

# SKYLIGHTS

Vol. 20, No.3

FROM LAKE AFTON PUBLIC OBSERVATORY

Vernal Equinox, 2008

## What's In a Name?

by Greg Novacek

The current Observatory moon program is "Celebrity Craters." In this program we are looking at particular craters on the moon and talking about the person the crater is named after along with their contributions.



The above image is a map from Hevelius' publication "Selenographia" featuring the crater now known as Copernicus.

Craters on the moon are generally named after scientists, scholars, artists and explorers. Of course the question arises who decided that they should be named after scientists, scholars, artists and explorers. Today the International Astronomical Union (IAU) makes those decisions, but the IAU was not around when the larger lunar craters were named.

Michael van Langren, a member of a family of Dutch cartographers, published the first Moon map in 1645. He also produced maps of the Moon showing thirty different phases. Van Langren served as the Royal Cosmographer and Mathematician to the King of Spain. So of the 322 lunar features he named, many of them were named after members of the Spanish royal court.

German astronomer Johannes Hevelius worked on a lunar map for ten years before publishing it in 1647. Hevelius named 275 lunar features including most of the large dark areas after "bodies of water" such as Mare Tranquillitatis, the Sea of Tranquility. It was his belief that the names of people, either dead or alive, should not be used for the names of places on the Moon.

Although some of Hevelius' names survive to today (the mare, and the Alps, Apennines, and Pyrenees mountains), the naming system eventually adopted was that of Italian Jesuit Priest Giovanni Riccioli. His pupil, Francesco Grimaldi made observations of the Moon which Riccioli turned into a Moon map. This map, with features named by them was included in Riccioli's two volume "Almagestum Novum" which was published in 1651. This work is considered by many to be the most important literary work of the Jesuits during the Seventeenth Century. This probably explains why Riccioli's naming scheme is still in use today.

So what about other objects in the solar system? As mentioned earlier, the IAU determines the naming scheme for each object. The schemes for naming craters on some solar system objects are:

**Mercury:** Deceased artists, musicians, painters, and authors who have made outstanding or fundamental contributions to their field and have been recognized as historically significant figures in the arts for more than 50 years.

**Venus:** Deceased women who have made outstanding or fundamental contributions to their field (over 20 km Common female first names (craters under 20 km).

*(Continued on Page 3)*

## Cracking Neutron Stars

by Robert Henry

As we know, stars like our sun are made up of different layers of hot gasses or plasma. As the stars rotate, the different layers of plasma spin at different rates, causing the star's magnetic field to tangle. This causes large magnetic storms on the star's surface. However, when the magnetic fields get too tangled, powerful explosions can result. In a neutron star, the tangled magnetic fields can actually cause the star's solid surface, or crust, to crack, triggering much more powerful outbursts of energy than we see from any Sun-like star.

Neutron stars are the crushed remnants of large stars that have gone supernova. These remnants have masses between 1.4 and 3.0 times that of our Sun, however they are only a few miles in diameter. If the remnant's mass is less than 1.4 solar masses, it won't become a neutron star. If the remnant's mass is more than about 3.0 solar masses, it will turn into a black hole.

With so much mass and fusion no longer taking place in the core to counterbalance the effects of gravity, the atoms themselves are crushed. All the space between the electrons and the nucleus of the atom get squeezed out and the electrons and the protons in the nucleus combine to become neutrons. What results is an object that is a few miles in diameter with a solid neutron crust and a "liquid" layer of pure neutrons below.

Neutron stars spin very rapidly – in fact, the fastest rate of spin (as of two years ago) was 716 times per second. They also "beam" energy out into space from their magnetic poles which, like here on Earth, do not necessarily coincide with their rotational poles. If the Earth is in the path of one of these beams, astronomers can "see"

*(Continued on Page 3)*

## From the Director

If you've been familiar with the Observatory for a number of years you know that student employees come and go.



Recently Scott Sullivan has moved on to bigger and better things. Scott, who will graduate with a degree in Aerospace engineering in May, accepted an internship with Hawker-Beechcraft.

Although Scott is no longer an employee, he is still volunteering at the Observatory once or twice a month. He also got married in January and we want to wish him and Erin the best of luck.

Angie Chadd, our other student assistant, will also graduate in May but with a degree in Geology. In anticipation of her graduation and Scott's open position, we've hired two new student assistants – Richard Kennedy and Lisa Lazareva. You can read more about them in the next column

We would also like to welcome Ruth Harries as a new volunteer. Ruth is a WSU student majoring in Art History, but who also has an interest in astronomy. She has already taken the General Astronomy class and is currently taking "Solar System Astronomy."

Clear skies and happy observing,

## New to the Crew

### Richard Kennedy

I am a freshman in the College of Engineering, and am studying Aerospace Engineering with hopes of working in the propulsion field. Through my studies, I will also gain a Math minor and am also contemplating a double major in Mechanical Engineering. I am a member of the WSU honors program and the Sigma Alpha Epsilon Fraternity.

I grew up here around Wichita and graduated last spring from Burrton High at the top of my class, granted it was only made up of thirteen. I visited LAPO many times in my youth and was pleased to come across an application to join the program.

I am pleased to have received the invitation to join the fine group of people which make up the Fairmount Center and Observatory. I am looking forward to the contributions I can bring to the Observatory as well as the experience and opportunities I can gain from it.

### Lisa Lazareva

I am completing my first year at WSU after transferring here from Tennessee Technological University, not far outside of Nashville, TN where I lived for the past nineteen years. I am a senior with a major in Aerospace Engineering and a minor in History. One of my interests is "back-yard" astronomy which I put to use teaching in the STEM-G lab of a NASA Explorer School in Murfreesboro, TN. It was great to watch the kids become interested in finding different constellations and planets, while learning to recognize the different phases of the moon. I am excited to have the chance to increase my own knowledge of astronomy through the Lake Afton Observatory.



Saturn and Mars grace the night sky all throughout the spring. Look for both planets nearly overhead around 10 p.m. Mars is located in the constellation Gemini during April and will make its way to Leo and its bright star Regulus by the end of June. Regulus and the red planet should make a good pairing. Saturn is near the head of Leo this spring, just to the east of Regulus.

There is a great encounter with the crescent Moon and Mars on the evening of April 11th and again on June 7th. Look to the west to see this encounter. Saturn, Regulus and the Moon all come together on June 8th, making a close gathering. Later in the Spring, on the evening of June 16th, the Moon passes right by Antares.

Mercury makes its way above the western horizon in early May. Look west-northwest a little bit after sunset to spot this elusive planet. This will be a great time to view the planet as it will make its way high into the early evening sky, reaching its highest on the evening of May 13<sup>th</sup>. It doesn't stay between the horns of Taurus the Bull long, because by the end of the first week of June, Mercury has disappeared back below the horizon. It will reappear in the eastern morning sky in mid-June. Look for it near Aldebaran.

Jupiter rises around 4 a.m. at the beginning of April and is rising around 9:30 p.m. by the end of June. Look for it between Sagittarius and Capricorn.

An area of observing that is fun, but overlooked, is to watch for satellites. Watching as the International Space Station, Hubble Space Telescope, and other major satellites pass overhead are yours for the watching. At [www.heavens-above.com](http://www.heavens-above.com) you can find the predictions for overhead passes of major satellites from your location. You must register and set your location first, but it is free and worth it. For example: on March 28th around 8 p.m., the ISS will pass nearly overhead the Wichita area. It will enter the sky in the southwest, go past Orion, Mars, and Ursa Major on its way back over the horizon in the northeast.

With no exceptional meteor showers this spring, no eclipses, and the only hope for some Aurora, the planets will be the rulers of the night sky.

### Lake Afton Public Observatory Quarterly Newsletter

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(316) WSU-STAR

#### Web Address

<http://webs.wichita.edu/lapo>

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..... Richard Kennedy  
..... Lisa Lazareva  
*Secretary* ..... Susan Emerson

*Explainers:* James Fullerton, Ruth Harries, Chris Ketron, C.W. Robertson, Vicki Sieglén, and Scott Sullivan.

#### NOTICE OF NONDISCRIMINATION

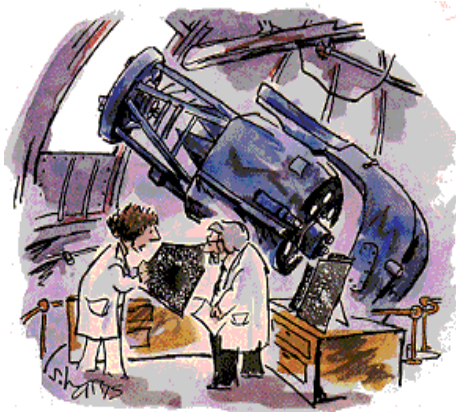
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## New and Renewing Members

We would like to thank the following people for becoming new members or renewing their memberships as *Friends of the Observatory*.

**Molly Troxel**  
**Tony Haidai**  
**Ann and Steve Burk**  
**Daniel Ensz Family**  
**Gary Pinkall**

And all those who chose not to have their names listed.



"It's black, and it looks like a hole.  
I'd say it's a black hole."

## What's In a Name

(continued from page 1)

**Mars:** Large Craters (about 60 km or larger) – Deceased scientists who have contributed to the study of Mars; writers and others who have contributed to the lore of Mars. Small Craters – Small towns and villages of the world with populations of approximately 100,000 or less.

**Europa:** Celtic gods and heroes.

**Ganymede:** Gods and heroes of ancient Fertile Crescent people.

**Callisto:** Characters from myths and folktales of cultures of the Far North.

**Titan:** Gods and goddesses of wisdom.

To see naming schemes for other types of features on these and other objects or a list of named features found on solar system objects visit:

<http://planetarynames.wr.usgs.gov>

Now that you know how lunar and planetary craters are named, visit the Observatory during "Celebrity Craters" to learn about the contributions that lead to those names.

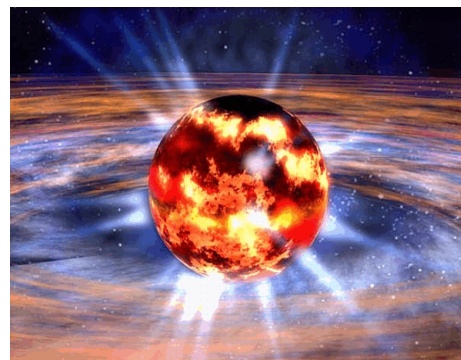
### DID YOU KNOW....

The robotic rovers Spirit and Opportunity arrived on Mars in early 2004. They were designed to last 3 months. But the plucky explorers far exceeded anyone's expectations. They have functioned on the planet for over four years.

## Cracking Neutron Stars

(continued from page 1)

the star pulse on and off like a lighthouse beacon sweeping across the cosmic sea.



This is an artist's rendition of what a Neutron star might look like.

Over time, the rate of rotation of a neutron star will get gradually slower, however, astronomers have observed the rate of rotation of some of these neutron stars to suddenly speed up. The theory is that this is caused by the different spin rates of the solid neutron crust and the "liquid" layer of neutron soup below.

This causes tremendously powerful magnetic fields and when these fields get tangled, they can actually produce "starquakes" in the crust – violent cracks in the crust accompanied by enormous bursts of energy. The crust then readjusts its spin to the liquid layers below it and the cycle starts all over again.

## Upcoming Special Programs

### Mercury Observation

May 9-10, 16-17  
8:30 - 9:15 p.m.

Come out and join us as we observe Mercury as it reaches its highest point in the evening sky. Usually Mercury is too close to



Mercury crater image courtesy of NASA.

the horizon for us to observe with our telescope, but that will not be the case during these two weekends. Through the Observatory's 16-inch telescope you will see Mercury in its last quarter phase.

### Mother's Day Weekend

Friday - Saturday,  
May 9-10, 9 - 11 p.m.

Bring mom to the Observatory for the program: *Celebrity Craters*. Mom (or grandma) receives free admission when accompanied by a paying child. (Limit one free admission per paying child.)

### Father's Day Weekend

Friday - Saturday  
June 13-14 9 - 11 p.m.

Bring dad to the Observatory for the program: *Celebrity Craters*. Dad or Granddad receives free admission when accompanied by a paying child. (Limit one free admission per paying child.)

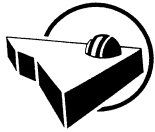
### Bring Your Own Telescope

9:00 p.m. on Friday: May 16, June 20.  
July 18, Aug. 15; and 8:00 p.m., on September 19

Members of the Kansas Astronomical Observers (KAO) will be set up on the observing pad behind the Observatory to help you learn how to use your telescope.

They will also have their telescopes available for viewing so that anyone considering buying a telescope will have a number of examples to look through.





**Lake Afton Public Observatory**  
 1845 Fairmount  
 Wichita, KS 67260-0032

## Current Observatory Programs

### Black Holes in Space

Black holes cannot be seen. Even so, astronomers can learn about black holes by observing things around them. Supergiant stars, binary stars, globular star clusters and galaxies will be observed during this program as we explore some of the mysteries surrounding black holes.

March 7-8, 28-29      8:00-10:00 p.m.  
 April 4-5, 25-26      8:30-10:30 p.m.  
 May 2-3, 23-24, 30-31    9:00-11:00 p.m.  
 June 20-21, 27-28      9:00-11:00 p.m.

### Celebrity Craters

Many of the craters on the Moon are named after scientists and philosophers. Learn about some of these individuals and their discoveries while exploring the lunar craters named after them. Saturn, with its beautiful ring system will also be observed.

March 14-15, 21-22      8:00-10:00 p.m.  
 April 11-12, 18-19      8:30-10:30 p.m.  
 May 9-10, 16-17 30-31    9:00-11:00 p.m.  
 June 6-7, 13-14      9:00-11:00 p.m.

### Photography Programs

Saturn	April 19	10:30 p.m.
Saturn	May 17	11:00 p.m.
Moon	June 14	11:00 p.m.

Bring your 35mm or Digital Single Lens Reflex Camera. You can also bring a flash drive and use our DSLR camera to take your pictures! Automatic cameras without a manual override cannot be used to take astronomical photos. (We recommend ISO 400 or 1000 color film for these programs.)

### Observatory Hours

The Observatory is open every Friday and Saturday evening. Admission is \$4.00 for ages 13 and over and \$3.00 for ages 6 - 12. Children under 6 are admitted free. Family Rate: \$12 for 2 Adults and their immediate children. Observing through the telescope begins soon after the doors open. Program times are subject to change. Call the Observatory at (316) WSU-STAR to confirm specific programs and times or to check for weather-related cancellations.

March 2 - 31: 8:00 - 10:00 p.m.

April 1-30: 8:30 - 10:30 p.m.

May 1 - Sept. 1: 9:00 - 11:00 p.m.

## Become A Friend of the Lake Afton Public Observatory

### Annual Membership Categories

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

e-mail: \_\_\_\_\_

- |  |   |
|--|---|
| <input type="checkbox"/> \$15 Student        | <input type="checkbox"/> \$100 Sustaining     |
| <input type="checkbox"/> \$15 Senior Citizen | <input type="checkbox"/> \$250 Patron         |
| <input type="checkbox"/> \$20 Individual     | <input type="checkbox"/> \$250 Business       |
| <input type="checkbox"/> \$20 Family         | <input type="checkbox"/> \$500 Business Donor |
| <input type="checkbox"/> \$50 Donor          | <input type="checkbox"/> \$ _____             |

- New Member       Renewal      Can we list your name in our newsletter?     Yes  No  
 I am interested in volunteering some of my time to the Observatory.  
 Gift Membership \_\_\_\_\_

Name \_\_\_\_\_ Address \_\_\_\_\_ City, State, Zip \_\_\_\_\_  
 Mail to: **Lake Afton Public Observatory**, 1845 Fairmount, Wichita, KS 67260-0032