brightest stars of Orion the Hunter. Draw an imaginary line from Rigel to Betelgeuse, and extend that line until you reach the next bright object near the feet of the Gemini the twins. That's Saturn! Returning to the west, near Venus, you'll find Mars. Mars isn't nearly as bright as it was last summer, but it's still visible, just above and to the left of Venus. Be careful not to mistake it for Aldebaran, the bright orange star that marks the eye of Taurus the Bull. Aldebaran will be just a bit brighter than Mars. What about that fifth planet? During the first few days of April (and the last week of March) you may be able to catch a glimpse of elusive Mercury just after sunset, low in the west. You'll need a very low western horizon, clear of trees or buildings. Even then, it can be tricky to see. Scanning with binoculars first may make it easier to spot with the naked eye. Don't wait too long! Every day it gets harder to see. By the 5th or 6th, it will be lost in the glare of sunset. Even though Mercury will be long gone, you simply must go outside Friday evening, April 23, because Venus and Mars will be closely attended by a pretty crescent Moon with Saturn and Jupiter watching from a distance.

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So Many Horses...

This year has been unbelievably exciting for astronomy fans: landing, roving, and discoveries on Mars, lots of planets in the evening sky, the possibility of one, or two, naked eye comets in May, the Cassini spacecraft on final approach to Saturn, and so on. To celebrate, we're bringing two teams of eight horses each to the Adventure Science Center for Astronomy Day. Why? Because Nashville is a sister city to Magdeburg, Germany, whose most famous resident was Otto von Guericke. If the name doesn't sound familiar, von Guericke was the scientist who demonstrated the power of atmospheric pressure with a dramatic experiment in 1654. Von Guericke, inventor of the air pump, placed two metal hemispheres together to make a complete sphere twenty inches in diameter. When the air was pumped out, the external air pressure of the atmosphere kept them snugly sealed together. Even sixteen horses, eight on each side, could not pull the halves apart. It would've taken a force of over two tons to do it, but a twist of a valve was all that was needed to let the air back into the sphere so the hemispheres would fall apart with ease. Von Guericke thus proved that vacuums were possible and went on to speculate that the space between the stars was also a vacuum. On Astronomy Day, April 24, 2004, the Adventure Science Center, the Otto von Guericke Society of Magdeburg, and Sister Cities of Nashville have arranged to reenact this famous experiment with actors from Germany in full costume and yes, real draft horses. This will be the first time such a performance has been done in the United States. It should be a very exciting day! There will also be solar observing, video astronomy, telescopes, displays, exhibits, and a variety of other programs and activities presented by the Barnard-Seyfert Astronomical Society, the International Dark Sky Association, and other local organizations.

So Many Comets...

A comet is a ball of ice and dust, several miles across. Occasionally, a comet's orbit will bring that "dirty snowball" into the inner solar system where solar heating causes it to melt and give off gas and dust. Sunlight reflecting off this material sometimes creates a spectacle visible from Earth. On average, there is one bright, naked-eye comet every ten years; however many readers will recall Comet Hyakutake from 1996 and Comet Hale-Bopp in 1997. It should be too soon for us to see another! Planetarium people are hesitant to hype such possibilities because comets are among the most unpredictable things in astronomy. In 2001, Comet NEAT was discovered and in 2002, Comet LINEAR was discovered; both by automated sky surveys. Current predictions indicate that Comet NEAT will be visible to the unaided eye throughout most of May - with its brightest appearance around May 8. Comet LINEAR will join Comet NEAT in the western sky after sunset during the last week of May. The comets should be visible above the western horizon after sunset and will look like fuzzy 'stars'. If you can get away from the influence of city lights, you should also be able to see the tails of the comets. Because a comet tail generally points away from the Sun, look for the tails to stretch upward in the sky. The darker the sky; the more you will be able to see. You do NOT need a telescope to get the best view of a comet. The comet should be easily visible with just your eyes, especially from a dark, rural area. But whether observing from the city, suburbs, or Timbuktu, use binoculars to find the comet and follow the tail. Don't let the media make you think the comet can only be seen on one particular night. It can be viewed in our evening sky from night to night for several weeks. The best viewing will be during the second week of May and over the Memorial Day weekend. If it should be cloudy for a few nights, don't give up. Just try again on the next clear night.

So Many Star Parties...

Friday, April 23 from 8:00 - 10:00 pm at ASC
Saturday, May 8 from 8:15 - 10:15 pm at LHSP
Saturday, May 15 from 8:30 - 10:30 pm at ASC
Saturday, May 22 from 8:30 - 10:30 pm at LHSP
Saturday, May 29 from 8:30 - 10:30 pm at ASC
Saturday, June 5 from 8:30 - 10:30 pm at WP

ASC = Adventure Science Center

LHSP = Longhunter State Park Visitor Information Center at 2910 Hobson Pike 37076 Visit www.mapquest.com for directions.

WP = model airplane field at Edwin Warner Park

Lawnchair Astronomy - The Spring Sky

by JanaRuth Ford

Every star and deep-sky object can be found within the boundaries of a constellation. Lawnchair Astronomers use the constellations to find their favorite celestial objects, so becoming familiar with the constellations is a great way to get started. Star charts showing the constellations are available at www.SudekumPlanetarium.com each month. A reclining lawnchair and red filtered flashlight for reading the star charts are all that is needed for a Lawnchair tour of the spring constellations. Look on the star charts for two very bright stars, Arcturus and Spica, and two powerful beasts, Ursa Major, the Great Bear, and Leo, the Lion. They are the harbingers of the spring sky.

High overhead in the spring sky is the Big Dipper, which is a part of the constellation Ursa Major. The Big Dipper is not a constellation, but an asterism, an easily recognizable pattern of stars. Use this stellar pattern as a convenient guide to the spring sky. Four stars form the bowl of the dipper and three stars form the handle. The two stars at the end of the bowl, farthest away from the handle, point to the North Star, Polaris. Follow the line formed by these two stars "up" from the bottom of the bowl to Polaris, a medium bright star at the end of the handle of the Little Dipper in Ursa Minor, the Lesser Bear. The Big Dipper is not merely a chance alignment of unrelated stars. Five of the stars are members of a seventeen-star cluster that is slowly dispersing. The two stars that are not part of the cluster are the last one in the handle and the one in the bowl closest to Polaris. The middle star in the handle of the Big Dipper is Mizar, an optical double star. Especially sharp-eyed viewers can detect the companion star Alcor unaided. For the rest of us, binoculars will suffice to separate the pair.

There is a saying "Arc to Arcturus and Speed to Spica" that will aid in identifying the two dominant stars of the spring sky. The arc is the curve of the Big Dipper's handle and following it away from the bowl will lead to Arcturus, the bright golden-orange star in the constellation Bootes, the herdsman. The name Arcturus means, "bear watcher". The diameter of this star is 23 times that of the Sun and it is 115 times brighter. In fact, this is the

fourth brightest star in the sky and the second brightest visible in the northern hemisphere. Arcturus is one of the nearest giant stars to Earth at a distance of 36 light years. However, it is moving through space at a pretty good clip. In the past 2 billion years it has traveled 760 light-years and will fade from Earth's view much sooner than other near neighbors. Observers can easily spy Spica to the south of Arcturus in the constellation Virgo, the maiden. This bluish star, which represents an ear of wheat held by Virgo, is 220 light-years away and 1,300 times brighter than the Sun. It is the sixteenth brightest star in the night sky.

Leo, the Lion, regally guards the spring sky. This constellation actually resembles a reclining lion with the back legs tucked under its body. The Greeks associated Leo with the mythological Nemean Lion that Heracles slew as one of his twelve labors. The brightest star in Leo, Regulus, the little King also known as Cor Leonis, marks the heart of this king of beasts. Regulus is a blue-white star that is 85 light-years away and 160 times brighter than the Sun. Through binoculars, this bright star is seen to really be a double star. The head and mane of the great lion are marked by the stars above Regulus which look like a backwards question mark with Regulus at the bottom. One of the most beautiful multiple stars in the spring sky resides in Leo. The second star up the question mark from Regulus as well as the second brightest in Leo is Algieba, an orange giant star with two golden companions. The back legs and haunches of the Lion are formed by a triangle of stars to the east of Regulus. Denebola, the easternmost star in the triangle and the third brightest star in Leo, marks the base of the tail of the lion.

Mentally form a triangle in the spring sky using the stars Arcturus, Spica, and Denebola. Scan inside this "spring triangle" with binoculars. Many of the faint, fuzzy "stars" nearer to Denebola are actually galaxies. These are part of the Virgo Cluster, a rich cluster of galaxies some 50 million light-years away containing well over 2,000 galaxies. This is Lawnchair Astronomy at its best!

Activities and Events

April 1 — 30, 2003

- 4/1 BSAS Board meeting, 7:30 pm at Jefferson Square, Joe Boyd 386-3134)
- 4/2 Conj. Moon & Jupiter
- 4/4 Daylight saving time begins.
- 4/5 FULL MOON
- 4/6 First day of Passover; Dark-sky Committee, 7:30 p.m., room 201 at McKendree Towers, 4343 Lebanon Pike, Hermitage (Middle TN section, will meet with us)
- 4/7 Conj., Mars & Aldebaran
- 4/11 Easter Day; LAST QUARTER
- 4/13 Conj., Neptune & Moon
- 4/14 Conj., Uranus & Moon
- 4/15 BSAS meeting, 7:30 pm at Adventure Science Center
- 4/16 Mercury in inferior conj.; Conj., Venus & Aldebaran
- 4/19 FULL MOON
- 4/22 Lyrids meteors
- 4/23 Conj., Mars (s) & Venus (n) of Moon
- 4/24 Astronomy Day; Otto von Guericke experiment, ASC
- 4/25 Conj., Moon & Saturn
- 4/27 FIRST QUARTER
- 4/29 Conj., Moon & Jupiter

May 1 — 31, 2004

- 5/2 Venus at gr. Brilliancy
- 5/4 FULL MOON; Dark-sky committee, 7:30 p. m., at 4343 Lebanon Pike, Rm. 201
- 5/5 Jupiter stationary
- 5/6 BSAS Bd. of Dir., 7:30 p. m., Jefferson Square Clubhouse
- 5/8 Comet party, 8:15-10:15 p. m., Long Hunter State Park
- 5/10 Conj., Moon & Neptune
- 5/11 LAST QUARTER
- 5/12 Conj., Moon & Uranus
- 5/14 Gr. elong. of Mercury (in morning sky)
- 5/15 Comet party, 8:30 -10:30 p. m., at Adventure Science Center
- 5/16 Conj., Moon & Mercury
- 5/17 Neptune & Venus stationary
- 5/18 NEW MOON
- 5/20 BSAS monthly mtg., 7:30 p. m., at Adventure Science Center ;
- 5/22 Comet party, 8:30-10:30 p.m., at Long Hunter State Park; Conj., Moon & Mars; Moon & Saturn (in Gemini)
- 5/24 Conj., Mars & Saturn (in Gemini)
- 5/27 FIRST QUARTER; Conj., Moon & Jupiter
- 5/29 Comet party, 8:30-10:30 p. m., Adventure Science Center

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