Bays Mountain Astronomy Club

☞*Next Meeting: Nov. 4*☜

SKYWARD *BY BRAD DUNN*

I guess if we didn't have all of those rainy, hot, nasty nights in the summer months, we couldn't appreciate these pristine nights we've had to enjoy in the Fall. I look forward to September and October all year. The weather finally cools down enough to enjoy the outdoors, football gets kicked off, and the mountains burst with color and the night sky seams to shed its dull cover to reveal its countless twinkles. What more could an amateur astronomer ask for? I have been out observing at least one night every week over the past month and since the recent addition to my scope family, I have been out every night it is clear. Wayne came across the mountain last weekend to help me fine tune the collimation on "Fat Boy." We had a great night of deep sky observing with the new scope.

We had an observatory cleaning day for the September meeting in preparation of the StarWatches and StarFest. We also had a handful of people who showed up and wanted to look through the telescopes, so we opened the dome and Bob Smith and Greg Love got their scopes out to do some observing. Bob gave a short talk about telescopes and pointed out some objects in the sky. Although these cleaning meetings aren't usually filled with excitement, we had a great turnout, and ended up having a good night of talking and viewing.

I will be giving a presentation at the November meeting entitled "Astronomical Myths." In preparing for this talk, I must admit that I have been surprised by a few of these misconceptions that have been passed down over the years. I think this will be fun and may spark some controversy among some people that are convinced that they are true. I am going to throw in some facts also and let you guys try to figure out fact from fiction. We will take plenty of time to talk about each myth and fact. After the presentation we will open the meeting for any new news or business. Until then, get outside and look up!

Calendar

SunWatch

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

Mar. - Oct., weather permitting.

BMACers are always welcome to help.

StarWatch

7 p.m.: Oct. 15 22 & Nov. 5

6 p.m.: Nov. 12, 19 & 26

BMACers need to arrive 30 min. early to set up.

BMAC Meetings

7 p.m., Discovery Theater

Nov. 4 Astronomical Myths will be busted by our own Brad Dunn.

Dec. 2 Topic TBA.

EYE TO THE SKY *BY BOB SMITH*

Venus and Mercury begin the month very close together in the southwestern evening sky. Let's start off with Venus which is always easy to locate at -4 magnitude. Our "Sister Planet" is just coming back to the evening sky and is still a little low, only about 10 degrees above the horizon as the sky darkens. If you can stand the trembling effect of our atmosphere, spend a few minutes looking at Venus through your telescope. The brilliant white planet is almost 100% illuminated and about 145 million miles from Earth. If you set up your telescope early and spy Venus while the sky is still fairly light, try observing through a blue or purple filter. At times you may be able to observe streaky features in the Venusian atmosphere.

Once you pick out Venus it should be easy to locate tiny Mercury just a couple degrees further toward the horizon. The fainter point of light is -0.3 magnitude the first couple of weeks of the month and should be easy to locate as the evening light fades. The two planets are closest together on the 10th, but Mercury begins its slow slide toward the horizon and will be gone by around the 20th. Venus continues to ascend and becomes a shining beacon through the winter. The evening of November 26th finds the thin crescent Moon just 3° from bright Venus.

As these two companions slide toward the horizon look over to the east to locate the "King of the Planets" Jupiter. The giant planet is magnitude -2.9 and immediately recognized in the rather dim area around Pisces and Aries. Jupiter never fails to impress through even the smallest scope. With a night of steady air and high magnification several belts and zones in the Jovian atmosphere stand out. With a large scope, even a few festoons and swirls appear in among the lighter areas. Try for the Great Red Spot if you haven't seen it for awhile. The GRS is fairly dim and certainly not red but it's a treat to be able to point it out to other observers. Hunt down this giant storm as it hides along the Southern Equatorial Belt. It will be on the meridian November 2nd-10:07; 4th-11:45; 5th-7:36; 7th-9:14; 9th-10:52; 10th-6:43; 11th-midnight; 12th-8:31; 14th-9:59; 16th-11:37; 17th-7:29; 19th-9:07; 21st-10:45; 23rd-midnight; 24th-8:14; 26th-9:53; 28th-11:31; 29th-7:22. These times are only for the evening hours (6:30 p.m. to midnight) when most people are viewing. The GRS is also visible at other times of the night if you're a real night owl. The almost-full-Moon is very close to Jupiter the night of the 9th.

If you're up and about these early November mornings be sure to pick out Mars among the stars of Leo the Lion. The morning of the 10th finds the "Red Planet" just 1.4° north of Regulus. The planet is magnitude 1.0 and its ruddy color contrasts well with blue-white Regulus. Mars grows to about 7″ across this month and those of you with larger scopes should be able to pick out some of the larger and darker features on the surface. We are looking at the northern hemisphere of the planet and the north polar cap should be visible in moments of steady seeing.

Saturn returns to the eastern pre-dawn sky this month but is still fairly low even at the end of November. Saturn passed the Sun in our sky back in October and is just starting to pull ahead in its orbit. By the 30th, the magnitude 0.8 planet should be 20° high as the Sun washes out the view. December will bring much better views of the "Ringed World."

Have you spied Comet Garradd yet? Better hurry, the 7th magnitude comet is racing past Earth and won't be around too much longer. Located about 10° from Alpha Herculis and high in the sky, the comet has a small tail but is still pretty hard to locate. Check Heavens-Above.com or any of the other on-line services to find exact co-ordinates and maps.

Finally, we have a pretty major meteor shower this month. The Leonid shower is famous for 33-year-interval outbursts that can bring hundreds of meteors per hour out of the constellation of Leo the Lion. Most years it's a fairly steady shower with 10-20 meteors per hour under a dark sky. The shower will peak the morning of November 18th with a waxing last quarter Moon riding close to Leo. If you happen to be out in the country, block out the Moon with a tree or building and see how many Leonids you can spot.

STAR STUFF

BY TERRY ALFORD

For 10 years now I have been teaching astronomy labs at ETSU. While I have seen a great number of bright and energetic kids, there are also some students that take Astronomy 101 or 102 just to punch a ticket for a science course. This latter type often express surprise that they would actually have to think about science and actually do some math to complete the course. These guys can come with some pretty odd and amusing answers to the questions in the labs. Below are some of my favorites.

Q: What is the ecliptic?
A: "The ecliptic is where the Sun takes up half the sky on the horizon."

Q: Why are the celestial equator and the ecliptic different?
A: "They are different because the Earth rotates on it's crooked axis."
A. "The ecliptic is an actual path which the Sun is shining (sic), the celestial equator is merely a reflection."

Q: What constellation is Jupiter in?
A: "Vertigo."

Q: Suggest a new interplanetary spacecraft. What object would you target? Why?
A: "I would send an interplanetary spacecraft to Uranus to study it's orbit pattern. I would call it Up Yours."

Q: Explain why the density of the Galilean moons change with their distance from Jupiter. (Hint: In the very early solar system the planet and moons were hot from the conversion of gravitational potential energy into kinetic energy.)
A: "Because as the moons move further away from Jupiter the hotter they get and water boils to become solid."

Q: Describe the famous event of Comet Shoemaker-Levy 9 collision(s) with Jupiter and relate it to the accretion phase in the formation of the solar system.
A: "A comet was eliminated from the accretion disk (sic)."

Each lab concludes with an Experiment Summary. This is supposed to be a paragraph that outlines what the student did and learned in the lab.

"I looked up on the internet the densities of Jupiter's moons and determined their composure."

"We used the internet to answer lab questions about important astrological objects."

"We got to see Saturn and Andromeda through the telescope. Saturn looked fake."

HAPPY BIRTHDAY ANDERS CELSIUS

BY ROBIN BYRNE

This month, we celebrate the life of an astronomer whose name lives on whenever we measure the temperature. Anders Celsius was born November 27, 1701 in Uppsala, Sweden. His father, Nils Celsius, was a professor of astronomy, his paternal grandfather, Magnus Celsius was a mathematician, and his maternal grandfather, Anders Spole, was an astronomer. Coming from such a family, it is no wonder that Anders followed a career in science as well.

With his strong mathematical skills, Anders pursued a degree in astronomy at Uppsala University, where his father taught. While a student there, he was respected enough to be named secretary of the Royal Society of Sciences in Uppsala. He would continue to hold that position until his death. Shortly after graduation, in 1730, Anders was named a professor of astronomy at Uppsala University, where he remained for the rest of his life. The same year he began working at Uppsala University, Celsius published his first book, detailing a method for determining the distance between the Earth and the Sun.

One of Celsius' first areas of study was the aurora. Working with Olof Hiorter from 1716 to 1743, Celsius was the first to suggest that there was a connection between the aurora and Earth's magnetic field. Using a compass, he found that the magnetic field was stronger when aurora were occurring. He published a book of his findings in 1733.

In 1732, Celsius began a four-year journey he called his "grand tour." Traveling to Germany, Italy and France, Celsius visited all of the major European observatories and worked with many notable astronomers. It was while he was in Paris, that the seeds were planted for his next major work.

Isaac Newton

had suggested that Earth was not shaped exactly like a sphere, but was, instead, wider at the equator. To determine if this were true, it would be necessary to measure a one degree section of Earth near the pole, and another one degree section near the equator. The French Academy of Sciences proposed doing just that. Celsius suggested measuring the northern arc in Tornea, in the Lapland region of Sweden. The equatorial arc would be measured in, what is today, Ecuador. The expedition leader to Lapland was Pierre Louis Maupertius, and Celsius served as the sole astronomer in the group. His participation in this project, and subsequent publications, gained Celsius much respect with the Swedish government.

Celsius cashed in on this recent popularity with the Swiss authorities by garnering the financial support to build an observatory at Uppsala University. Completed in 1741, the Uppsala Astronomical Observatory was filled with state-of-the-art equipment Celsius had amassed during his tour of European observatories, and was dedicated to the study of the universe.

With the new observatory at his disposal, Celsius began a series of observations of stars, with the intent of measuring their brightness. Up to this point, stellar magnitudes were merely estimated by their visual appearance. Celsius used plates of glass that were slightly colored. The magnitude of a star was determined by the number of glass plates needed to make the star too dim to see. The brightest star, Sirius, required 25 plates to obscure it. Celsius published a

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NASA SPACE PLACE

The Gray Cubicle You Want to Work In

By Dr. Tony Phillips

It's another day at the office.

You're sitting in a gray cubicle, tap-tap-tapping away on your keyboard, when suddenly your neighbor lets out a whoop of delight.

Over the top of the carpeted divider you see a star exploding on the computer screen. An unauthorized video game? No, this explosion is real. A massive star just went supernova in the Whirlpool Galaxy, and the first images from Hubble are popping up on your office-mate's screen.

It's another day at the office... at NASA.

Just down the hall, another office-mate is analyzing global temperature trends. On the floor below, a team of engineers gathers to decode signals from a spaceship that entered "safe mode" when it was hit by a solar flare. And three floors above, a financial analyst snaps her pencil-tip as she tries to figure out how to afford just one more sensor for a new robotic spacecraft.

These are just a few of the things going on every day at NASA headquarters in Washington DC and more than a dozen other NASA centers scattered around the country. The variety of NASA research and, moreover, the variety of NASA people required to carry it out often comes as a surprise. Consider the following:

Some of the employees of NASA's Science Mission Directorate may work in gray cubicles, but their jobs are anything but dull. They get to study Earth, the Sun, the Solar System, and the Universe!

NASA's Science Mission Directorate (SMD) supports research in four main areas: Earth Science, Heliophysics, Astrophysics, and Planetary Science. Read that list one more time. It includes everything in the cosmos from the ground beneath our feet to the Sun in the sky to the most distant galaxies at the edge of the Universe. Walking among the cubicles in NASA's science offices, you are likely to meet people working on climate change, extraterrestrial life, Earth-threatening asteroids, black holes or a hundred other things guaranteed to give a curious-minded person goose bumps. Truly, no other government agency has a bigger job description.

And it's not just scientists doing the work. NASA needs engineers to design its observatories and build its spacecraft, mathematicians to analyze orbits and decipher signals, and financial wizards to manage the accounts and figure out how to pay for everything NASA dreamers want to do. Even writers and artists have a place in the NASA scheme of things. Someone has to explain it all to the general public.

Clearly, some cubicles are more interesting than others. For more information about the Science Mission Directorate, visit science.nasa.gov. And for another way to reach the Space Place, go to http://science.nasa.gov/kids.

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MISCELLANEOUS

Happy Birthday

by Robin Byrne

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catalog of magnitudes for 300 stars, with an accuracy within 0.4 magnitudes.

However, what Celsius is best known for is his temperature scale. Thermometers work because certain liquids, like alcohol and mercury, expand when they are heated, and contract when cooled. That doesn't change from thermometer to thermometer. What can be changed is what conditions are used to establish the calibration points for the scale. At the time of Celsius, several scales were in existence, most of which used a division of 100 units. Celsius, too, proposed a scale with 100 divisions, but his was unique in that he used physical phenomena to establish the end points. In his original scale, Celsius set the temperature of boiling water to be 0° and the temperature of freezing water to be 100°. This was later reversed, in 1745, by Carl Linnaeus. Celsius was very precise in his determination of the calibration points, running experiments to make sure that the freezing point didn't vary with latitude or with atmospheric pressure. He also measured how the boiling point DID vary with air pressure, and established a way to compensate, depending on what the pressure was. Celsius presented his scale to the Royal Society of Sciences, and proposed calling it the "Centigrade" scale, which derives from Latin for "hundred steps." In 1948, it was adopted almost worldwide, and called the Celsius scale.

Celsius continued to work on many projects. Working for the Swedish General map, he discovered that Scandinavia is slowly rising in altitude. This was later found to be due to ice from the last major ice age, melting, thus reducing the downward pressure on the land. Celsius was an early supporter of adopting the Gregorian calendar in Sweden. However, it wasn't until 10 years after his death that the nation made the change. He also, in his spare time, wrote poetry, and had begun a science fiction story located on Sirius, but died before finishing it.

Anders Celsius was stricken with tuberculosis at the age of 42, and died soon thereafter on April 25, 1744. He was buried next to his grandfather, Magnus, in Uppsala. For someone who lived such a short life, Anders Celsius certainly made the most of his time, and his incredible body of work is a testament to his diligence. Despite America's stubborn refusal to convert to the metric system, it is slowly infiltrating our everyday lives. Many public displays of time and temperature include both Fahrenheit and Celsius temperatures. The next time you drive by one of these displays, give a cheer for Anders Celsius and all of his accomplishments.

References:

Anders Celsius - Wikipedia

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

Anders Celsius (1701-1744)

http://www.astro.uu.se/history/Celsius_eng.html

Anders Celsius Biography

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.

http://www.notablebiographies.com/Ca-Ch/Celsius-Anders.html
Celsius, Anders | Project Galactic Guide
by Henrik O A Barkman
http://www.galactic-guide.com/articles/2R151.html
The History of the Thermometer
http://inventors.about.com/od/tstartinventions/a/History-Of-The-Thermometer.htm

"A Part of the Sky Called Orion" showing at 2 p.m. on Sat. & Sun. during November and December. Bays Mountain Planetarium.

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.

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Kingsport, TN 37660