

Bays Mountain Astronomy Club

☞ *Next Meeting: Oct. 5* ☞

REFLECTIONS

September's meeting of the Bays Mountain Astronomy Club opened with an Astro News update by BMAC'er Brandon Stroupe. Brandon shared the progress of the Curiosity rover on Mars. NASA has tested all the functions and movements are all working. Pictures coming back from Curiosity are very good which have the scientific community very excited. Brandon also reminded us of the passing of Neil Armstrong (1930-2012). I would like to encourage each of you to research Mr. Armstrong's life. I think you will agree Mr. Armstrong will be missed, however he has left a legacy that will inspire future generations. I personally want to thank Brandon for his willingness to be a part of our program. I hope more of you will agree to be a part in future meetings as well.

The keynote speaker was Anthony Cavallucci, Warning Coordination Meteorologist at the National Weather Service (NSW) in Morristown, TN. Anthony introduced all the members, guests and visitors to a general overview of the weather service website and definitions helpful to understand the information presented on the site.



BY WILLIAM TROXEL

Anthony explained other factors that can be used as well. He showed examples of what to look for in reports and data. Anthony showed a new section on the main page of the website "Metrograms" explaining about the hour-by-hour data. Anthony talked about the myths that have been around concerning weather. Overall, Anthony's presentation was very good. His light presentation style and great personality made our September meeting very interesting. Thanks to Anthony, I feel like I understand a little more about the weather.

In new business Brad Dunn, StarFest Chairman, updated the club on the details of our upcoming event. Brad talked with members asking what they would be willing to do during the event. Adam announced that club dues would be going up in January, however if members wanted to pay up to two years in advance they will be able to lock in the current rate. He also reminded everyone that September 21st is the deadline to get your registration turned into the park for StarFest. Make sure you get your email from Adam confirming he got your

Calendar

Special Events

StarFest 2012 Oct. 12-14. Registration is now closed.

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

Oct. 5 6 p.m.! Observatory Cleanup. After the cleanup, we'll head off to the planetarium for "Cosmic Colors."

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."

completed registration and payment. If you have not, please contact him. No walk in registrations will be accepted for StarFest.

Now that we have had two months of the new Astro News section, I would like to hear your thoughts about this new segment. Thank you to those of you who shared your thoughts during social time last month. I have and always will welcome your thoughts and comments because this is how we can make our club better.

Having said that, I want to re-introduce another part of our meetings called "Constellation Corner." After a conversation with one of BMAC's members I learned that a segment called this was part of the meeting many years ago. Previously, it was very popular with everyone, including the visitors. I would like to set November's Meeting as the target to bring this segment back to the meeting.

(Continued on page 6)

EYE TO THE SKY

BY BOB SMITH

October skies are usually our best for the year as far as observing is concerned and cool, clear evenings return as we move into Autumn. Be sure and plan a few nights out in the country and away from city lights to take in the sights under a truly clear sky. Also, make room for StarWatch on as many Saturdays as you can schedule in the next two months.

Saturn is effectively gone from the early evening scene unless you have a remarkable viewing spot with a fabulous western view. The "Ringed World" is still viewable, but only a few degrees above the western horizon. Still around 1st magnitude, the planet just might be spotted the first few days of the month very low in the evening dusk. It will soon be gone and return to the morning sky in November.

Mars is next up and still fairly high in the southwest as the sky darkens. It stays about magnitude 1.2 all month and is prominent against the stars of Libra as the month begins. Mars continues to race eastward against the background stars and enters Scorpius on the 6th and winds up in Ophiuchus the last two weeks of the month. The most interesting naked eye view comes on October 19th when the Red Planet passes 4° north of bright Antares (Rival of Mars) in Scorpius. Be sure to spend some time comparing the pair both with the naked eye and through binoculars. Mars is less than 5 arcseconds across, so nothing on the surface can be picked out through your telescope. But, I still like to show the small disk to interested onlookers. Keep up with the latest news from NASA's Curiosity rover on the NASA website and NASA-

TV. A thin crescent Moon is near Mars the nights of October 17th and 18th.

Uranus is high in the south in the early evening and fairly easy to spot through first binoculars then through a moderate-sized telescope. Find the Circlet of Pisces and drop your gaze about 10 degrees eastward to two fairly bright 6th magnitude stars less than 0.3° apart. Or, find 44 Piscium on a good finder chart and then through binocs; you may notice that the lower of the two "stars" seems bluish. Find the pair in your telescope and crank up the power on the southwestern one. This is Uranus, and with about 100-150X, you should be able to spy the 6 arcsecond face of the planet. Uranus is currently about 1.77 billion miles from Earth.

Jupiter rises around 10 p.m. in early October and is high enough for observing by midnight. It lies among the stars of Taurus the Bull, but at magnitude -2.6 it outshines everything nearby. Spend some time at the eyepiece first taking in the face of the planet if you have a steady view then look over the arrangement of the bright moons. These both change on an hour by hour basis. A gibbous Moon appears close to Jupiter on the night of October 5th and again on Halloween Night.

Venus is, of course, the brightest of the planets and is the last to appear, showing itself about 3:30 a.m. in early October. The magnitude -4.1 planet is less than 2° from nearby Regulus (mag 1.4) that morning. The morning of the 3rd, they pull within 7 arcminutes of each other and the brilliant planet overpowers the 1st magnitude star. This is the closest approach of a planet to a 1st

magnitude star this year and really should be on your "to do" list even if it means getting up a little early.

I'm very interested in asteroids and we have four bright space rocks visible this month. Both 4 Vesta and 1 Ceres are visible in northern Orion in October while Parthenope and 2 Pallas appear in Aquarius and Cetus respectively. If you're in the area looking for Uranus, you should drop your sights a little and try to pick out the magnitude 8.3 Pallas. It is in a fairly dim area of the Whale's Tail and should be easy to locate over several days with a good chart. Pallas is within a degree of 3.5 magnitude Iota Ceti at the start of October and tracks a path southwestward all month toward 1 Ceti.

Finally, I'm planning on "retiring" the column after the first of the year and am in search of someone to take over writing something like it or maybe something brand new. If you're interested, contact me through BMAstro or at a meeting.

STAR STUFF

BY TERRY ALFORD

For almost two years, I have been enjoying viewing the Sun in Ha light with my little Lunt LS35THa solar scope. Prominences are easily visible. Surface features such as filaments, spicules, plages, and solar flares are also visible. Like nearly everyone else who goes down this road I got aperture fever. I wanted to see more detail in everything, especially prominences. Also, I wanted to be able to use more magnification when the atmosphere permitted it.

Earlier this year I started doing some serious research on Ha scopes in the 40 mm of aperture and up range. Cost of these instruments rise dramatically as aperture increases. Also, the cost of upgrades is tough on the old pocketbook. A 60 mm scope outfitted with a Feather Touch focuser, larger blocking filter and Pressure Tuning carried a price tag of well over \$2000! It would be easy to outfit an 80 mm or 100 mm scope with some extra goodies and have to fork out over \$7000. That is some serious cash for an OTA (Optical Tube Assembly only, no mount, tripod or eyepieces).

Since I really had no interest in photography and a standard focuser would suffice I began to look at entry level 60 mm instruments. Being very happy with the performance of the 35 mm I naturally looked most closely at the Lunt LS60THa (Lunt Solar 60 mm Telescope Hydrogen alpha) f/8.33 solar refractor. Admittedly, price was a factor and

the Lunt was a winner there. Looking around on the net this basic Ha scope was in short supply. However, Astronometrics had one in stock. Since this company gives a small discount to Cloudy Nights members and offered free shipping on orders over \$100 it was a no brainer.

The scope promptly arrived on August 14th. It was beautiful! Features on the scope included a filter with a Ångström passband centered on the 6562.8 Å Ha line, dual



speed Crayford focuser, a clamshell-like mounting ring with a couple of pre-threaded 1/4x20 holes and a foam-lined aluminum case. I had also ordered a SolFinder since the clamshell ring was pre-drilled to accept it. While I can make my own solar finder, the SolFinder was much prettier than my work would be.

Contrary to normal weather when a new scope arrived, it was pretty clear that day. Eagerly I set it up and brought the Sun in sharp focus. I turned the tuner wheel,

being careful not to force it too much. This wheel tunes, or tilts the internal etalon to get the best images of prominences and surface features. Hmmm. Proms were faintly visible and surfaces features were barely there. Out came the Lunt 35 and I compared views. The 35 showed details that were brighter and sharper. That wasn't right! For the next couple of days I repeated this little experiment three or four times and always got the same results.

Naturally, I called Lunt's Customer Service Department. The rep there told me to put more pressure on the tuning wheel to the left and things would be wonderful.

I did so and the image did improve, but not impressively so. Again, comparing the two scopes the 60 was showing a little more surface detail but the 35 had better proms. That just did not seem right. A scope with twice the cost and almost twice the aperture should show definite improvements in the image.

Paul Lewis from UT Knoxville has had quite a bit of experience with all kinds of solar telescopes. He also has a double stacked (two etalons) Lunt 60. He agreed to meet me halfway between our homes on I-81 to compare views between his scope and mine. On August 24th Paul and I got together.

(Continued on page 6)

*HAPPY BIRTHDAY PEEKSKILL METEORITE FALL**BY ROBIN BYRNE*

This month we celebrate the anniversary of one of the most famous meteorite falls ever recorded. The night of October 9, 1992 will be a night Michelle Knapp will likely never forget. On that night, a visitor from outer space paid a visit and demolished her car!

Residents of Kentucky were the first to see the bright, "greenish" fireball in the sky. Barely grazing the atmosphere, it quickly broke up into over 70 pieces, triggering a sonic boom. The meteor pieces continued to be sighted as it traveled north-northeast, passing over West Virginia, Maryland, Pennsylvania, and, finally, landing 40 seconds later in Peekskill, New York.

What makes this meteor fall so unusual is that it was captured by not just one video camera, but by 16! This was largely due to its timing - high school football games were underway, and proud parents were armed with video cameras at the opportune moment. Only a handful of other meteorite falls have been filmed, with only one camera each, and this was the first time an actual meteorite was recovered. The first shot captured was in West Virginia at 7:48 p.m., and others caught its path across Maryland, Pennsylvania and New York.

The variety of angles of shots from all of the cameras provided an unprecedented amount of information concerning the meteor's trajectory. Prior to entering Earth's atmosphere, it was determined that the meteoroid was traveling at 14.72 km/s (-33,000 mph). Its orbit around the Sun took it from 0.886 AU out to 2.1 AU (where 1 AU = Earth's distance from the Sun). At the time of impact, the meteorite had

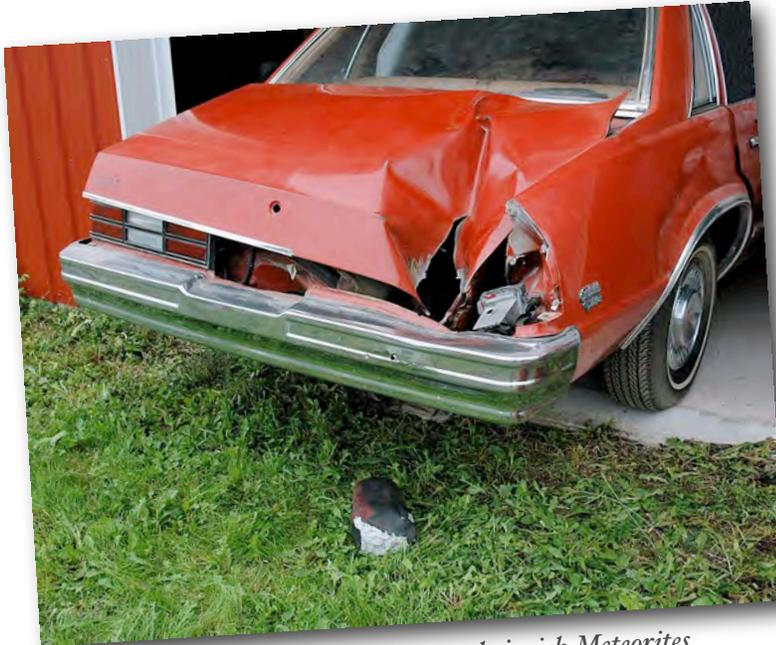


Image source R.A. Langbeinrich Meteorites

http://www.nyrockman.com/peekskill_meteorite_car.htm

slowed to a mere 164 mph.

But the main reason this meteorite fall is so well known is not the trajectory through the atmosphere nor the video footage, but the landing. At approximately 7:50 p.m., the meteorite landed on a parked 1980 red Chevy Malibu. The loud crash left a large hole in one corner of the trunk of the car, which

is what the owner, 18 year old high school student Michelle Knapp, first noticed, so she called the police. Upon investigating what was assumed to be a criminal mischief case, the police smelled gasoline from the leaking gas tank, so the fire department was brought in. That's when the 26 pound, one foot across meteorite was discovered. The police impounded the "criminal" and opened it, to be sure of what they were dealing with. As soon as they knew it wasn't dangerous, they returned it to Ms. Knapp. Because of the notoriety, and offers from around the world, Ms. Knapp decided to sell the meteorite and car at an auction, where the high bid was close to \$100,000. Small pieces of the meteorite have been broken off for sale and to share with various museums, but the largest piece, which weighs 890 grams, belongs to a meteorite collection.

The meteorite itself is nothing special. It is an H6 chondrite, which are very common, but the notoriety of this particular meteorite has driven prices for pieces to over \$125 per gram.

Chondrite meteorites are stony meteorites that contain chondrules of once molten silicate minerals (usually olivine and pyroxene) that were floating around in our forming Solar System.

(Continued on page 6)

NASA SPACE PLACE

**Doing Science with a
Spacecraft's Signal****By David Doody**

Mariner 2 to Venus, the first interplanetary flight, was launched August 27 fifty years ago. This was a time when scientists were first learning that Venus might not harbor jungles under its thick atmosphere after all. A Russian scientist had discovered that atmosphere during the rare Venus transit of 1761, because of the effects of sunlight from behind.

Mariner 2 proved interplanetary flight was possible, and our ability to take close-up images of other planets would be richly rewarding in scientific return. But, it also meant we could use the spacecraft itself as a "light" source, planting it behind an object of our choosing and making direct measurements.

Mariner 4 did the first occultation experiment of this sort when it passed behind Mars as seen from Earth in July 1965. But, instead of visible light from the Sun, this occultation experiment used the spacecraft's approximately 2-GHz radio signal.

The Mariner 4 experiment revealed Mars' thin atmosphere.



Venus

Since then, successful radio science occultation experiments have been conducted at every planet and many large moons. And another one is on schedule to investigate Pluto and its companion Charon, when the New Horizons spacecraft flies by in July 2015. Also, during that flyby, a different kind of radio science occultation experiment will investigate the gravitational field.

frequency sent from Earth.

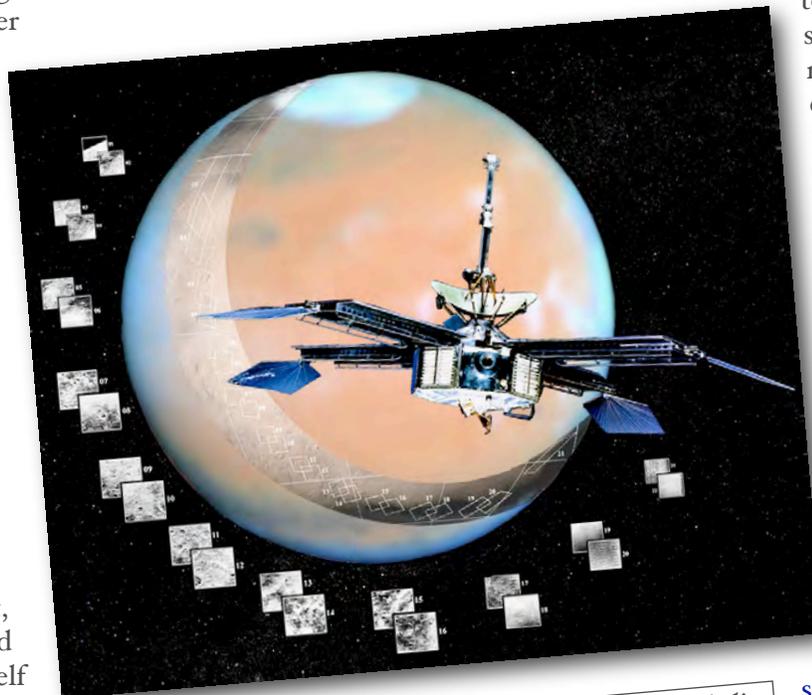
Compared to observations of the free space for calibration just before ingress to occultation, the experiment makes it possible to tease out a wide variety of components in Saturn's ionosphere and atmosphere.

Occultation experiments comprise only one of many categories of radio science

experiments. Others include tests of General Relativity, studying the solar corona, mapping gravity fields, determining mass, and more. They all rely on NASA's Deep Space Network to capture the signals, which are then archived and studied.

Find out more about spacecraft science experiments in "Basics of Space Flight," a website and book by this author, <http://jpl.nasa.gov/basics>. Kids can learn all about NASA's Deep Space Network by playing the "Uplink-Downlink" game at [http://](http://spaceplace.nasa.gov/dsn-game)

spaceplace.nasa.gov/dsn-game.



In this poster art of Mariner 4, you can see the parabolic reflector atop the spacecraft bus. Like the reflector inside a flashlight, it sends a beam of electromagnetic energy in a particular direction. Credit: NASA/JPL/Corby Waste.

The most recent radio science occultation experiment took place September 2, 2012, when the Cassini spacecraft carried its three transmitters behind Saturn. These three different frequencies are all kept precisely "in tune" with one another, based on a reference

MISCELLANEOUS

Reflections**by William Troxel***(continued from page 1)*

October's meeting will start at 6 p.m. at the observatory for a brisk clean up. Please come up to the observatory, bring rags cleaners, brooms, etc. and help. The more members we have, the quicker we finish up. After the clean-up we will come down to the planetarium for the viewing of "Cosmic Colors." We will have a short meeting focusing on StarFest.

Please join me in welcoming our two new members, both from Kingsport, TN. They are Michael Crawford and Arun Rao. Thank you both for giving Bays Mountain Astronomy Club a chance. I look forward to getting to know you both in the upcoming months. Remember we are all learning together. Welcome to Bays Mountain Astronomy Club.

I can't close this article without taking a few more words to remind you to be a part of StarFest if you are attending. I want to be the first one to thank Brad and Adam for all the work that has been done in preparation. Now only days away and counting down. Hope I get to see each of you.

Until next time.... Clear skies!

Star Stuff**by Terry Alford***(continued from page 3)*

After removing the outer screw-on etalon the scopes should have

been pretty equal. Well, his was still superior. Then another issue popped up. When the tuner wheel was turned farther to the left a horizontal black band moved up and down over the face of the Sun, in sync with the wheel. Paul said something like, "That ain't right." I had notice this artifact before but did not realize the significance.

So, I called Lunt Customer Service again. This time the rep was very interested when I told her about the comparison between my 35, Paul's scope and my new 60 mm. She became very attentive when I told her about the black line moving horizontally across the Sun's disk. She said I needed to return it for adjustment/repair and gave me a Return Authorization Authorization number. Neither Lunt nor Astronomics would pay for the return shipping so I bit that little bullet. Sigh...

I shipped the scope back on September 3rd and Lunt received it on September 10th. So far (as of Sept 17th) I haven't heard anything. Stay tuned.

Happy Birthday**by Robin Byrne***(continued from page 4)*

Because these materials date back to the formation of our Solar System, the meteorite is estimated to be 4.4 - 4.5 billion years old. The "H" designation means that this meteorite has a 30% iron content, which is the highest percentage for all chondrites. The structure of the meteorite indicates that it

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.

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.

experienced heating and shocking as the result of two asteroids colliding at some time in its past.

Meanwhile, the 1980 Chevy Malibu has had an interesting time traveling around the world and visiting various museums. Places visited include: New York City, Tucson, Paris, Tokyo, Germany and Switzerland.

The Peekskill Meteorite certainly earned its fame, coming to Earth 20 years ago, literally, with a bang. Although I would never wish anyone's car to be damaged under normal circumstances, I can't help but think that it sure would be wonderful to find a large hole caused by an interplanetary traveler. Since most meteorites are magnetic, I recommend that if you want to get rid of an old clunker, you should cover your car with magnets and hope for the best. May you make a big impact!

References:

Peekskill meteorite - Wikipedia

http://en.wikipedia.org/wiki/Peekskill_meteorite

<http://www.nyrockman.com/peekskill.htm>

Peekskill Meteorite Car

<http://www.nyrockman.com/peekskill.htm>

<http://www.nyrockman.com/peekskill.htm>

Peekskill Meteorite - Hudson

Valley Geologist

by Steven Schimmrich

[http://](http://www.hudsonvalleygeologist.blogspot.com/2011/06/peekskill-meteorite.html)

www.hudsonvalleygeologist.blogspot.com/2011/06/peekskill-meteorite.html

www.hudsonvalleygeologist.blogspot.com/2011/06/peekskill-meteorite.html

Peekskill meteorite

by David Darling

http://www.daviddarling.info/encyclopedia/P/Peekskill_meteorite.html

[encyclopedia/P/Peekskill_meteorite.html](http://www.daviddarling.info/encyclopedia/P/Peekskill_meteorite.html)

[Peekskill_meteorite.html](http://www.daviddarling.info/encyclopedia/P/Peekskill_meteorite.html)

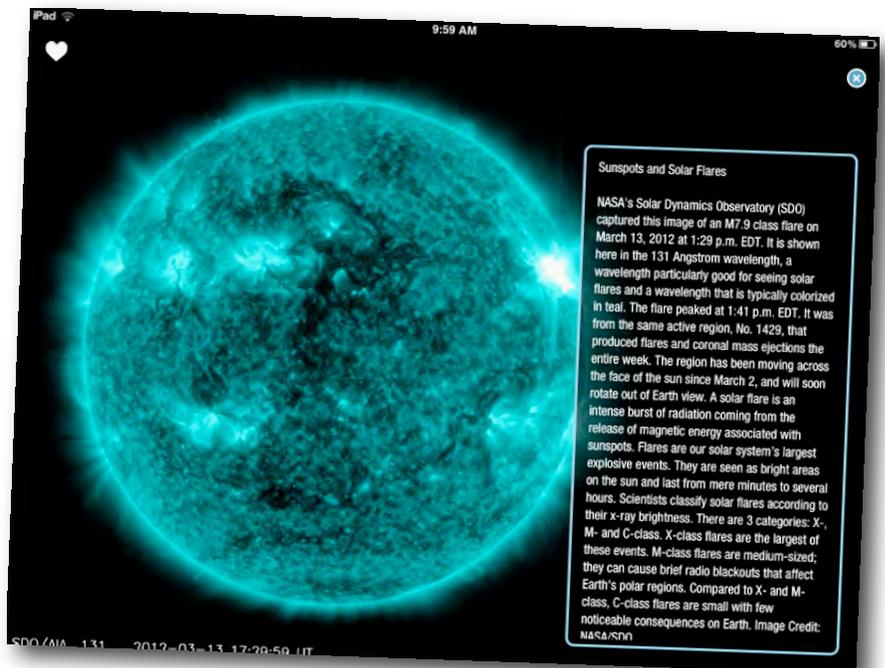
NASA's Space Place Prime - iPad App Now Available

We are proud to unveil our long-anticipated iPad app, 'Space Place Prime.' This brand new app gathers some of the best and most recent web offerings from NASA. It taps engrossing articles from The Space Place website, enlightening NASA videos, and daily images such as the Astronomy Picture of the Day and the NASA Earth Observatory Image of the Day.

Space Place Prime targets a multigenerational audience. Kids, teachers, parents, space enthusiasts, and everyone in between will find fascinating features on this new, free NASA app. Find it in the Apple Store. <http://spaceplace.nasa.gov/ios>

Club Dues to Change

After more than 20 years, the club dues rates will increase starting Jan. 1, 2013. 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%.



One of the many features of the new app from Space Place

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.

Calendar

Special Events

StarFest 2012 Oct. 12-14. Registration is now closed.

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

Oct. 5 6 p.m.! Observatory Cleanup. After the cleanup, we'll head off to the planetarium for "Cosmic Colors."

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."

Apple logo Made on a Mac!

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