

Challenger
LEARNING CENTER
of Hardin County



The Otter Creek Astronomical Observatory

The Observer

September 2008 (#14)

Upcoming Evening Programs:

***September 6th (7:00 pm), October 4th (6:30 pm),
November 1st (6:30 pm), December 6th (6:30 pm)***

Join the observatory staff for a tour of what is visible in the night sky, including the moon, stars, and planets. *All times are Eastern time zone. All evening programs are "weather permitting" -- if the sky is not clear enough for celestial objects to be visible the observatory will not be open.*

Upcoming Daytime (solar) Programs:

***August 23rd, September 20th, October 18th,
November 15th, December 20th***

Daytime programs are "open house" at the observatory. Come safely observe the Sun, with its prominences and sunspots. Walk the model solar system trail and get a sense of the size of things in space. Check out our telescopes and learn about the observatory -- after all, you can't really see what's in the observatory when it is dark. *Daytime programs begin at 11 AM. All times are Eastern time zone. Daytime programs are held "rain or shine"--the observatory is open regardless of weather.*

Visit the Otter Creek Observatory web page at

www.ottercreekpark.org

Meet Henry Sipes

When you attend a program at Otter Creek Observatory, chances are you will talk to Henry Sipes. Henry has been taking on a greater role at the observatory during the past year, doing things like experimenting with the observatory's CCD camera to see if it might be useful for public programs, upgrading the observatory's batteries, taking on primary responsibility for scheduling programs, and working to increase publicity for the observatory.

Henry is from the Otter Creek Park area – he was born and raised on a small farm near Flaherty, Kentucky – and he still lives near Flaherty today. He became interested in space at a young age – he saved money earned from raising cucumbers to fly Estes model rockets, and he watched the development of the Space Shuttle program on TV. His first telescope was a small spy-glass. After many frustrating nights of steadying the spyglass scope against his well house, he purchased a small 60mm refractor with a wooden tripod to enable steadier images of the Moon, Jupiter and Saturn. Carl Sagan's TV series *Cosmos* fueled his interest in astronomy and science, and after graduating from Meade County High School he went on to get a degree in Celestial Engineering from the School of Interdisciplinary Engineering at Purdue University where he completed course work in Spacecraft Design, Geology, and Astronomy.

Although he never went to work in the Space Industry, he has continued to feed his passion for space by building telescopes and his own backyard observatory, helping with the design and construction of the Louisville Astronomical Society's observatory in Indiana, and conducting astronomy programs for the Boy Scouts, Girl Scouts, and other groups. He works as a Packaging Engineering Manager for Samtec, Inc., designing thermoformed trays used in the automated placement of electronic connectors to printed circuit boards for use in everything from CAT scan machines, cell phone towers, smart bombs, and yes, spacecraft systems.

International Year of Astronomy 2009

2009 is the International Year of Astronomy! IYA 2009 is a celebration of astronomy and its contributions to society and culture, highlighted by the 400th anniversary of the first use of an astronomical telescope by Galileo Galilei. Otter Creek Observatory is celebrating IYA 2009 in a number of ways.



THE UNIVERSE
YOURS TO DISCOVER

INTERNATIONAL YEAR OF
ASTRONOMY
2009

First, the observatory has completed its upgrading of the **model solar system trail** with new plaques. Whereas the old plaques simply displayed the names of the planets and dots representing the size of the planets,

the new plaques include pictures and other information. Keeping with the historical significance of IYA 2009, the information on the plaques has a historical component. If you have not yet seen the new plaques (there are now plaques for the dwarf planets Ceres and Eris as well as for the other nine you are probably more familiar with), make a trip to Otter Creek Park and check them out! You will not be disappointed. A sampling of what the new plaques look like (Sun plaque and Earth plaque) can be found on the next few pages.

Second, Otter Creek Observatory has produced a book on astronomy for all its visitors and other patrons – and the book is free. Entitled *The Known Universe*, it was written by Chris Graney, Park Astronomer at Otter Creek Park and Professor of Physics and Astronomy at Jefferson Community College. *The Known Universe* tells the story of astronomy, and explains key ideas in astronomy, from a Kentucky perspective, with our observatory visitors in mind. Many visitors to Otter Creek Observatory have had very little in the way of science education and are a little intimidated by science, and many visitors to the observatory are people with strong religious convictions, such as many homeschoolers and church groups. So *The Known Universe* assumes no prior scientific knowledge (in fact, it begins by asking its readers to put anything they *do* know out of their minds and to start by just looking at the sky), it presents the story of astronomy while acknowledging and remaining respectful of the role religion has played in that story, and it talks about the ideas astronomers got wrong as well as the ones they got right (and why).

There are two different ways to obtain a copy of *The Known Universe*:

- You can download it in electronic format for free. Just visit www.jefferson.kctcs.edu/observatory/iya2009, and you can read it on your computer or print it out.
- You can request a free hardbound copy of *The Known Universe*. A request form is attached to this newsletter. The observatory's budget is limited, so only a limited number of these traditional (as opposed to electronic) copies will be given away.

IYA 2009 has a number of major goals which fit very nicely with Otter Creek Observatory's purposes of outreach, education, and bringing the natural night sky to the public. These IYA 2009 goals are increasing scientific awareness; promoting widespread access to new knowledge and observing experiences; supporting and improving formal and informal science education; and facilitating the preservation and protection of the world's cultural and natural heritage of dark skies in places such as urban oases, national parks and astronomical sites.

In 1609 the telescope was brand new technology! We have learned a lot in the past four centuries!



One of Galileo's telescopes (image from the Institute and Museum of the History of Science, Florence, Italy)

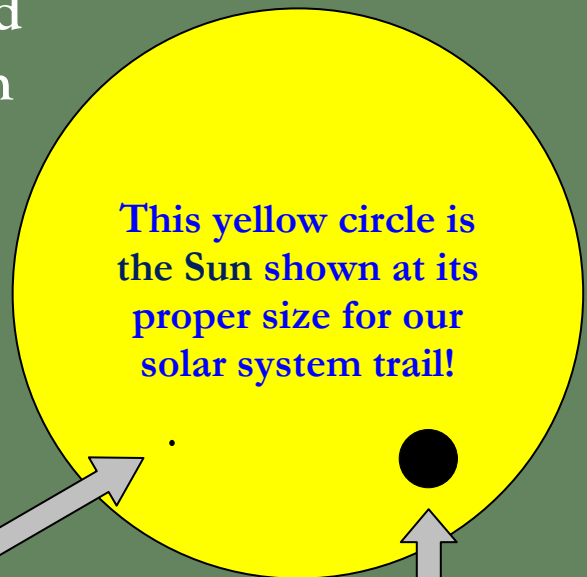


SUN (star)

Diameter: **865,000 miles** (If a highway circled the Sun, it would take over 7 years to drive all the way around the star.)

Drive times on these plaques are based on hard driving ~ 1000 miles a day (such as from Louisville to South Florida in one day).

The Sun, like the planets Mercury, Venus, Mars, Jupiter, and Saturn ~ and like the Moon ~ is a heavenly body that people everywhere have known about since ancient times. And you do not have to know much about astronomy to know where the Sun is in the sky! The Sun is unimaginably huge – dwarfing even the giant planet Jupiter.



This yellow circle is the Sun shown at its proper size for our solar system trail!

This dot shows the size of Earth compared to the Sun.

This dot shows the size of Jupiter compared to the Sun.



The dot shows **Earth** at its proper size
for our solar system trail!



EARTH (planet)

Diameter: **7900 miles** (If a highway circled Earth, it would take about 25 days to drive all the way around the planet.)

Distance from the Sun: **93 million miles**
(If a highway stretched from Earth to the Sun, it would take about 250 years to drive it.)

Astronomers have only known that Earth is a planet for about 350 years. It's true! We once thought heavenly bodies like stars or the Moon were just lights in the sky, not worlds like Earth. Heavenly bodies never stop moving across the sky. Heavenly bodies never go dark. On Earth things don't move unless pushed, and every fire burns out eventually. Who would think Earth and a brilliant light like Venus had anything in common? Aristarchus (230 B.C.) and Copernicus (1540 A.D.) argued that Earth might be a planet, circling the Sun, with day and night caused by Earth turning. But a moving Earth was hard to accept ~ did you know a turning Earth means that as you stand here reading this you are moving at over 800 mph? Many astronomers of the time could not accept that we could move so fast yet not notice it. Only after the invention of telescopes and modern ideas in physics did astronomers finally accept that the Earth really was ~ like Venus ~ a planet.



Free Hardbound Copy Request Form for *The Known Universe – An Otter Creek Observatory History of Astronomy for the International Year of Astronomy 2009*

Name: _____

Address: _____

City: _____ State: _____ ZIP: _____

e-mail: _____

Did you know that you can obtain a free electronic copy of *The Known Universe* online at www.jefferson.kctcs.edu/observatory/iya2009?

Yes: _____ No: _____

A limited number of free hardbound copies of *The Known Universe* will be given away. Please indicate why you would prefer a hardbound copy as opposed to the electronic version: _____

How long have you been interested in astronomy? _____

How long have you been interested in the history of astronomy? _____

How would you rate your knowledge of astronomy? _____ Use a scale of 1 to 5 where 1 is "I'm just getting started" and 5 is "I'm an advanced amateur astronomer or I have degrees in astronomy or a closely related field".

Would you be willing to return your copy so that another person could read it or would you prefer a copy of your own to keep? _____

Return this form by US Mail to

Prof. Chris Graney
Jefferson Community College (Southwest Campus)
1000 Community College Drive
Louisville, KY 40272

Only requests made by mail using this form will be honored.