Bays Mountain Astronomy Club

☞*Next Meeting: December 3*☜

SKYWARD *BY BRAD DUNN*

We had a great meeting and a great turnout for our November meeting at Bays Mountain. Our speaker was Tom Rutherford who gave a very interesting presentation entitled "How far is it." Tom explained how astronomers over the past 500 years have used different methods for determining the distances of celestial objects. He also showed how modern day technology and the use of variable stars have made it possible for astronomers to come up with the accurate distances between objects in space. When you are speaking to a group of people like us with different levels of knowledge in astronomy, it is difficult at times to make the presentation interesting for everyone. Tom has a very special way of presenting the material so that he can keep the attention of avid astronomers and the layman at the same time. Thanks Tom!

Since we have a few new members that have not had the opportunity to see the greatest planetarium in the world, we will be meeting in the planetarium to start the December meeting. Remember, no food or drink! It will be an interesting activity to get an understanding of what magnitude stars are visible depending on the amount of light pollution. After the planetarium activity, we will go downstairs to the Discovery Theater and split up into three groups and play a game of astronomy Jeopardy. This will be followed by a short break and business meeting. We had discussed making the January dinner on the 8th with the 15th as a backup date in case of bad weather. Todd will be looking at some different restaurants and we can decide on one at the next meeting. Don't forget the Astronomy Knowledge Compendium is now posted on the website if you want to give it a try. The sky has been great the past month, so get out of the house and look up! See you at the next meeting, clear skies!

Calendar

Special Events

Jan. 8 *BMAC Dinner. Time and place TBA.*

Jan. 15 *BMAC Dinner snow date.*

SunWatch

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

Mar. - Oct., weather permitting.

BMACers are always welcome to help.

BMAC Meetings

7 p.m., Planetarium Theater

Dec. 3 *Magnitude test & Astronomy Jeopardy.*

7 p.m., Discovery Theater

Feb. 4 *Meeting TBA.*

EYE TO THE SKY *BY BOB SMITH*

It's been quite a while, but we get a chance to view a total lunar eclipse this month. On the night of December 20/21 (Monday night) the Full Moon will plunge almost directly through the center of Earth's shadow. Beginning at 1:30 a.m. EST, the total part of the eclipse will last from 2:40 a.m. till almost 4:00 a.m. The Moon will fully recover its bright face at 5:00 a.m. on Tuesday morning—just in time for dawn. The only down side to the eclipse is the late hour, but it will be well worth getting up in the middle of the night to see how the Moon's appearance will change. A few times in the past I've seen it cherry red or orange and once it was just a dark yellow color. With the eruption of an Indonesian volcano last month throwing lots of dust into the atmosphere, this eclipse may be pretty dark. If you don't watch the full disappearing act you may have a hard time finding the Moon during the mid part of totality. Remember to look about half-way between Gemini and Taurus for the fully eclipsed Moon.

If you're out before dawn this month, be sure and take in brilliant Venus which should be visible after around 4:30 a.m. You certainly won't confuse our "Sister Planet" with anything else. Shining at magnitude -4.9 it is outshone only by the Moon. Venus rises with a thin crescent Moon on December 2nd--they are just a few degrees apart. Then on December 31, the Moon rises just 15 minutes after Venus. If you have your telescope available, take a look at Venus' changing face. At the start of the month Venus is 42″ across and about 25% illuminated. By the end of December, Venus shows a rounder face that is 27″ and 45% lit.

Standing about 15° above Venus is Saturn. At magnitude 0.8, it isn't extremely obvious and I had to really think twice last month about which is which--Saturn or Spica? Saturn is about 10 degrees above Spica and is also the warmer looking of the two. The "Ringed World" has a more open appearance to its ring system and is beginning to look like its old self. You should be able to pick out the Cassini division through most any small telescope if the air is steady.

Jupiter is "King of the Planets" and king of the evening sky for all of December. Shining at magnitude -2.5 the planet really stands out among the dimmer stars of Aquarius and Pisces. The Southern Equatorial Belt is still missing and could return at any time—or not. Also try to pick out the Great Red Spot which is still a spot but neither great nor red and seems to be a little easier to locate when it travels across the face of the planet. Keep up with the predicted behavior of the four major moons. Io, Europa, Ganymede and Callisto always challenge your observing skills with their comings and goings.

While observing Jupiter, be sure to use the bright planet to locate the dimmer nearby Uranus. At magnitude 5.8, Uranus is within 3° of Jupiter all month and can be initially located with binoculars. You'll have to really pump up the power to convincingly spot the tiny 3.5″ face of Uranus. The bluish planet is currently a little less than 2 billion miles from Earth.

Asteroid 7 Iris is cruising through the after-midnight sky this month and should make an easy binocular target. The magnitude 8.6 space rock is in the constellation Cancer and spends all month just a couple degrees north of the bright, but isolated cluster M-67. On the 13th Iris forms a tight pair with an 8th magnitude star and on the 20th it is fairly close to a 4th magnitude star. Over the period of about an hour, movement of 7 Iris should be obvious through a telescope.

One of the best meteor showers of the year occurs the night of December 13/14 when the Geminid shower reaches its peak. The first quarter Moon will set before midnight and we should be set for a good night of observing if the weather co-operates. Up to 100 meteors per hour have been reported under ideal conditions and we might realistically expect 30- 50 meteors under our urban skies. The radiant should be almost directly overhead at 2:00 a.m. The stream is fairly broad, so quite a few meteors should be seen a few days before and after the predicted peak. An oddity of the shower is that it's not tied to any comet but to an asteroid (or dead comet?) 3200 Phaethon.

STAR STUFF *BY TERRY ALFORD*

One reason my wife and I built our house where we did was that the neighborhood was reasonably dark. Being in the county, this area did not suffer from Johnson City's mega watt, unshielded street lights. The developer of the neighborhood did not put in any street lights. It was up to each home owner to light or not light their property. The area between the retaining walls just outside the basement door became my "roofless observatory." Six years ago, there were no houses within 100 yards directly in front of the retaining walls and it was decently dark. Of course this changed within a year or two. Now I have several neighbors and one in particular likes to leave his outside lights on all night long very nearly every night. This one light is bright enough to cast a strong shadow, very irritating. [Ed.: If light shines on your property in an inappropriate manner, it is considered light trespass and may allow for modification under the law.]

About three years ago, I assembled a light blocking curtain out of some poly tarps, a couple of bungee cords and two 6-ft long wooden dowels. To set up the curtain, the wood dowels had to be clamped to the brick retaining walls with woodworking clamps. The bungee cords were hooked together and stretched to connect the tops of the dowels. Then the tarps were thrown over the cords. While this proved to be effective, it took some time to set up and take down. If the wind blew very hard, the rustling of the plastic tarps became annoying. The net effect was that I only used the light blocking curtain whenever I was planning a long observing session. For short sessions I just lived with the annoying lights.

A while back, our fearless leader Brad offered me a tripod. This was not a typical photo tripod but one of the steel types with a halogen work light on top that is often used around construction sites. Evidently the tripod had been knocked over and the top piece broken off. I couldn't turn down a freebie although at that time I had no idea what I would do with the tripod.

About a month ago, it dawned on me that I could use the tripod as a base for a small but very portable light shield. In my wood bin I found an old oak stairwell baluster. In the end of the baluster that was square I drilled a hole and connected another piece of wood with a 1/4-in bolt and thumbscrew. A 3x4-ft heavy duty black trash bag was stapled to the cross member. The other end of the baluster was round and fit snugly into the top of the tripod post. All of this took no more than 15 or 20 minutes to assemble. That night I used my "new" light shield and was very pleased with the results. I had to add a few used wheel balancing weights to the bag to keep it from blowing around in a light breeze. The telescoping feature of the tripod allows easy adjustments to the height of the light shield to compensate observing standing or sitting.

About the only thing about the light shield I am not pleased with is that it is a little on the small side. Buried in a closet I found a 4x5-ft piece of heavy, black cloth. It had been used for a cloak in a haunted house project a long time ago. There was a big slit in it to slip over the head so I asked my wife to sew it back together. It ain't purty but it shore work fine. And it was free as nearly everything else that is part of the portable light shield. I like free.

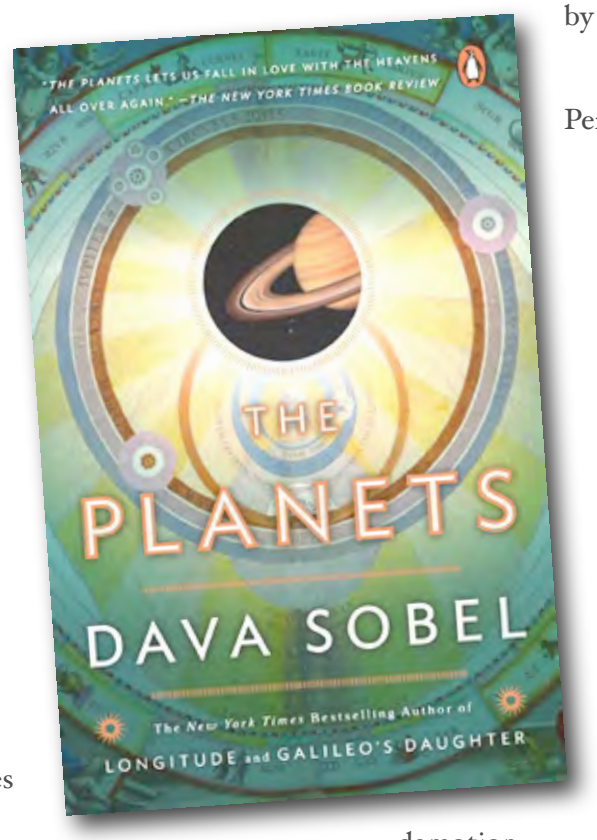
HAPPY BOOK REVIEW: "THE PLANETS"

BY ROBIN BYRNE

When Dava Sobel agreed to be the main speaker at the 2010 Southeastern Planetarium Association (SEPA) Conference, I was thrilled. I loved "Galileo's Daughter" and was enthralled by the television production of "Longitude." However, when I heard that she wrote a book about the planets, my first reaction was "Do I want to read a book that will likely repeat what I already know about the planets? Not really." Then I won the book as a door prize at the SEPA Conference....

I am happy to say that my initial expectations were wrong. Yes, the book does include information I already knew about the planets, but that isn't what the book is entirely about. As usual, Dava Sobel makes the story of a scientific topic a human journey that includes so much more. Each chapter is about a different planet, plus Earth's moon and the Sun. But each Solar System object is approached in an entirely different, and entertaining way.

The chapter about the Sun is titled "Genesis" and includes a variety of versions, including the scientific one, of how our Solar System formed. Mercury provides an opportunity to explore the mythology of the planets. Beautiful Venus shows us the role of planets in art. The exploration and mapping of Earth provide the backdrop for our home world. Man's exploration of the Moon takes us to our celestial neighbor. Mars allows us to venture into the realm of science fiction. Dava Sobel doesn't even shy away from that taboo topic, astrology, when discussing Jupiter. Saturn provides the venue to discuss musical expressions of the planets. Uranus and Neptune take us into the lives of the people responsible for their discoveries. And even Pluto, despite Sobel's participation in the larger process for reclassification to dwarf planet, is included, and the story of its descent from predicted planet, to discovery, to scientific study, to demotion, as well as, the discovery of other planet candidates, is completely outlined.



In addition to the variety of approaches taken with each Solar System object, Sobel includes her own personal stories, sharing her connection to our Solar System. These personal experiences add another dimension to the story of the planets, making it even richer and more enjoyable.

The wide variety of approaches, the personal stories, and, yes, even the science that most of us already know, take us on a journey through our Solar System that goes beyond a planet tour, and into a whole new way of thinking about our celestial neighborhood, perhaps even sparking the reader to add their own stories to the tapestry. "The Planets" by Dava Sobel will not disappoint.

Sobel, Dava "The Planets", Penguin Books Ltd, 2005

NASA SPACE PLACE

Blue Rings around Red Galaxies

by Trudy E. Bell and Dr. Tony Phillips

Beautiful flat rings around the planet Saturn are one thing—but flat rings around entire galaxies?

That is the astonishing discovery that two astronomers, Samir Salim of Indiana University at Bloomington and R. Michael Rich of UCLA described in the May 10, 2010, issue of The Astrophysical Journal Letters.

"For most of the twentieth century, astronomers observing at visible wavelengths saw that galaxies looked either 'red and dead' or 'blue and new,'" explained Salim. Reddish galaxies were featureless, shaped mostly like balls or lentils; bluish ones were magnificent spirals or irregular galaxies.

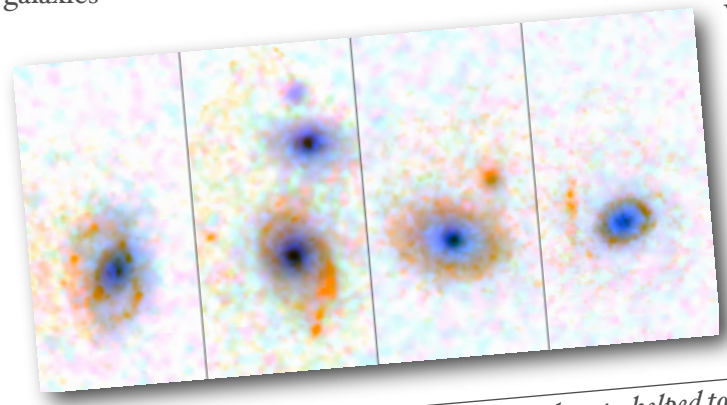
Elliptical galaxies looked red, astronomers reasoned, because they had mostly old red giant stars near the end of their life cycles, and little gas from which new stars could form. Spiral and irregular galaxies looked blue, however, because they were rich in gas and dust that were active nurseries birthing hot, massive, bluish stars.

At least, that's how galaxies appear in visible light.

As early as the 1970s, though, the first space-borne telescopes sensitive to ultraviolet radiation (UV) revealed something mysterious: a few red elliptical galaxies emitted "a surprising ultraviolet excess," said Rich. The observations suggested that some old red galaxies might not be as "dead" as previously supposed.

To investigate, Salim and Rich used NASA's Galaxy Evolution Explorer satellite to identify 30 red elliptical galaxies that also emitted the strongest UV. Then they captured a long, detailed picture of each galaxy using the Hubble Space Telescope.

"Hubble revealed the answer," says Salim. The UV radiation was emitted by enormous, flat bluish rings that completely surrounded each reddish galaxy, reminiscent of the rings of Saturn. In some cases, the bluish rings even showed a faint spiral structure!



The Galaxy Evolution Explorer UV space telescope helped to identify red elliptical galaxies that also emitted the strongest UV. These are detailed, long-exposure Hubble Space Telescope images of four of these galaxies that capture the UV-emitting rings and arcs indicative of new star formation.

Because the bluish UV rings looked like star-forming spiral arms and lay mostly beyond the red stars at the centers of the elliptical galaxies "we concluded that the bluish rings must be made of hot young stars," Salim continued. "But if new stars are still being formed, that means the red-and-dead galaxies must have acquired some new gas to make them."

How does a galaxy "acquire some gas?" Salim speculates that it was an act of theft. Sometimes galaxies have close encounters. If a gas-rich irregular galaxy passed close to a gas-poor elliptical galaxy, the gravity of the elliptical galaxy could steal some gas.

Further studies by Galaxy Evolution Explorer, Hubble and other telescopes are expected to reveal more about the process. One thing is certain, says Rich: "The evolution of galaxies is even more surprising and beautiful than we imagined."

The press release is available at http://www.galex.caltech.edu/newsroom/glx2010-03f.html. The full published article is "Star Formation Signatures in Optically Quiescent Early-Type Galaxies" by Samir Salim and R. Michael Rich, The Astrophysical Journal Letters 714: L290–L294, 2010 May 10.

Point the kids to the Photon Pile-up Game at http://spaceplace.nasa.gov/en/kids/galex/photon, where they can have fun learning about the particle nature of light.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

The Bays Mountain Astronomy Club

Find out more at our website:
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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.

Made on a Mac!

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Kingsport, TN 37660