



the BARNARD STAR

A PUBLICATION OF THE
BARNARD ASTRONOMICAL SOCIETY

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MEETING NOTICE: The regular meeting of the BARNARD ASTRONOMICAL SOCIETY will be held **Thursday, September 10th** at Jones Observatory on Brainerd Rd. The observatory doors will open at 6:45 p.m. Refreshments and social hour begin at 7:00 p.m. The program will be presented at 7:30 p.m. followed by the business meeting at 8:30.

PROGRAM: Ed Sunder on Image Processing and Sky Tools.

The Barnard STAR is the official publication of the Barnard Astronomical Society.



Planned Activities to Enjoy
The Wonders of Astronomy—

For more information, contact Tom Adkins, Joe D'Agostono or Dr. Gary Caldwell.

Celebrating Amateurs Who Are Professional in
Knowledge

“Giving amateurs their due: The term ‘amateur’ is often used negatively as a synonym for ‘unskilled.’ Not here! In astronomy, the word remains true to its Latin root, amator, meaning ‘lover.’ Amateur astronomers spend countless hours under the starry sky purely for the love of it. Many become as skilled at telescope observing or astrophotography as any professional—often more so.”

Discovering the Joy of Astronomy

“The joy of astronomy comes from finding your way around the starry sky and understanding what you see.” –
 The Editors, SKY AND TELESCOPE MAGAZINE

Mourning the Increasing Loss of Dark Night Skies in
Our Cities

“There is no more important task for the modern amateur astronomer than to fight the steady growth of light pollution in urban areas. Already we are witnessing the tragedy of the first generation of city children who might never see the beauty of a dark night sky.”

--Director, Observatory, Houston Museum of Natural Science.

Note: BAS endorses outdoor lighting restriction efforts by the International Dark Sky Association (IDSA) and also by local organizations such as Save Roane Starry Skies (SRSS) at The Tamke-Allan Observatory, Roane State College, Harriman, TN.

Technical Areas of Specialization within BAS for
Member Participation

Large Aperture/Dark Sky/Deep Space Optical
Astronomy at Several Regional Dark Sky Sites

For more information, contact David Witt or Victor Rogers.

Astrophotography

For more information, contact David Hanon or Dr. Gary Caldwell

Radio Astronomy at a Fully Functional Radio
Telescope Observatory Outside of Cleveland, TN

For more information, contact Bill and Melinda Lord, Bill Seymour, or John Mannone.

Sidewalk Astronomy—“Chattanooga Out of This
World” Challenging Optical Viewing of The Earth’s
Moon and The Inner Planets for the General Public
from Downtown Locations Surrounded By Bright
City Lights

BAS AUGUST MEETING

Program

How special to have a BAS regular meeting program presented by a professional astronomer from a major university.

On Thursday, August 13th, eighteen club members heard Dr. Douglas Durig from the University of the South, Sewanee, discuss “Recent Observations and Discoveries from Cordell-Lorenz Observatory.” He gave fascinating details of his research as well as describing the equipment and techniques used to collect the data.

The two most important discoveries in the last year were: 1) An asteroid, Jupiter Trojan 2008 UF90, a 5 km object 60 degrees behind Jupiter in orbit, and 2) Comet Giacobini Fragments P/205-b and P/205-c. Finding these pieces of the comet was a very important observation from a scientific standpoint. Dr. Durig was the first astronomer in the world to report these particles, and it is significant that his students were also involved in the discovery.

Dr. Durig is well known at the world clearing house for asteroid discoveries—The Minor Planet Center, Harvard-Smithsonian Center for Astrophysics in Cambridge, MA-- and is credited with finding 148 asteroids. Most are main belt asteroids (in the plane of the ecliptic), but a few have a higher eccentricity. Sizes range from ½ to 5 km in length. In response to a question from the audience regarding the density of the asteroid belt (between Mars and Jupiter) where most of these objects are located, he said that contrary to popular conception, hundreds of thousands of km separate individual asteroids. Surprisingly, fine dust in the ecliptic plane is more of a worry than collisions with large asteroids for managers of spacecraft, beginning with Voyagers I and II, which traversed the asteroid belt en route to deep space.

In addition to encouraging university students to fascinating astronomy discoveries, he recently directed 20 high school students in the Bridge Program and assisted each one to find an asteroid.

He has been expanding his research to include the study of Variable Stars (Dr. Hall at Vanderbilt is an expert in this area), eclipsers (one star going behind another with respect to the vantage point on Earth), and color imaging. In 2007-08, for example, Dr. Durig made more than 1000 observations for the AAVSO (American Association of Variable Star Observers); and, his data is included in their publications.

The AAVSO does important liaisons with professional astronomers such as Dr. Durig and also with

amateurs. (BAS members who have an interest in the activities of this organization might want to check their web site; www.aavso.org/)

As part of his presentation, Dr. Durig made a gift to BAS of five computer zip drives loaded with Astrometrica (the specialized software for processing moving images against the fixed star background) and some other data processing programs. These are for distribution to BAS members who have an interest.

Thank you, Dr. Durig, for allowing BAS members to get an overview of your programs, equipment, and very significant accomplishments. Only a few amateur astronomy clubs in America are fortunate to have such important astronomy research occurring in close proximity with a professional astronomer/leader who is so accessible.

The Basics

Important Compilations of Celestial Objects

The 88 Constellations—Created by ancient cultures, mostly in Greece, Rome, Egypt, Persia, and Babylonia to explain patterns of stars, using myths and legends about creatures and beings. In actuality, the stars making up a constellation have no relationship to each other and may be located thousands of light years away from each other. Many of the brightest stars in the sky have beautiful and mysterious sounding names such as Betelgeuse, Capella, Aldebaran, and Vega, which also come from antiquity.

Uranometria—Created in 1603 by the astronomer Johannes Bayer, shortly prior to the invention of the telescope. He identified the brightest stars in a constellation using lower case letters from the Greek alphabet, beginning with alpha for the brightest and continuing until all twenty four letters were used. Bayer's Greek letters are still in use today.

Flamsteed Numbers—In order to extend the Bayer system, the British Astronomer John Flamsteed assigned numbers to all stars of approx. 5th magnitude and brighter in each constellation. Flamsteed numbers start at 1 and increase from west to east

Messier Catalog—Created by Charles Messier, the eighteenth century comet hunter, the finest non-stellar deep sky objects are cataloged numerically from 1 to 109. Strangely, Messier compiled his list not to record the locations of deep sky objects but rather to define the positions of objects that interfered with his comet hunting. While his comets have faded over the centuries, the Messier list has become famous and an important tool of modern astronomers.

New General Catalog of Nebulae and Clusters (abbreviated NGC)—Compiled by John L. E. Dryer in

1888, this is the most comprehensive digest of deep sky objects. The NGC lists more than 7,800 star clusters, nebulae, and galaxies covering the entire celestial sphere Dryer later assembled a pair of supplementary Index Catalogs (IC) that included new objects published after the NGC was published.

The Messier, NGC, and IC listings are general compilations. Most newer catalogs are specialized according to the type of celestial objects listed.

Reference: Star Watch, Philip S. Harrington

August Program

Ed Sunder will speak on Image Processing and Sky Tools

Mark Your Calendar

Here are a few of the upcoming meetings that have programs scheduled:

September 10: Ed Sunder – Image Processing and Sky Tools.

October 8: Joint Meeting with the Chemical Society, Prof. John Mannone will present a program of interest to both astronomers and chemists.

November 12: Paul Lewis, UTK

December 5: Annual BAS Christmas Party

January 14: Ronnie Floyd on calibration/collimation of telescopes.

Telescope Project

We would like to start a group within the Barnard Astronomical Society for those interested in building telescopes. We have had a donation to the club of two mirrors and some parts to build two telescopes. If you are interested in helping with these, or in building your own telescope, let us know.

Bill & Melinda Lord 423-478-9043

www.tnSkyNet.com

Telescope Loaner Program Donation

Bill Seymour has donated two telescopes to the BAS loaner program. One six inch Newtonian Reflector, f/8, with metal equatorial mount, constructed with parts from Edmund Scientific Co. in good condition.

One Jason 2.5 inch refractor with tripod mount and wooden carrying box. In good condition, except the mirror diagonal is broken and needs to be replaced.

Both of these telescopes are simple, easy to use, with significant magnification (beyond the toy level), and would be wonderful for persons who are just beginning in the astronomy hobby.

The club has several telescopes for loan. Contact Adam Krause krausea34@yahoo.com or Bill Lord: ap_guardian@yahoo.com to get a telescope.

Book Review Feature for the BAS Barnard Star Written on September 3, 2009

A Few of My Favorite Things By Jeff Goswick

As a child growing up during the space race, I have always had a soft spot in my heart for the moon. Interestingly, I had never really spent any telescopic resources on our nearest heavenly neighbor until recently. Like many other amateurs, I was often annoyed by the moon when I needed all the dark I could muster to draw out details in a deep-sky catch.

After reading various books, especially *Star Watch* by Phil Harrington, the topic of another recent book review, my curiosity toward lunar observing was piqued. So much so that I have spent the last three years building what I call a "lunatic" library. I would like to quickly take a look at three of my favorite lunar resources. If you scan popular lunar literature, you will no doubt, find titles that are well-regarded, and classics such as Antonin Rukl's *Atlas of the Moon*. I have decided, instead, to focus on resources that would be most used in the field or would benefit a new lunar observer the most.

"Somebody Hand Me a Map..."

To begin, a good map of the moon would be a welcomed start. Of all the lunar maps I own, the most concise, foldable map would be the *Sky and Telescope Field Map of the Moon*. Drawn by master lunar cartographer, Antonin Rukl, it is offered in both correct-image version, and the one I have, the mirror-image version, which works well for refractors and Schmidt-Cassegrains. It divides the moon into four quadrants and comes with a large index and coordinate system for quickly finding features by name. Each quadrant is 12" X 12" and the map is laminated and made to fold easily. This is the map I use out at the telescope. It takes up little tabletop real estate. I discovered while completing my Astronomical League Lunar Club award that it was also easy to mark or record notes on the laminated surfaces with a china/grease pencil that could later be erased.

"A Little More, Please..."

The second, more in-depth resource that would be a great addition for indoor use or even at the telescope would be a small lunar atlas, such as *The Hatfield Lunar Atlas* edited by Jeremy Cook. This also comes in an SCT version, which is mirror-imaged. The atlas is made of hand-drawn and labeled maps that correspond to photographs of matching scale on adjoining pages. This makes it easy to identify surface features in more detail than a map would allow. Several photos of each area give an observer the ability to see the same areas under different illumination conditions. This atlas feels good in the hand and is a good, basic atlas. The hand drawings are homely and the images are older, but the practical value of this atlas becomes obvious quickly to its user.

"Smoke and Mirrors..."

Like other types of astronomy, viewing the lunar surface provides its own set of rewards and challenges. The contrast and texture of the lunar surface can improve an observer's eye for fine detail. The increased resolution of images through the eyepiece can be a real treat compared to the wisps of deep sky objects. It also has its own difficulties. What seems confusing to the lunar observer is often just the result of what I call, "smoke and mirrors." This simply means that the angle of illumination of sunlight changes the appearance of the entire moon's surface. The old becomes new again, since the same craters and features can take on a new appearance in a matter of hours. A book that would help in this regard, and that is easy to use, is the *Photographic Atlas of the Moon* by Chong, Lim, and Ang. This book features whole moon images for 29 days of the lunar cycle and some images are included for half-days, making it that much more valuable. It includes labeling for features near the terminator and a daily highlights guide as well. This book is neat and concise in its design. I enjoy using it to find mysterious objects I have observed near the terminator that don't look familiar to me.

I hope these quick notes of some of my favorite, lunar resources have encouraged you to sneak a peak of our nearest neighbor. The moon is an interesting story teller, sharing its violent history through both impact and volcanic features.



No Higgs, What Then?

Years ago in the early 1970's my physics Prof. Henry James Donnelly said, "Francis, if you decide to do physics you must get used to one thing, you will be wrong at least half the time in everything you write!" Professor Donnelly died in 1984, sadly never to hear from me how right he was!

I have made much in these articles of the Higgs Boson and the ongoing experiments at CERN toward its 'Hopeful' discovery there and perhaps at the Batavia Illinois FermiLab.

Rumor has it that a new particle has been found at the Tevatron, with a mass of 180 GeV, which is on the heavy side for the standard Higgs but not out of the allowed range. It also says that the excess (ie. the number of hits on the particle detector above what was expected) is 5 standards of deviation in magnitude. This is the usual standard for a new particle (the bumps talked about previously were more like 3 standards of deviation). The excess is apparently occurring in the bottom quark channel of the D0 experiment. Some people have taken this to mean that the new particle is *not* the Standard Model Higgs, which would probably decay to W bosons if it were really 180 GeV. But of course, there's no *real* data available, and so it isn't clear what the new particle's decay chain really is, and most people still speculate that it is, indeed, the Higgs.

But what, I ask if the Higgs is never found and the Higgs field does not exist? Will the standard model disappear with it? We come to crux of it all, "Symmetry Breaking". How, then, did the universe began?

Or did it Began at all? To do good science we must ask these questions and as my dear professor admonished years ago, be wrong once again.

So who has a plan "B" and if there is none what will become of us when Fred Hoyle hands us our dish of Crow?

Good Seeing!

DIRECTIONS TO ORION ACRES

FROM NORTH HAMILTON COUNTY:

From 27 (corridor J) take hwy. 111 to Dunlap, continue through the Sequatchie Valley up the next mountain (Cagle Mountain). When you reach the summit about 5 miles turn LEFT onto hwy. 399 (sign reads 'to Savage Gulf State Park' Stay on 399 until it ends, which will be in Grundy Co. Now make a LEFT onto hwy. 108 South. This goes thru Palmer TN. Continue on 108 up to a higher elevation. When this levels off, turn RIGHT onto Palmer Fire Tower Rd. This is a large open area with possibly trucks loaded with timber for the paper mills. Orion Acres will be on the RIGHT about 8 tenths mile.

FROM INTERSTATE 24 (to Nashville):

Go to the Dunlap/Whitwell exit (#155). This is hwy. 28. Exit right and keep on 28 for about 11 miles, passing Hardee's on your left. Continue through the stoplight and take the next LEFT on Hwy. 108 North. Continue another 11 or so miles. You will see 'Grundy County' sign. Take the next left. This is Palmer Fire Tower Rd. Go 8 tenths of a mile and Orion Acres is on the RIGHT

TELESCOPES WANTED

We want everyone in our club to have access to a great telescope. Our plan is to refurbish telescopes so that we can loan them to astronomers without scopes of their own. If you have a telescope or accessories you are no longer using, please let us have it. We promise someone will use it and treat it with care and respect. Of course you can have a receipt for your tax write-off and every penny is welcome if you would like to donate money so we can buy or fix up a telescope.

Contact Gary Caldwell, Adam Krause or Bill Lord if you have a donation, we will happily come to your door to pick up your unwanted telescope. Sponsorship information will be posted on the web and in the Barnard Star.

BAS WEB SITE
<http://bas.chattanooga.net>

Officers

President.....	Bill Lord
Vice-President.....	David Witt
Secretary.....	Bill Seymour
Treasurer.....	Melinda Lord
STAR Editor.....	Steve Ramey
Webmaster.....	Rod Ruch
Star Party Chairman.....	Victor Rogers
Outreach Coordinator.....	John Mannone
Program Committee Co-Chairs...	John Mannone and Bill Lord
Member-at Large.....	David Witt

August Minutes

The minutes of the July meeting were accepted as written.

President Bill Lord presented the evening speaker, Dr. Douglas Durig, with a special asteroid sample in an attractive plastic transparent container.

Melinda Lord gave the treasurer's report: \$830.47 in the bank account as of July 31, 2009. The Astronomical League dues have been paid. George Bell said that the next edition of the AL publication should be mailed to BAS members soon.

Book reviews or reports on astronomical topics by BAS members are needed for publication in the BARNARD STAR. Thanks to Ronnie Floyd for his review of Star Watch by Philip Harrington, which appeared in the August issue.

Victor Rogers received word from the Tellus Museum that they will not be able to put the BAS Orrery on display.

Bill Seymour gave to Melinda Lord for evaluation a reference for a professional computer program for the cataloging of library books which can be used with PC's. The BAS library continues to grow (Bill recently downsized his household in a move to a new home and donated approximately 60 books on astronomy and space exploration).

Robert Coulter has agreed to be Program Co-Chair with John Mannone, releasing Bill Lord to focus on presidential duties.

Bill and Melinda Lord rented a safety deposit box at Regions Bank for \$40 per year to store valuable BAS items, such as an original document signed by astronauts.

There was discussion about establishing a youth outreach program to bring younger persons into BAS.

Upcoming programs: Sept.—Ed Sunder on Image Processing and Sky Tools; Oct.—John Mannone, Joint Meeting with American Chemical Society at UTC; Nov—Dr. Paul Lewis from Physics and Astronomy Dept., UTK; Dec.—Christmas Party at St. Peters; Jan.—Ronnie Floyd on Calibration/Collimation of Telescopes.

Ed Sunder has received an inquiry about possibly conducting a multi-school star party.

Home School organization in Sale Creek, grades 1-6, is interested in having a star party.

John Mannone has received an invitation as Solar System Ambassador to give astronomy presentations in Meigs County public schools.

Respectfully submitted by Bill Seymour,
 BAS Secretary..

REMINDER- Your annual BAS dues of are now due on the anniversary of your membership in accordance with the adopted amendment to the by-laws. The due date appears below your name on the address on the front of this newsletter. If your expiration date says "Overdue" or if you don't agree with the date shown, contact Melinda Lord to resolve discrepancies. The current dues rates are as follows: REGULAR \$15.00, REGULAR ASSOCIATE \$7.00, JUNIOR \$8.00, JUNIOR ASSOCIATE \$5.00. Your Sky & Telescope or Astronomy subscription will continue to be handled as in the past. When you receive your subscription reminder card, submit it to:

Melinda Lord
 354 N West Cir NW
 Cleveland, TN 37312-1011

Along with the group subscription rate of \$32.95 for Sky and Telescope, or \$34.00 for Astronomy. **Note the increased rate for Astronomy. This was effective July 31, 2005**

DEADLINE- All articles and other materials for publication in the next STAR are due no later than Wednesday, September 30th. The following media are acceptable: hard copy, disk (IBM), video tape (VHS), prints, or e-mail to bas@chattanooga.net or stramey@catt.com and attach a file or mail to:

Steve Ramey
 109 Sioux Trail
 Ringgold GA 30736

PHOTOGRAPHS ARE ALSO ACCEPTABLE.

BARNARD ASTRONOMICAL SOCIETY MEMBERSHIP LIST

Adkins, Tom	3937 Forest Highland, Chattanooga, TN 37415	(423) 877-4639
Bell, George	1948 Light Tower Cir., Hixson, TN 37343	(423) 842-7757
Caldwell, Dr. Gary B.	6034 Browntown Rd., Chattanooga, TN 37415	(423) 875-6668
Cioni, Philip T.	2018 River Bluff Drive, Hixson, TN 37343	(423) 847-8687
Clarke, Kathie W.	1022 Canyon Rim Dr. Soddy-Daisy, TN 37379	(423) 451-0006
Cordell, Francis M, Sr	1018 Holly Ave, South Pittsburg, TN 37380	(423) 837-7403
Coulter, Robert Bruce	20 Holiday Lane, Chattanooga TN 37415	(423) 877-0953
Cross, Jim	571 Kashaya Ln, Soddy Daisy, TN 37379	(423) 322-2862
Cummings, V. L. (Lee)	6636 Shallowford Rd., Chattanooga TN 37421	(423) 855-0303
D'Agostono, Joe	205 Stone Creek Rd. Rising Fawn, GA 30738	(706) 398-2729
Delay, Sam	602 Watts Ave. Chattanooga TN 37421	(423) 892-0109
Delay, Sam, J. L.	6837 Hickory Lane Chattanooga TN 37421	(423) 892-7376
Drake, Brian	535 Pierce Drive Ringgold GA 30736	(706) 861-1464
Dube, Richard L.	6018 Mill Rd. Hixson TN 37343	(423) 877-0787
Durig, Douglas T.	735 University Ave, SPO 1291, Sewanee, TN 37383	(931) 639-1149
Floyd, Ronny	1053 Harvest Knoll, Soddy Daisy, TN 37379	(423) 847-1707
Gartenhaus, Paul	338 Chambers Ln, Ringgold, GA 30736	(706) 935-8550
Gmeiner, Andy	651 Burgertown Rd, Copperhill, TN 37317	(423) 496-3377
Goswick, Jeffery	114 Heritage Dr NW Adairsville, GA 30103	(770) 877-3016
Graziadei, Camille	167 Crystal Ter SE, Cleveland, TN 37323	(423) 472-1656
Graziadei, Charles	167 Crystal Ter SE, Cleveland, TN 37323	(423) 472-1656
Hanon, David	3762 Three Notch Rd., Ringgold, GA 30736	(706) 937-3593
Hanon, Linda	3762 Three Notch Rd., Ringgold, GA 30736	(706) 937-3593
Haynes Bryant	5007 Browntown Rd., Chattanooga, TN 37415	(423) 876-7359
Hereford, Kenneth M.	2440 Haven Cove, Chattanooga, TN 37421	(423) 892-2123
Highlander, Gilbert M.	914 Wesley Drive, Hixson, TN 37343	(423) 842-8192
Krause, Adam	5702 Taggart Drive Hixson TN 37343	(423) 877-9341
Lauck, James	PO Box 755, Datil, NM 87821	(575) 772-5164
Lord, Bill	354 N West Circle NW, Cleveland, TN 37312	(423) 478-9043
Lord, Melinda	354 N West Circle NW, Cleveland, TN 37312	(423) 478-9043
Mannone, John	1574 County Rd. 250, Niota TN 37826	(423) 337-2197
Mansfield, Joseph	305 Whitehall Rd Chattanooga, TN 37405	(615) 469-2396
Marlowe, Robert L.	535 Elinor St. Chattanooga, TN 37405	(423) 266-9316
McConnell, Ralph	3538 Valley High Lane, Chattanooga, TN 37415	(423) 238-4171
McKnight, Charles	1061 Blanton Dr. East Ridge TN 37412	(423) 894-2705
Mills Dr. Buell B.	435 Meadow Lark Ln. Palm Harbor FL 34683	
Michalski, Robert A.	9011 Quail Run Dr. Chattanooga, TN 37421	(423) 894-9203
Michalski, Georgia S	9011 Quail Run Dr. Chattanooga, TN 37421	(423) 894-9203
Mozingo, Thomas	6409 Ware Branch Cove Dr Harrison, TN 37341	(423) 344-9545
Murphy, Thomas W. Jr.	UCSD, 9500 Gilman Dr., LaJolla, CA 92093	
Newton, Jeff	122 Pleasant Hill Rd., Lookout Mtn., GA 30750	(706) 398-3338
Paik, Karen	9210 Hidden Mtn. Dr., Chattanooga TN 37421	(423) 954-1498
Politte, John	3912 Reaching Way Soddy Daisy TN 37379	(423) 332-7186
Ramey, Steve	109 Sioux Tr. Ringgold, GA 30736	(706) 937-4528
Ramey, Tedra	109 Sioux Tr. Ringgold, GA 30736	(706) 937-4528
Rhoton, Alex II	204 Windmere Dr. Chattanooga TN 37411	(423) 622-8288
Richardson, Kevin	9977 Deer Ridge Drive, Ooltewah TN 37363	
Rogers, Victor	11047 Old Hotwater Road, Soddy-Daisy, TN 37379	(423) 332-6445
Ruch, Rod	11819 Thatch Rd. Harrison, TN 37341	(423) 344-4513
Sajwaj, Thomas	1703 Carroll Lane Chattanooga TN 37405	(423) 240-5231
Seymour, Bill	1922 Preswood Drive Hixson TN 37343	(423) 870-8552
Smith, Jr., Duane	5555 Hixson Pike, Apt. 435 Hixson TN 37343	
Spence, George W.	400 N. Castle Rd., Dalton, GA 30720	(706) 226-3092
Spurgeon, Greg	P. O. Box 819, Soddy Daisy, TN 37384	(423) 332-8301
Sullivan, Stephen	2008 Blythe Ave, Cleveland, TN 37311	(423) 303-8021
Sunder, Edward W.	267 Hidden Oaks Drive, Flintstone, GA 30725	(706) 820-1738
Thompson, Bobby	24 Martin Clement Dr, Chickamauga, GA 30707	(706) 375-7415
Trayer, David M.	1915 Lake Peninsula Dr., Hixson, TN 37343	(423) 843-1521
Tomazewski, Tina	20 Holiday Ln., Chattanooga TN 37415	(423) 877-0953
Watson, George R.	518 Grand Mountain Drive, Chattanooga TN 37421	(423) 495-3152
Westman, Carl	802 Susan Carol Lane, Chattanooga, TN 37421	(423) 954-1939
Witt, David	4503 Cove Lane, Chattanooga TN 37415	(423) 877-6505



ORION ACRES

Once a month, weather permitting, members of the Barnard Astronomical Society gather at Orion Acres to marvel at the beauty of the heavens, to share the brotherhood that comes from the numinary experience of observing the countless wonders of the nighttime sky.

Members of the BAS encourage everyone who's interested in participating in the "star parties" to contact the association to verify dates, times and directions. (Orion Acres is a dark sky observing site located near Palmer, TN on the Cumberland Plateau, about 1.5 hours driving time from Chattanooga.)

For more informaiton see The Barnard Astronomical Society web site: bas.chattanooga.net.

Orion Acres — "Where heaven meets the earth"

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Members of the Barnard Astronomical Society set up for one of the club's most memorable star parties, June 16-17, 2007. Excellent "seeing" and clement temperatures were enjoyed by all.