

Bays Mountain Astronomy Club

☞ *Next Meeting: Feb. 3* ☞

SKYWARD

It seems kind of weird to be sitting out on the porch writing the February newsletter. I'm sure we will pay for this beautiful weather soon, but I'm very thankful for the clear nights we've had lately. I have really taken advantage of it and have had some great observing opportunities lately. I recently bought another telescope and had to meet the guy in Pigeon Forge to pick it up, so I took the wife and kids along to try out the new indoor water park, which by the way is amazing! As usual, I couldn't wait to set it up and try everything out, so I set it up in the parking lot of the motel to make sure everything worked like it was supposed to. Shortly after I got set up, six vans pulled in loaded down with teen aged kids that were visiting from Alabama on a trip with their church. Of course the first kid out of the van ran over and said WHOA! Cool telescope! Can I see? This turned into about three hours of Oooo's and Ahhh's and we had a great time looking at Jupiter, Orion, and a few other things. The new scope is an 8" Meade LX50 with the Magellan II hand controller. I bought it to try some astrophotography. I get the



astrophotography bug about every other year and then give up on it after two or three tries, so if you are in the market for a good 8" Meade, I'm sure one will be available in a month or so. Our January meeting was held at the Golden Dragon Buffet in Kingsport. We had a good crowd show up, and had some great food. The only business was a discussion about the upcoming BoBfest. We have several members that will attend, and I will give a report in next month's newsletter. Things will be picking up a lot in astronomy over the next couple months with the spring public observing and planning for Astronomy Day, so please try to help out with these events all you can. Our speaker for February will be Dr. Gary Henson from the Physics Department at East Tennessee State University and his talk will be on polarized light. I'm sure you won't want to miss this one! Until then, take advantage of this beautiful weather and get outside! After dark of course....

Clear skies!

BY BRAD DUNN

Calendar

Special Events

Apr. 28 Astronomy Day!

SunWatch

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

Mar. - Oct., weather permitting.

BMACers are always welcome to help.

StarWatch

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8 p.m.: Mar. 17, 24 & 31

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Mar. 2 Topic TBA.

*EYE TO THE SKY**BY BOB SMITH*

This month's "Eye to the Sky" article is from Terry Alford.

February opens with a waxing gibbous Moon shining brightly midway between two of the largest open star clusters in the sky, the Pleiades and the Hyades. This will be a nice photo opportunity if you have a wide angle lens. A week later, on the 7th, the Moon is full. Two more weeks later, we will have a new Moon.

If you are a planet watcher there will be ample opportunities in February. As soon as darkness falls, the mighty planet Jupiter will dominate the southeastern sky. Be sure to study Ol' Jove with your highest power eyepiece that still gives a steady image. Try different color filters such as light blue to tease out more subtle details in the cloud bands. If you have an OIII filter use it on Jupiter. I know it sounds crazy and Jupiter will look like something out of a 1960's hippie movie, but you will see more detail.

In the western sky it will be difficult to not notice Venus. At the start of the month it shows a gibbous disk through a telescope. Each night it will rise slightly earlier as it races in it's orbit to "catch up" with the Earth. If you can find Venus in the daytime sky, use a #47 violet filter and you just might get to see some cloud details.

Mars rises in the east around 8 p.m. or so this month. Although the angular diameter of Mars is still small, it is large enough to pick out some major features, such as the polar cap. Use your highest power eyepiece and wait for moments of steady skies to tweak out finer details. Again, use different color filters to see various features. Mars

will reach opposition on March 3rd, so now is the time to wear it out with your telescope.

Possibly no other telescopic object in the sky offers up such a wow factor than Saturn does. The rings have opened up a little more and the view is mesmerizing. Even though Saturn doesn't rise until around midnight at the start of the month it will reach opposition in mid April and thus is very close to Earth. I can confidently predict that the ringed planet will be a big hit with the public this coming StarWatch season. Maybe we will get another "white storm" on the planet this year.

On Feb 22nd, there will be a very thin one day old crescent Moon. About a half hour after sunset, find the Moon with your binoculars. Swing your glasses over to the left to see the elusive planet Mercury. By the end of the month Mercury will be more than 10° above the western horizon and on the way to it's best evening showing of the year.

There are many other fine telescopic targets in the February night sky. Canis Major, Orion and Auriga have lots of eye candy with open clusters and nebulas galore. The next time you observe the Great Nebula in Orion, spend some time to the south with the smaller constellation Lepus. M79, the only winter globular cluster is fairly bright and quite striking. The long period variable star known as Hind's "Crimson Star" deserves some observing time if it is near it's maximum brightness level. Seven arc minutes due east of alpha Leporis is one of the most unusual objects in the sky. H3780 (aka NGC 2017) is a small cluster of six stars that are

gravitationally bound together. This lovely little cluster is easily resolved and you will notice the stars having different colors. Well worth searching out.

This is a great time of year to search for Sirius B, the "Pup." Sirius's companion star is not really faint, it just gets so overwhelmed by the glare of the primary. Sirius can often be seen before sunset. On a clear, transparent evening, locate Sirius with your scope during twilight. Try different eyepieces and try placing Sirius just outside the field of view. With a little patience and luck maybe you will get a glimpse of the Pup. If so, congratulations! A lot of amateur astronomers have never seen the Sirius B.

So if you think it is too cold to set up your scope on a clear February night, bundle up and dash outside with your binoculars. There are plenty of naked eye and binocular targets available this month.

STAR STUFF

BY TERRY ALFORD

Hi everybody. Terry Alford and I have talked about this for a while and decided to swap newsletter columns this month. The reasoning was to give an overview of GOTO telescopes and my (fairly) new Celestron 6SE.

First, let me give a little background info. My first telescope (1980 or so) was a Meade 6" Newtonian. This was a fine telescope and fed my addiction to long nights under the stars. I flew through the Messier list and of course contracted "aperture fever" pretty quickly. My next scope was a well used Coulter 13.1" around which I built a Dobsonian mount. This served me well for many years and took lots of rides out to the darkest skies I could locate. After a few years though my neighborhood where I usually observed became more light polluted and I started concentrating more and more on the planets and the Moon and Sun. I purchased a 5" refractor on an equatorial mount but I knew what I really wanted was a small scope with GOTO ability.

Toward the end of 2009 the Celestron 6SE was selling for \$800 plus a \$100 rebate. This was in my price range and I knew the 6" size would be just about right for planets and the Moon. Plus, the step up to an 8" would put me at \$1000—too much.

Here are a few of my observations:

The telescope came in two boxes—one containing the leg-set/mounting plate and the other the telescope and drive/control arm. The leg-set weighs 9 pounds and the 6" telescope and drive is 21 pounds. The diameter of the legs is sufficient to

make the assembly very stable while the single-arm holder for the telescope is also a very rigid mounting. Bumps to the scope settle quickly and I've never had any concern over vibration. I haven't played with an 8SE (which weighs 24 pounds and comes on an identical leg set, base, drive and holder) but the few people I've talked to seem pleased with the larger scope also. The only drawback to the 6" f/10 scope is that it provides very dim views of galaxies and extended objects.

M81 and 82 are

difficult.

The scope is powered by 8 internal AA batteries. I found out very quickly that these weren't enough power. On a 50° night these might last 5-10 minutes. The first accessory was an external high capacity battery. You can pick up one of these little

automobile jump start batteries from Wal-Mart for about \$39 for a 7 amp hour or \$89 for a 9 amp hour version. I chose the cheaper model with one accessory plug and it has never seemed to run low over my average observing session of 1 to 2 hours. I at first thought I had internal tracking problems with the scope but soon found out it was the connections in the wire coming from the battery to the telescope. I took the plug apart and discovered that of the 20 or so strands of wire inside only 2 or 3 were connected and conducting. Then after more problems I discovered the other end was the same way. After fixing both ends I've had no further problems with tracking.

It is very important to level the leg-set before the scope is attached. This is accomplished with a small bubble level that you set on the flat surface of the mounting plate. It looks like Celestron would have spent another dollar and permanently mounted the level into the mounting plate and I'm sure they do on more expensive models. So far I haven't lost the little plastic level but I bought another just in case.

When the power switch is turned on you must input your approximate location from an internal data base (one time only—Johnson City was closest), the date, time, time zone and Daylight Savings Time if applicable.

(Continued on page 6)



BOOK REVIEW: *A MORE PERFECT HEAVEN* BY DAVA SOBEL

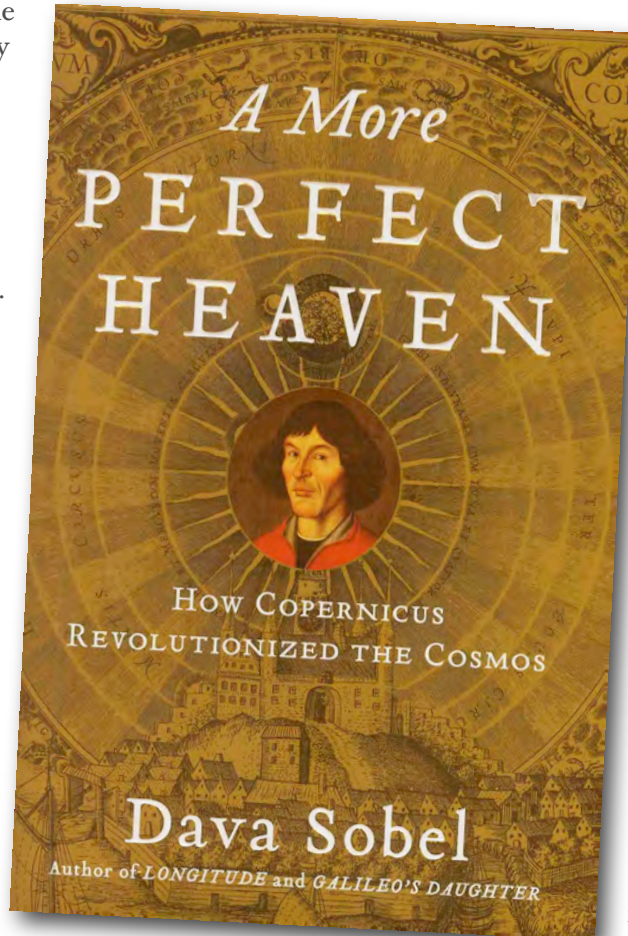
BY ROBIN BYRNE

Another astronomy book has crossed my path, so it's time to review it. "A More Perfect Heaven: How Copernicus Revolutionized the Cosmos" by Dava Sobel is an interesting combination of a biography of Copernicus, a history of his scientific ideas and how they fit into the cultural history of the time, and a fictional two-act play about the pivotal time when Copernicus was convinced to write his book, "On the Revolutions."

Much of the material covering the life of Copernicus has been written in other books. However, as usual, Dava Sobel manages to add so much more to the story by including the cultural history surrounding the events. As a Canon in the Catholic Church, Copernicus had many mundane responsibilities, such as overseeing transfers of land, making sure the peasant farmers supplied the required amount of goods each month to the church, and advocating for a currency standard. But, at the same time, he devotedly studied the night sky and made observations of the positions of the planets whenever possible. Because of his accurate observations, which provided a more precise measurement of the length of a year, Copernicus was consulted about calendar reform, which ultimately led to the development of the Gregorian calendar used today.

What is not known, however, is when Copernicus came to the conclusion that a much simpler

explanation of the sky's motions would require a moving Earth. He did not document his internal thoughts or the process that brought him to this "revolutionary" idea. What is clear, is that Copernicus knew that all of the convoluted



epicycles of Ptolemy still didn't accurately predict planet positions, no matter how many extra circles upon circles were added. This lack of accuracy, coupled with the complicated system that had grown out of the initial geocentric model, certainly were motivations for Copernicus to find a better solution.

Meanwhile, surrounding this dramatic change of thought, other dramatic changes were occurring. Martin Luther was leading a split from the Catholic Church, resulting in the formation of the Lutheran faith. Years of violence and discrimination ensued as the

Catholic Church tried to prevent the inevitable divide. It was near the peak of anti-Lutheranism, when a Lutheran mathematician, Georg Joachim Rheticus, approached Copernicus. Despite the danger Rheticus faced if he were caught in the home of a Catholic, he remained for an extended period of time, encouraging and assisting Copernicus to publish his observations and conclusions. This encounter between two unlikely colleagues is the focus of the two-act play, presented in the middle of the book. Here, Sobel gets to use her imagination about the conversations they must have had, which ultimately led to Copernicus' book being published just as he lay on his deathbed. Although a work of fiction, the play does incorporate many known events from both the lives of Copernicus and Rheticus to lend it historical relevance.

Sobel goes past the end of Copernicus' life to discuss how his book was received. Naturally, many accused it of being heretical. Although never banned, presumably due to the useful tables for

(Continued on page 6)

NASA SPACE PLACE

The Nerdiest Video Game Ever**By Dr. Tony Phillips**

NASA has a job opening. Wanted: People of all ages to sort, stack, and catalogue terabytes of simulated data from a satellite that launches in 2015. Agile thumbs required.

Sorting terabytes of data? It's more fun than it sounds.

In fact it's a game: Satellite Insight. The Space Place Team at the Jet Propulsion Laboratory created the entertaining app for iPhones to get the word out about GOES-R, an advanced Earth science satellite built by NOAA and NASA.

Described by the Los Angeles Times as possibly "the nerdiest game ever," Satellite Insight may be downloaded for free from Apple's app store. Be careful, though, once you start playing it's hard to stop. Some reviewers have likened it to Tetris, one of the most popular video games of all time.

GOES, short for "Geostationary Operational Environmental Satellite," is the workhorse spacecraft for weather forecasters. NOAA operates two (at a time) in geosynchronous orbit, one above the west coast of N. America and one

above the east coast. They monitor clouds, wind, rain, hurricanes, tornadoes and even solar flares.

The GOES program has been in action since 1975.

GOES-R is the next-generation satellite with advanced technologies far beyond those of the older GOES satellites. It has sensors for lightning detection, wildfire mapping, storm tracking, search and rescue, solar imaging, and more. Many of the sensors are trailblazers. For example, the Advanced Baseline Imager has 60

count and pinpoint lightning bolts over the Americas 24/7. It's the first such detector to fly on a geosynchronous satellite, and it could lead to transformative advances in severe storm warning capability.

All in all, GOES-R represents a "huge technological leap from the current GOES." We know this because Satellite Insight tells us so. The app has an informative "Learn More" feature where players can find out about the satellite and the data they have been sorting.

Which brings us back to sorting data. It's a bit like eating Cheerios; just don't tell the kids it's nutritious, and they love it. Helping GOES-R gather and stash data from all those advanced sensors is just as satisfying, too—a dose of Earth science wrapped in thumb-flying fun.

More information about Satellite Insight may be found on the web at <http://>

itunes.apple.com/us/app/satellite-insight/id463588902?mt=8. The game is also available in web form (flying thumbs optional) at spaceplace.nasa.gov/satellite-insight.

satellite-insight.

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



This new iPhone game is the first NOAA app and only the second game app from NASA. Just as with the real GOES-R, the challenge with Satellite Insight is to keep up with the massive influx of weather and other environmental data.

times the capability of the current imager—16 channels instead of 5. It has twice the spatial resolution and five times the temporal refresh rate, including the 30-second imaging of weather systems over a region of 1000 km x 1000 km. Also, the Geostationary Lightning Mapper can

MISCELLANEOUS

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

The handset will then ask you which alignment you wish. Solar system, one star, two star, three star or auto align.

I generally use either Solar System alignment when following planets or a two-star alignment if I'm going for M- or NGC-objects. Once aligned, the scope will track well for 10-30 minutes depending on how carefully it was set up. You can re-define the alignment as you go along. One of the problems I've found in setting up for StarWatches is with the unit power finder which is a red-dot gun sight. By the time the sky is dark enough to locate alignment stars to use in the finder the public has crowded around and is clamoring to look. This makes me rush sometimes and it's easy to make mistakes like imputing Saiph for Rigel. Not good for alignment.

One of the handiest parts of the menu is letting the telescope tell where you are pointed using RA and Dec. Once the scope is aligned correctly you can use this menu to locate brighter asteroids and stars if you know their position.

I could go on and on but you get the drift. I've been very happy I finally spent the money to buy my GOTO. Some people think these scopes are a detraction to the hobby but I certainly don't. It has only added to the pleasure of keeping up with the planets.

Book Review**by Robin Byrne***(continued from page 4)*

calculating planetary positions, the book was on a list of questionable publications. These books were required to have certain passages amended by the owner before they had permission to keep it. We even venture into the works of Brahe, Kepler and Galileo, all of whom were influenced by "On the Revolutions." Finally, we even get a taste of modern astronomers studying original copies of the book, and forensic scientists exhuming Copernicus' skull to create an image of what he would have looked like in old age.

Dava Sobel continues to produce books that are enjoyable on so many levels. Whether you simply want to know about the life of Copernicus, or wish to understand the religious turmoil of 16th century Europe, or want to indulge in imagining the conversations held by great men of the time, "A More Perfect Heaven" will provide exactly what you are looking for.

"A More Perfect Heaven: How Copernicus Revolutionized the Cosmos" by Dava Sobel, Walker Publishing Company, 2011

Regular Contributors**BRAD DUNN**

Brad is the current chair of the club and a member since 2007. During the day, he runs Dunn Professional Billing and Dunn Construction.

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.



Upon driving home from work on January 4th, a fantastic sunset had commenced. As the minutes progressed, this beautiful sun pillar had appeared. The foreground shows a church and the local TV station, WJHL. The photo was taken at 5:30 p.m.

Adam Thanz,

The Bays Mountain Astronomy Club



Find out more at our website:

www.baysmountain.com

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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.

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