



ECLIPSE



The Newsletter of the Barnard-Seyfert Astronomical Society

August 2001

Global Warming or The World Will Be Without Form and Void*

A dying star ten thousand million years
Before the Earth and sister planets appears
In awkward orbits round our new-born Sun
As gamma radiation now appears

And brings to new fledged man new faces.
Mankind's ascent, but recently begun,
And would-be dominance more newly won
Are threatened by cacophony of the spheres.

Perhaps a nearer distant cosmic Blast
Has burst already, vast but far too late
To terminate mankind or seal a fate
Obliterated in a future past.

Volcanoes might have brought us to the void,
A comet, or some shard of asteroid.

Gaston Hall
Kenilworth, 2-3 July 2001

*Eschatologies often replicate cosmogonies,
but not always.

HAPPENINGS & EVENTS

- 8/11-13 Perseid Meteors
- 8/12 Last Quarter Moon
- 8/15 Conjunction of the Moon and Saturn
- 8/16 BSAS monthly meeting; 7:30 p.m. at the Dyer Observatory. Conjunction of the Moon and Venus
- 8/18 New Moon. Private Star Party at the Natchez Trace site.
- 8/23 Youth Night at Dyer Observatory
- 8/25 First Quarter
- 8/27 Conjunction of the Moon and Mars
- 8/30 Conjunction of the Moon and Neptune
- 9/1 Conjunction of the Moon and Uranus
- 9/2 Full Moon
- 9/3 LABOR DAY
- 9/10 Last Quarter. Conjunction of the Moon and Saturn.
Occultation of the Moon.
- 9/12 Conjunction of the Moon and Jupiter
- 9/13 Public Night at Dyer Observatory
- 9/15 Conjunction of Moon and Venus.
the **BSAS Annual picnic** and observing session in Pavilion #7 at Barfield Park in Murfreesboro. (See directions page 2)
- 9/17 New Moon
- 9/18 Rosh Hashanah. Gr. elon. Mercury;
Conjunction of the Moon and Mercury.
- 9/20 ANNUAL MEETING OF BSAS
730 p.m. at Dyer Observatory. Speaker to be announced

The BSAS website can be found at
www.bsasnashville.com

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

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

The BSAS Annual Club Picnic

Excerpted from a message Sc tt Deganhartd sent

Mark your calendars! The Barnard-Seyfert Astronomical Society will be holding its annual picnic and observing session in Pavilion #7 at Barfield Park on Saturday September 15'th. This is a potluck, so bring something good to eat! People will start arriving around 5PM with eating in full force by 6PM and observing following that, coupled with more eating while observing and eating and eating while observing some more..... You get the point! This should be a good time to get together in this new facility.

Directions to Barfield Crescent Park

- At I-24 Exit 81 go South 1.8 miles (towards Shelbyville) on HWY 231 (Church Street)
- Turn right at the light at Barfield Crescent Road.
- The Park entrance is about a mile on the left right before the road changes from 4 lanes to 2 lanes.

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)

BSAS Volunteers Needed

Production of the Eclipse, website modifications, public starparties, membership database updates, TNSP are all items that need your help and support. If you would like to volunteer for any of these, please contact Rocky Alvey at 615-373-4897 or Email r.alvey@vanderbilt.edu

B.S.A.S. Annual Meeting

Although our by-laws set the second Thursday in September as the date of the society's annual meeting, the members at the August meeting will likely vote to change to the third Thursday in order not to be in conflict with Dyer Observatory's public night on the second Thursday. We have made such a change in recent years. The official announcement will be carried in our September issue.

EDITORIAL

Calendar Matters

On which date will the moon be full next April? I have two calendars for the year 2002, each with a beautiful picture for each month. One of these is the Astronomy calendar published by Kalmbach, which seems if possible to be better each year. (There is a supply of these for club members at reduced rates - \$8.95 instead of \$11.95, since we obtain them in bulk.) The other calendar was one sent in hopes of a contribution to a good cause. It has a picture of Fall Creek Falls with one of the months. One calendar says the April full moon falls on Saturday, April 27, 2002. The other announces the April full moon on Friday, April 26, 2002. Is one calendar right and the other wrong? Not necessarily! The data given for one astronomical occurrence, such as lunar phases, equinoxes, solstices, and eclipses, and occultations is contingent on where you look at the clock, i.e. in reference to which time zone the occurrence is dated. If according to Eastern Time, as in the Astronomy calendar and the almanac I consult, the date may be earlier than the very same occurrence according to Universal Time. The April 2002 moon is full at Greenwich, England, on April 27; the same April 2002 moon is full (at the very same instant, pace Einstein) in Boston, MA, on April 26. Boston clocks are five hours behind Greenwich clocks

In the "Happenings and Events" column of this newsletter celestial as well as terrestrial occurrences are dated according to Central time.

Recent items of astronomical interest in the news include the discovery that the star Altair, like the planets Jupiter and Uranus, has a considerably larger equatorial than a polar diameter. The star like the gas giant planets is an oblate spheroid rather than a perfectly round ball. This "fat-at-the-waist" effect is due to rapid rotation.

A second discovery is that the 25-year old sample of Martian soil may harbor evidence of biological activity after all. The sample was scooped up in 1976.

Powell S. Hall

HOT FLASHES

by Gerald Lappin

Let's hear it for scum, not that soap scum in your bathtub but that green slimy stuff that gathers around ponds, on wet rocks where you can slip and break a leg, and on your teeth when you haven't been to your dentist lately, good old bacterial scum. Why celebrate this nasty stuff? Because once it may have been of vital importance to you. Science has long pondered the question of how the earth's atmosphere changed from its primitive state of little or no oxygen and lots of water vapor along with nitrogen, methane and some other stuff to the present composition of 20% oxygen and a small amount of water and a lot of nitrogen. Although some very simple cells can get along with that primeval air all complex cells, including us, need oxygen. Complicated organisms began to make their appearance some 2 billion years ago. Somehow, at that time, some mechanism was stripping hydrogen from water and sending it away forever. The mystery is how that could be accomplished. Scientists at NASA's Ames Laboratory believe that they have found the way. Before about 2 billion years ago the only life on Earth was in the form of green microbial scum. Such mats of scum still exist and the Ames scientists have shown that these mats have the remarkable property of stripping hydrogen from water and pumping the hydrogen into the atmosphere. Light gases such as hydrogen rapidly escape into space leaving the oxygen behind. So, if you're breathing, and I hope you are, thank those little green bugs and if somebody calls you scum, take it as a compliment.

A new Yahoo Group announcing astronomy events in Middle Tennessee

The group can be found at <http://groups.yahoo.com/group/tnastronomy>

Dedicated to bringing together all those who are interested in astronomy especially in the middle Tennessee area. This is a resource for clubs, groups, organizations and individuals who are inclined to post their local events. Hopefully it will become a comprehensive calendar for star parties, lectures, and all other astronomy events in our region. The group can also be a great resource for those starting out in astronomy. Beginners will find out where help is available. Issues affecting amateur astronomy in TN, such as light pollution may also be discussed. Although this forum is unmoderated, no controversial content will be allowed. Events will be deleted after the date of event has passed. Join the Yahoo Group by visiting the link above or just visit regularly.

Deadline for articles and news items for September ECLIPSE: 23 August one week after the monthly B.S.A.S. meeting

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>

TENNESSEE STAR PARTY 2001

**Our October event is just around the corner. Send your registration soon in order to secure a place.
Find the form online at www.bsasnashville.com/TNSP2001.htm**