



# The Mason-Dixon Astronomer

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## Star Points for July 2011

“One Neptunian Year Later”

by Curtis Roelle

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This month Neptune completes its first circuit of the Sun following its discovery in the year 1846. With a distance from the Sun 30 times farther than the Earth's, the eighth planet requires 165 earth years to perform one orbit around the Sun.

The discovery of Neptune is one of the best mystery stories in all of astronomy. It involved careful observations by alert observers, mathematical puzzle solving, and international competition and cooperation. Neptune's discovery wasn't an accident. It was the prize in a 19<sup>th</sup> century space race.

For millennia, our human ancestors around the globe were aware of five “wandering stars” in the sky — Mercury, Venus, Mars, Jupiter, and Saturn. They were also aware of the Earth, even though they may not have understood its planetary nature. No single person was ever credited with discovering any of these six planets.

That all changed in 1781 when William Herschel discovered the planet Uranus while observing with a telescope from the garden of his house in Bath, England. With his discovery Herschel became the first person in recorded history to discover a planet of any kind — major or minor — orbiting the Sun.

Forty years after its discovery, new observations of Uranus indicated that the planet was slowing down. Was there a flaw in Sir Isaac Newton's laws of physics, or was Uranus being tugged on by the gravitational pull from some other unknown planet?

The director of the Paris Observatory in France assigned the mathematical astronomer Joseph Le Verrier the job of solving the mystery. Simultaneously in England, the young astronomer John Couch Adams took up the same issue, in his spare time. These efforts involved endless hours of performing painstaking calculations, without the aid of electronic computers, to pinpoint the position of an unknown and unseen world.

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**July Meeting:** Wednesday, July 13, 2011, 7:30 p.m., Bear Branch Nature Center

**Speaker:** Mike Hanky of the American Meteor Society will discuss “Observing Fireball Meteors.” Please join him for a pre-meeting dinner at Harry's in Westminster at 6 p.m.

**Next WASI Observing Weekend:** Friday, July 22 and Saturday, July 23

## **President's Message for July**

by Jim Reynolds

Greetings all!

I hope everyone's summer is going well. Like many of us, it's been disheartening to see the clouds move in at sunset so many evenings lately. All the same, the summer night skies have many celestial delights.

I'd like to recommend a couple of books that I've been using a LOT recently (both for star parties as well as personal reference):

1. "Patterns in the Sky: An Introduction to Stargazing" by Ken Hewitt-White

SBN-10: 9781931559393

ISBN-13: 978-1931559393

2. "The Beginners Observing Guide - An Introduction to the Night Sky for the Novice Stargazer" by Leo Enright

ISBN-10: 0968914152

ISBN-13: 978-0968914151

This is an outstanding refrence book for beginner and advanced stargazers alike.

3. "The Practical Astronomer" by Will Gater

ISBN-10: 0756662109

ISBN-13: 978-0756662103

I \*always\* carry these outstanding reference books with me anytime I am in the field. "Patterns in the Sky" has some very good Greek mythology to go along with the "major" constellations for each season.

On to other matters.....

I know a lot of folks are anxious for news and updates regarding the observatory. There was an officer's meeting on Sunday, June 26th, and we as a club are discussing the possibility of additional methods/media to disseminate information and status updates to all of our members. If you have any questions/concerns about the status of the observatory, Skip is our observatory chairman. You can always check with Skip or any of the other observatory committee members if you need an individualized update. I like everyone else can't wait to see the new structure out in the parking lot, but this is a big elephant and we're eating it one bite at a time.

Hopefully as many of us as possible will be able to view the launch of the Operationally Responsive Space (ORS-1) mission on June 28th (scheduled for 8:28 p.m. EDT). According to Aviation Week, "...the ORS-1 will launch from the barrier island east of Chesapeake Bay may be visible along the U.S. East Coast from New York to North Carolina, and as far west as West Virginia...".

Another topic that was discussed at the officer's meeting was the annual Westminster Astronomical Society picnic,which will be held in August. More details will be provided at our July 13th meeting.

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## Star Points *continued*

The part-time nature of Adams' effort seems to have resulted in lower urgency for following up his predictions with confirmatory observations. When observations were attempted, they suffered from a lack of suitably detailed star charts.

On the other hand, Le Verrier published his predictions in a prestigious journal. Using a new and very detailed Berlin Academy star map, German astronomer Louis d'Arrest was able to immediately locate and identify the new planet per Le Verrier's prediction. The Frenchman received due credit for discovering the planet using his pen.

Subsequently, the English attempted to save face by pointing out that Adams had likewise managed to calculate Neptune's location mathematically, and in the year prior to Le Verrier's published results. That served to enrage both the English, who were deeply embarrassed by the perception of bumbling a missed opportunity, and the French, who were offended by England's attempt to steal credit from France for its own coveted scientific achievement.

The difficulty of the problem cannot be overstated. They had little to work with other than some observations and a few weak assumptions based on flimsy principles. "*Had Adams and Le Verrier been working in the 21<sup>st</sup> century, their predictions never would have found their way into a peer-reviewed journal!*" claimed an article in the July issue of Sky & Telescope magazine. This interesting view begs the question, how many discoveries are killed in the nest by the peer review process? The vested interests and ingrained biases of peers, even when wrong, is a difficult hurdle to overcome.

Revolutionary discoveries in science are placed at risk through blind adherence to the old saw "*extraordinary hypotheses require extraordinary proofs.*" As the late astronomer and former director of the Celestial Mechanics Branch at the U.S. Naval Observatory Tom Van Flandern wrote in his book subtitled Paradoxes Resolved, "*Sometimes (although admittedly not often) the extraordinary hypothesis will be the right one.*"

Neptune is easily within the reach of amateur telescopes. Although I had observed Neptune previously, my first recorded observation, made in 1982 while observing at 50-power, described Neptune's "*small but obviously round disc*" as being "*bluish*" in color.

The most memorable Neptune observation for me was one evening in 1989, when I first observed its largest moon, Triton. That same night the U.S. spacecraft Voyager 2 was flying past and photographing the moon. Each new image was displayed upon receipt during live television coverage. Due to the distance of Neptune and Triton, their images, traveling at the speed of light, required four hours to reach antennas on Earth.

While viewing Neptune and Triton with a telescope, the thought occurred that the images appearing on live television had been taken at the same instant as the view seen in the eyepiece. Their reflected light had also needed four hours, traveling through space, before entering the eye. I was enjoying two live feeds from Neptune at the same time!

Currently, Neptune is best observed in the pre-twilight morning sky. If you'd like to try spotting it, finder charts are available online at [skyandtelescope.com](http://skyandtelescope.com).

## **President's Message *continued***

We have some exciting speakers in the coming months. Be sure to check the website or talk to Curt about our lineup!

I've been having a lot of fun viewing Saturn in the last few weeks; my wife always loves it as do all of my neighbors, although I think they suspect I'm a bit of a kook, being outside in the wee hours of the night. Speaking of Saturn, it was the big crowd-pleaser at the National Wildlife Federation's "Great American Backyard Campout" at Patapsco State Park in Catonsville, Maryland. I never, ever get tired of seeing how much kids enjoy seeing their "first" planet in a telescope. It's a magical event. I think knowing or hoping that the child will remember that moment the rest of his or her life is priceless.

There are many opportunities for public outreach still available this summer. Please see myself or Skip for more information on participating in our public outreach events.

We do have two private groups requesting planetarium shows and star parties in July as well as August. I've been in contact with both groups and could use a couple of volunteers. The first group is a Cub Scout Troop on July 15 (rain date July 16th). The other group is another Cub Scout Troop, the date will be in August, but the date hasn't been finalized yet.

Also relating to public outreach, please be sure to log your public outreach hours on the Night Sky Network. It's very important for keep track of your hours, and it also helps our club continue its visibility within the Night Sky Network.

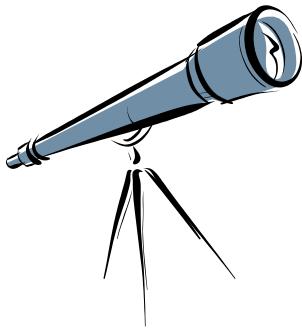
Lastly, there have been some messages from some of our members regarding the functionality of the new WASI Forums; in particular regarding new post(s) notifications. We are aware that there are some kinks to work out. As with any new software deployment, this isn't unexpected. Please be sure to let me or Brian Eney know of any specific issues you've had. I know this can be extremely frustrating (myself included). I want to remind everyone that Brian Eney has put many, many hours of his personal time into the new forums and the updated WASI website, and he has done an outstanding job to say the least. I'm sure that the issues relating to the forums will be addressed PDQ. In the meantime, try and manually check the WASI forum for any issues that are especially near and dear to you. Also be sure that you have checked the "Subscribe" box at the bottom of each topic that you want to be notified about.

If you have any questions about anything on the forum, or have anything to report that isn't "doing the right thing," please don't be shy about asking. If we don't know a forum feature isn't "doing the right thing," then we can't address the issue.

Thanks everyone. I hope that we'll have a great turn out for our July meeting!

Regards,  
Jim Reynolds

## Upcoming Events



**Maryland Science Center Public Stargazing** July 1 – 4, 10 a.m. – 10 p.m., at the Maryland Science Center in Baltimore

**Planetarium Show** July 8, 7:30 p.m., at Bear Branch Nature Center (BBNC)

**Shore Leave Sci-Fi Convention** July 8 – 9, 11 a.m. – 6 p.m., then 11 p.m. to whenever

**Soldiers Delight Public Stargazing** July 9, 8 p.m., at Soldiers Delight Natural Environment Area in Owings Mills

**Winfield Carnival** July 11 – 16, 6 p.m. – 10 p.m.

**Monthly WASI Meeting** July 13, 7:30 p.m., at BBNC

**Finksburg Library Event** July 14, 6 p.m. – 10 p.m.

**Private Planetarium Show** July 15, 7 p.m., at BBNC, for Cub Scout group

**National Federation of the Blind Event** July 20, 2 p.m. – 5 p.m., Towson Univ.

**WASI Member Observing Weekend** July 22 & 23 at BBNC

**Mason-Dixon Star Party** July 27 – 31, at the Footlight Ranch in Wellsville, Pennsylvania; for more info visit [www.masondixonstarparty.org](http://www.masondixonstarparty.org)

**Astronomical Society of the Pacific Annual Meeting** July 30 – August 2, 12 p.m. – 5 p.m. in Baltimore

**Carroll County Fair** July 30 – August 5, 12 p.m. – 5 p.m.

### WASI Observatory Status by Curt Roelle

Ever wondered what happened to that observatory we were trying to build? Well, it's moving forward again. We've received a proposal from a builder who specializes in observatories. We are going with one of their large club models. We have ordered sets of plans so that we can get our previously approved building permits reissued.

Follow the status on the WASI forum website ([www.westminsterastro.org/forum/](http://www.westminsterastro.org/forum/)). Look under the "Latest News" forum for the "WASI Public Observatory Project" thread.

## **Minutes of Meeting on June 8, 2011**

The meeting of the Society came to order at about 8:00 PM, chaired by President Jim Reynolds.

- 1) Curt gave a progress report regarding the observatory and Backyard Observatories (BYO). We may be able to expand slightly.

- 2) Skip listed outreach events currently planned:

June 18, Cunningham Falls Star Gazing, 8 pm-11pm,

June 24, Piney Run Sleepover Star Gazing, 9 pm-whenever

June 25, CCPL Finksburg Branch, 1 pm-4 pm, "Death from the Skies or just Another Bad Hair Day?"

July 1-4, Maryland Science Center, 10 am-10 pm,

July 8-9, ShoreLeave Sci-Fi convention, 11 am-6 pm, then 11 pm-???

July 9, Soldiers Delight, 8-11 pm,

July 11-16, Winfield Carnival (details to follow), 6 pm-10 pm

July 14, CCPL Finksburg Branch, 6 pm-10 pm, "Fun with Chemistry or How not to Blow up your House (well, most of the time)"

July 20, National Federation of the Blind, 2 pm-5 pm, Towson Univ.

July 30-Aug. 5, Carroll County Fair, Noon-10 pm

July 30-Aug. 2, ASP annual convention (times to be determined)

- 3) Our participation in the State Fair might come back to life.

- 4) The Black Forest Star party was discussed in some detail.

- 5) Skip provided a treasurer's report "We Are Solvent"

- 6) Jim gave a presentation on his Project Astro trip to Kitt Peak National Observatory including descriptions and images of:

- a) The McGrath-Pierce Solar Observatory
- b) The Mayall 4-Meter Solar Observatory
- c) The Optical Casting Facility

- 7) Items donated by Brian were used as door prizes.

Meeting ended at about 9:06 PM.

Respectfully submitted,

Robert L. Clark



## 25 Years Ago...

by Curt Roelle

April – June 1986

Comet P/Halley was still hanging around the inner solar system. I went to Peru in March to observe the comet and enjoy the unfamiliar southern constellation patterns from the Andes Mountains, and returned in April. Meanwhile, closer to home, our members and the public were busy dusting off telescopes to catch a glimpse.

WASI scheduled several public comet watches during the spring. WASI had a slide show and comet watch at Piney Run Park on April 26, the backup date. It was originally scheduled for the previous night but was delayed because of weather. We returned to the Hashawha Environmental Center for a star party on May 4. (A huge one had been previously held there in December.) On May 10, the following weekend, WASI held an Astronomy Day event at the Westminster public library.

The April WASI meeting featured member reports on — what else — Halley’s Comet. At May’s meeting astronomer Dr. Daniel Lufkin (Hood College) spoke about the vast amount of data being transmitted back by the flotilla of spacecraft that were then visiting the comet in his “*Comet Halley Wrap Up*.”

In June, Dr. Lufkin sponsored a joint meeting for WASI and the Tri-State Astronomers of Hagerstown on neutral territory at Hood College in Frederick. Both clubs had a chance to toot their own horn, highlighting their interests and bragging about their members’ unparalleled observing skills. After the meeting the joint gathering was treated to some beautiful celestial sights through the college’s historic 8-inch Alvin Clark refractor.

As a little fundraiser at public events, WASI sold copies of a 32-page pamphlet entitled “Mr. Halley’s Comet: Everyone’s Complete Guide to Seeing the Celestial Event” for \$2 each. The remaining inventory of booklets was handed out free to attendees at the June meeting. Did anybody other than myself hold on to their copy? I recently saw a used one for sale on eBay for \$23, including shipping. There was another one on Amazon.com.uk going for £23 (that’s \$37 US!).

Finally, a joint star party with the Baltimore Astronomical Society and the Space Telescope Science Institute was organized by Blaine Roelke and Mike Potter and held at Blaine’s observatory near Keymar. The star party theme was “*Good Riddance, Halley!*”



## Finding Planets among the Stars

By Dr. Tony Phillips

Strange but true: When it comes to finding new extrasolar planets, or exoplanets, stars can be an incredible nuisance.

It's a matter of luminosity. Stars are bright, but their planets are not. Indeed, when an astronomer peers across light-years to find a distant Earth-like world, what he often finds instead is an annoying glare. The light of the star itself makes the star's dim planetary system nearly impossible to see.

Talk about frustration! How would *you* like to be an astronomer who's constantly vexed by stars?

Fortunately, there may be a solution. It comes from NASA's Galaxy Evolution Explorer, an ultraviolet space telescope orbiting Earth since 2003. In a new study, researchers say the Galaxy Evolution Explorer is able to pinpoint dim stars that might not badly outshine their own planets.

"We've discovered a new technique of using ultraviolet light to search for young, low-mass stars near the Earth," said David Rodriguez, a graduate student of astronomy at UCLA, and the study's lead author. "These M-class stars, also known as red dwarfs, make excellent targets for future direct imaging of exoplanets."

Young red dwarfs produce a telltale glow in the ultraviolet part of the electromagnetic spectrum that Galaxy Evolution Explorer can sense. Because dwarf stars are so numerous — as a class, they account for more than two-thirds of the stars in the galaxy — astronomers could reap a rich bounty of targets.

In many ways, these stars represent a best-case scenario for planet hunting. They are close and in clear lines of sight, which generally makes viewing easier. Their low mass means they are dimmer than heavier stars, so their light is less likely to mask the feeble light of a planet. And because they are young, their planets are freshly formed, and thus warmer and brighter than older planetary bodies.

Astronomers know of more than five hundred distant planets, but very few have actually been seen. Many exoplanets are detected indirectly by means of their "wobbles" — the gravitational tugs they exert on their central stars. Some are found when they transit the parent star, momentarily dimming the glare, but not dimming it enough to reveal the planet itself.

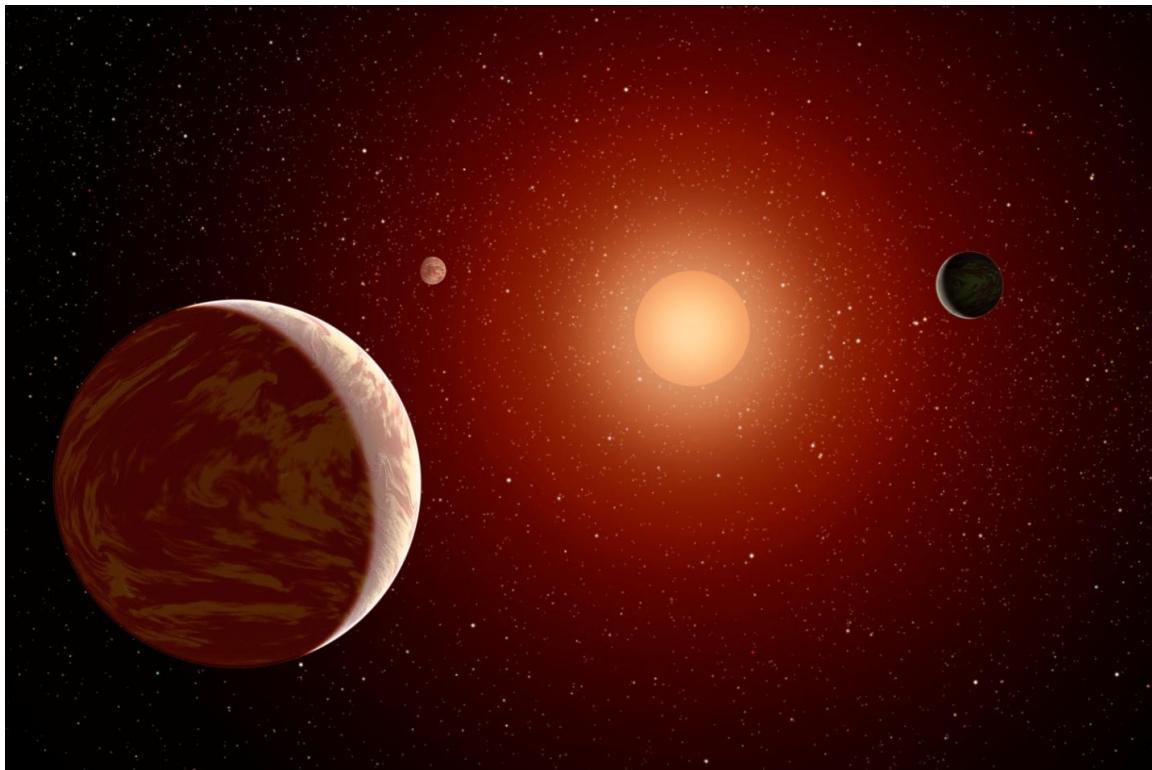
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The new Galaxy Evolution Explorer technique might eventually lead to planets that can be seen directly. That would be good because, as Rodriguez points out, “seeing *is* believing.”

And it just might make astronomers feel a little better about the stars.

The Galaxy Evolution Explorer Web site at <http://www.galex.caltech.edu> describes many of the other discoveries and accomplishments of this mission. And for kids, how do astronomers know how far away a star or galaxy is? Play “How Old do I Look” on The Space Place at <http://spaceplace.nasa.gov/whats-older> and find out!

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



*Exoplanets are easier to see directly when their star is a dim, red dwarf.*