Bays Mountain Astronomy Club

☞*Next Meeting: Aug 1*☜

REFLECTIONS *BY WILLIAM TROXEL*

Greetings fellow amateur astronomers! Hope each of you have had a great summer so far. I hope each of you made it out to the annual picnic at Natural Tunnel State Park. I want to thank everyone for your work and help with our annual event. August also marks two months until StarFest. As we get closer, Adam will be asking BMACers that are attending to help with a small part of the event. This way, we can help, but not be burdened with a heavy load.

The August meeting will highlight Kayla Jenkins, Sullivan South High School Junior/Senior and planetarium intern. She will speak of her open cluster research.

I want to pass on some updates on events that the club participated in the last few months. I got approved as the Boy Scouts of America Astronomy Merit Badge Counselor! As such, I'll help coordinate the club members so we can be a go-to source for scouts to help complete their requirements. I hope to have a copy of the requirements for the club finished by the 2014 Fall StarWatches at Bays Mountain. I will have a copy in both observatories. During the August meeting, I will go over details about the program and what you may be asked to do should one of the scouts come to you asking about the requirement(s). Don't worry, I feel that any of us with some basic understandings of the night sky can help a young scout. If the club works as a team, then a scout will have received enough help for us to be able to complete their requirements for the merit badge. I do not think that we will see a large number of scouts coming to the StarWatches because this is not the easiest of the merit badges that the scouting program offers. No matter the numbers, my goal is that any member will be able to help a young person with the merit badge.

Greg Love and myself were part of the Sevier County Library's Summer program on Friday, July 11. We had between 20/ 30 young people who attended the program. Because of the full moon less then 2 days past the viewing, it was not good for stars. However, we did have several pairs of binoculars for the students to use and we still had some great viewing of the moon, and its surface. I heard a few comments like: "wow," "it looks close enough to touch," and "I've never seen the craters that clear before." I think that everyone enjoyed the presentation and learned a lot. The library staff is including the Bays Mountain website with the information they give out to the home schooler's as field trips and learning experiences.

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Calendar

Special Events

Oct 17-19 StarFest. This is BMAC's 31st annual regional astronomical convention/ star gathering. Visit the club's website for registration forms. Pre-registration with payment is mandatory in order to attend.

SunWatch

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

Mar. - Oct., weather permitting.

BMACers are always welcome to help.

StarWatch

Oct. 4, 11, 7:30 p.m.

Oct. 18, 25, Nov. 1 7 p.m.

Nov. 8 15, 22, 29 6 p.m.

BMACers are always welcome to help with this nighttime viewing program for the public. Please show up about 30 min. prior to help set up.

BMAC Meetings

7 p.m., Discovery Theater:

Aug. 1 Kayla Jenkins will speak on her open cluster research. Const. Quest and Amateur Ast. Corner TBA.

Sep. 5 Mark Marquette will present: "Is Mars an Abode for Life?" Const. Quest and Amateur Ast. Corner TBA.

6 p.m., Observatory:

Oct. 3 6 p.m. Observatory cleaning and ?. Const. Quest and Amateur Ast. Corner TBA.

7 p.m., Discovery Theater:

Nov. 7 Meeting et al.TBD. Const. Quest and Amateur Ast. Corner TBA.

Dec. 5 Meeting et al.TBD. Const. Quest and Amateur Ast. Corner TBA.

STAR STUFF *BY TERRY ALFORD*

Well, the planetary parade has certainly changed from July to August. Mercury makes a solid appearance late in the month low in the southwest after sunset.

Venus is still low in the eastern sky right before dawn and is still very noticeable at magnitude -3.8. A scope will show it as a round, featureless disk. After August 7, something really interesting happens. Jupiter has come from behind the Sun and is creeping up on Venus from below. Jupiter will be easy to spot as it shines at -1.8 magnitude. Each morning it will be closer to Venus until they crash into each other on August 18! Not really, of course. But about an hour before sunrise they will separated by a mere 0.3°. This is considerably less than the angular diameter of the Moon. This will be the closest pairing of these two planets since the year 2000. A low power telescopic or binocular view will easily show both planets in the same field of view. With a wide enough fov and a clear sky, the Beehive Cluster (M44) will be just to the left of the planets and should be visible. Hello photo op.

As darkness settles in, Mars and nearby Saturn will become visible in the southwest. They are similar in brightness. Mars is 0.4 magnitude and Saturn is 0.5 magnitude. Nearby is the 1.0 mag star Spica. It is interesting to compare the three of them with naked eye and binoculars. Note the colors and how the planets may shine steadily while Spica twinkles noticeably. Through a telescope, Mars is a small, featureless disk that is only 8" in diameter at the start of the month. Saturn still is well worth viewing. Its globe is 17" wide and, of course, the ring system is much wider. By August 21, Mars will be 3 1/2° under Saturn. By this date both planets will be at 0.6 magnitude. Another photo op from the 21st until the 26th.

Uranus rises late in the evening this month. It is now in Pisces. At 5.8 magnitude it could be naked eye visible from a dark site. Later in the night, view it with a telescope at relatively high magnification to see the 3.6" wide disk.

Neptune rises a little earlier in the evening. It comes into opposition on the 29th of the month but is still rather faint (mag 7.8) and small (2.4" wide).

Our Moon is full on August 10 and is very close to perigee, it's closest approach to Earth. Therefore the Moon will appear the largest of any lunar cycle this year. Will this be a "Super Moon?" Unfortunately, this larger than usual Moon will hinder the Perseid meteor shower a few nights later. This famous shower is predicted to peak around nightfall on August 12. Go out then and find the darkest part of the sky you can see. Settle down in a reclining lawn chair or a blanket and relax. Maybe you will see a few earthgrazing Perseids or even a bright sporadic meteor.

Lonnie Sparks

It is with sad news that I write on the passing of Lonnie. He was a long-time member of this club. He was always willing to help out and lend a hand. If you knew him, you'd know he was definitely a behind-the-scenes person. I'll share a funny story: I don't know if any of us knew his real birthday, but whenever the club went out to dinner after Astronomy Day, someone would tell the restaurant staff that it was his birthday. Of course, this resulted in Lonnie being embarrassed by receiving a slice of cake and an uproarious sing-song.

StarFest 2014

The details for our annual astronomy convention/star gathering event from our club has been set. The dates are October 17-19, 2014.

Read all about it here: http://www.baysmountain.com/astronomy/astronomy-club/?GTTabs=4

HAPPY BIRTHDAY METEORITE HITS

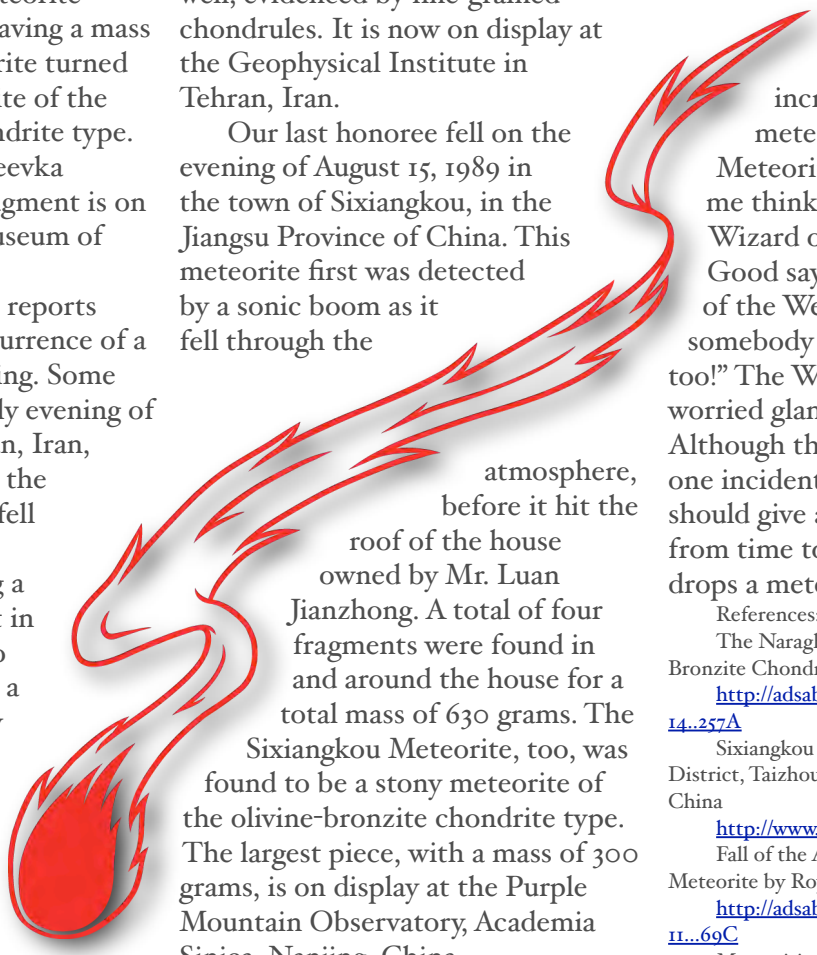
BY ROBIN BYRNE

This month we celebrate the anniversary of not one, but three separate incidents of meteorites hitting a building.

The first such event occurred the evening of August 7, 1969 in the village of Andreevka in the Slaviansky district of the USSR. This one fell through the roof of someone's house. The owner found a total of 600 grams of meteorite pieces, with the largest having a mass of 150 grams. The meteorite turned out to be a stony meteorite of the olivine-hypersthene chondrite type. Now known as the Andreevka Meteorite, the largest fragment is on display at the Donets Museum of Regional Studies.

There are conflicting reports regarding the second occurrence of a meteorite hitting a building. Some say it occurred in the early evening of August 18, 1974 in Esfahan, Iran, while others say it was in the morning. The meteorite fell through the roof of a secondary school, leaving a hole between 1 and 2 feet in diameter in its wake. Two fragments were found by a janitor, who claimed they were still hot. The surface was partially coated with asphalt from the roof, while the remainder was exposed fusion crust. The reported total mass values range from 2.7 to 3.2 kilograms. Now known as the Naragh meteorite, it is a stony meteorite of the olivine-bronzite chondrite type. In 1979, researchers at Stanford University studied sample slices from the meteorite in more detail. They found it to be fine-grained with many glassy chondrules of olivine. The composition is about 80% silicates, 14% metals, with the remaining 6% a variety of other materials. The structure implies that the meteorite experienced a high temperature era, leading to the crystalline structure observed, while a later collision probably occurred, as well, evidenced by fine-grained chondrules. It is now on display at the Geophysical Institute in Tehran, Iran.

Our last honoree fell on the evening of August 15, 1989 in the town of Sixiangkou, in the Jiangsu Province of China. This meteorite first was detected by a sonic boom as it fell through the atmosphere, before it hit the roof of the house owned by Mr. Luan Jianzhong. A total of four fragments were found in and around the house for a total mass of 630 grams. The Sixiangkou Meteorite, too, was found to be a stony meteorite of the olivine-bronzite chondrite type. The largest piece, with a mass of 300 grams, is on display at the Purple Mountain Observatory, Academia Sinica, Nanjing, China.



Meteorites striking buildings, animals and people are not as rare as you might think. From the year 1750 to 2010, there have been 14 known cases of people being hit by meteorites, 6 of animals being struck, and 110 buildings. Since buildings are larger, it makes sense that they would have a higher frequency of impacts. Animals can't report impacts, so their numbers would be lower. Looking at the rate of reported impacts per quarter century, there is an apparent increase of meteorite strikes (rising from only 1 report from 1750-1774 up to 33 in 1975-1999). This is clearly a combination of better communication and higher population densities rather than an increase in number of actual meteorites striking Earth.

Meteorite impacts always make me think of the scene from "The Wizard of Oz" when Glenda the Good says to the Wicked Witch of the West, "Begone, before somebody drops a house on you, too!" The Wicked Witch then gives a worried glance up to the sky. Although the numbers imply roughly one incident per year, maybe we all should give a wary look to the sky from time to time before somebody drops a meteorite on you, too!

References:

The Naragh Meteorite: A New Olivine-Bronzite Chondrite Fall by Adib and Liou
http://adsabs.harvard.edu/full/1979Metic..14..257A

Sixiangkou meteorite, Sixiangkou, Gaogang District, Taizhou Prefecture, Jiangsu Province, China
http://www.mindat.org/loc-69701.html

Fall of the Andreevka, USSR, Stony Meteorite by Roy S. Clark, Jr.
http://adsabs.harvard.edu/full/1976Metic..11...69C

Meteoritical Bulletin: Entry for Sixiangkou
http://www.lpi.usra.edu/meteor/metbull.php?code=23619

Meteoritical Bulletin: Entry for Naragh
http://www.lpi.usra.edu/meteor/metbull.php?code=16909

Meteoritical Bulletin: Entry for Andreevka
http://www.lpi.usra.edu/meteor/metbull.php?code=2296

Meteorite Hits Page
http://imca.cc/old_site/metstruck.html

NASA SPACE PLACE

The Invisible Shield of our Sun

By Dr. Ethan Siegel

Whether you look at the planets within our Solar System, the stars within our galaxy or the galaxies spread throughout the universe, it's striking how empty outer space truly is. Even though the largest concentrations of mass are separated by huge distances, interstellar space isn't empty: it's filled with dilute amounts of gas, dust, radiation and ionized plasma. Although we've long been able to detect these components remotely, it's only since 2012 that a manmade spacecraft -- Voyager 1 -- successfully entered and gave our first direct measurements of the interstellar medium (ISM). [Ed.: Be aware that Voyager 1 is still well within the influence of the Sun's gravity and so, within the Solar System.]

What we found was an amazing confirmation of the idea that our Sun creates a humongous "shield" around our Solar System, the heliosphere, where the outward flux of the solar wind crashes against the ISM. Over 100 AU in radius, the heliosphere prevents the ionized plasma from the ISM from nearing the planets, asteroids and Kuiper belt objects contained within it. How? In addition to various wavelengths of light, the Sun is also a tremendous source of fast-moving, charged particles (mostly protons) that move between 300 and 800 km/s, or nearly 0.3% the speed of light. To achieve these speeds, these particles originate from the Sun's superheated corona, with temperatures in excess of 1,000,000 Kelvin!

When Voyager 1 finally left the heliosphere, it found a 40-fold increase in the density of ionized plasma particles. In addition, traveling beyond the heliopause showed a tremendous rise in the flux of intermediate-to-high energy cosmic ray protons, proving that our Sun shields our Solar System quite effectively. Finally, it showed that the outer edges of the heliosheath consist of two zones, where the solar wind slows and then stagnates, and disappears altogether when you pass beyond the heliopause.

Hubble Heritage Team (AURA / STScI), C. R. O'Dell (Vanderbilt), and NASA, of the star LL Orionis and its heliosphere interacting with interstellar gas and plasma near the edge of the Orion Nebula (M42). Unlike our star, LL Orionis displays a bow shock, something our Sun will regain when the ISM next collides with us at a sufficiently large relative

Unprotected passage through interstellar space would be life-threatening, as young stars, nebulae, and other intense energy sources pass perilously close to our Solar System on ten-to-hundred-million-year timescales. Yet those objects pose no major danger to terrestrial life, as our Sun's invisible shield protects us from all but the rarer, highest energy cosmic particles. Even if we pass through a region like the Orion Nebula, our heliosphere keeps the vast majority of those dangerous ionized particles from impacting us, shielding even the Solar System's outer worlds quite effectively. NASA spacecraft like the Voyagers, IBEX and SOHO continue to teach us more about our great cosmic shield and the ISM's irregularities. We're not helpless as we hurtle through it; the heliosphere gives us all the protection we need!

Want to learn more about Voyager 1's trip into interstellar space? Check this out: http://www.jpl.nasa.gov/news/news.php?release=2013-278. Kids can test their knowledge about the Sun at NASA's Space place: http://spaceplace.nasa.gov/solar-tricktionary/.

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

MISCELLANEOUS

Reflections

(continued from page 1)

Ken, Greg and myself drove over to PARI on Wednesday, July 16, 2014 for the weekly afternoon public tour. That was the first time I had been over to see the campus. I have to tell you that it was a wonderful afternoon. The weather was perfect and we were able to walk around on campus. Ken took some pictures and I hope he will share them with you. I hope we can get enough interest to make another trip over and have a tour just for our members and get some time to interact with the astronomers doing research at the PARI campus. The trip was a little over two hours, going though some really beautiful countryside. I have some of the annual reports to share with the club members at the meeting. I will be sharing some ideas with you and hopefully get conversations started about a field trip to PARI.

This is the start of something very good for this Bays Mountain Astronomy Club. I hope more of you will be able to be a part of future events. We all know that it gives us extra time with our hobby, but it also becomes a tool to introduce this science in a way that no classroom or textbook can. Should you have questions please contact me.

I want to leave you this month with the following quote. "Two things fill the mind with ever new and increasing wonder and awe--the starry heavens above and the moral law within me." (Immanuel Kant, 1781)

I find myself each time I am out under the night sky, wondering if mankind will ever understand the heavens. The more we learn, discover, and apply it seems the more we do not understand. The moral law within ourself sets the limits, maybe someday we can truly get beyond the limits we set. Until then continue to look unto the sky seeking....

Until next time, clear skies.

For Sale

10" Zhumell Dobsonian
2" Crayford-style Focuser
8x50mm Right-angle Finder Scope
1.25" 9mm Zhumell Plossl Eyepiece
2" 30mm Zhumell Wide-field Eyepiece
1.25" Eyepiece Adapter
Excellent Condition
$350.00 OBO

Brandon Stroupe
865-712-9639

Regular Contributors

WILLIAM TROXEL

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

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.

The Bays Mountain Astronomy Club

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:

$16 /person/year

$6 /additional family member

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

Find out more at our website:
http://www.baysmountain.com/astronomy/astronomy-club/

Made on a Mac!

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853 Bays Mountain Park Road
Kingsport, TN 37660