

The Mason-Dixon Astronomer



August Meeting:

- Wed., August 13th – 7:30 pm
Bear Branch Nature Center
- **The Great August Mish-Mash**
“Lots of stuff for the local astronomer!”

Dinner Before the Meeting

- Wed., August 13th – 6pm.
- Harry's Main Street Grill
65 W Main Street
Westminster, MD 21157

INSIDE THIS ISSUE:

Meeting Info.	2
Coming Events	2
Summer Picnic	5
Still Wish Pluto Was a Planet?	6
Space Place For August	7

St*r Points

The Great Comet Crash Bash

August 2014 – Curt Roelle

Twenty years ago this summer, something unprecedented occurred, way out there. Nothing even close to its magnitude had ever been seen by human eyes before, or since. Although the events then about to unfold had been predicted more a year earlier, no one knew exactly what to expect.

An extraordinary comet had been discovered the previous year by a team of three comet hunters. Most comets have a single nucleus and maybe a couple of tails. Comet Shoemaker-Levy 9 (or SL-9) had not one nucleus, but more than 20!

Perhaps even more fantastic was the discovery that the comet was orbiting the planet Jupiter instead of the sun. Several decades earlier, Jupiter had managed to “steal” the comet from the sun around which the comet was previously orbiting.

Apparently, during close encounters with Jupiter, the tug of the planet's gravitational sphere of influence had disrupted the comet, causing multiple fragments to separate and spread out along the comet's orbit. The facts of its Jovian orbit and multiple nuclei alone were fantastic discoveries, but the news would get even more surreal in the coming months.



Continued on Page 3...

Hubble image of the devastation caused by fragment G of Shoemaker-Levy 9

President's Message

August 2014 – Tony Falletta

Greetings Fellow Astronomers!

Here we are in the heart of summer! This is the time of year where we can spend the night getting lost in the stars and find ourselves hours later surprised that it's 3am. Whether you are working your way across the night sky through your telescope or laying back in your lounge chair or hammock with binoculars in hand or simply laying back on a blanket, looking up enjoying a tour of the summertime constellations complete with an accompaniment a planet or two and perhaps a string of earth satellites zipping by in their polar orbit, this is the time of year I enjoy the most. While winter stargazing tends to offer many nights of crystal clear skies, its cold temperatures keep my stargazing times to less time than I would like. This time of year encourages many people to be outdoors, taking walks and enjoying the all too short summer months. It is especially at this time of year that I like to set up my telescope in the front of my house and invite passersby to take a peek at a planet, a colorful double star, a bright globular cluster or especially the moon.

Continued on Page 4...

August Meeting – The Great August Mish-Mash!



So...you ask..."What is the great August mish-mash?" Well my astronomical friend...let me tell you. We will be having lots of little talks on things like the observatory, the Mason Dixon Start Party, outreach, and some other really cool topics.

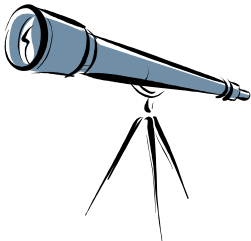
Mish-Mash.

All sorts of things.

But...you may ask..."Why should I drive all the way out to Bear Branch, on a Wednesday night? I am tired from work. I have to mow the grass. I need to feed my fish. My bathroom needs cleaning." The answer is simple. The drive is a nice one. You were just going to sit on the couch and watch a re-run of The Big Bang Theory. The grass will be there tomorrow and only a fraction of an inch taller. Feeding the fish only takes a second and do you REALLY want to clean your bathroom on a Wednesday night? See...we have given you the perfect excuse. Take advantage of it and come join us.

If that is not enough....there has been progress on the observatory at Bear Branch. Not just paper and signatures...but physical, viewable, progress. Come on out and take a look for yourself.

Upcoming Events From Our Calendars



- ❖ **Soldiers Delight Public Stargazing** August 9th, 8 p.m., at Soldiers Delight Natural Environment Area in Owings Mills
- ❖ **Monthly Meeting** August 13th, 7:30 p.m., at Bear Branch Nature Center (BBNC)
- ❖ **Planetarium Show** September 6th, 7:30 p.m., at Bear Branch Nature Center (BBNC)

Join The Westminster Astronomical Society...

Joining WASI gives you a great opportunity to meet fellow astronomers and provides group memberships to the [Astronomical League](#) and the [International Dark-Sky Association](#). Additionally, benefits include access to our [Library](#) (over 500 astronomy-related books), the ability to borrow [club scopes](#), a subscription to the Astronomical League's *Reflector*, access to members-only observing sessions and sites, and club discounts on astronomical magazine subscriptions.

Adult Membership is still only \$25 per year.



NEW THIS YEAR – JUNIOR MEMBERSHIP

Yearly Membership For Anyone Under 18 Is Now Just \$5!
(YES...JUST FIVE DOLLARS!)

<http://www.westminsterastro.org>



St*r Points for August...

Continued from Page 1

Astronomers studying the comet's orbit discovered that it was ultimately destined to be annihilated in head-on collisions with Jupiter in the summer of the following year. The individual fragments would, over a period of nearly a week, slam into Jupiter like bullets shot from a fully automatic firearm. The energy released from the largest fragment was estimated to be equivalent to six million megatons of TNT. That's around 67 million times more energy than the atomic bomb dropped on Hiroshima during World War II. Plus 20 other fragments slammed into Jupiter as well. It was destined to be an awesome spectacle no matter how you looked at it, and nothing to be missed by even the most casual armchair astronomer.

Excitement grew among professional and amateur astronomers alike. Would the impacts be visible from the earth? Could they be observed and monitored with amateur equipment? The debate went on as it seemed everyone was reading the predictions and making plans to have a front row seat in their back yard with their favorite telescope to see history being made in what would be the greatest cosmic collision in recorded human history.

I was looking forward to experiencing it as well, but soon there was a big fat fly in the ointment. Unbeknownst to me, my family had made plans to spend time in Ocean City, meeting another family who was renting a condo for the week. I love the beach as much as the next person, but I also didn't want to miss one of the greatest natural spectacles of the 20th century anywhere in the solar system.

Family politics dictated that staying home and missing the family vacation would not be the prudent thing to do. Then I recalled a gentleman I had heard about in O.C. He was the owner of a domed observatory with rather large refracting telescope with an 8-inch diameter lens. A friend of mine had met him a few years previously and had been told that any astronomer he knew was welcome to drop in for a visit.

I telephoned the O.C. astronomer, who had heard about the upcoming comet crash. He said to give him a call when I got to O.C. It was a relief to have a backup plan in hand. Now I could finally enjoy planning the trip with the rest of the family.

Upon arriving in O.C. I called the man with the observatory and got some distressing news. It seems he had converted his domed observatory into an apartment, and a renter was actually living inside the dome. But the news wasn't all bad. He had mentioned the telescope, comet, and Jupiter to the renter who had expressed an interest in viewing it himself. So the tentative plan was that he and his tenant would remount the telescope on the day of the evening that the first chunks would crash. He said to call again that day and we'd arrange getting together to observe.

After a day at the beach and a nice dinner I telephoned my new astronomer friend to compare notes and discuss when to open up the dome. Unfortunately, his response was far from enthusiastic. His latest plan was to watch the live coverage on TV instead. Besides, he reasoned, nothing would probably be visible in the telescope anyway, so why bother with it.

I countered that not only was it almost guaranteed that the comet impacts would be clearly visible in earth-based telescopes due to the predicted energies involved, but that his premium telescope would certainly reveal detail through the eyepiece to the human eye that would be invisible at TV resolution.

The conversation then switched suddenly and unexpectedly to guitars, his newest interest which had usurped his curiosity of the night sky. After explaining that he planned to spend the night playing one in front of his TV, he asked if I might be interested in purchasing a specific used telescope, for a certain price. When I replied that I didn't have \$40,000 on me to spare, he asked me to stop telephoning, and that was that.

President's Message

Continued from Page 1

Here in my town of Mount Airy, there is Town Camp Night every August. This year, Camp Night is on Saturday, August 9th. This is a free public event sponsored by the town. Everyone is invited to come and pitch a tent and spend the night at Watkins Park where there is music, food, games, an outdoor movie, a campfire and fun. I have been able to attend Camp Night for the past few years and I will be there this year as well. Of course no campout would be complete with some astronomy going on too. The past years that I have attended I have set up a telescope and offered Astronomy Merit badge to Boy Scouts, Astronomy Belt Loop for Cub Scouts and also conducted some "sidewalk" astronomy in the grass. Campers seem to like getting a chance to see and know the stars they will be sleeping under. In the past years, this event has coincided with the Perseids Meteor Shower. It's always been an added pleasure to the night. This year the big astronomical event will be what the media is calling, a "Supermoon". A Supermoon is simply a full moon that occurs when the moon is at perigee. As the moon moves in its elliptical orbit around the Earth, its distance naturally varies. When it is at apogee, it is about 252,000 miles away. When it's at perigee, it is about 225,000 miles away. The perigee full moon, or Supermoon, will appear about 14% bigger and about 30% brighter. The Moon should look spectacular (assuming it's clear out!). This full moon will pretty much wash out much of this year's Perseids but I think looking at it through a telescope with a properly filtered eyepiece will more than make up for it. This Supermoon will bring out the "Luna-tics" in all of us!

Here at Bear Branch Nature Center, The Blaine Roelke Observatory is starting to take form. As of this writing, the underground conduits which will contain the electrical wiring for the dome is being installed. Once this step is done, the site for Observatory will be prepared for a concrete pad. Wasi Member and Donor Frank Roelke and Dave Rohrer, the Park Superintendent for Hashawha/BBNC have been doing a "stellar" job getting the job done. I can't thank them enough for the all that they are doing towards this endeavor. Wasi's dream of our home here at BBNC being fully outfitted with an Observatory and Planetarium run by a dedicated group of amateur astronomers becoming the astronomical focal point of Carroll County is yet another step closer to being realized.

Over in Taneytown, we are surveying Bollinger Park for site placement of our planned Roll-Off Roof Observatory. WASI Taneytown Observatory Director, Erich Bender, Observatory Committee Chairman Curtis Roelle and Outreach Coordinator Skip Bird, after meeting with Taneytown Officials, went to the Park and decided on the best location for the building. They are next scheduled to report back to town officials with detailed follow-up information. It appears that Town Officials are looking into developing Bollinger Park in a passive capacity with an Observatory as a focal point. From a Wasi's point of view, the night skies at Bollinger Park are quite dark and having an observatory in a large park that could facilitate campgrounds and basic amenities would make an ideal star party location.

As I close this months' message, I give you "Tony's Astronomy Target" for August. The selected target is Sagittarius, which is on Meridian on August 20th. Sagittarius, The Archer is a beautiful constellation. It contains more Messier Objects than any other constellation in the sky. The most distinctive pattern of stars in Sagittarius is the Asterism known as "The Teapot". It is quite easy to spot in the southern sky. As you look upon the Teapot, you can easily see under dark skies, the "steam" coming out of the spout. When you look at this "steam", you are looking at the Galactic Center of the Milky Way. Because of this there are many star clusters and nebulae to be seen. Starting at the spout of the Teapot, follow the steam up to M8, The Lagoon Nebula. M8 is visible to the naked eye under dark skies. It shines at about 6th magnitude. Looking through a telescope will show a small scattering of stars against an illuminated cloud. Just above M8, very closely lies M20, the Trifid Nebula. This emission nebula glows beautifully through a small telescope. Moving very slowly up from M20, you'll run into M21, a 5.9 magnitude open cluster. Go a little further and you'll spot M23, a 5.5 magnitude open cluster. It has over 100 stars in a field the size of the moon which makes it look stunning in a pair of good binoculars. From M23 move to the left and you find yourself in M24. This is not a star cluster. It is actually a beautiful star cloud of the Milky Way. A little more to the left and you'll be at M25, a 4.5 magnitude open cluster sparkling with 30 distinct stars when looking through a small telescope. Now work your way down to the top of the Teapot. Right near the top of the pot is M22, The Great Sagittarius Star Cluster. This is a very large globular cluster shining at 5th magnitude. M22 is very easy to see in binoculars but to do it justice you need to observe it through a telescope. I've only touched on a few of the multitude of objects right there in a small part of the sky. You could take many hours exploring what lies in the heart of the Milky Way Galaxy and would not be disappointed. It is now, in the summer season time of year, when our orbit around the sun has our night sky pointed in the direction of the center of the Milky Way, that we can enjoy the sights of our galactic home.

That's all for now. I hope to see you at our next meeting.

Clear Skies

Tony Falletta

St*r Points for August...

Continued from Page 3

The new prospect of missing out on seeing the first night's impacts live and through a telescope was somewhat depressing. The other adults had their own plan to go out for the night, and I joined them. When we returned I switched on the TV to check the news.

The first impacts were dramatic and widely observed. From the coverage it was clear that although I had missed the first night, I would get to see some of the remaining impacts with my own telescopes once I returned home.

Indeed, the impact regions were clearly visible in even the smallest telescopes. The earth-sized scars at the collision sites in Jupiter's atmosphere remained visible. I made sketches and identified the various impact sites for weeks to come.

Over a decade had passed and once again we were in Ocean City. A woman collecting the \$9 per person admission at a club asked if any of us had ever been there before. After thinking for a moment I explained that I had once been there years before on the first night of the bombardment of Jupiter by the disrupted fragments from Comet Shoemaker-Levy 9. With eyes now wide, she opened the velvet rope and took a hasty step back. "No charge," she said, allowing us to pass through.

Perhaps she thought it better not to argue with the crazy talking man.

2014 WASI Summer Picnic

When:

A Saturday evening in September (date and exact time will be in next month's MDA).

Where:

Bear Branch Nature Center (BBNC). In the picnic pavilion down the hill from the back of the parking lot. There is handicapped access with permission.

Who:

Club members, their friends and family.

What:

A pot-luck picnic to get together and enjoy the company. If the weather is nice, there might even be some observing after the picnic. The club will provide drinks, ice, plates, cups, napkins, and plastic-ware. The club will also provide an open charcoal grill. You should bring your own meat or equivalent for grilling (just for you) and a side dish/dessert (to share).



Still Wish Pluto Was a Planet?

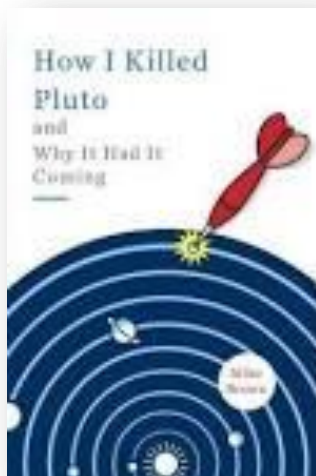
A Short Book Review by Dave Gede

So you were crushed when the Astronomical Union voted to remove Pluto as a planet. Yes...they reclassified it as a “dwarf” planet. But with one quick vote, the organization changed everything we had been taught about the solar system. I don’t know about you...but I was crushed. How could they do this? Yes...Pluto was strange. Yes...it did not quite fit with the other bodies we called planets. But it was still a planet. It had to be.

Until 2 weeks ago...I had harbored a lot of anger towards the AU and all those astronomers who voted to kill Pluto. My primary target was Dr. Mike Brown who actually discovered the object that eventually demoted Pluto. He was the evil astronomer who spent years looking for objects in the Kuiper belt just to prove that Pluto was one of them and not one of the planets. But then I read his book [How I Killed Pluto and Why It Had It Coming](#).

Not only does Dr. Brown explain how his discoveries came about but recounts the stresses and conflict that came with them. His writing style is light hearted, easy to understand, and very informative. He puts a humorous spin on some very difficult times. He relates how his personal life had major impacts on his discoveries. His recounting of his activities, before and after his daughter’s birth, had me laughing out loud. He is also able to take very complex topics, boil them down to the basics, and then relate them in a very understandable way. Finally, he ultimately convinces me that my favorite (ex) planet really should not be considered a planet.

If you get the chance...pick up this book and give it a read. I recommend it regardless of your opinion in this argument. It is a rare chance to glimpse into the life and mind of someone who found the largest object in our solar system in the last 100 years. I hope you enjoy it as much as I did. Maybe...just maybe...it will make you feel a bit better about those mean old astronomers who killed Pluto!





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).

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.

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!

Continued on Page 8...

Continued from Page 7...

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/>.



Image credit: 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 velocity.