Bays Mountain Astronomy Club

☞*Next Meeting: Sep. 7*☜

REFLECTIONS *BY WILLIAM TROXEL*

The stars were bright at the August 3rd meeting, at least inside the Discovery Theater. One of the brighter stars was our keynote speaker Tom Rutherford. Thank you Tom for presenting a program that engaged, informed and taught us. Tom's program was titled "The Color of Stars." Tom showed how the color of stars reflect their age and temperature. Tom also showed that a lot of the stars we know are in the same class, an important distinction to astronomy in the area of research of systems that could have life.

The brightest stars were you, members. As Tom spoke, I watched the reaction of your expressions showing you were as engaged in the topic as I. Before Tom's program, I introduced a new part of the meeting where we want to bring news in astronomy, star parties, and star parties from other area clubs. My hope is that we can get the bugs worked out so this will only be about 10 minutes of our time each month. I'm still hoping more members will sign up to do some of the Astro news.

After the questions for our speaker, we moved into the business part of our meeting. Brad Dunn was awarded a plaque for his service as club chair for the last two years. Many thanks go to Brad for all his hard work. Next, our StarFest chairman Brad Dunn, gave an update on the upcoming event. He stated that all the keynote speakers and meals have been set. Registration forms should now be available to everyone. More details are available on the club part of the Park's website. I want to encourage each BMAC member to register and volunteer to do a small task to help this great program out. Check out the web site for details about the line up of speakers and topics. The event is going to be wonderful. Event registration packets are now available. Go to http://www.baysmountain.com/astronomy/astronomy-club/ and click on the StarFest tab for all sorts of information. Download the registration document which includes all the details. Brad will keep us updated each month. We ended our meeting with snacks and conversations. Because of overcast skies we did not do any star watching.

Calendar

Special Events

StarFest 2012 Oct. 12-14. Registration is open until Sept. 21st for this annual event of astronomy, activities, keynote speakers, food and more. Please visit the astro club section of the Park's website for all the details and cost.

SunWatch

Every Sat. & Sun., 3 - 3:30 p.m.,

Mar. - Oct., weather permitting.

BMACers are always welcome to help.

BMAC Meetings

7 p.m., Discovery Theater

Sept. 7 Anthony Cavallucci from the National Weather Service will speak about weather and viewing sky conditions.

Oct. 5 6 p.m.! Observatory Cleanup. Dr. Joseph Pollock from Appy State will speak about "Specifically Paired & Binary Asteroids."

Nov. 2 George Privon from UVa will speak on galaxy collisions and research for amateurs.

Dec. 7 Dr. Richard Ignace from ETSU will speak about "Hot Stars."

I wanted to remind you about September's keynote speaker. We will be welcoming Anthony Cavallucci from the National Weather Service in Morristown, TN. Anthony will be talking about understanding basic weather and when to get the best view of the night sky using the data from the web site, broadcasted forecast or weather station data.

The September meeting will be on Friday the 7th starting at 7 p.m. Please try to come out and hear Anthony. I think it will be a very interesting meeting. Brandon Stroupe will be presenting the Astro news section.

I would also like to ask you for some help. I am seeking names and contact information for speakers with backgrounds in Solar System research. I would like to have some

(Continued on page 6)

EYE TO THE SKY *BY BOB SMITH*

Bright Saturn and Mars are cavorting in the western sky as the September sky darkens. Brilliant Jupiter and Venus shine in the pre-dawn sky and a planet that isn't too familiar hangs in a dim part of the midnight sky all month. Along with the cooler, dryer weather and a couple of bright asteroids—September is just about a perfect month for observing.

Saturn is becoming fairly low in the west as twilight begins on these early fall evenings. At magnitude 0.8, the Ringed World is distinctive about 10° above the horizon and a little higher than 1st magnitude Spica. Saturn slides behind the Sun in late October and will return to the morning sky by Christmas. This month, you will be looking through much more of the Earth's atmosphere, so really sharp views will be hard to find. If a good, clear, steady night presents itself, use your time at the eyepiece to take in the rings and dim moons of the planet. A thin, crescent Moon will be close to Saturn on the 18th and 19th so you might plan a photo one of those nights.

Look about 10° south of the Saturn-Spica pair to locate the fainter (mag 1.2) Mars. The tiny planet is growing dimmer as earth races ahead of the Red Planet but it will be visible long after Saturn is gone from the scene. Mars is about to move quickly eastward and actually climb higher in the evening sky. It starts off September in eastern Virgo, but by the end of the month Mars will race eastward into Libra and then Scorpius. This retrograde motion is what always puzzled ancient astronomers about Mars' orbit. It has to do with our perspective of the fairly close planet and our own orbit through the Solar System. By now the Curiosity rover will be starting to move around Gale Crater and make some new observations and discoveries. Be sure to catch the science briefings that come on the NASA-TV web site and are replayed usually about 7:00 or 8:00 p.m. every night.

At magnitude 5.7, the outer gas giant planet Uranus is a little hard to locate at first try. This month, the planet is at opposition and visible almost all night in the dim constellation Pisces. It's usually best to start off with binoculars and locate the general area of this optically small planet then move over to your telescope. Use a good chart to locate 44 Piscium in the area between Pisces and Cetus. Uranus is within one degree of this magnitude 6 star and the two appear as near twins through binoculars. Uranus is east of the star and through a medium (6-8") scope, the tiny 4" face of the planet can be spied with high magnification. Consider that the light you are seeing has traveled 1.77 billion miles to your eye.

If you're observing Uranus through your telescope, you might want to try for the nearby asteroid 2 Pallas. The small space rock is within a couple degrees of Uranus' location in Pisces and is at opposition this month. It is magnitude 9 so it must be tracked down over a couple of nights with drawings of the area made to determine which of the faint "stars" has moved. There is always a sense of accomplishment when you track down these elusive targets.

If you locate Pallas you might try also for the nearby 11Parthenope. This small (90 miles) rock is also 9th magnitude and very close to Delta Aquarii. It is at opposition this month and closest to Earth. Parthenope passes about a degree north of Tau Aquarii in the middle of the month. Locate a good finder chart online (try Heavens-Above) and give it a whirl.

If you rise early in September and the sky is still fairly dark, go out and take in the spectacle of brilliant Jupiter near the Hyades in Taurus and the even brighter Venus a little lower to the horizon. Old Jove is magnitude -2.4 and stands over the Hyades all month which could make a wonderful astro-photo if you catch a clear morning. The planet is approaching Earth in its orbit and increases in size from 39" to 43" this month. The belts and zones and the four bright satellites always amaze the telescopic viewer. The last quarter Moon is less than a degree south of Jupiter the morning of the 8th.

Even more prominent is the Jewel of the Sky which is Venus. It is its customary -4.3 magnitude among the stars of eastern Gemini as the month starts. By the 12th, it has moved within 3° of the Beehive cluster in Cancer and also on that morning the thin crescent Moon is only 4° southwest of Venus. Over the next two mornings, Venus passes within 3° of the Beehive. This should be spectacular through binoculars. Through the month, the phase of Venus increases from 58 to 70% illuminated as the size of the disk actually shrinks a little.

(Continued on page 6)

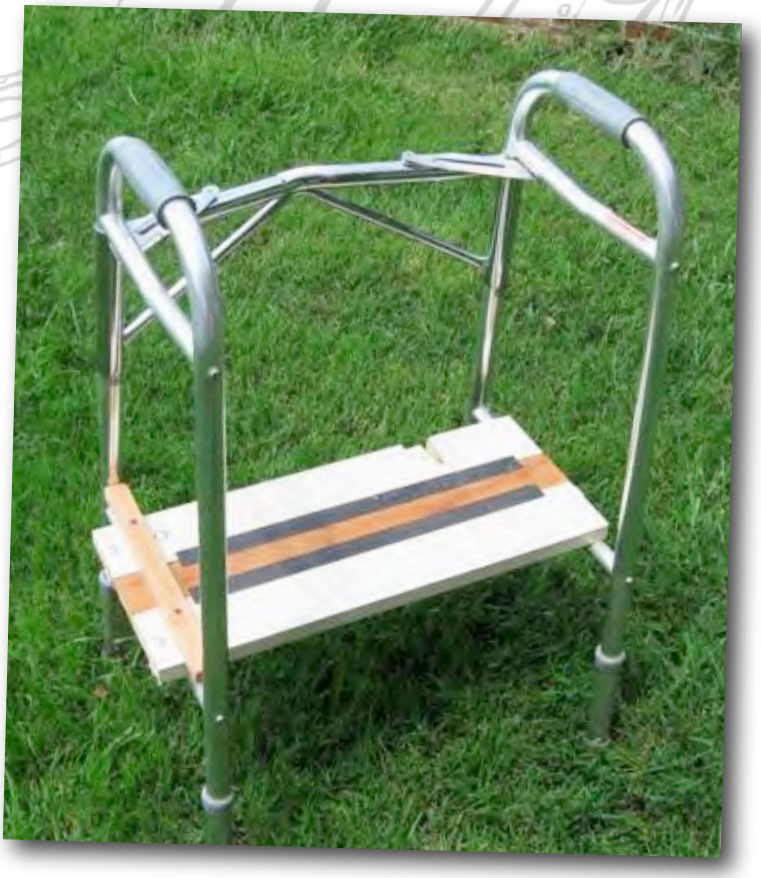
STAR STUFF *BY TERRY ALFORD*

A few years ago, I handed out flyers in the neighborhood for an observing session in my yard. It was a night that featured a first quarter Moon and a couple of bright planets. For kids to reach the eyepiece of my scope I got out a smallish stepladder. This worked OK but was far from perfect. The kids would almost always reach out and grab the scope and knock it off the target.

Something better was needed, but what? Whatever it turned out to be had to meet my requirements of being effective, easily transportable and cheap. Not necessarily in that order, either.

Looking around the basement I came across an aluminum walker that had belonged to a former family member. Using a scrap piece of plywood and some pipe strapping and various nuts and bolts on hand, I rather rapidly fashioned a "step" for the walker. In use, the step is 14 inches off the ground. The rubber-covered handles are 19 inches above the step. This is just about perfect for kids. It is easy to say to a kid "Just step up here and hold onto the handles."

After use, the walker folds up for storage or transportation. It is both lightweight and compact when folded up. Note the strips of stair tread grip tape. That came from leftovers when I made a "Denver Observing Chair" a few years earlier. All pieces and parts for this project were on hand. Looks like all of my requirements were met.



With Thanks

James B. "Jim" Faris passed away a couple of months ago. Some of us "old timers" remember Jim and what he did for Bays Mountain. Back in the days before there was even a Bays Mountain Astronomy Club, Jim volunteered to help develop programs for the Planetarium. There were several guys in the "Friends of the Planetarium" group. Most of them seemed to share a love for both astronomy and ham radio operating.

If I remember correctly, Jim was one of the first members of BMAC. After a while, it seemed he stopped coming to meetings regularly but kept his passion for astronomy. Jim and I stayed in touch and swapped and sold various pieces of astro gear over the years. Jim even re-joined the club earlier this year.

Jim had told his wife, Patty, that in the event of his death, he wanted his telescopes and eyepieces to be donated to our club. Recently, Patty called me and asked if I could take the donated equipment to the Park. I was happy to do that. Among the pieces of gear Jim had donated were several TeleVue Plössl eyepieces, two small telescopes, a Wil Tirion Sky Atlas 2000, a Bogen tripod and several other items related to astronomy and photography.

Thanks Jim and Patty!

[Ed.: I would like to thank Jim and Patty as well. Their donation will be quite useful in the club's public observing programming. Making the stars within reach.]

HAPPY BIRTHDAY MARS GLOBAL SURVEYOR *BY ROBIN BYRNE*

This month we celebrate the accomplishments of a spacecraft that exceeded expectations. Launched in November of 1996, it was on September 11, 1997 that Mars Global Surveyor (MGS) arrived at Mars and entered into orbit. This was the first U.S. spacecraft to successfully visit Mars in 20 years.

Placed in a polar orbit around Mars, MGS was well-positioned to map out the entire planet, one north-south strip at a time. Initially, the orbit was highly elliptical, with a closest approach of 163 miles, and farthest distance of 33,570 miles. Using aerobraking (allowing the drag from Mars' atmosphere to slow the spacecraft down), MGS ultimately achieved an orbit that ranged from 68 to 280 miles each orbit, circling the planet in 2 hours. It was also placed so that each photographic pass occurred at 2 p.m. local time, resulting in every surface image having the same lighting conditions.

The MGS mission had four main questions it hoped to answer: did life ever exist on Mars?, what is the climate of Mars?, what is the geology of Mars?, and what information do we need to send people to Mars? Although originally a 2-year mission, due to extensions for an unprecedented total of 9 years 52 days of operation, the answers found were more than had been hoped for.

One of the most exciting discoveries occurred due to the extended time around Mars. Because this allowed the opportunity to view the same features multiple times, over the course of many years, MGS was able to show short-term changes to the surface of Mars. One case was a crater imaged in 1999, and then in 2005. The latter image showed streaks down the crater wall not there in the first image. Could these streaks be evidence for liquid water below the surface of Mars that seeped out through the crater wall?

More evidence for Mars' watery past came in the discovery of hematite. This mineral forms in the presence of water. This finding helped determine where the Mars rover Opportunity would land, so that it could study the hematite directly. MGS also found the remnants of Mars' past magnetic field, which would have made the planet more suitable for life in the past. Not only did MGS find evidence for long-range planet-wide changes, but also found that Mars appears to be experiences climate change measurable over the few years in orbit. In particular, the amount of carbon dioxide present in the south pole's permanent ice cap decreased 3 Martian years in a row, suggesting increasing temperatures. Short-term weather was also studied. MGS studied how the winds on Mars form intricate features in sand dunes, and imaged streaks on the surface created by dust devils.

Mars Global Surveyor also performed a secondary duty not originally planned. The Mars Exploration Rovers (MER's), Spirit and Opportunity, landed on Mars in 2003 while MGS was still operational. This allowed MGS to act as a data relay station for the MER's for part of their mission. MGS even photographed Spirit on the surface of Mars and the tracks it left over its first 85 days on Mars. Mars Global Surveyor came to an end ahead of its time, even for a spacecraft that had already outlived its original lifespan. Due to a series of programming errors, MGS moved the solar array too far and thought its gimbals were malfunctioning. To compensate, it used its gyros to rotate the entire spacecraft in order to point the solar panels back toward the Sun. In the process, it also exposed its last functional battery to the Sun's heat. This caused the battery to overheat and lose power. On November 2, 2006, MGS sent its last message to Earth.

(Continued on page 6)

NASA SPACE PLACE

A Brand New Age: Queue Observing at Mt. Paranal

By Dr. Marc J. Kuchner

First, a caravan of white observatory cars arrives, winding up the narrow road to the 2600-m- (-8500-foot-) high summit. Then the shutters around the domes open, and rays from the setting sun alight on colossal mirrors and metal struts. It's the beginning of another busy night at Mt. Paranal, Chile, where I am learning about new, more efficient ways of managing a modern observatory.

I stepped into the observatory's control room to soak up some of the new, unfamiliar culture. Here, under florescent lights and drop ceilings are banks of computer screens, one bank to control each of the four big telescopes on the mountaintop and a few others too. At each bank sits two people, a telescope operator and an astronomer.

The layout of this workspace was not unfamiliar to me. But the way these Mt. Paranal astronomers work certainly was. When I was cutting my teeth at Mt. Palomar observatory in California, I would only go to the telescope to take my own data. In stark contrast. everyone observing at Mt. Paranal tonight is taking data for someone else.

The Mt. Paranal astronomers each spend 105 nights a year here on the mountain performing various duties, including taking data for other astronomers. The latter, they call "executing the queue." Headquarters in Germany decides what parts of the sky will have priority on any given night (the queue). Then the Mt. Paranal astronomers march up the mountain and carry out this program, choosing calibrators, filling the log books, and adapting to changing conditions. They send the data back to headquarters, and from there it makes its way out to the wider astronomical community for study.

This new way of working allows the Mt. Paranal astronomers to specialize in just one or two telescope instruments each. Surely this plan is more efficient than the old-fashioned way, where each of us had to learn every instrument we used from scratch—sifting through manuals at 3 a.m. when the filter wheel got stuck or the cryogen ran out, watching precious observing time tick away. Here at Mt. Paranal, much of the work is done in a big room full of people, not off by yourself, reducing some dangers of the process. Also, queue observing cuts down on plane travel, an important step for cutting carbon emissions. It's a brand new age, I thought as I watched the giant domes spin in the silent, cold Chilean night. And maybe with queue observing, some of the romance is gone. Still, my colleagues and I couldn't help saying as we stared out across the moonlit mountains: I can't believe how lucky we are to be here.

European Southern Observatory at Mt. Paranal, Chile.

Dr. Marc J. Kuchner is an astrophysicist at the Exoplanets and Stellar Astrophysics Laboratory at NASA's Goddard Space Flight Center. NASA's Astrophysics Division works on big questions about the origin and evolution of the universe, galaxies, and planetary systems. Explore more at http://www.science.nasa.gov/astrophysics/. Kids can explore these topics at http://spaceplace.nasa.gov/space.

MISCELLANEOUS

Reflections

by William Troxel

(continued from page 1)

speakers be able to talk about our own system, its planets and the sun, along with the sun's movement around the galaxy, etc. Maybe some of you have been to presentations and heard speakers who you enjoyed. All I need is the name and where you heard them or if you know their contact number that would be of help. I will be happy to contact them. I would like to have you speak as well. Just let me know the subject you would like to talk about and I will get you and your topic on the program.

The weather is starting to turn cool in the evening now as we get closer to Fall. Try to get outside and enjoy the wonders of the night sky. Get out your gear and check it out. Check out the reference and links in the Bays Mountain Astronomy Club section. Bays Mountain Astronomy club is very lucky to have seasoned people that can help you with most, if not all, of your questions. All you need to do is ask.

I want to welcome our two new members. They are: Robert Mumford from Jonesborough, TN and Lucas Cameron from White Pine, TN. All the members of Bays Mountain Astronomy Club are very happy to have you as part of our group. Please feel free to ask any questions of any of us. I will look forward to seeing you at the September meeting.

A final reminder that just prior to the start of the October club meeting on the 5th, we will be cleaning the observatories for the upcoming StarFest event on October 12th. The October meeting will also have a great speaker, Dr. Pollock from Appalachian State University. I am asking that we arrive at 6 p.m. to do the clean up so that we can all be ready for Dr. Pollock's presentation at 7 p.m. I will be talking more about his presentation and the hour earlier request at the next business meeting. Until next time.... Clear skies!

Eye to the Sky

by Bob Smith

(continued from page 2)

The autumnal equinox occurs this year at 10:49 a.m. EDT on September 22nd. This is the moment when the Sun crosses into the southern celestial hemisphere and Fall begins. Equinox comes from the Latin word for equal night and indicates equality between night and day.

Happy Birthday

by Robin Byrne

(continued from page 4)

As I write this, the Mars Curiosity Rover successfully landed on Mars just a few hour ago. So aptly named, because we are, indeed, "curious" about our neighbor planet. With each orbiter and lander we send, we find another piece in the puzzle, slowly building up a complete picture of this other world. Should we ever send men to Mars (and I

Regular Contributors

WILLIAM TROXEL

William is the current chair of the club. He serves as activities coordinator for a local retirement living community.

BOB SMITH

Bob is a founding member of BMAC, since 1980. He has also served as chair many times over the years. He currently works at Pioneer Industrial Sales.

TERRY ALFORD

Terry is also a founding member since 1980 and has been chair many times, as well. He has worked as an astronomy lab instructor at ETSU since 2001 and is also the sole proprietor of Celestial Woodworks.

ROBIN BYRNE

Robin has been writing the science history column since 1992 and was chair in 1997. She is an Associate Professor of Astronomy & Physics at Northeast State Community College (NSCC).

ADAM THANZ

Adam has been the Editor for almost all of the years since 1992. He is the Planetarium Director at Bays Mountain Park as well as an astronomy adjunct for NSCC.

sincerely hope we do), the reason why it will be successful will be due to all of our unmanned pioneers that blazed the way. Mars Global Surveyor was, arguably, one of the more successful of those pioneers, and here's wishing Curiosity as much success in its mission.

References:

Mars Global Surveyor
http://mars.jpl.nasa.gov/mgs/overview/

Mars Global Surveyor: Science
http://mars.jpl.nasa.gov/mgs/science/

NASA - Mars Global Surveyor Mission Highlights
http://www.nasa.gov/mission_pages/mgs/mgs-20070413a.html

NASA - Report Reveals Likely Causes of Mars Spacecraft Loss
http://www.nasa.gov/mission_pages/mgs/mgs-20070413.html

Mars Global Surveyor - Wikipedia
http://en.wikipedia.org/wiki/Mars_Global_Surveyor

StarFest 2012

October 12-14

Every Fall, the BMAC hosts a regional gathering of amateur astronomers from around the Southeastern United States. It's an enjoyable three-day weekend of talks, observing, food, and fun.

Pre-registration is required and is now open. Please go to this website and select the StarFest tab for the registration form and more. http://www.baysmountain.com/astronomy/astronomy-club/

Event Highlights:

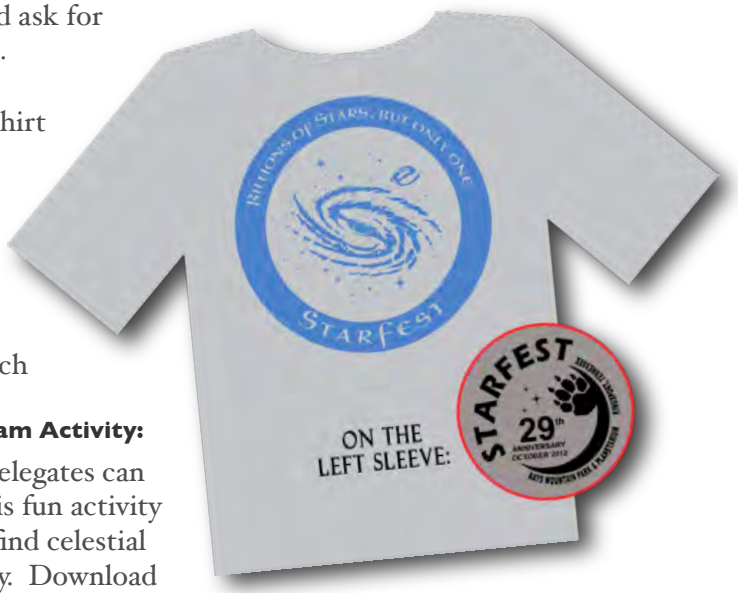
- Night Sky and Solar Observing sessions.
- Interesting talks and the Art/Photo & ATM displays by fellow astronomy enthusiasts.
- Swap Shop - Buy, Sell, Trade! Come and see what others have to offer or setup your own swap area.
- Lots of great meals provided with registration.
- Unique commemorative T-shirt with custom art.

Accommodations Option:

Registered delegates can choose to stay on the grounds of the Park or in the Nature Center at no extra cost. But, we've arranged for a special price of $89/night with the 4-star MeadowView Marriott just down the road from Bays Mountain Park. They can be found at the same exit off of I-26 as Bays Mountain, exit 3. Go to the StarFest website for a direct link to the StarFest rate at MeadowView or you can call 423-578-6600 and ask for the StarFest rate.

T-shirt Design:

A special T-shirt is ready for 2012. Every StarFest T-shirt is unique and sports custom artwork and is included with each registration.



Observing Program Activity:

Registered delegates can participate in this fun activity to learn how to find celestial objects in the sky. Download the StarFest 2012 Observing Program document to get started!

Featured Guest Speakers:

Tim Barnwell: Astronomical and Atmospheric Photography / Workshop: Using a DSLR for Astrophotography

Rick Boozer: The Magellanic Clouds: What No One Knew Until Now

Chuck Higgins - Middle Tennessee State University

Luke Reves, David Hiller, Joe Kimball, Erin Van Hoy - MTSU undergraduate physics majors: The Radio Universe & Jupiter and Solar Radio Astronomy

Paul Lewis: Voyagers: Chapters 1, 2 and 3

Club Dues to Change

After more than 20 years, the club dues rates will increase. The new rates will be $16 for a full member and $6 for additional family members. If you are a member of the Park Association (an additional fee), then your club dues are reduced 50%.

The Bays Mountain Astronomy Club

Find out more at our website:
www.baysmountain.com
Edited by Adam Thanz:
thanz@kingsporttn.gov

Dues:

The Bays Mountain Astronomy Club requires annual dues for membership. It covers 12 months and is renewable at any time.

Rates:

$12 /person/year

$4 /additional family member

If you are a Park Association member, a 50% reduction in fees is applied.

Note: After more than 20 years, these rates will change on Jan 1, 2013. The new rates will be $16 and $6.

Made on a Mac!

Calendar

Special Events

StarFest 2012 Oct. 12-14. Registration is open until Sept. 21st for this annual event of astronomy, activities, keynote speakers, food and more. Please visit the astro club section of the Park's website for all the details and cost.

SunWatch

Every Sat. & Sun., 3 - 3:30 p.m., Mar. - Oct., weather permitting. BMACers are always welcome to help.

BMAC Meetings

7 p.m., Discovery Theater

Sept. 7 Anthony Cavallucci from the National Weather Service will speak about weather and viewing sky conditions.

Oct. 5 6 p.m.! Observatory Cleanup. Dr. Joseph Pollock from Appy State will speak about "Specifically Paired & Binary Asteroids."

Nov. 2 George Privon from UVa will speak on galaxy collisions and research for amateurs.

Dec. 7 Dr. Richard Ignace from ETSU will speak about "Hot Stars."

Bays Mountain Astronomy Club
853 Bays Mountain Park Road
Kingsport, TN 37660