The Mason-Dixon Astronomer

Westminster Astronomical Society Inc. of Maryland

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President's Message for October

by Jim Reynolds

In This Issue:

Greetings fellow WASIans,

I hope everyone is well.

This past month we had an outstanding planetarium show/star party. I think it was one of our largest crowds recently. Several members came out to share their expertise with the public. Brian Eney, Doc (Pankaj Desai), Bob C., & Tony Falletta all deserve a hearty "Thank You" for their public service. Don't forget to log your hours on Night Sky Network, folks! Of course I am the prime offender for slacking on logging my public outreach hours on Night Sky Network.

I was very sorry to have missed the September monthly meeting. I am teaching in the evenings at Towson University on Wednesday nights. I'd like to be able to dismiss the class early, but I think that would not be looked at kindly by management. As it is, I have a small cadre of students threatening mutiny if I don't let them out of class early on Halloween.

I hope folks have been taking advantage of the incredible viewing conditions the last couple of weeks. I've been getting out almost every clear night we've had. Unfortunately the heaviest thing I am allowed to pick up these days is my binoculars. All the same I've had a terrific time stargazing in September. If you are "fortunate" enough to have to get up at the unholy hour of 5:00 a.m., you can see the winter constellations in all their glory. Venus and Jupiter have been especially beautiful, and welcome to my eyes.

(*Continued on page 2)*

October Meeting: Wednesday, October 10, 2012, 7:30 p.m., Bear Branch Nature Center

Topic: Curt Roelle will share photos and descriptions of various astronomical facilities in Colorado.

President's Message *continued*

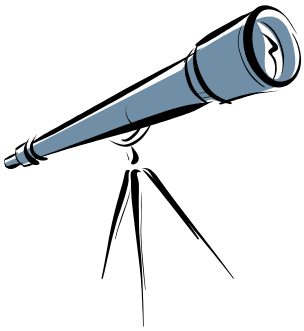
In a couple of weeks I am going to start trying my hand at lunar photography. I am purchasing a digital SLR camera along with an ingenious device called the "Polarie Star Tracker". This is a device that is mounted on a standard camera tripod and will follow the motion of the Earth (eliminating star trails). It's really just a motorized drive for a camera. All the same I am pretty excited about starting on this "new" (to me) aspect of stargazing/astronomy. I'll be pestering several of our stellar photographers (you know who you are) for advice, expertise, and wisdom.

My tenure as the 2012 WASI president is coming to a close. We have just two more regular meetings before the coveted "Eating meeting" in December, and after that WASI will select a new president. I am planning on nominating someone whom I think would make a terrific WASI president, but you will have to wait 'til elections in January to see who I have in mind.

Lastly I do want to thank Vanessa for stepping up to the plate in my absence. Vanessa does a lot of volunteer time for WASI, and I very much appreciate all the time and effort she has put in "pro bono."

Clear Skies,
Jim

Upcoming Events



Monthly WASI Meeting October 10, 7:30 p.m., at Bear Branch Nature Center (BBNC)

Soldiers Delight Public Stargazing October 13, 8 p.m., at Soldiers Delight Natural Environment Area in Owings Mills

Sandymont Elementary School Astronomy Night October 18, 7 p.m., in Finksburg; contact Skip or visit our Night Sky Network calendar for more information

Planetarium Show October 20, 7:30 p.m., at BBNC

National Air & Space Museum Udvar-Hazy "Air & Scare" event October 27, 2 p.m., in Chantilly, Virginia; for more information or to volunteer, contact Bob Clark

Want to join the Westminster Astronomical Society?
Sign up online at *www.westminsterastro.org/members*
or bring a check for $25 made out to WASI
to our next meeting at Bear Branch Nature Center
Wednesday, October 10, 7:30 p.m.

Minutes of Meeting on September 12, 2012

Called to order at 7:35 by Skip Bird, Treasurer.

Introduction of new members and visitors by Skip.

Reminded all of the availability of WASI license plates

Observing Reports:
None new

Outreach Report:
None New

Slava presented a report on his trip to Tom's West Virginia observatory with movies and still photos of the road up and the site. The road is very rough and the actual site is very beautiful.

Brian Eney presented a report on his summer internship with Project SOFIA. He also took a side trip to Griffith Observatory.

SOFIA is a special Boing 747 equipped for infrared astronomy. It happens that infrared light is absorbed by water vapor in the atmosphere. Accordingly, SOFIA operates at high altitudes, above most of the water vapor in the atmosphere.

Brian worked, mainly, on the process of collimation of the telescope while the aircraft is in flight.

Adjourned at 9:40 p.m.

Respectively Submitted,
Robert L. Clark, Secretary

Doing Science with a Spacecraft's Signal

by David Doody

Mariner 2 to Venus, the first interplanetary flight, was launched August 27 fifty years ago. This was a time when scientists were first learning that Venus might not harbor jungles under its thick atmosphere after all. A Russian scientist had discovered that atmosphere during the rare Venus transit of 1761, because of the effects of sunlight from behind.

Mariner 2 proved interplanetary flight was possible, and our ability to take close-up images of other planets would be richly rewarding in scientific return. But it also meant we could use the spacecraft itself as a "light" source, planting it behind an object of our choosing and making direct measurements.

Mariner 4 did the first occultation experiment of this sort when it passed behind Mars as seen from Earth in July 1965. But, instead of visible light from the Sun, this occultation experiment used the spacecraft's approximately 2-GHz radio signal.

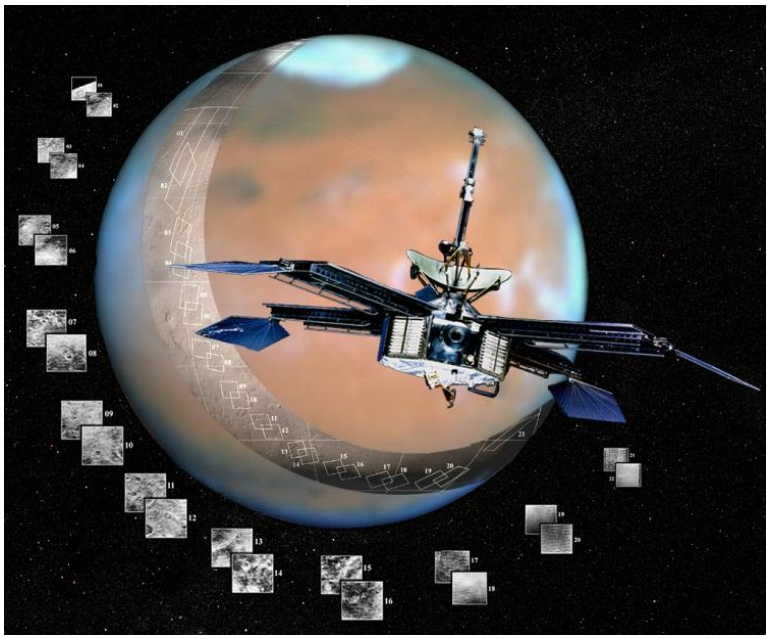
The Mariner 4 experiment revealed Mars' thin atmosphere. Since then, successful radio science occultation experiments have been conducted at every planet and many large moons. And another one is on schedule to investigate Pluto and its companion Charon when the New Horizons spacecraft flies by in July 2015. Also, during that flyby, a different kind of radio science experiment will investigate the gravitational field.

The most recent radio science occultation experiment took place September 2, 2012, when the Cassini spacecraft carried its three transmitters behind Saturn. These three different frequencies are all kept precisely "in tune" with one another, based on a reference frequency sent from Earth. Compared to observations of the free space for calibration just before ingress to occultation, the experiment makes it possible to tease out a wide variety of components in Saturn's ionosphere and atmosphere.

Occultation experiments comprise only one of many categories of radio science experiments. Others include tests of General Relativity, studying the solar corona, mapping gravity fields, determining mass, and more. They all rely on NASA's Deep Space Network to capture the signals, which are then archived and studied.

Find out more about spacecraft science experiments in "Basics of Space Flight," a website and book by this author, http://www2.jpl.nasa.gov/basics. Kids can learn all about NASA's Deep Space Network by playing the "Uplink-Downlink" game at http://spaceplace.nasa.gov/dsn-game.

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



In this poster art of Mariner 4, you can see the parabolic reflector atop the spacecraft bus. Like the reflector inside a flashlight, it sends a beam of electromagnetic energy in a particular direction.

Credit: NASA/JPL/Corby Waste