The Meteor
The Newsletter of the Astronomical Society of Greenbelt
Oct. 2009

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 Note

Judging from what I saw & the reports other people made of what they did on Labor Day, I think we reached a lot of our neighbors with the message of amateur astronomy. I hope they’ll show up to our star parties & join the society. Our chances for outreach will also be good in October, when we’ll observe the autumn Astronomy Day with the Owens Science Center on the weekend of the 24th.

The experiment with using the PDF converter in Google Documents doesn’t seem to have worked out as well as I’d hoped, so I’m returning to hypertext format. So far, Google Documents has done a pretty reasonable job for me as an editor without costing us a nickel, so I am sticking with it for now.

Also, my notes from August’s meeting were a bit muddled. Tom is not interested in running for any office. Doug was offering his name as a possibility of last resort. Our society needs people who are willing & able to serve as officers for the next year.
Elected officers for 2008-2009

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<th>Office</th>
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<tr>
<td>President</td>
<td>Martha Gay</td>
<td>marty_lou AT comcast.net</td>
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<td>Vice-President</td>
<td>Glory Houck</td>
<td>N/A</td>
</tr>
<tr>
<td>Secretary</td>
<td>Elizabeth Levin</td>
<td>elevin AT ripco.com</td>
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<tr>
<td>Treasurer</td>
<td>Sue Bassett</td>
<td>wb3enm AT amsat.org</td>
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Some Notable Astronomical Events Around Greenbelt

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<td>See Dr. Mather at the Koshland 6:30 (see below for more)</td>
<td>Sky Show @ Owens 7:15</td>
<td>Star Party @ Northway 7:00</td>
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<td>Sky Show @ Owens 7:15</td>
<td>Astronomy Day @ Owens, Star Party @ Northway 6:45</td>
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<td>Astronomy Day @ Owens, 2:00 Sidewalk Astronomy @ Roosevelt Sq. 7:00</td>
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<td>Business meeting @ Owens 7:30</td>
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Star Party & General Meeting Reports

Labor Day Weekend: According to reports from Doug, we made $21.50 on Friday, $62.05 on Saturday, & $30.78 on Sunday. Over a hundred raffle tickets for the telescope & nearly two dozen raffle tickets for the game were sold. We also handed out lots of NASA material to people who dropped by. Judging from the time that Elizabeth & I spent at the booth, this was a great time to connect with our neighbors & tell them about our hobby.

Sept. 12: Cloudy & raining. Doug showed Cliff how to use the observatory, but it was otherwise a wash.

Sept. 24: Martha made a brief appeal to the assembly to consider volunteering as officers. Then, she introduced our guest of honor, Dave Skillman.

While Mr. Skillman is a physicist at GSFC, working on laser remote sensing, the true focus of his lecture was about his work outside NASA as an amateur astronomer. Mr. Skillman was originally bitten by the astronomy bug when he was 12. He built a 6" Newtonian, but since his family travelled a lot, he rarely had a chance to use it, & he put it aside only a year after it was built.

Mr. Skillman returned to the hobby after he graduated from college & grad school, settled down, & joined NASA in the Seventies. He joined the GAC, built a 12" reflector, & got involved in several aspects of the hobby, including occultation timings, but, in the main, he was attracted to timing & photometry of eclipsing binaries. At first, he would estimate by eye, but, as an instrumentation specialist, he naturally wanted to see if he could automate the process of observing. By 1980, Mr. Skillman had constructed an observatory with an automated telescope that would go from one point in the sky to another & record variable star data, often finding changes that one could not have found by eyeball estimation. This telescope was so unusual for its time that Mr. Skillman was featured in the ATM column of Sky & Telescope a year later.

Through the Eighties, Mr. Skillman began to specialize even further, on a set of stars called cataclysmic binaries or dwarf novae. This type of variable binary star is made of one white dwarf & one main sequence star. The white dwarf pulls plasma off of the main sequence star. The plasma forms a disc orbiting the white dwarf, & eventually, the disc collapses, generating energy. [A question was raised by an audience member: Does fusion take place? Ans: No. The heat & light are caused by grav. collapse alone.]

Since dwarf novae are very fast phenomena, Mr. Skillman’s automated telescope could provide very useful data to astrophysicists. He began to partner with a professor from Columbia U., & was thus able to tap into grant money to upgrade his equipment. In the early Nineties, Mr. Skillman obtained a rich field 26" reflector & built his own CCD camera for it, using public domain plans from Mt. Palomar, including a small refrigeration unit to keep it ultra-cool! As time has gone by, he’s replaced this homemade setup with a commercially built CCD camera.

Currently, Mr. Skillman’s interests have shifted to finding very small minor planets (below 18th magnitude). In order to accomplish that, he has had to move his observatory to a farm out by Front Royal, VA, owned by a member of NOVAC, & he is also using the process of coadding (layering the electronic images) & blink comparing. Mr. Skillman has already found one minor planet, which he has caused to be named after his grandson.

Mr. Skillman concluded by saying that this is a very good time for professional-amateur astronomical partnership. Professional astronomers are always hungry for more information, but the competition for
even a couple of hours of time at the major observatories is fierce. On the other hand, amateurs have a lot more time to observe. He also pointed out that there are several organizations, such as the Center for Backyard Astrophysics, which he helped to found, & the International Occultation Timing Association, founded by our own Mr. Dunham, & the American Association of Variable Star Observers, which pass on high-quality data gathered by amateurs to professional astronomers.

Note: The powerpoint file Mr. Skillman used in his presentation may be downloaded from the ASG Yahoogroup.

Sept. 26: Rain.

Sept. 27 (by Martha): It was a very quiet evening at the Roosevelt Center. I set up with my homemade 6" dob. That's when I remembered that an Allen wrench is required for collimation. Fortunately, it's an f/8 mirror and not very sensitive to poor collimation. Views of the Moon and Jupiter were excellent. Very few visitors stopped by. The lady from the theatre liked Jupiter and there were maybe 3 or 4 others. People seemed surprised to be able to see Jovian moons and atmospheric bands. I hadn’t done my homework on the Jovian moons, so of course folks wanted to know the name of the one that was visible. I hadn't a clue. I was ready to name lunar craters, but no one was interested. Not much business at the theatre, either. Perhaps showing "Yoohoo, Mrs. Goldberg" on Yom Kippur was unwise.

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See Dr. Mather at the Koshland on Oct. 8!

*From the Big Bang to the James Webb Telescope*
Thursday, October 8, 6:30 p.m. - 8 p.m.
Admission: $7; $5 for students
Koshland Science Museum, 6th & E Sts.
(near Judiciary Square and Gallery Place metro stops)
Washington, DC

The origin of the universe has been a source of fascination for centuries. In recent years, advanced technologies such as the Hubble Space Telescope and the Cosmic Background Explorer satellite have done much to illuminate how the universe began --providing proof of the big-bang theory in the process. The planned launch in 2014 of the James Webb Space Telescope, an orbiting infrared observatory, is expected to extend the discoveries and capabilities of the Hubble telescope and provide closer examination of the beginning of time. Join John C. Mather, senior astrophysicist in the Observational Cosmology Laboratory at NASA's Goddard Space Flight Center and a member of the National Academy of Sciences, as he provides a brief history of the universe and discusses NASA's plans for its newest telescope. The program coincides with World Space Week, being held Oct. 4-10. Tickets and additional information are available through the museum by calling 202-334-1201 or [www.koshland-science-museum.org](http://www.koshland-science-museum.org).

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Come & Get It!
Free Online Observatory Reports & Other "Grey Literature"

Part I: US Government Ground-based Observatories

A lot of scientific research, especially government research, never *quite* makes it to the headlines, or even to the insides of journals like *Astronomy* or *Mercury*. Instead, it exists in the form of material that
is not commercially published, such as in-house reports, working papers, and conference proceedings. Librarians call this stuff "grey literature"-they aren't classified ("black"), but unlike commercially published books & periodicals ("white"), they aren't produced with the goal of making money, & there isn't a lot of fanfare surrounding the release of these items. On the other hand, these materials are usually free to download from the websites of the organizations that write them. My goal is to give a brief "tour" of different websites of astronomical interest every month. This month’s tour: US government ground-based observatories.

Even in these thin economic times, the federal government is still the greatest supporter of American research. One of the great benefits that we get is that many of the researchers must make their discoveries known to the general public.

Many of the ground-based observatories supported by the civilian side of the federal government receive their funding from the Astronomical Sciences Division of the National Science Foundation. The optical observatories are run by the National Optical Astronomy Observatory (NOAO) & the National Solar Observatory (NSO). The radio observatories are run by the National Astronomy & Ionosphere Center (NAIC) & the National Radio Astronomy Observatory (NRAO).

The NOAO & NSO have a common quarterly journal, the NOAO/NSO Newsletter, & the NSO posts its own quarterly report. The NOAO also posts its quarterly reports, & a separate newsletter, NOAO Currents, on an irregular basis, so you always have to keep an eye on that website! Also, the Gemini Observatory has a semiannual newsletter, the Gemini Focus.

The NAIC is probably better known as Arecibo. It produces a semiannual newsletter, although there was a stretch a few years back when the newsletter was an annual. The NRAO does a little better, with an irregular newsletter that can be downloaded as a PDF or read directly as a webpage.

Moving from the civilian sphere into the military sphere, only one observatory stands out: The US Naval Observatory. While they don't issue a quarterly report, I think everyone is nonetheless familiar with their main product, the Nautical Almanac. Their website is full of links on time & astrometry, as well as an impressive photo library covering the history of the observatory itself & the history of astronomy in both the Old & New Worlds.

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**Aries-Triangulid Meteors, Comet C/2006 W3 Christensen, and SN 2008ig**

by G.W. Gliba

Lynne and I went up to our cabin at Mountain Meadows in Mathias, West Virginia to spend nearly a week doing some work on the place and observing at night when it was clear. It was clear about 30% of the time from September 8/9 to 14/15. On the first night we were able to both see the ISS pass from the SW to the NE in the early evening around 8:05pm EDT. With the 12x63 binoculars I could make out a shape that resembled the letter "H". It was around -3 magnitude. Later, the Milky Way looked great, and we later watched the gibbous moon rise in the 3.1-inch F/12.4 Zhumell refractor. Lynne and I saw two different meteors from the Southern Taurids a few seconds apart, while casually stargazing.

The next evening started off clear, and at around 7:30pm EDT, during the twilight, the ISS was seen again, but it was seen too low in the NE, and late in the pass to notice a shape. When it got dark, the transparency was better than the night before, and we both looked at several nice star clusters, nebulae, and galaxies with the 12x63 binoculars. The Veil Nebula was relatively easy to see with the 12x63 binoculars, but I also looked for comet C/2006 W3 Christensen with them, but didn't see it. Later, I was able to sweep it up with the 8-inch Celestron SCT. It was about 9th magnitude, had an elongated
coma about 3 arcminutes wide, and a central condensation that was around 11th magnitude. I was also able to see Jupiter too later, and saw some good detail in the belts. Some Earth clouds finally moved in after moonrise, and we both saw a nice Lunar Halo.

It was partly clear, but mostly cloudy on Friday, Sept. 11/12, but I was able to just get in an hour of meteor observing before it clouded-up completely. There was a half moon that rose around 12:30am, but I was able to hide it behind a tree for 30 minutes so I could see more meteors. I also saw some good views of the Milky Way before it clouded-up. The next night it was completely cloudy, and we didn’t see any stars, but Sunday night it cleared up nicely.

It was so clear on Sunday night, Sept. 13/14, that I could see not only the Zodiacal Band, but also the Gegenschein. It was a large wider area on the Zodiacal Band tilted about 30 degrees to it, to the right of it, about 10 degrees wide, and 15 degrees long. The Coat Hanger was easy to see with the naked-eye, as was M33, and M31 was about 1.75 degrees long naked-eye. I could also see more than 16 stars in the Pleiades, and the denser part of the Alpha Persei Association, consisting of mostly faint stars, was noticed. The limiting magnitude briefly reached 6.8, which ties the best night that I have seen at this site (only two other times) since 1992! After meteor watching, at around 2:30am EDT I was able to see SN 2009ig in NGC 1015 in Cetus, It was around 13th magnitude, but was relatively easy to see in the 8-inch Celestron SCT due to the excellent transparency.

I wanted to observe near the maximum of the Aries-Triangulids (A-T) this year, as it has been 5 years since I have last seen significant activity, back on Sept. 12/13, 2004. Instead of looking for only the usual two sub-radiants, near α Tri. and α Ari, and grouping them together as ATR, I've included a third sub-radiant near beta Tri. (BTR) this year, to differentiate them. All three of these sub-radiants can be considered part of the A-T complex of radiants. This time, only the α Tri. radiant got the ATR designation, which is also in-line with the IMO recognition of ATR as α Tri. meteors only. Unfortunately, it was cloudy September 12/13, which may have been the maximum for the ATR sub-radiant.

I first noticed the BTR in 1994, and included them in my ATR totals then, but I unfortunately didn’t specify them separately. On Sept. 11/12, 1998, the Japanese meteor observer, Osada Kazuhiro was able to plot 9 meteors from this radiant from 14:15 to 16:30 UT, as reported in the Minor Meteor Shower Circular #57 (MMSC). Interestingly, his average magnitude was 4.4, while my average from four BTR was 4.5 this year. The A-T meteors from all three sub-radiants are generally faint, and thus difficult to detect visually. I was able to get five hours of observing total done on three of the four nights near maximum though.

Observing from 12:00 to 1:00am EDT the morning of September 11/12, I was able to see 20 meteors. There were 4 Southern Taurids (STA), 4 α Triangulids (ATR), 1 September Taurids (SET), 1 Northern Apex (NPX), and 10 sporadics (SPO) seen. It was cloudy the next night, but I resumed my meteor observing on the morning of 13/14 and 14/15. The night of the 13/14, from 12:00 to 2:00am EDT, I saw 4 STA, 5 ATR, 1 α Arietid (AAR), 3 BTR, 1 NPX, and 21 SPO. From 12:04 to 2:04am EDT on the 14/15 I saw 6 STA, 1 ATR, 1 AAR, 1 BTR, 3 SET, 3 NPX, and 19 SPO. The best meteor was the last one seen at 2:00am EDT on the last night, which was a nice 0 magnitude yellow-green NPX, which would have been called a September Perseid a couple years ago, before it was recently realized that they were really NPX meteors. Overall, we had a great week of stargazing.