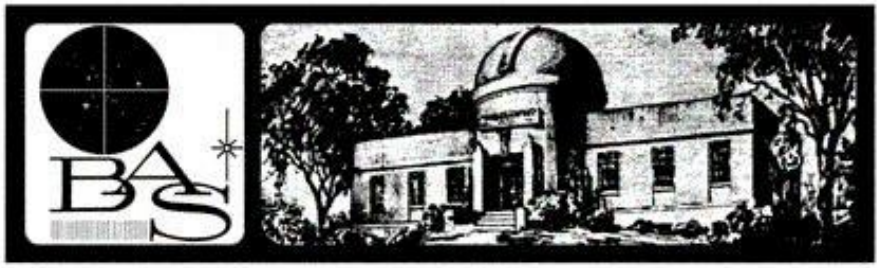

the BARNARD STAR

A PUBLICATION OF THE
BARNARD ASTRONOMICAL SOCIETY

VOL 39 NO 12 **December 2010** **PUBLISHED MONTHLY**

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SPECIAL DECEMBER ISSUE: The newsletter is a little late getting to you this month. By the time we received notice of the location for the Christmas party, it was too late to get it mailed before the party. I have created a special December issue anyway. The January issue will go out at the normal time, the first of the week before the January meeting. Here's hoping you and all of your families have a Merry Christmas.

Planned Activities to Enjoy The Wonders of Astronomy—

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 Home Observatories

For more information, contact Tom Mozingo, or Victor Rogers.

Astrophotography

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

Amateur Radio Astronomy Using Specialized Antennas, Receivers, and Computer Software to Receive Signals Generated by Natural Processes from The Sun, Jupiter, Galactic Hydrogen Clouds, and Other Cosmic Sources

For more information, contact Bill Seymour or John Mannone; and local Consultants Dr. David Fields or Dick Castle.

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

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

BAS NOVEMBER MEETING

On Thursday, October 11th, eleven BAS members accompanied by visitors John and Samuel Sunder came to the Jones Observatory to hear Tom Mozingo give a very interesting presentation entitled, "The Nature of Lunar Impact Flashes and Associated Equipment To View Them."

In anticipation of the future establishment of manned lunar bases, NASA is very interested in the frequency and severity of meteorite collisions with the Earth's Moon, which are most frequent during meteor showers on Earth. At his home observatory in North Hamilton County, Tom hopes to become part of an international monitoring network where telescopes equipped with special detection equipment observe the Moon for very faint impact flashes over extended periods of time. Tom showed the modifications to his 11 inch Celestron telescope, including a special detector which replaces the secondary mirror. A CCD camera observes at the dark area of the Moon along the terminator line where a burst of visible and/or infrared radiation would be most noticeable.

The Marshall Spaceflight Center in Huntsville, AL is the NASA Center for studying lunar impacts. In fact, NASA has placed a remotely operated telescope for this purpose at the Walker County Science Center near Lafayette, GA. BAS members were given a tour of this equipment by a NASA Scientist during a field trip last year.

For persons who might want more information on this topic, Tom showed the definitive text, Lunar Meteorite Impacts and How to Observe Them by Brian Cudnik.

Thanks, Tom for further educating BAS members on this subject.

BAS DECEMBER MEETING

In keeping with to our tradition, the December Christmas party was held on December 4th at the St. Elmo Presbyterian Church. Because the location was found at the last minute, there was no time to get the December issue of the Star out in time to announce it. I have decided to go ahead and produce this abbreviated issue anyway, because it gives me a chance to join all of the officers of the BAS in wishing every one of our readers a Merry Christmas and a happy new year.

Steve Ramey, Editor

The Basics
The Standard Model of Particle Physics

Astronomers typically deal with the very, very large—galaxies and super-clusters and millions of light years. However, persons who have an interest in comprehending the physical universe must also develop an awareness of the very small, submicroscopic aspects of matter. This is the invisible subatomic world whose particles and interactions form the foundation of all matter and physical processes—both here on earth and presumably governed by the same laws of physics deep in outer space.

Many decades ago when students took physical science courses in school, a simple model of the atom taught that the proton, neutron, and electron were the smallest parts of matter. Now, according to 21st century physics, we can now observe the universe at a much smaller level: the world is theorized to be made from 12 fundamental particles called fermions—six quarks and six leptons. All of the hundreds of known particles, including protons, neutrons, and electrons are combinations of these fermions. In our everyday life, we see only what's termed Generation I fermions. These are electrons and the up and down quarks (which combine to form neutrons and protons). Fermions in Generation II and III tend to decay into lower generations, and when a heavy lepton (an electron, a muon, or tau) decays, one of the by-products is a correspondingly named neutrino. Matter particles interact by exchanging force particles, collectively called bosons, shown at the bottom of the diagram. At present, while the Standard Model can explain how the force particles carry the strong, electromagnetic, and weak forces, it can't explain gravity. All particles have a particular mass, electric charge, and spin. Each particle has a corresponding antimatter particle with the same mass and spin but a different electric charge. When a particle meets its anti-particle, the two annihilate in a flash of energy.

A particle changes its spin, or handedness, by interacting with another particle (yet undetected) called the Higgs Boson. In the Standard Model, neutrinos and anti-neutrinos come only in left-handed varieties, so they are massless. But it now appears that neutrinos have mass, so right-handed neutrinos must exist. Somewhere.

Leptons		**Quarks**	
GENERATION			
I.	e	Ve	d	u
	Electron	Elect. Neutrino	Down Quark	Up Quark
II.	u	Vu	s	c
	Muon	Muon Neutrino	Str.Quark	Chm Quark
II.	T	Vt	b	t
	Tau Particle	Tau Neutrino	Bottm Quark	Top Quark

FORCE CARRIERS			
w	z	g	y
W boson	Z boson	Gluon	Photon

Ref: COSMOS; Astronomy Magazine Collector's Edition, 2006

CERN Physicists See Parallel Universe Possibilities

Scientists investigating the origins of the universe are hoping the vast underground Large Hadron Collider (LHC) at CERN near Geneva, Switzerland, will lead to new discoveries that could completely change existing views of how the cosmos works. "Parallel universes, unknown forms of matter, extra dimensions...
These are not the stuff of cheap science fiction but very concrete physics theories that scientists are trying to confirm with the LHC and other experiments," Reuters quoted the international research center's Theory Group as saying in CERN's staff-targeted Bulletin this month.

The Theory Group is tasked with contemplating what might exist in the universe beyond the reach of telescopes. As particles are collided in the LHC complex at increasingly high energies, they should be able to be brought into computerized view, the physicists said.

The hundreds of scientists working at CERN have grown optimistic after the $10 billion LHC along the border of France and Switzerland met its goals this year.

CERN Director-General Rolf Heuer told his staff last weekend that as of mid-October, protons were being collided along the 16.8-mile underground ring at the rate of 5 million collisions per second. That achievement was two weeks ahead of schedule, he said.

If this progress continues, collisions will take place at a rate producing one "inverse femtobarn" of information by next year, providing vast amounts of data for scientists to analyze.

The head-on collisions occur at roughly the speed of light, and recreate events that took place a tiny fraction of a second after the "Big Bang" 13.7 billion years ago, in which the known universe was brought into
existence. Today, just 4 percent of that universe is known because the rest consists of invisible dark matter and dark energy.

Billions of particles flying off from each LHC collision are tracked at four CERN detectors to determine when and how they come together and what shapes they take. The CERN scientists say this data could provide clear signs of dimensions beyond length, width, depth and time because at such high energy particles could be tracked disappearing and then reappearing into one of the traditional four dimensions.

Parallel universes could also be hidden within these extra dimensions, the scientists theorize, but only in a gravitational variety in which light cannot be propagated, making it virtually impossible to investigate.

Merry Christmas and Good Seeing!

"Literary Art Sometimes Blends with Science"

BAS member John Mannone continues to work on his special creative projects which connect science and the fine arts. He is the new poetry editor of Silver Blade: The Quarterly Journal of Fantasy Fiction, and has received two nominations for the Pushcart Prize in Poetry for 2010. Both nominations are for literary fantasy cross-genre poems: "Scales of Ice, Rails of Fire" (Liquid Imagination, Spring 2010, Issue 6); and "Amberlee's Ocean," which introduces a collection of short stories, Yarns for Our Youth (ed. Chris Bartholomew, Static Movement, August 2010).

John also received a Pushcart nomination for 2009 for "Hauntings" (Inglis House Poetry Contest) about a U.S. Vet coming home disabled from the Iraq War. And, he was nominated for the 2010 Rhysling award ("Layers of Man," Liquid Imagination, Issue 4, Fall 2009 for the best SciFi/Fantasy/Horror.)

Recently, he broke through a very tough professional market, Abyss & Apex Speculative Fiction Magazine with his astronomy-related poem, "Extinction Level Event." It deals with the fate of civilization on a planet whose sun is becoming a red giant—like ours will be in 5 billion years. (See http://www.abyssandapex.com/201010-extinction.html)

His poetry and short fiction appear in numerous literary and speculative fiction journals such as Skive, Pyrene's Fountain, Paper Crow, and Astropoetica. His most recent project, Nightsongs, is a collection of poems and technical commentary on the preservation of dark skies and to increase awareness of light pollution. It will be a multi-media format with collaborative art and music to enhance the literary experience. The target release date is Spring 2011. (please contact him if you want to help with this project—jmannone@gmail.com). His blog on the art and craft of poetry is at jcmannone.wordpress.com.

John is a nuclear consultant and physics professor. When he isn't looking at the stars, he is creating dishes in the kitchen, which he considers another form of poetry.

Congratulations, John, on these impressive interdisciplinary achievements!

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. I f 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 or Adam Krause 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…….....Robert Coulter
Vice-President……..……Ed Sunder
Secretary……...…….....Bill Seymour
Treasurer……..…….....David Witt
STAR Editor…….…….....Steve Ramey
Webmaster……..…...…….Ed Sunder
Star Party Chairman……..……...…….....Victor Rogers
Outreach Coordinator…….……...John Mannone
Program Committee Chair……..……..Tom Atkins
Member-at Large…….……..……..……David Witt

November Minutes

President Robert Coulter called the meeting to order

Treasurer David Witt reported a checking account balance on October 29th of $1,230.68.

The BAS officers drafted and signed a letter to Bobby Thompson authorizing the release of BAS property stored at his house. Tom Mozingo will deliver the letter and pick up the items for temporary storage at his house.

Ed Sunder will make arrangements for the December BAS Christmas Party.

Program Chair Tom Adkins needs ideas and volunteers for the January and February, 2011 BAS programs.

Discussion was held concerning possible Star Parties for schools in late Winter or Spring. Per George Bell, schools already expressing an interest are Thrasher Elementary and Daisy Elementary. These events should be scheduled at least one month in advance.

Tom Mozingo, Tom Adkins, and Gary Caldwell discussed setting up Sidewalk Astronomy sessions on the North end of the Walnut Bridge on a Friday night.

David Witt discussed the current process of publishing THE BARNARD STAR. Steve Ramey does not have pdf. conversion software to unzip a pdf. file., so he sends the BARNARD STAR to Ed Sunder who unzips it.

Ed Sunder is working with George Bell, Astronomical League liaison, to verify Ed's Messier Observing List of all 104 objects. Congratulations to Ed on this viewing accomplishment !

Tom Adkins and David Witt discussed the arrangements (selection committee and plaque) for the annual Lewellan Evans Award. This award for outstanding achievement by a BAS member will be presented at the Christmas Party.

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 David Witt 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:

David Witt
4503 Cove Lane
Chattanooga, TN 37415-2306

Along with the group subscription rate of $32.95 for a year of Sky and Telescope, and/or $34.00 for a year of Astronomy, or $60.00 for two years of Astronomy.

DEADLINE- All articles and other materials for publication in the next STAR are due no later than Wednesday, January 5th. Email any media or articles to bas@chattanooga.net or stramey@catt.com and attach a file or mail to:

Steve Ramey
8007 Hamilton Mill Drive
Chattanooga, TN 37421

PHOTOGRAPHS ARE ALSO ACCEPTABLE.

BARNARD ASTRONOMICAL SOCIETY MEMBERSHIP LIST

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Clark, 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
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Cross, Jim	571 Kashaya Ln, Soddy Daisy, TN 37379	(423) 322-2862
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Graziadei, Charles	167 Crystal Ter SE, Cleveland, TN 37323	(423) 472-1656
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Hanon, Linda	3762 Three Notch Rd., Ringgold, GA 30736	(706) 937-3593
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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
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Murphy, Thomas W.Jr.	UCSD, 9500 Gilman Dr., LaJolla, CA 92093	
Newton, Jeff	122 Pleasant Hill Rd., Lookout Mtn., GA 30750	(706) 398-3338
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Politte, John	3912 Reaching Way Soddy Daisy TN 37379	(423) 332-7186
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Ramey, Tedra	8007 Hamilton Mill Dr., Chattanooga, TN 37321	(423) 400-5507
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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
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Smith, Richard B.	522 Forrester White Dr., Hixson, TN 37343	(423) 870-3981
Spence, George W.	400 N. Castle Rd., Dalton,GA 30720	(706)-226-3092
Sullivan, Stephen	2008 Blythe Ave, Cleveland, TN 37311	(423) 244-7217
Sunder, Edward W.	267 Hidden Oaks Drive, Flintstone, GA 30725	(706) 820-1738
Teas, Michael Jeff	9122 Hundley Rd, Chattanooga, TN 37416	(423) 593-3932
Trayer, David M.	1915 Lake Peninsula Dr., Hixson, TN 37343	(423) 843-1521
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Westman, Carl	802 Susan Carol Lane, Chattanooga, TN 37421	(423) 954-1939
Wilson, Charles	4201 Gann Store Rd, Hixson, TN 37343	(423) 877-5042
Witt, David	4503 Cove Lane, Chattanooga TN 37415	(423) 877-6505

Last Name	First Name	Membership Anniversary Month (Pay Dues in this Month)
Adkins	Tom	June
Bell	George	June
Caldwell	Dr. Gary B.	May
Childress	Chris	March
Cioni	Philip T.	August
Clarke	Kathie W.	May
Cordell	Francis M., Sr.	June
Coulter	Robert Bruce	June
Cross	Jim	June
Cummings	V. L. (Lee)	January
D'Agostono	Joe	January
Delay	Sam, J. L.	January
Drake	Brian	May
Dube	Richard L.	December
Durig	Douglas T.	August
Floyd	Ronny	June
Gartenhaus	Paul	August
Gmeiner	Andy	August
Goswick	Jeffery	September
Grafton	Brad	January
Grafton	William	January
Graziadei	Charles	December
Graziadei	Camille	December
Hanon	David	Novermber
Hanon	Linda	November
Haynes	Bryant	July
Hereford	Kenneth M.	June
Krause	Adam	July
Lauck	James	July
Liechty	Jason	January
Lord	Bill	May
Lord	Melinda	May
Mannone	John	May
Mansfield	Joseph	August
Marlowe	Robert L.	October
McConnell	Ralph	March
McKnight	Charles	January
Mills	Dr. Buell B.	September
Michalski	Robert A.	September
Michalski	Georgia S.	September
Mozingo	Thomas	June
Newton	Jeff	August
Parashak	Paul	August
Politte	John	August
Ramey	Steve	June
Ramey	Tedra	June
Rhoton	Alex II	November
Richardson	Kevin	August
Rogers	Victor	June
Ruch	Rod	September
Saiwai	Thomas	June
Seymour	Bill	March
Smith, Jr.	Duane	November
Smith	Richard B.	August
Spence	George W.	January
Sullivan	Stephen	August
Sunder	Edward W.	May
Teas	Michael "Jeff"	March
Traver	David M.	August
Tomazewski	Tina	June
Watson	George R.	October
Westman	Carl	May
Wilson	Charles	November
Witt	David	June