The Meteor
The Newsletter of the Astronomical Society of Greenbelt
Jan. 2011

The Meteor is the official publication of the Astronomical Society of Greenbelt, Greenbelt, MD. Articles & other contributions are welcome. Membership in the Astronomical Society of Greenbelt is open to anyone interested in astronomy. The Astronomical Society of Greenbelt is a not-for-profit community-based organization with the goal of encouraging public interest in science & education in general, astronomy in particular. More detailed information on our club’s activities & organization can be found elsewhere at our website.

The editor of this newsletter, Craig Levin, can be contacted at clevin AT ripco.com. Unless specified otherwise, all items in this newsletter were written by the editor.

Editor’s Notes
2011 is the 230th anniversary of Herschel's discovery of Uranus, which I hope you'll celebrate with me this spring at the Owens Science Center's April public planetarium show. Since then, astronomers, no matter their status, have worked together to expand our frontiers. If 2009 was the Year of the Telescope, I hope that this year will be the Year of the Amateur!

Elected officers for 2010-2011

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<tr>
<th>Office</th>
<th>Name</th>
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<tr>
<td>President</td>
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<td>Treasurer</td>
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Astronomical Events Around Greenbelt in Jan. 2011

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<th>Sunday</th>
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<td>Planetarium Show at the Owens 7:15 PM</td>
<td>Star Party at Northway 6:00 PM</td>
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<td>Sidewalk Astronomy at Roosevelt Square 6:00 PM</td>
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<td>Business Meeting at the Owens 7:30 PM</td>
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<td>Star Party at Northway 6:00 PM</td>
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Star Party & Business Meeting Reports

Dec. 11 & 12 Star Party & Sidewalk Astronomy: Clouded out.

Dec. 16 Holiday Party: Called off on account of snow.

Baltimore Symphony Orchestra presents "Icarus at the Edge of Time"

Science and sound collide when famed physicist and author of The Elegant Universe, Brian Greene, teams up with American composer and Baltimore native Philip Glass in this multi-media recreation of Greene’s board book for children, Icarus at the Edge of Time. Led by Marin Alsop, this cautionary tale with mythological roots depicts a young boy’s accidental adventure to a black hole.

Performance Dates
Friday, January 14, 2011 at 8:00 p.m. @ The Meyerhoff
Sunday, January 16, 2011 at 3:00 p.m. @ The Meyerhoff
Saturday, January 15, 2011 at 8:00 p.m. @ Strathmore

For more details, please see the BSO's announcement at their website.
Dozens of Greenbelters and Others Enjoy the Best Lunar Eclipse of the Year

Doug Love, Greenbelt Observatory Director

On the longest night of the year, the morning of the winter solstice, everyone on this side of the Earth was treated to a total lunar eclipse, where the Moon passed through the Earth's shadow. Since this was happening on the Moon, everyone could see it at the same time, even though people in different parts of the world saw it from different time zones. It was observed on the morning of Dec. 22 in Japan and other places west of the International Date Line, and on Dec. 21 to the east of the Date Line.

This was the 48th of 72 eclipses in the current Saros cycle of lunar eclipses, a pattern of relations between the Earth's and Moon's orbits. Being the 48th, the Moon passed through the northern half of the Earth’s shadow, which means that the eerie red light creating the "blood on the Moon" effect was refracted by the Earth's atmosphere over the North Atlantic Ocean and eastern China and Russia to fill in the dark umbra of the Earth's shadow. The Umbral shadow of the Earth's atmosphere was only slightly dimmed by the light that had been refracted away. It was scarcely visible as the eclipse started, and the "shadow line" of the Umbral shadow was sharp. As the moon came out of eclipse between 4 and 5 in the morning, the center of the Moon’s disk looked grayish, but otherwise the Moon had recovered the Full Moon brightness that it will show tonight and tomorrow.

The winter solstice is unrelated to the Moon's orbit. It is simply the moment when the North Pole of the Earth faces the farthest away from the Sun, so that the Arctic is in the midst of a winter-long night, and the Antarctic continent has a summer-long day. It was just a fortuitous event to have the eclipse occur on solstice morning.

According to the map of the eclipse's progress, there is a place in Siberia where the eclipse could be seen on the northern horizon over the pole, but it could not be seen a few dozen miles to the east or west of that point.

It's an interesting paradox that the fullest Moon is a moon in eclipse. We had been watching the moon get fuller and fuller, and brighter and brighter for the past few days. The Moon reflects sunlight most directly back at us when the visible side is fully lit up, so the full moon is much brighter that twice the first-quarter "half moon". Fred Espenak, Nasa's "Mr. Eclipse", notes on one of his websites that the moon was just 4 days from being closest to the Earth in its' orbit, so it appeared especially large in the sky.

I wasn't totally sure that we would be able to observe this lunar eclipse from Greenbelt. The Dark Sky Clock for the University of Maryland Observatory said it would get cloudy around 3 am, and professional observer David Dunham said in an email last night,

"Good luck in Greenbelt, but I wouldn't put a lot of faith in Clear Sky Clock. Even their brand new forecast shows it staying clear across Georgia through the eclipse, when in fact cirrus already covers most of the state, with more streaming in from the northwest (I'm trying a graze with observers from Savannah, about 20 miles west of town). Although it's clear in Greenbelt now, clouds across most of Virginia, n.w. Maryland, and south-central Penn. seem to be inching their way towards you, according to the IR weather satellite loop - hope they don't spoil the show for you. If they stay away, I certainly should have stayed home rather than come down here into this cloud trap."
David was able to observe at least 3 disappearances and reappearances of stars ZC887 and SAO 77692 from Georgia, with which the Moon’s orbit can be very precisely defined. He also recorded parts of the Moon throughout totality, usually the parts closest to the center of the umbra, and for several minutes before and after, for possible lunar meteor impacts.

Many of our members stayed indoors in the frigid weather. I had a few appointments out in the cold anyway, so I dressed in several layers, and although I couldn’t zip my snowmobile suit over my layers of sweatshirts, I was fairly comfortable all night. (It wasn’t until I got into bed with my warm puppy this morning that I started having leg cramps from my really cold feet!)

I checked the Clear Sky Clock again at 11, and it said clear all night. I decided to get a 90 minute rem-cycle of sleep before going out to open up the observatory. When I arrived at 1, there was already a group observing with a portable telescope in the Northway Field parking lot. I had to set up the batteries to power the observatory during the First Contact of the Moon with the Earth’s shadow. I invited the group up to the observatory for hot chocolate and a look through the Mead Memorial Celestron, and looked at their interesting "blue moon" view through a blue filter.

We now have 2 nice new wide-angle 2" eyepieces, but when I put them into the eyepiece holder, they each fogged up. So I pulled out our tried and true 32 mm 1 1/4" wide eyepiece, and got excellent views of the Moon. Unfortunately, this is the wrong size eyepiece to see the whole Moon. We could only see part of the Moon in it. But many of the more than 20 folks that came up to the observatory between 2 and 4 got a better view through the finder scope. One fellow visiting from Minnesota took a number of pictures through the finder with his iPhone, and will be emailing them to us soon.

As the eclipse progressed, we noticed something that Dr. Espenak had predicted: The southern half of the eclipsed Moon was brighter than the northern half. This may be been due to clouds over the northern Atlantic keeping the red light from refracting. These would be snow clouds from the great storm in Europe in the lower atmosphere, but there could still be remnants of the sulfur clouds from the Icelandic volcano in the upper atmosphere shading the Earth and keeping the weather colder than normal.

But once Second Contact had occurred, and the Moon was completely in the Earth’s shadow, the entire moon was dark red, with a thin crescent of yellow around the top and west-facing sides of the Moon that were at the edge of the Umbra. In the sky, it looked like a little red-faced man with yellow hair as the crescent moved around to the East. Visitors came and went, and then for a while I was alone with the Moon, the telescope, and the cold "hot chocolate".

Then suddenly Third Contact came, and the Moon began brightening on its’ upper left side as it exited the shadow to the East. Michael Chesnes [editor of the NCA’s Star Dust-ed.] came up to watch the Moon’s egress, and helped me close down the observatory. A few clouds drifted by some of them in a Christmas-tree like pattern, only partly obscuring the colorful view of a dark red Moon with what looked like a snow cap.

Even with charged-up batteries, it was difficult to get the 1 horsepower slit motor to close the heavy slit, and I had to hook my car battery to the observatory’s 2 marine cells, plus I had to use a heavy pipe to loosen the slit and get it started down the track to a closed position. It’s the price we pay for being off the grid, and keeping electricity and excess lights out of the Great North Woods. I know the animals appreciate it.

I glanced up at the now full Moon when I arrived home shortly after 5. I would sleep until I had to take my cousin to the doctor at noon, but it was a well-spent morning. I had seen a total lunar eclipse from start to finish, something that is not always possible in cloudy weather.
Geminids, Winter Solstcie Lunar Eclipse & New Year

by G.W.Gliba

It was mostly cloudy in Greenbelt for the maximum of the Geminids last year, but I was able to get out for a short 15 minute watch early the next night and was able to see a couple nice Geminids. On December 14/15, from 10:10 pm to 10:25 pm EST I saw three meteors, one 4th magnitude Monocerotid, and two 1st magnitude Geminids. The first Geminid seen at 10:15 pm had a blue-green color, and the second Geminid seen at 10:21 pm had a very nice yellow-green color. It was worth it despite the cold conditions and bright moonlight. Elsewhere, there were several reports of good Geminid activity during the maximum, with a ZHR of about 130 Geminids around 08.00 UT reported by the IMO, three hours earlier than predicted.

Elsewhere in Maryland, top state meteor observer, Richard Taibi saw several nice Geminids the day after the maximum from southern Maryland. Despite the bitter cold, he was able to observe 12 meteors from 2:19 am to 3:49 am EST in Bel Alton, Maryland. Eight of the meteors he saw were Geminids. The brightest meteor seen was a -3 sporadic and the brightest Geminid was -2 magnitude. He started observing after moonset, but his limiting magnitude was only 5.0, due to increased light pollution due to holiday light displays.

Lynne and I were both out to see the wonderful Winter Solstice Total Lunar Eclipse. We used the naked-eye and our 12x63 Optolyth Royal binoculars to watch it. Although we didn't stay outside the whole duration, we went out every 10 or 15 minutes, and watched it from our backyard deck from our Greenbelt townhouse. A red-orange-copper coloration was first noticed when the Moon was about halfway into the Earth's umbra, and when totality first started, the brightest part of the Moon was near the outer umbra. I would say this was an L=2 eclipse on the Danjon Scale of Lunar Eclipse brightness. Overall it was a very nice sight to see for the Winter Solstice.

Next year will be big anniversaries for two of the most well known and respected national observing groups. It will be the 100th anniversary of both the American Association of Variable Star Observers (AAVSO) and the American Meteor Society (AMS), that were both started in 1911, as a result of that January AAS meeting. It is also the 50th anniversary of the Goddard Astronomy Club, which was one of the first of the Goddard GEWA clubs to form. So, let's cheer these great organizations for all the fine work that they have done for all of amateur astronomy, and astronomy in general.

Effort to Save the Brown Planetarium Rounds the Corner

The effort to preserve the Brown Planetarium in Arlington has met with a measure of success. It looks like the Friends of the Planetarium have met the challenge to raise over two hundred thousand dollars by the end of 2010, thanks to the generosity of Mr. Preston Carruthers, an Arlington philanthropist. The organization still needs to raise about another one hundred and sixty thousand dollars to meet the figure that the Arlington school board has set to keep the Brown Planetarium open, so keep those donations & good vibes coming.