



# ECLIPSE



*The Newsletter of the Barnard-Seyfert Astronomical Society*

December 2001

## PRESIDENT'S MESSAGE

Several dozen of us, both B.S.A.S. and others, looked skyward on November 17-18, late Saturday and early Sunday, from the dark-sky site on the Natchez Trace, at the Leonid meteors. We saw several that produced approving noises from those present. The friends with whom I drove to the site and I departed around 2 a.m. I had to teach a class later that same morning. Those who watched later, I understand, may have been rewarded with even more meteors. I later heard reports that 4 a.m. Sunday was the peak hour.

Our B.S.A.S. Board is set to meet at 7 p.m. the first Thursday in December. Our society will meet two weeks later at 6:30. Both meetings are to be at the Cumberland Science Museum. Bring a covered dish and a companion and come. I plan to invite the officers to join me in providing a ham for ham sandwiches, with or without bread! The business at the December meeting will be minimal. The program will be a new planetarium show.

The planets Venus and Mars, which have dominated the early morning and early evening night skies through much of this first year of the 21st century, are going, going, gone. Venus, with Mercury, is speeding ahead of us behind the sun. Mercury will be in superior conjunction on December 4. Mars, though still visible in the southwest, sets earlier and is fainter as it falls behind the earth.

But Saturn and Jupiter, the two largest planets, which have risen in the middle of the night, are now visible in the evening skies. Saturn, in opposition December 3rd, will be up all night and will appear in Taurus this December when darkness falls. Because of the tilt of the rings, Saturn will be a specially delightful object for telescopic observing in the months ahead. Even brighter Jupiter, in Gemini, rises later but well before midnight. At the November B.S.A.S. meeting, we enjoyed seeing Saturn in the big telescope at the Dyer Observatory.

Next month I hope to review three recent books by astronomers on the Star of Bethlehem. One of these has persuaded me to revise my views in a January 1999 Eclipse article.  
Powell Hall

## HAPPENINGS & EVENTS

December 1 - December 31, 2001

- 12/3 Conj., Moon & Jupiter; Saturn at opposition
- 12/4 Mercury in superior conjunction
- 12/6 BSAS Board of Directors meeting at C.S.M. 7:00 p.m.; Conj., Sun & Pluto
- 12/7 LAST QUARTER MOON
- 12/8 BSAS Private Star party at Natchez Trace Site
- 12/12-13 Geminid Meteor Shower
- 12/14 NEW MOON; Warner Park partial solar eclipse observation 3:00 to 4:45 p.m. and Warner Park star party later that evening 7:30 to 9:30 p.m.
- 12/15 BSAS Private Star party at Natchez Trace Site
- 12/17 Conj., Saturn & Aldebaran
- 12/18 Conj., Moon & Neptune
- 12/19 Conj., Moon & Uranus
- 12/20 Conj., Moon & Mars; BSAS Meeting, 6:30p.m. Xmas potluck dinner at Cumberland Science Museum, the program will be a planetarium show by Kris McCall
- 12/21 Winter Solstice at 1:21 p.m.
- 12/22 FIRST QUARTER MOON
- 12/25 Christmas Day
- 12/28 Conj., Moon & Saturn, Occultation
- 12/30 FULL MOON, penumbral eclipse; Conj., Moon & Jupiter, occultation

## MAGAZINE SUBSCRIPTIONS FOR BSAS MEMBERS 2001

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** : \$29.95  
**ASTRONOMY** : \$29.00

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

BSAS  
Dyer Observatory  
1000 Oman Drive  
Brentwood, TN 37027

## 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 are \$20.00 per year for Regular and Family membership and \$15.00 per year for Seniors (over 60 years of age), and \$10.00 for Students (under 22 years of age). Please call the Dyer Observatory (373-4897) if you have questions. Dues can be sent to:

BSAS c/o Dyer Observatory  
1000 Oman Drive  
Brentwood, TN 37027

## THE ECLIPSE NEWSLETTER

Editor: Rocky Alvey  
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BSAS Officers:  
Powell Hall, President  
John Bradford, Vice President  
William A. Hayden, Secretary  
A.G. Kasselberg, Treasurer  
Board of Directors  
Kris McCall, Ch.  
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Douglas Hall  
Joe Boyd  
Lloyd Watkins  
Logo Photograph:  
Francisco Diego

### Schedule at Sudekum Planetarium Planetarium Programs through December 2001

#### Tuesday through Friday

3:15 Santa Snork Saves the Seasons

#### Saturday

11:30 Santa Snork Saves the Seasons

1:00 Skies Over Nashville

2:30 Santa Snork Saves the Seasons

3:30 A Christmas Story

#### Sunday

1:30 Santa Snork Saves the Seasons

3:30 A Christmas Story

NOTE: The Science Museum and Planetarium will be closed for all programs December 24, 25, and 31 and January 1.

#### December 26 through 30, 2001

##### Wednesday through Friday

11:30 Santa Snork Saves the Seasons

1:00 The Light-Hearted Astronomer

2:30 Santa Snork Saves the Seasons

3:30 The Light-Hearted Astronomer

#### Saturday, December 29

11:30 Santa Snork Saves the Seasons

1:00 Skies Over Nashville

2:30 Santa Snork Saves the Seasons

3:30 The Light-Hearted Astronomer

#### Sunday, December 30

1:30 Santa Snork Saves the Seasons

3:30 The Light-Hearted Astronomer

What on Earth are these shows about ???

#### Skies Over Nashville

Many people are intimidated by astronomy and the night sky. This show highlights those constellations and planets that can be seen from backyards throughout Middle Tennessee and across the United States. If you can "connect the dots", you can draw star pictures. Skies Over Nashville is an excellent way for the entire family to get ready to go out and look at the real sky.

#### The Light-Hearted Astronomer

This laid-back look at the night sky provides both information and inspiration for anyone to become an astronomy enthusiast. Basic steps to start exploring the universe and how NOT to buy a telescope are highlighted along with a healthy dose of down-home humor and the pure enjoyment of the beauty of the sky.

#### Santa Snork Saves the Seasons

When we go out to look at the winter constellations, why is it cold and sometimes snowy? Is it like this everywhere on Earth, and more importantly, why does the Earth have seasons? Planetary Investigator Sam Snork not only saves the seasons, but he also presents an alien interpretation of "A Visit From Saint Nicholas".

#### A Christmas Story

This program explores the origins of many of our most cherished holiday traditions: from Santa Claus and Christmas trees to candles and gift-giving.

#### Upcoming Astronomical Events

NOTE: Our monthly star charts and related articles can be downloaded from [www.SudekumPlanetarium.com](http://www.SudekumPlanetarium.com)

Warner Park partial solar eclipse observation 3:00 to 4:45 pm 14 December 2001 - Warner Park star party 7:30 to 9:30 pm 14 December 2001

For additional and updated information: call AstroLine at +615-401-5092

### Challenge of the Month *Algol "The Demon Star"*

You may think Beta Persei is not much of a challenge. It may be a simple task to find this star however, have you ever observed its variability? Algol varies in magnitude from 2.1 at maximum to 3.4 at minimum with a period of 2.867 days. For those hoping to observe this eclipsing wonder, here are UT times and dates of minima taken from a Sky and Telescope website - **December 1**, 10:39; **4**, 7:28; **7**, 4:17; **10**, 1:06; **12**, 21:55; **15**, 18:44; **18**, 15:33; **21**, 12:22; **24**, 9:11; **27**, 6:01; **30**, 2:50 (remember to subtract 6 hours for CST). At minima the star remains magnitude 3.4 for two hours and gradually brightens over a period of 10 hours. It is amazing to contemplate the source of the darkening. A dimmer K2IV binary companion passes between us and Algol which is a B8V star.  
Rocky Alvey

**Minutes of BSAS Meeting on November 15, 2001**  
by Evelyn Wright

Powell Hall called the meeting to order at 7:30 PM in the Dyer Observatory Library and introduced his brother Dr. Gaston Hall, visiting from England. Also visiting were several students from Dr. Douglas Hall's Astronomy 102 class this semester. It was noted that Bill Hayden has resigned as Secretary, and the Board of Directors will be selecting a new Secretary soon.

A special order was proposed by Powell Hall to interrupt the business portion of the meeting at 8:00 PM to allow the program on the International Space Station to start on time. The special order was passed, and Powell Hall got down to business, giving some time limits on comments. A. G. Kasselberg noted the BSAS had \$4917.74, about half of which is in CDs, and the rest newly acquired TNSP 2001 funds. He also requested that the Dyer Observatory address be used for all Treasury correspondence, noting that it will be the address on the BSAS bank account.

As there were no notes from the Board of Directors, the Astronomical League, or other reports, Powell Hall moved on to unfinished business, noting that BSAS membership renewal will occur in September, and "Sky & Telescope" magazine subscription renewal in May. The publisher of "Astronomy" was unable to accommodate the once a year renewal date, and magazine subscriptions will have to be renewed whenever the subscription expires. Also, Rocky Alvey requested that phone numbers and email addresses be listed on the sign-up sheet so that members could be notified of unexpected events.

New business notes included the following:

The next BSAS meeting will be a potluck dinner at the Cumberland Science Museum on the third Thursday in December at 6:30 PM followed by a presentation by the Sudekum Planetarium folks. The Observer's Handbook for 2002 (25 copies) should be available at the December meeting for \$16.00 each.

The Leonid meteor shower can be observed from the Water Valley Natchez Trace dark sky site this Saturday night/ Sunday morning and should be impressive this year as remains of the Tempel-Tuttle comet pass through the earth's atmosphere. The frequency of meteors should increase after midnight.

Another not-so-dark site was described off Moore's Lane.

Saturn's orientation allows better viewing of its rings in the next few months.

On the tax-deductible contributions front, Joe Boyd said that once the papers are filed, it should take about four months for a ruling. A one-time fee of \$150, and possibly an annual reporting fee are the only costs he is aware of.

Having zipped through the business portion of the meeting with a few minutes to spare, a few more visitors were introduced. John Bradford then introduced the guest speaker, Chuck Schlemm, who is a member of the Middle Tennessee Space Society and the National Space Society. Mr. Schlemm showed slides and two models of the International Space Station (ISS), one showing its current configuration, and one showing what it would look like if proposed plans are carried out. He talked about the evolution of the International Space Station, fielding many questions from the interested group. He also survived a pun from one of the BSAS members about the positive and negative aspects of solar panels. The ISS started out as an American design, but budgetary considerations sparked the inclusion of other nations' money, capability, and experience to speed up its development. Mr. Schlemm gave quite a bit of detail on the internal and external layout of the modules, how they fit together, how they are powered, and the different ways the combined structure can be maneuvered.

With the conclusion of the ISS program, the meeting adjourned, and members were encouraged to examine the ISS models, sign the sign-up sheet, look at Saturn through the Seyfert Telescope, and buy 2002 Astronomy Calendars (\$9.00).

## **HOT FLASH**

by Jerry Lappin

Astrophysics has, and it's about time, caught up with Dr. Zarkov's encyclopedic knowledge of the universe. He has long believed that black holes are the perfect energy source. You just feed them anything and out should come energy. It took a while for science to find that energy but now we know it's there. Scientists studying a supermassive black hole in a distant galaxy found it to be emitting X-rays generated by iron atoms traveling at half the speed of light. They speculate that the friction of the spinning black hole heats the surrounding ring of gas to extremely high temperatures causing the gas to emit very energetic radiation. Now, states Dr. Zarkov, all we have to do is find a reasonably nearby black hole, dragging it closer if needed, and then surround it with energy collecting satellites. The collected energy could then be beamed to earth orbiting satellites where it could be beamed down to the electrical grid. Even a small hole could supply all of the energy we could ever use. Additionally, with all that excess energy available all of the earth's garbage and other wastes could be sent to the black hole for completely environmentally safe disposal. Of course, there remain a few minor engineering problems before full commercialization is realized. With many large science-based companies downsizing there should be no shortage of capable scientists who could quickly solve these problems.

**Royal Astronomical Society of Canada Observer's Handbook 2002 now available for \$16.00**  
**See Powell Hall to purchase a copy, first-come first-served.**

## Happy Birthday Edward Emerson Barnard

by Robin Byrne

This month we celebrate the life of a man whom we may primarily think of as the namesake of the Nashville club, but whose contributions to astronomy are varied. Edward Emerson Barnard was born in Nashville, Tennessee, on December 16, 1857. His father died before he was born, which left his family quite poor. Barnard was educated at home, and began working to support his family at the age of nine, helping in a photography gallery. The skills learned at this job would influence much of his professional career. Barnard's interest in astronomy began at an early age with a small telescope and a borrowed book from which he learned the names of the stars.

At the age of 20, Barnard was advised that if he wanted to pursue astronomy as a career, he should improve his math skills and hunt for comets. Barnard hired a math tutor to brush up his skills, and found his first comet in 1881, at the age of 24. This was financially fortunate, due to an award granted by H. H. Warner of Rochester, NY. For every comet discovered, he would pay out \$200. Barnard and his wife, Rhoda, used the money as a down payment on a house. Over the years, the subsequent comet rewards paid for most of the house.

In 1883, Barnard received a Fellowship to attend Vanderbilt University, where he received a degree in Mathematics. While at Vanderbilt, Barnard taught part-time, and made as much use of the school's 6-inch refractor as he could. It was also here that he made some important contacts with Burnham and Edward Holden, both of whom would help Barnard get jobs later on.

In 1887, Holden offered Barnard a job at the not-yet-finished Lick Observatory. Barnard immediately quit his job and moved to California before the job was even available, so he had to work as a law clerk for a few months before the observatory was complete. Once finished, Barnard worked as Holden's assistant in making a photographic lunar atlas. Barnard was not impressed with the quality of the images produced. Not being allowed to use the 36-inch telescope, Barnard purchased a cheap 6-inch portrait lens, and converted it into a wide-field astronomical camera. With this, he photographed comets and made the first photographic discovery of a comet. He also used it to photograph the Milky Way, revealing a tremendous amount of structure and detail.

Barnard spent a great deal of time observing Jupiter. Using a 12-inch telescope, he discerned that Io was lighter in color at the equator than at the poles. This was a real testament to his observational abilities. In 1882, when Barnard finally had the opportunity to use the 36-inch telescope, he discovered a fifth moon of Jupiter: Amalthea. This brought him a tremendous amount of fame.

By 1895, Barnard was fed up with Holden taking credit for everyone else's work. A job offer from the University of Chicago to work at Yerkes Observatory was Barnard's ticket out. Here, he continued to study comets, nebulae and the Milky Way. Barnard's fanatical observing style is legendary. One story tells of an instance when he had been concentrating so hard at the telescope during a particularly cold night, that his nose froze to the eyepiece. He hadn't noticed until he was done with the observation, pulled away from the eyepiece, and lost a good-sized piece of skin from his nose.

Barnard died in 1923 and was buried in Nashville. A marker was erected at the location of his first comet discovery. After his death, a book of his Milky Way photographs was published: "Photographic Atlas of Selected Regions of the Milky Way." This book is still popular today for its magnificent images. To have started from such humble beginnings, it is truly remarkable how much Barnard achieved in his life. His tenacity and enthusiasm can provide inspiration for us all.

Reference:

Yerkes Observatory Virtual Museum-People-Barnard  
<http://astro.uchicago.edu/yerkes/virtualmuseum/Barnardfull.html>

The refractor Barnard used while at Vanderbilt, is still showing wonderful images every Tuesday Night 8:00 p.m. - 9:00 p.m. March - November. The telescope now sits in an observatory on the tenth floor of the Stevenson Center Physics Building on the Vanderbilt Campus. For more information about the Vanderbilt Campus public nights call 615-373-4897.

**Deadline for articles and news items for January ECLIPSE: 24 December**