



ECLIPSE



The Newsletter of the Barnard-Seyfert Astronomical Society

September 2001

President's Message

As my term as president winds down, I want to thank everyone for their part in the many good things that have happened to BSAS. It's been a good year.

1. The Tennessee Star Party 2000 (TNSP2000) was a great success and the start of an annual event. Thanks, Rocky, for showing us it can be done. The camaraderie created by this event has been an important part of BSAS all year. The income generated has let us do more.
2. The availability of the Bergquist C-14 telescope for BSAS is a reality. Thanks to a formal agreement between BSAS and Vanderbilt and the mechanical and optical skills of Rocky Alvey, Dudley Pitts, and others, we have a fine telescope in a safe location.
3. BSAS and Vanderbilt have a major role in the ISS-AT: Amateur Telescope in Space project. What a unique and exciting opportunity!
4. The mentors program was started to help us all learn more. We learned astronomy from each other and made new friends.
5. The public nights, especially at Dyer Observatory, have been great successes with nearly 1000 visitors some months!
6. There have been outstanding speakers at our meetings. A "thanks" goes to Lonnie Puterbaugh for serving as vice president and program coordinator.
7. Electronic delivery of the Eclipse newsletter is a reality for those who want it.
8. Amateur telescope making (ATM) (really amateur equipment making) is alive and well in BSAS. We have had several programs and demonstrations and a weekend workshop to make dew heaters.
9. We have begun the fight against light pollution.

Thanks for the honor of serving as president.

A.G. Kasselberg

HAPPENINGS & EVENTS

September 1 - September 30, 2001

- | | |
|------|--|
| 9/1 | Conjunction of the Moon and Uranus |
| 9/2 | Full Moon |
| 9/3 | LABOR DAY |
| 9/10 | Last Quarter. Conjunction of Moon and Saturn. Occultation of the Moon. |
| 9/12 | Conjunction of the Moon and Jupiter |
| 9/13 | Public Night at Dyer Observatory |
| 9/17 | New Moon |
| 9/18 | Rosh Hashanah. Gr. elon. Mercury; Conjunction of Moon and Mercury. |
| 9/20 | ANNUAL MEETING OF BSAS 7:30 p.m. at Dyer Observatory. Annual elections will be held. The speaker will be MTSU Astronomer Chuck Higgins speaking on radio astronomy with a live demonstration. |
| 9/22 | Autumnal Equinox 6:04 p.m. |
| 9/24 | FIRST QUARTER MOON; Conjunction of Moon and Mars |
| 9/27 | Youth Night at Dyer; Yom Kippur; Conjunction of Moon and Neptune |
| 9/28 | Conjunction of Moon and Uranus |

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: 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 REGULAR MONTHLY MEETING OF BARNARD-SEYFERT ASTRONOMICAL SOCIETY

The regular monthly meeting of the membership of the Bernard-Seyfert Astronomical Society (BSAS) was held on Thursday, 16 August 2001, at 7:30 P. M. at the Dyer Observatory.

The meeting was called to order by the president, A. G. Kasselberg, who presided over the meeting. There were 27 members present and nine visitors. The secretary, Bill Hayden, had requested in advance that Joe Boyd take the minutes of the meeting, due to the secretary's absence.

The president welcomed the visitors and extended an invitation to them to become members of the Society.

A treasurer's report was given by Powell S. Hall. He reported that the Society has \$2,500 plus interest in CDs, and approximately \$1,170.51 in the Society bank account or in cash. Treasurer Hall announced that he has the 2002 astronomy calendars available, and he will be glad to sell them to anyone who wishes to purchase one or more tonight. He pointed out the features of the calendars. He further reported that the membership of the Society is now approximately 120, although he has signed up some tonight, and there may be as many as 126 members.

Treasurer Hall advised the group that he wants to change the method of collecting the dues for the Society. He proposes that all memberships expire and come due on the same date. He tentatively suggested 1 October as that date, so that each member's membership would expire on 30 September of each year, and dues notices could be sent out to everyone at the same time. For those who are already paid past that date at the present time, their dues would still come due on 1 October, but would be prorated to offset the period they have already paid for. He stated that Rocky Alvey is going to help him get this underway, and President A. G. Kasselberg also stated that he would assist. It has been difficult to keep up with whose dues were expiring, and this has made the treasurer's job rather difficult. The new method would also have the benefit of making it easier to maintain an accurate and up to date membership list.

Rocky Alvey then presented a report on the progress on the Star Party 2001, which is scheduled for 19 through 21 October at Fall Creek Falls State Park. He stated that several other astronomical clubs and societies have also scheduled events for the same weekend, but the BSAS date and arrangements are firm, and hopefully the others will not cut the attendance too much. He reported that he is already receiving applications and checks for the event, and he urged all of the local members to sign up without delay, since the accommodations will be assigned on a first come basis.

Doug Hall reported on the ISS-AT (International Space Station Amateur Telescope) project, which was described to the Society at the July meeting. He announced that the ISS-AT committee of the Astronomical League has extended an invitation to Vanderbilt to make the Dyer Observatory the operations control center for the telescope when it is placed on the International Space Station. This means that the uplink and downlink would be handled at Dyer Observatory. He pointed out that this will be a great honor for Vanderbilt, the Observatory, and the BSAS, whose members are actively involved in the project. The invitation has been passed on to the Vanderbilt hierarchy, through the chain of command, and he is now waiting for what he hopes is a momentous response from the Vanderbilt administration.

Dr. Hall explained the significance of having the operations center at Dyer Observatory. When the Hubbell telescope project was developed, various universities actually bid on the opportunity to host the control center. The Johns Hopkins University was considered a dark horse, but was the winner, and as a result constructed a building to house the control center. As a result of being selected as the host for the control center, all of the operations of the Hubbell go through Johns Hopkins. Vanderbilt did not even have to bid on this; rather, it was just handed to Vanderbilt, probably in large measure due to the participation of the Observatory staff and the BSAS members who are working on the ISS-AT. Therefore, he pointed out, it would be a shame to lose it by not accepting the invitation.

Mike Benson, the delegate of BSAS to the Astronomical League, announced that the Astronomy Day which was held by the Nashville Science Museum, the BSAS, and the Dyer Observatory won a national award at the recent meeting of the League, and that Kris McCall had flown to Frederick, Maryland, to receive the award on behalf of the Museum. The award was displayed to the group.

A brief discussion was held about some changes to the organization of the Society. The president said he would defer that subject because of the upcoming program.

It was announced that the September meeting is the time of the annual BSAS elections. The Board of Directors will propose some nominees, and there can be nominations from the floor. A president, vice-president, and two directors are to be elected.

The president then declared that the business meeting is completed, and he turned the meeting over to the vice president and program chair, Lonnie Puterbaugh, who in turn introduced Rocky Alvey, who in turn introduced Jim Reid. This astronomical handoff resulted in an excellent and well received program on the subject of Building Your Own Telescope. Both Jim Reid and Rocky Alvey described their own experiences in building their own telescopes, and both showed examples of their handiwork. Both of them also offered suggestions for the members to use, based on the experiences and research of those presenting the program.

At the conclusion of the program, the president declared the meeting adjourned.

Respectfully submitted,

Joseph M. Boyd, Jr., Substitute secretary

TNSP 2001 at Fall Creek Falls State Park, October 18-21

Don't wait till the last minute to sign up for this great event! You may find the registration form and event details on our club website at- www.bsasnashville.com
Or call Rocky Alvey at Dyer Observatory 615-373-4897

Happy Birthday Gemini XI

by Robin Byrne

This month we celebrate another milestone in the U.S. space program. Gemini XI was the ninth manned spacecraft in the Gemini series. The crew consisted of Charles "Pete" Conrad and Richard Gordon.

After two postponements, Gemini XI finally launched on September 12, 1966 at 9:42 EST. An hour and half earlier, a Gemini Agena Target Vehicle (GATV) was launched. The first objective of the mission was to attempt a direct rendezvous, which meant that it would occur during the first orbit. This had never been done before, but it would more closely match what would occur during the Apollo missions during lunar orbit rendezvous. The successful docking was completed 1 hour 25 minutes after launch.

The next day was a scheduled extravehicular activity (EVA) for Richard Gordon. The main task was to retrieve a 30 meter tether from the GATV and attach one end of it to the Gemini spacecraft. Gordon pushed himself toward the GATV, but overshot and Conrad pulled him back by his umbilical. On his second attempt, Conrad caught hold of the GATV and straddled it. Even with his feet wedged in place, it was harder to maneuver than had been anticipated. Although the procedure had been practiced in zero-G aircraft flights during training, it was nothing like the real thing. He had to hold on with one hand and use the other to operate the tether clamp. It took him six minutes to secure the line. This exhausted Gordon. His face was streaming with sweat, which blinded him in one eye. Although there were other experiments to perform, Conrad ordered Gordon to return to the spacecraft. The experiments would have to await another flight.

Early in the Gemini program, there were thoughts of sending a Gemini craft into lunar orbit. It was decided that this would be saved for the Apollo program, but the idea of a higher orbit around Earth was still a possibility. Pete Conrad pushed the idea of using the GATV as a booster rocket to put the Gemini craft to a higher altitude. The idea was accepted, and on September 14, the GATV was fired for 25 seconds, taking the Gemini XI crew to an altitude of 800 km. This record height would not be broken until the Apollo 8 mission to the Moon. From this height, Conrad radioed back to Earth, "...the world's round... you can't believe it ... I can see all the way from the end, around the top ... The curvature of the earth stands out a lot." This was the first time a person had seen the curvature of the Earth directly.

The last main task to perform involved the tether with which Gordon had so much trouble. The GATV and Gemini craft were undocked and the tether was stretched to its full length. Conrad then fired some thrusters to put the pair into a spin to simulate gravity. At first, though, there were some problems. Conrad radioed, "This tether's doing something I never thought it would do. It's like the Agena and I have a skip rope between us and it's rotating and making a big loop." Finally, it straightened out as they went into a rotation rate of 38 degrees per minute. There were some instabilities, but they damped out, and the system was stable. Then they sped the rate up to 55 degrees per minute. Although the men could not feel the artificial gravity, when they put a camera on the instrument panel and let go, it moved in a straight line to the back of the cockpit. This was the first time artificial gravity had been generated in space.

Their final experiment was during reentry, which had always been done, at least in part, manually. They would attempt a totally automated reentry. Everything worked beautifully, and they landed about 2.5 miles from the recovery vehicle on September 15. The mission lasted almost three full days.

We haven't heard much about generating artificial gravity in space for a long time. Although microgravity experiments are the primary objective of the International Space Station, if people are really going to live in space for extended periods of time, artificial gravity will become a necessity. Gemini XI paved the way for these future endeavors.

References:

NSSDC Master Catalog: Spacecraft Gemini 11 Web Page <http://nssdc.gsfc.nasa.gov/nmc/tmp/1966-081A.html>

NASA Project Gemini-XI Web Page <http://science.ksc.nasa.gov/history/gemini/gemini-xi/gemini-xi.html>

Gemini 11 Web Page <http://www.friends-partners.org/mwade/flights/gemini11.htm>

HOT FLASHES

by Gerald Lappin

Not having heard from Dr. Zarkov for some time I have been concerned that the recent decline in the economy might have ended the flow of great schemes, which flow from his magnificent brain. I should have realized that adversity only spurs him on to greater enterprises. As always, these brain storms are inspired by reports of strange and unusual discoveries in the cosmos. I'm sure you've read about the recent discovery of a number of "pariah planets" drifting through M22 bereft of any parent planet. To most of us these are merely puzzling objects in the celestial zoo but to the otherworldly mind of Dr. Zarkov the present a great financial opportunity. He has formed a new corporation the objective of which is to gather as many of these homeless planets as possible and introduce them to currently planetless suns, thus creating new solar systems. Some would be enticed into the life zone of their new parent. These would present millions of square miles of virgin but developable real estate. Others would be placed in more distant orbits to provide interest in the new night sky. Of course, a few details remain to be worked out such as the exact mechanism for moving a planet-sized body across light years of space. However, I'm sure he will solve these problems soon. Wise investors may wish to take a position in the stock of his new corporation at this early stage for, once these problems are solved, the price will surely skyrocket.

September 2001 Editorial

Ten days from when I write this, the Sun will cross the celestial equator going south. Autumn will begin in the northern hemisphere and we shall have nights longer than days for six months. With a new moon in September the Jewish month of Tishri will begin with Rosh Hashanah, the Jewish New Year. And when that moon is full, on September 30th, it will be both the Harvest Moon and , because it is the second full moon in the month of September, a so-called "blue moon."

The season of Autumn has been termed the season of the quiet sky. Not many bright stars appear for the first time in the Fall. Fomalhaut in the southeast and Capella in the northeast are the exceptions. One is the farthest north first magnitude (technically - 0 - magnitude) star; Fomalhaut the farthest south of the brightest stars seen from our latitude. So, although these two stars rise close to the hour, Fomalhaut sets before Capella has reached its highest point. Fomalhaut is above the horizon about eight hours; Capella, nearly twenty.

There are a group of constellations, none of which has a star of the first magnitude, which compose a group related both by proximity in the sky and by representing figures in one of the most dramatic narratives of ancient Greek mythology. There are five or six constellations involved: Cassiopeia, Cepheus, Perseus, Andromeda, and Cetus. Pegasus, which for more than two millennia shared a star with Andromeda, is not only close to the previously named constellations in the sky but also related mythologically to Perseus' slaying of the Medusa.

Various astronomical books tell the ancient story, including Ian Ridpath's *Star Tales* and Burnham's *Celestial Handbook*. Let me borrow the rendition given in *Star Maps for Beginners* by Levitt and Marshall. "Above the Little Dipper, lurking as M as we gaze north, is Cassiopeia, a queen of Ethiopia who was beautiful and was too vain about it. She would sit by the hour, combing her lovely hair and gazing at herself in a mirror. One day she boasted that even the sea nymphs were not as beautiful as she, and the word got to these maidens, who were provoked by it to such a degree that they persuaded the ruler of the waters to send a horrible sea monster to ravage the coast of the country in order to punish Cassiopeia for her vanity. When the conditions had grown quite intolerable, Cepheus, the somewhat subdued king, went to an oracle, who told him that he could rid his country of the horrid pest only by exposing his daughter Andromeda to be devoured by the monster. Tearfully he ordered Andromeda to be chained to the rocks.

Perseus, a son of Jupiter and Danae, came on the scene where the hapless Andromeda lay chained to the rocks and, as every proper hero should do, he was able to estimate the situation at a quick glance. He fought the monster, slew it, and claimed Andromeda as his reward."

- p.40, from the text accompanying Map No. 12.

Powell Hall

September Elections

The Board of Directors has nominated a slate of candidates for the following positions-

Board of Directors, Michael Benson, Joe Boyd and Barbara Brand.

President, Powell Hall

Vice President, John Bradford

Treasurer, A.G. Kasselberg

Schedule at Sudekum Planetarium

September 1 through 30, 2001

NOTE: starting Monday, September 10, the Cumberland Science Museum and Sudekum Planetarium will be closed on Mondays.

NOTE: Labor Day - Monday, September 3
12:30 The Light-Hearted Astronomer
3:00 Just Imagine

Tuesday through Friday
11:00 Our Place In Space
3:15 Just Imagine

Saturday
11:30 The Light-Hearted Astronomer
1:00 Skies Over Nashville
2:30 The Light-Hearted Astronomer
3:30 Just Imagine

Sunday
1:30 The Light-Hearted Astronomer
3:30 Just Imagine

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.

Our Place In Space

This program is especially designed for the enjoyment and education of the younger members of the audience. Even adults can join the fun as a group of endangered animals tries to solve a crossword puzzle about the sky. Along the way, they explore the cause of day and night, the importance of our star, the Sun, the beauty of the constellations, and some of the many objects that populate the universe.

Just Imagine

Using science and imagination, contemplate a sky full of stars and imagine the infinite variety of constellations. Then wonder, what would Earth be like without the Moon? Consider how life would be different if the Sun was a different kind of star, and ponder how the universe might end.

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.

NOTE: Our monthly star charts and related articles can be downloaded from www.SudekumPlanetarium.com

For additional and updated information:
call AstroLine at 615-401-5092
or go to www.SudekumPlanetarium.com