



ECLIPSE



The Newsletter of the Barnard-Seyfert Astronomical Society

March 2001

PRESIDENT'S MESSAGE

I am happy to announce that for the first time in recent history BSAS has a club telescope. The agreement with Vanderbilt for BSAS to have access to Dyer and the Bergquist telescope (C-14) has been finalized. I want to thank everyone who has made this happen. The BSAS members who have contributed money, labor, materials, and expert advice are too numerous to list here. A special thanks goes to Dean Francille Bergquist, Professor Douglas Hall, and Vanderbilt General Counsel John Callison. Our agreement contains provisions for everyone's safety and for the safekeeping of the equipment. In summary, there are seven BSAS members, one for each night of the week, who are responsible for BSAS use of the Bergquist telescope and access to Dyer. When a member wants to use the telescope on a given day, he or she makes arrangements with the member responsible for that day, and they will be at Dyer together. We will go over the procedures in detail but for the next few weeks these seven are being checked out on the access procedures and use of the equipment. Once this is completed all we need is clear skies (You remember what that is don't you?) and we are ready to go!!

The time has come to get serious about planning the Tennessee Star Party 2001 (TNSP2001) October 18-21, 2001. Six months might seem like a long time but it isn't for an event of this size. There is lots to do. Rocky has made a list of 10 general areas we need to cover: select a theme, create a schedule, promotional materials and website, speakers and special events, contact attendees, food and refreshments, state park public events, rental equipment, door prizes, and planning and oversight committee. Give Rocky a call at Dyer (373-4897) or email (r.alvey@vanderbilt.edu) and tell him what you will do. If we all pitch-in early, TNSP2001 will be a great success and we will all have fun.

Remember the meetings are back at Dyer Observatory from March through November. The next meeting is 7:30 pm March 15 at Dyer Observatory. See you then.

A.G. Kasselberg

HAPPENINGS & EVENTS

- 3/1 Conjunction of Saturn and Moon
- 3/2 FIRST QUARTER MOON; Conjunction of Jupiter and Moon
- 3/7 Venus stationary
- 3/8 Dyer Observatory Public Night at 7:00 p.m.; Moon at Perigee
- 3/9 FULL MOON
- 3/10 Conjunction of Mercury and Uranus
- 3/11 Mercury at Greatest Elongation West
- 3/15 BSAS Meeting at Dyer 7:30 p.m.; Conjunction of Mars and Moon
- 3/16 LAST QUARTER MOON
- 3/17 Star Party at Natchez Trace (Water Valley Exit) Prep for Messier Marathon
- 3/20 Vernal Equinox, 7:31 a.m.; Conjunction of Neptune and Moon; Moon at Apogee
- 3/21 Conjunction of Moon and Uranus
- 3/22 Youth Night at Dyer (Call for Reservations); Conjunction of Mercury and Moon
- 3/24 NEW MOON; "MESSIER MARATHON" All night private Star Party at Natchez Trace Site (Water Valley Exit)
- 3/27 Vesta in Conjunction with Sun
- 3/28 Conjunction of Saturn and Moon
- 3/29 Conjunction of Jupiter and Moon; Venus in Inferior Conjunction
- 3/31 Public Star Party at Long Hunter State Park
- 4/1 FIRST QUARTER MOON
- 4/6 Conjunction of Mercury and Venus
- 4/7 FULL MOON; Severe Weather Spotter Class at Dyer 11:00 a.m. - 12:30 p.m.
- 4/12 Conjunction of Mars and Moon
- 4/15 Easter Day

MAGAZINE SUBSCRIPTIONS FOR BSAS MEMBERS 2000

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:

Powell S. Hall, Treasurer
 4343 Lebanon Rd., T-1618
 Hermitage, TN 37076-1223

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:

Powell S. Hall, Treasurer
 4343 Lebanon Rd., T-1618
 Hermitage, TN 37076-1223

The Eclipse Newsletter
 Editor: Powell S. Hall
 powell.hall@worldnet.att.net

BSAS Officers:
 A.G. Kasselberg, President
 Lonnie Puterbaugh, Vice President
 William A. Hayden, Secretary
 Powell S. Hall, Treasurer
 Board of Directors
 Kris McCall, Ch.
 Mike Benson
 Douglas Hall
 Curt Porter
 Lloyd Watkins
 Logo Photograph:
 Francisco Diego

MINUTES OF 15 FEBRUARY 2001
(GALILEO'S 437TH BIRTHDAY)
BSAS MEETING AT CUMBERLAND SCIENCE
MUSEUM

President A.G. Kasselberg opened the meeting at 7:30 PM. Visitors and new members were introduced. Treasurer Powell Hall reported a balance of \$3404.94 with all bills paid.

A signed agreement concerning the C-14 has been obtained from Vanderbilt U. The task force will meet to arrange final details regarding the telescope's use. Seven key holders have been selected, and an eighth will be named for a substitute role. Note that a phone will be installed in the dome.

Astronomy Day at CSM on April 28 will feature Frank Drake and Mitzi Adams as speakers. Volunteers are welcome and lunch will be provided for them. Public Star Parties are scheduled 4/27 at Warner Park and 4/28 at The Renaissance Center. The first public night of the year at Dyer is Thursday March 8. Mike Benson spoke of the first of seven Astro-nomical League observing awards for which he is coordinator.

The Urban Club is for those observing through enough light pollution to obscure the Milky Way. The 100 objects include mostly point source type clusters and planetary nebulae. A list of them is available at astroleague.com. Mike noted that late night observing is best because of more settled air and fewer lights. We hope to have the chance to test that theory at this year's Messier Marathon, March 24 at the Natchez Trace site. Lonnie Puterbaugh's handout described how to prepare for and survive the night. It occurs on the New Moon, and no make-up date is scheduled, March being the time when the most objects can be seen. Lonnie will lead a dew heater building class at Dyer Observatory beginning 10 AM March 3. The class will take most of the day with time out for meals (not provided) and will conclude in the evening with an observing/test session on the model airplane field at Edwin Warner Park. One scope and about \$10 for a 12 volt battery should be brought to the event, which was inspired by dew problems at last year's marathon. Meeting adjourned 8:55 PM.

MARCH MEETING LOCATION

The March meeting will be held at Dyer Observatory

**Schedule at Sudekum Planetarium
March and April 2001**

Worlds In Motion

Two media conglomerates, the Know-It-All Network and the All-Star Station, have set Worlds In Motion with aggressive new campaigns so fast-paced that even a couch potato won't be able to sit still. From the atoms in the air to the dance of the planets, the programming will address such topics as Ptolemy vs. Copernicus, Newton's First Law of Motion, simple celestial mechanics, and even late winter and early spring constellations.

Skies Over Nashville

Skies Over Nashville is a LIVE program in the Planetarium devoted entirely to what is visible in the current night sky. We'll talk about and point out the constellations and planets along with other items of special interest.

Our Place In Space

This program is especially designed for the younger members of our audience. Trying to solve a crossword puzzle about the sky, a host of endangered animals explore the cause of day and night, the importance of our star the sun, the beauty of the constellations, and the variety of objects that make up the Universe.

Tuesday through Friday

Worlds In Motion 3:15

Saturday

Worlds In Motion 11:00

Skies Over Nashville 1:00

Our Place In Space 2:30

Worlds In Motion 3:30

Sunday

Our Place In Space 1:30

Worlds In Motion 3:30

NEW DIRECTIONS TO BSAS DARK-SKY SITE

Go west on Old Hickory Blvd. from I-65, 4.5 miles to Hillsboro Rd. Go south on Hillsboro Rd. for 3.4 miles to Highway 46 and turn right. You will see Grassland Elementary school on the left as a landmark.

.. Follow Highway 46 for 5.8 miles to Highway 96 and a flashing red light.

.. Continue straight on Highway 46 for 6.0 miles through Leiper's Fork to a right turn just outside of town, to stay on route 46.

.. Continue on Route 46 for 0.9 miles to Natchez Trace Parkway.

.. Follow the entrance ramp to the Parkway and turn right, toward Tupelo, Mississippi.

.. Follow the Parkway for 17.2 miles, passing Old Trace and Burns Branch, to the "Water Valley" overlook. Our site is the parking area.

(THIS NEW SITE IS 12 MILES FARTHER SOUTH PAST THE OLD SITE WHICH WAS AT MILE MARKER #424)

Astronomy Day

Space - Is anybody out there? Come find out at the Cumberland Science Museum on Astronomy Day, April 28, 2001! Our featured guest will be astrophysicist Dr. Frank Drake, professor of astronomy and astrophysics at the University of California, Santa Cruz. Dr. Drake is best known as the father of SETI - the Search for ExtraTerrestrial Intelligence. He was the first to use a radio telescope to search for intelligent life beyond Earth. Come hear him speak about the continuing work of those searching the heavens for signs of intelligent communications. Solar astrophysicist Mitzi Adams of NASA's Marshall Space Flight Center in Huntsville, Alabama, will also be speaking at the Museum. But, that's just the beginning! Do you want to know all about telescopes? Members of the Barnard-Seyfert Astronomical Society will be on hand for discussions and demonstrations. Learn about living and working on the International Space Station during our Star Station One presentation. Check out astronomy related software in the computer lab. There will activities and displays throughout the Museum and special programs in the Sudekum Planetarium. So, mark your calendars now! Come and celebrate Astronomy Day at the Cumberland Science Museum on April 28, from 11 am to 4 pm.

Astronomy Nights

In addition to Astronomy Day, there will be two FREE public star parties - Astronomy Nights. The first will be held on Friday, April 27, from 8:00 to 10:00 p.m. at the model airplane field in Edwin Warner Park. Admission is free, but reservations should be made by calling the Nature Center at 352-6299. The second star party will be at the Renaissance Center in Dickson on Saturday, April 28, also from 8:00 to 10:00 p.m. At both star parties, the Barnard-Seyfert Astronomical Society will set up telescopes for viewing the Moon, Jupiter, Saturn, the Great Orion Nebula, and more. Astronomy Day is joint effort of the Barnard-Seyfert Astronomical Society, Cumberland Science Museum and Sudekum Planetarium, and the Warner Park Nature Center. Thanks to them and our wonderful volunteers for making Astronomy Day great for everyone!

HOT FLASHES

by Gerald Lappin

With the planetary status of Pluto once more being threatened, Clyde Tombaugh's ghost must be doing a lot of agitated chain clanking these days. For more than seventy years Pluto enjoyed its position of the most remote planet in our solar system. Then, a couple of years ago, planetary astronomers decided to demote it to just another big comet in the Kuiper belt. After a few months that demotion was lifted and Pluto again became a planet although some astronomer's decided it was both a planet and a comet, sort of dual citizenship. Now astronomers at the Rose Center for Earth and Space have again denied Clyde's discovery the title of planet, just another icy comet they say. We can only hope that someone will readmit it Pluto to our planetary system. Having just eight planets might have been good enough for the 19th Century but 21st Century progress demands more than that of the cosmos. Sooner or later, Pluto will regain its planetary status but can we be sure that it will remain as the ninth planet? Just imagine what might happen in the future. Pluto is once again voted out and the well-known axiom "Three Strikes And You're Out" could then be enforced. NASA might then be required to mount an expedition to Pluto, there to mount a mass driver which would, once and for all time, push that former planet into deep space, never to return. Is it now time to initiate a Save Pluto movement or should we resign ourselves to living in a shrunken system?

On the subject of planets, how many are there in our galaxy? Astronomers have been adding them by the handful and the count is up to more than 50 but are any of these really planets? Some in the Orion Nebula do not orbit any star. Can a lone body be a planet? If not, what is it? Many others seem far too large to be even gas giants. Are they just aborted attempts of a collapsing nebula to create a little star or two? Maybe we need a new name for these objects. They're not brown dwarfs or so their discoverers say. Could they be black dwarfs? That name is probably unacceptable, just not politically correct. Should we call them giant gasbags or do we already have too many of those.

Happy Birthday Albert Einstein by Robin Byrne

This month we celebrate the life of a man who revolutionized the scientific world. Albert Einstein was born on March 14, 1879 in Ulm, Württemberg, Germany. He grew up in Munich, where his family owned a shop that manufactured electric machinery. In 1894, after several business failures, his family moved to Milan, Italy. Einstein withdrew from his school in Munich to live with his family in Milan for a year.

In 1895, Einstein failed an exam to enter the Eidgenössische Technische Hochschule (ETH) in Zurich to study to be an electrical engineer. So, instead, he went to secondary school at Aarau. A year later, Einstein entered the Swiss National Polytechnic in Zürich. Never very interested in the formal nature of school, Einstein would cut classes to spend more time studying physics and playing the violin. It was also in 1896 that Einstein renounced his German citizenship.

Einstein graduated in 1900 as a teacher of mathematics and physics. Because of his attitude toward his classes, Einstein's professors did not like him very much and would not recommend him for any jobs. For the next two years, he worked as a tutor and substitute teacher teaching math at the Technical High School in Winterthur. In 1902, Einstein was appointed a job at a patent office as a "technical expert third class." A year later, Einstein married Mileva Marić, who was one of his classmates at school.

The year 1905 was a monumental one for Einstein. It was during this year that he earned his doctorate from the University of Zurich. His dissertation dealt with determining the dimensions of molecules. It was also during this year that he published some of his most important works. One dealt with the "photoelectric effect", which is where objects radiate energy in discrete amounts called quanta. Related to this was the idea that light could be considered to behave like a particle, called a photon.

This was contrary to the idea that light behaved like a wave and could have any amount of energy. Virtually no one accepted Einstein's proposal.

Einstein's second paper of 1905 laid the groundwork for what is now known as the "special theory of relativity", which deals with the idea that at speeds near the speed of light, the traditional equations of motion developed by Isaac Newton would need to be altered to ensure that the laws of physics would still hold true regardless of the frame of reference. The one rule that would have to hold true in any frame is that the speed of light stays the same.

Einstein's third paper of 1905 dealt with what is now called the "general theory of relativity". Building upon special relativity, which only considered motion at a constant speed, general relativity tackles motion in an accelerating frame. Einstein found that an object in an accelerating frame (like a space ship) has the same experiences as an object experiencing the force of gravity. The equivalence between the two means that they are the same thing. This led to the ideas of energy and mass being related and the curvature of space by massive objects. In 1911, Einstein predicted that light from a star passing near the Sun would have its path slightly deflected. That prediction was later verified in 1919 during a total solar eclipse, thus verifying all that Einstein had proposed.

During World War I, Einstein was among the few who publicly criticized Germany's involvement in the war. He was a lifelong supporter of pacifism, and this stance and his support of Zionism opened him up for attack. In Germany, his scientific theories were ridiculed, and his public lectures were interrupted by anti-Jewish demonstrations.

In 1921, Einstein made his first trip to the United States. After a lecture he gave at Princeton, which was overflowing with people, Einstein commented, "I never realized that so many Americans were interested in tensor analysis." It was also in this year that Einstein received the Nobel Prize in Physics for his work on the photoelectric effect.

Einstein made his third trip to the United States in 1932 and was offered a position at Princeton. He accepted and left Germany in December of that year. The next month, Nazis came to power in Germany. Although Einstein continued to support Zionism, his stance on pacifism changed in light of the Nazi menace to humanity. At Princeton, Einstein worked on attempting to unify all the laws of physics. An idea that is still being pursued by scientists today.

In 1939, Einstein, along with several other physicists, wrote to President Roosevelt to encourage the development of the atomic bomb due to the likelihood that Germany was already in the process of building one for themselves. Although several people were involved in the writing of the letter, only Einstein's signature was on it. Einstein's fame helped to sway Roosevelt to support the Manhattan project. After the war, Einstein returned to his pacifist beliefs and was active in the cause of international disarmament and political freedom.

One week before his death, Einstein agreed to have his name included on a manifesto urging all nations to give up nuclear weapons. Albert Einstein died April 18, 1955 in Princeton, NJ. He was cremated and his ashes were scattered at an undisclosed place.

The name of Albert Einstein will always be associated with the theory of relativity, but his work for disarmament and international peace were just as important to him as his scientific work. Einstein's work was the keystone of the physics revolution of the 20th century. We can only begin to imagine what the scientific revolution of the 21st century will bring, but we can be sure that Einstein's ideas will live on.

References:

Einstein Web Page <http://www-groups.dcs.st-and.ac.uk/~history/Mathematicians/Einstein.html>
Einstein, Albert (1879-1955) Web Page <http://www.sofitec.lu/misc/einstein.htm>

Extreme Stargazing?

Many persons are participating in a variety of sports that have been renamed to attract new persons into the "newer" and "rougher" sport, which has been modified from the old one. People participate in these sports for many reasons, but lately the fad is to use the word "extreme" before the old sport name.

We in astronomy are still observing with our same scopes and same buddies at our same sights. So how do we participate in some "extreme stargazing"? We go participate in a Messier Marathon -- that's how! Why would any sane, logical, methodical observer participate in the fast and useless activity of trying to see all 110 Messier objects in one night? Isn't the whole point of astronomy to relax and actually observe an object in detail? The answer is an overwhelming YES, BUT..... the point is also to increase your overall astronomy skills and that includes being able to find objects. A Messier Marathon under your belt will definitely help you locate Messier objects faster. It will also make you intimately more familiar with your tools of the trade - your telescope and eyepieces, your binoculars, and your star charts. This skill is useful for all of our club's public observing nights and for when you later attempt your Astronomical League Messier and Binocular Messier Awards for a much longer observation of each of the objects. The extra familiarity with your scope and it's field-of-view with certain eyepieces will aid you in locating any object faster in the future. I can guarantee you that your ability to locate most of the Messier objects quickly later will amaze you if you come try this marathon and practice a little beforehand. Even if you are not interested in the somewhat "extreme" sunset-to-sunrise complete marathon, come try to "bag" as many as you can in a three, four, or five-hour time span. You can participate without a scope by jumping from one to another for brief views. Just come by mine if you want a look! A set of 10X50 binoculars should be able to see about 50-60 of the Messier objects fairly easily. At least a 6-inch scope is recommended if you are trying for all of the objects, but a 4-inch will get most of them. Everyone with "goto" telescopes are welcome also. Just don't be surprised if some of us "old-fashion" guys are actually faster at times in getting on an object. The goto scopes and even analog setting circles are a huge benefit in locating objects in the evening and morning twilight when guide stars are few and far between and star-hopping is virtually impossible. If anyone is having trouble locating an object, feel free to come see me for advice or a look at a chart that may be "extremely" helpful.

This year's marathon is on New Moon March 24th-25th at the regular club site. We will setup well before dusk. There will be a "Mini-Messier Thirty" certificate to everyone observing at least 30 Messier objects and filling out the very minimal paperwork. In preparation for the marathon, I'm suggesting we meet on the 17th at the club site for an early evening practice run during the last quarter Moon. Due to the unfavorable Moon, there is no rain date for this year's marathon. We will have to wait a year to try again.

I hope to see you all there under dew-free steady and transparent skies!
--Lonnie Puterbaugh

Our first impromptu potluck night was held February 24. A good time of fellowship and some astronomy instruction was enjoyed by all. Here are the attendees after dinner with the Seyfert Telescope.



EDITORIAL

The Whale Swallows The Sun or The 14th Constellation of the Zodiac

The best known incident in the story of the ancient prophet Jonah is his being swallowed by a whale. The whale, however, regurgitated the prophet, who subsequently carried out the commission which he had first fled to avoid. So his being swallowed was temporary.

Cetus is the Latin word for whale and is the name of one of the 88 constellations. "On March 27-28, the disk of the Sun clips a corner of the constellation of Cetus." (p. 582, *World Almanac 2001*) I have known for many years that the Twelve Signs of the Zodiac should be thirteen. The Sun spends about a month in each of the twelve, on average. But after being in the Scorpion, the Sun spends many days in the Serpent Bearer before entering the Archer. So Ophiucus, the Serpent Bearer is a 13th Zodiac constellation. Now I realize that Cetus the Whale is a 14th. (I knew the Moon was sometimes in Orion, a constellation the Sun does not visit, and in Cetus. But I had supposed this was owing to the fact that the Moon's path is sometimes 5 degrees south of the ecliptic.)

Now, however, I am aware that the Whale will swallow the Sun and soon thereafter regurgitate him. This happens about a week after the Sun crosses the vernal equinox.

So I started wondering about precession and when it was that the equinox, which slowly precesses westward along the ecliptic, was at that point in the sky where the ecliptic now clips the corner of Cetus. My rough, off-the-cuff calculation said it would have been around the time of Christopher Columbus. I invite anybody whose computer can give him or her the date to share it with me. Before concluding that half a millennium ago the Whale had swallowed both the Sun and the equinox, together, I ponder the fact that the present boundaries of the constellations are a devising of the 20th century. In 1492 (or whenever) the Sun might have passed through the Fishes (Pisces) without being thought to have entered the Whale (Cetus).

Powell Hall

Some captured moments from the "Make Your Own Dew Heater" class taught by Lonnie Puterbaugh on March 3. This class was very successful and several of us will be using our heaters at the upcoming Messier Marathon. Lonnie has agreed to repeat the class if enough interest is generated. To request more information please e-mail Lonnie at - lputerbaugh@irby.com



The class was held in the Dyer Library.



Soldering Resistors

SKYWARN SPOTTER CLASS

This class will be held at A. J. Dyer Observatory 7 April at 11:00 a.m. The class is free to all who attend. In the classroom, we will learn how to identify features such as wall clouds, shelf clouds, roll cloud, funnel clouds, etc. from a booklet. We will go over definitions of terms such as tornado watch and a tornado warning, what is a severe thunderstorm, and of course we will review our safety tips for a tornado warning. We will discuss the various meteorological factors that cause thunderstorms to develop in the U.S. and then mention how tornadoes form. We also will demonstrate various tone alert NOAA Weather Radio models.