

Mountaineer Skies

On July 4, Independence Day, the Earth is at **aphelion** (the day the Earth is farthest from the Sun). Perihelion, on the other hand, occurs when the Earth is nearest the sun. The next perihelion happens on January 2, 2010.

The **Perseids Meteor Shower**, appearing to originate from the constellation **Perseus**, will peak during the night of August 12/13 when you can expect to see between 50 to 80 meteors per hour.

On September 4, Saturn's rings will seem to disappear because they are edge-on as seen from Earth.

The **Autumnal equinox**, the first day of autumn, will occur on September 22.

The first day of winter, the **Winter Solstice**, takes place on December 21. This is called the shortest day of the year because the sun is above the horizon for the shortest time of the year.

In The Sky This Quarter

Visible Planets in the Night Sky

Beginning of July, 2009

	Const	Rise	Transit	Set	Mag
Sun		05:54	13:23	20:53	-26.8
Mercury	Tau	04:56	12:22	19:51	-1.1
Venus	Tau	03:14	10:18	17:20	-4.1
Mars	Ari	02:53	10:00	17:08	1.1
Jupiter	Cap	23:15	04:34	09:52	-2.7
Saturn	Leo	11:22	17:53	00:21	16.4

Beginning of August, 2009

	Const	Rise	Transit	Set	Mag
Sun		06:17	13:26	20:34	-26.8
Mercury	Leo	07:53	14:40	21:30	-0.4
Venus	Gem	03:18	10:42	18:04	-4.0
Mars	Tau	02:04	09:28	16:54	1.1
Jupiter	Cap	21:06	02:21	07:35	-2.8
Saturn	Leo	09:34	16:01	22:25	1.1

Beginning of September, 2009

	Const	Rise	Transit	Set	Mag
Sun		06:47	13:19	19:52	-26.8
Mercury	Vir	08:58	14:47	20:35	0.6
Venus	Cnc	04:05	11:15	18:24	-4.0
Mars	Gem	01:23	08:54	16:25	1.0
Jupiter	Cap	18:54	00:04	05:13	-2.8
Saturn	Leo	07:50	14:13	20:32	1.1

Ari	Aries, The Ram
Cap	Capricornus, The Goat
Leo	Leo, The Lion
Tau	Taurus, The Bull
Cnc	Cancer, The Crab
Gem	Gemini, The Twins
Vir	Virgo, The Maiden

INSIDE THIS ISSUE

- 1 In The Sky This Quarter
- 2 About: **Sputnik**
- 3 Planetarium Show Schedule
- 3 Selected Sunrise/Sunset, Moon Rise/Moon Set Times
- 4 Monthly Sky Chart

About: Sputnik

Sputnik, Russian for “traveling companion,” is featured in one of our current planetarium shows, *Dawn of the Space Age*. This show will be presented to the public from August 28, 2009, until November 13, 2009. Reservations can be made at (304)293-3422, extension 1443 or via e-mail to jhopkins@mail.wvu.edu. Here is a little history of this remarkable device.

July 1, 1957, to December 31, 1958, was declared The International Geophysical Year (**IGY**) by the International Council of Scientific Unions. Among other things, the union wanted someone to launch an artificial satellite to map the entire surface of Earth. Of course they were not overly optimistic that that this would actually happen. However, on Friday, October 4, 1957, the Soviet Union astounded the world by successfully launching the very first artificial satellite into an elliptical, 98 minute orbit at an altitude of about 950 km (somewhat less than 600 miles). Though small in size, it quickly captured the attention of the entire world. This was during a time of global paranoia and, as far as the average citizen was concerned, it could have contained anything up to and including an atomic bomb. This, of course, was far from the truth, but those were very uncertain times.

Sputnik



From **NASA**

Once in orbit, Sputnik was able to broadcast to the world a beeping signal at a frequency of 20 and 40 MHz. which was easily and enthusiastically monitored by many ham (amateur radio) operators on Earth. You can hear what they heard by going to <http://history.nasa.gov/sputnik/sputnik.wav>. The signals continued to be emitted for about 22 days until the onboard batteries ceased functioning. The satellite remained in orbit for nearly three months before burning upon reentering the Earth’s atmosphere. Even though it had only a comparatively brief life, it still was an amazing achievement and did indeed mark the end of the air age and the beginning of the space age.

Externally, the very highly polished spherical satellite was 58 cm or nearly two feet in diameter, constructed of an alloy composed of aluminum, magnesium, and titanium, weighting 84kg (185 pounds), and had four whip type antennas about 122 cm (4 feet) in length. Inside the pressurized satellite there were three silver-zinc batteries (state of the art at that time) that powered the radio transmitter (only 1 watt) and the heating/cooling system for the transmitter.

Sputnik 1 was followed on November 3, 1957, by Sputnik 2, a much larger satellite. It was almost four meters (thirteen feet) high and contained a passenger, a dog named Laika. This was the first living thing to be put into orbit. Unfortunately, as there was no provision for the animal to return to Earth, it died a few hours after successfully surviving the trip into orbit.

Finally, on January 31, 1958, the United States, still within the IGY and four months after the launch of Sputnik 1, finally put an artificial satellite, **Explorer 1**, into orbit. Its payload was a device for measuring cosmic rays, built by Dr. James Van Allen of the University of Iowa, and called the Iowa Cosmic Ray Instrument. Unfortunately, it did not work especially well and no usable data was obtained.

Thus commenced the space race.

2009 Planetarium Shows

Two Small Pieces of Glass – While attending a local star party, two teenage students learn how the telescope has helped us understand our place in space and how telescopes continue to expand our understanding of the Universe. Their conversation with a local female astronomer enlightens them on the history of the telescope and the discoveries these wonderful tools have made. The students see how telescopes work and how the largest observatories in the world use these instruments to explore the mysteries of the universe. **About 25 minutes in length.**

Dawn of the Space Age – From the launch of the first artificial satellite Sputnik, to the magnificent lunar landings and privately operated space flights.

Be immersed and overwhelmed with this most accurate historic reconstruction of Man's first steps into space. Who were these Men and Women who took part in these death defying endeavors? Witness their drive, their passion and their perseverance to explore. **About 41 minutes in length.**

August 28, 2009 <i>Two Small Pieces of Glass</i> & <i>Dawn of the Space Age</i>	September 11 & 25, 2009 <i>Two Small Pieces of Glass</i> & <i>Dawn of the Space Age</i>	October 9 & 23, 2009 <i>Two Small Pieces of Glass</i> & <i>Dawn of the Space Age</i>
November 6 & 13, 2009 <i>Two Small Pieces of Glass</i> & <i>Dawn of the Space Age</i>	December 4, 11, & 18, 2009 <i>'tis the Season</i>	

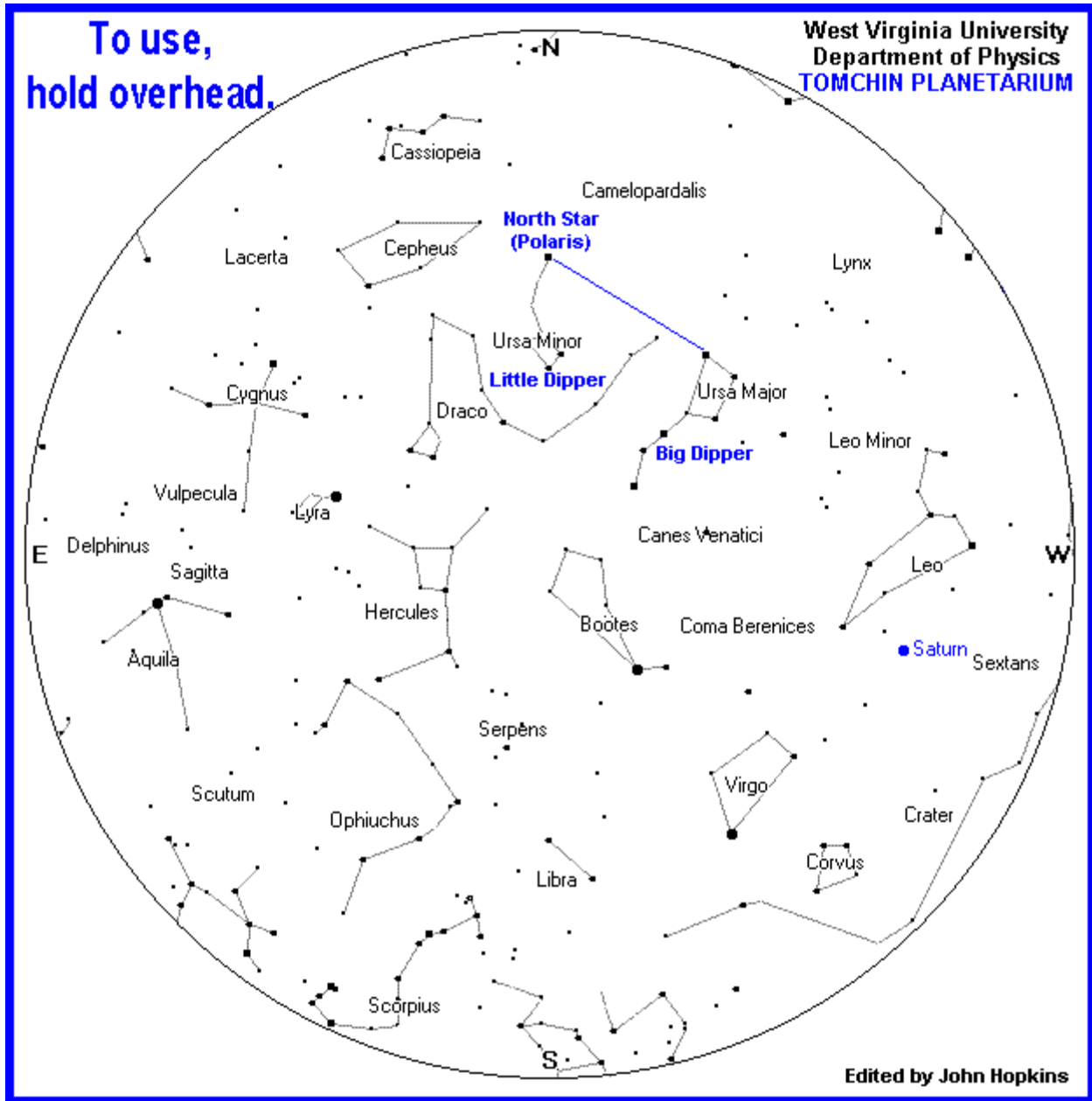
For those who are interested in bringing a group, such as schools or scouts, during the day, please call for more information. These shows are usually given on Tuesday or Thursday mornings.

For further information or reservations, please call John Hopkins at (304)293-3422, extension 1443 or by email at: jhopkins@mail.wvu.edu

Selected Sunrise/Sunset and Moon Rise/Moon Set Times

Date	Sunrise	Sunset	Moon Rise	Moon Set	Moon Phase
July 7	5:58 A.M.	8:50 P.M.	9:15 P.M.	6:00 A.M.	Full Moon
July 15	6:04 A.M.	8:46 P.M.	12:10 A.M.	2:12 P.M.	Last Qtr
July 21	6:09 A.M.	8:42 P.M.	5:21 A.M.	8:33 P.M.	New Moon
July 28	6:15 A.M.	8:37 P.M.	1:55 P.M.	none	First Qtr
Aug 5	6:22 A.M.	8:28 P.M.	8:17 P.M.	5:54 A.M.	Full Moon
Aug 13	6:29 A.M.	8:19 P.M.	11:55 P.M.	2:19 P.M.	Last Qtr
Aug 20	6:36 A.M.	8:09 P.M.	6:48 A.M.	8:10 P.M.	New Moon
Aug 27	6:42 A.M.	7:59 P.M.	2:52 P.M.	none	First Qtr
Sep 4	6:50 A.M.	7:47 P.M.	7:33 P.M.	6:47 A.M.	Full Moon
Sep 11	6:56 A.M.	7:35 P.M.	11:36 P.M.	2:24 P.M.	Last Qtr
Sep 18	7:03 A.M.	7:24 P.M.	6:52 A.M.	7:03 P.M.	New Moon
Sep 25	7:09 A.M.	7:13 P.M.	2:28 P.M.	11:38 P.M.	First Qtr

July 2009 Sky Chart* for:
 10:00 P.M at the beginning of the month
 9:00 P.M in the middle of the month
 8:00 P.M at the end of the month



*Sky Chart used with the kind permission of **Heavens-Above** at <http://www.heavens-above.com/>

The TOMCHIN PLANETARIUM is named in honor of the late Harold Tomchin, of Princeton, W.Va., who made a generous donation to ensure its continuing operation, and whose family continues to support the planetarium for the educational benefit of WVU students, staff, and faculty members, as well as the local community. Contributions can be made in support of the planetarium through the WVU Planetarium Project at the WVU Foundation, Inc., phone (304)284-4000. Thank You.



Edited by John Hopkins
 (304)293-3422, extension 1443
 jhopkins@mail.wvu.edu

