Otter Creek-South Harrison Astronomical Observatory

The Observer

April 2009 (#19)

How Did They Know That?

THE UNIVERSE
YOURS TO DISCOVER

INTERNATIONAL YEAR OF
ASTRONOMY
2009

As part of the IYA 2009, this newsletter is going to include some explanations of how early astronomers figured out some facts about the heavens -- and how you can figure them out, too. In previous issues we have addressed how you see for yourself that the moon is much closer to Earth than the sun, and how you can see for yourself that the Earth is round.

In this issue, we will address how you see for yourself that the sun, moon, and stars must be very far away. They tell you in school that it is a long way to the sun, but how can we be sure? Might it not just be a bit higher than the clouds, painted on a big dome up there?

Well, just recently we had the first day of Spring – the vernal equinox. On the first day of Spring, the sun rises at a point due east on the horizon, and sets at a point due west. Furthermore, on equinox, the sun is above the horizon for 12 hours and below the horizon for 12 hours. On the equinox, the days and nights are equal in length. Believe it or not, this proves that the sun is very, very far away!

(continued on page iii)

Visit the Observatory web page at

www.jefferson.kctcs.edu/observatory

Harrison County Parks and Recreation Department
Jefferson Community & Technical College
Higher Education Begins Here
TARS
Technology and Related Sciences
The Technology and Related Sciences division of Jefferson Community & Technical College

Schedule of Public Programs:

**** ALL PROGRAMS ARE FREE! ****

Nighttime programs:		***Daytime programs:***	
		March 21	*11 am to 1 pm*
April 4	*9 – 11 pm*	*April 18*	*11 am to 1 pm*
May 2	*9:30-11:30 pm*	*May 16*	*11 am to 1 pm*
May 30	*10 pm – 12 am*	*June 13*	*11 am to 1 pm*
		July 4th	*11 am to 1 pm*
July 4th	*10 pm – 12 am*	*July 11th*	*11 am to 1 pm*
July 25th	*10 pm – 12 am*	*August 8th*	*11 am to 1 pm*
August 22nd	*9 – 11 pm*	*Sept. 5th*	*11am to 1 pm*

All programs at South Harrison Park are open rain or shine. Check with Park Astronomer, Park office, or websites below for updates.

Contacts: *Park Astronomer – Henry Sipes – 270-668-2103*
Harrison County Park Office – 812-738-8236

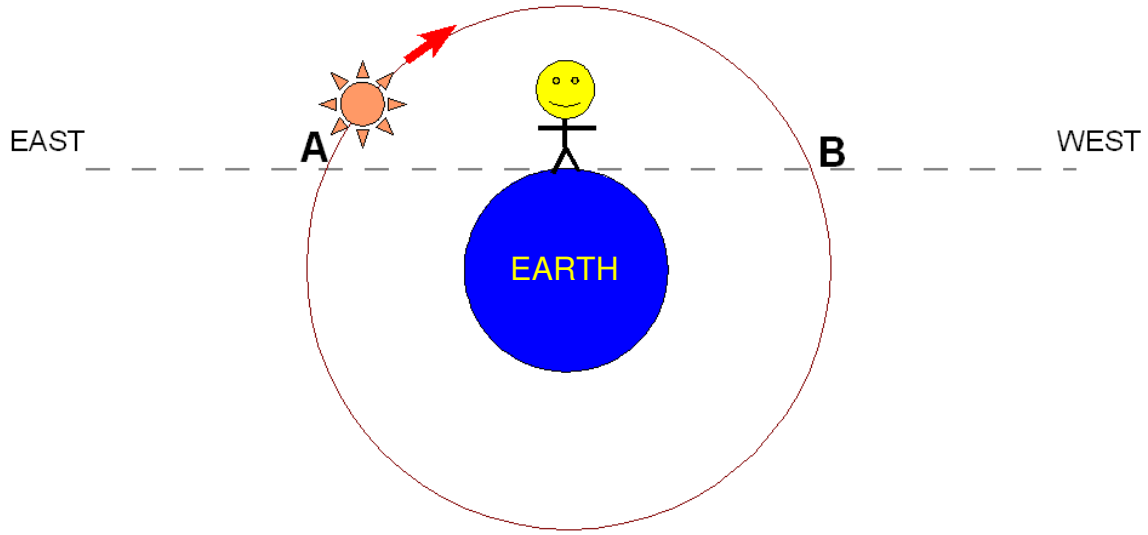
Websites: *http://www.harrisoncoparks.com/Observatory.html*
http://www.jefferson.kctcs.edu/observatory/
http://astronomy2009.us/

All times are Eastern time zone.

Nighttime programs: *Join the observatory staff for a tour of what is visible in the night sky, including the moon, stars, and planets.*

Daytime programs: *Daytime programs are "open house" at the observatory. Come safely observe the Sun, with its prominences and sunspots. 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.*

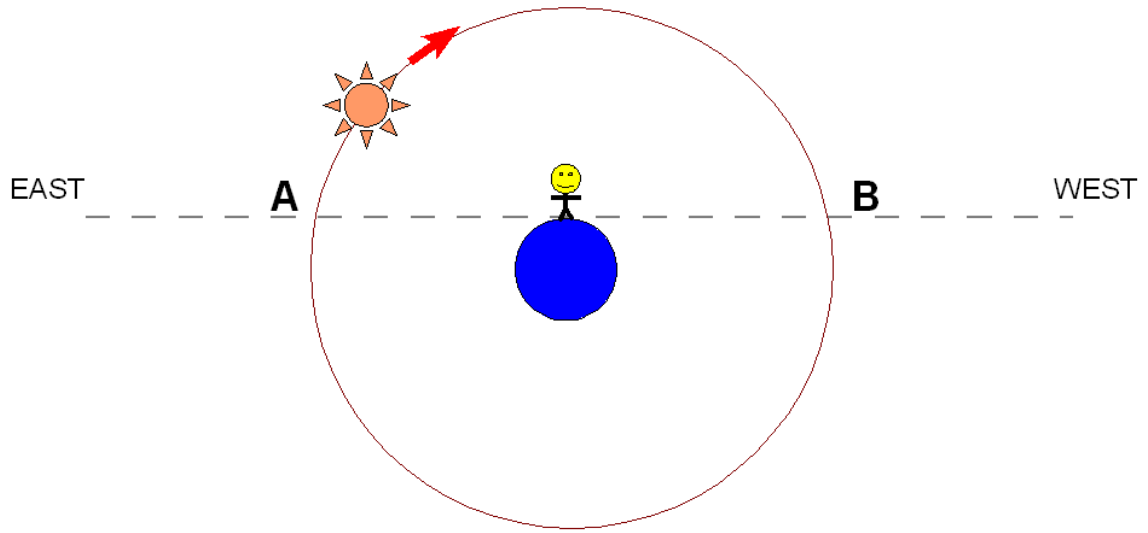
To see how this works, imagine yourself standing with your arms outstretched, with your right hand pointing due east and your left hand pointing due west. The sun rises on your right, passes above you during the day, and sets on your left. Here's a little picture of you, standing on the Earth, with the sun moving clockwise across the sky.



The dashed line represents the horizon. In this picture, on the first day of Spring the sun rises at A, passes above you during the day, and sets at B.

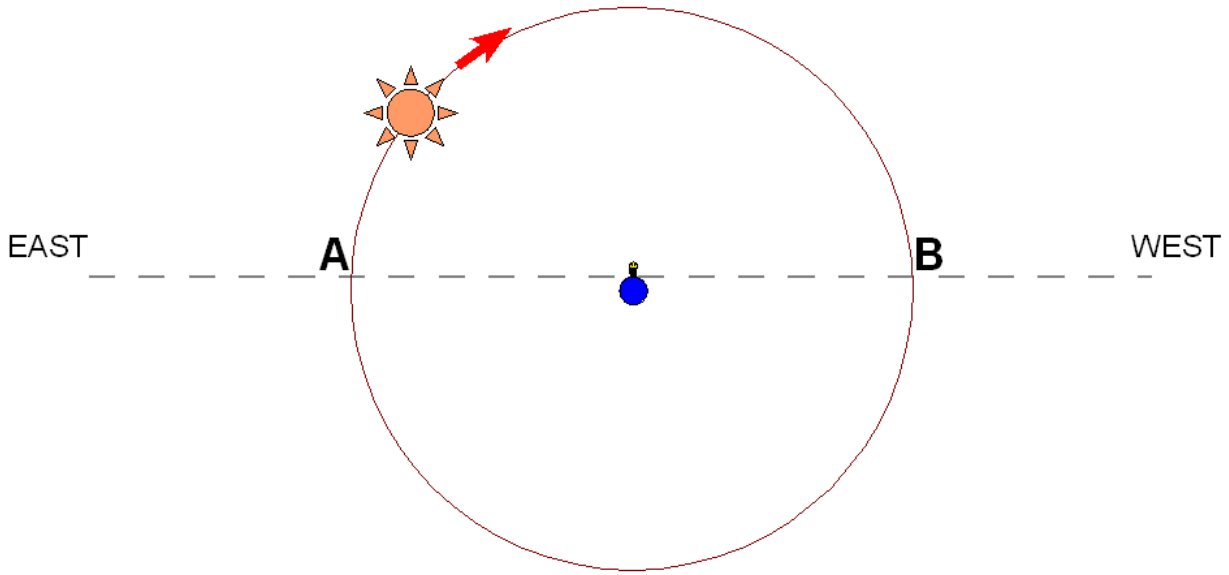
But look at the picture closely. There is a *lot* less distance for the sun to travel going from A to B than there is going from B to A. The sun moves across the sky at a steady rate (if you watch you can see this for yourself). So if the sun were as close as in this picture, it would have to be below the horizon for longer than it is above the horizon. The night would be longer than the day on the first day of Spring.

Let's draw you and the Earth a little smaller in our picture:

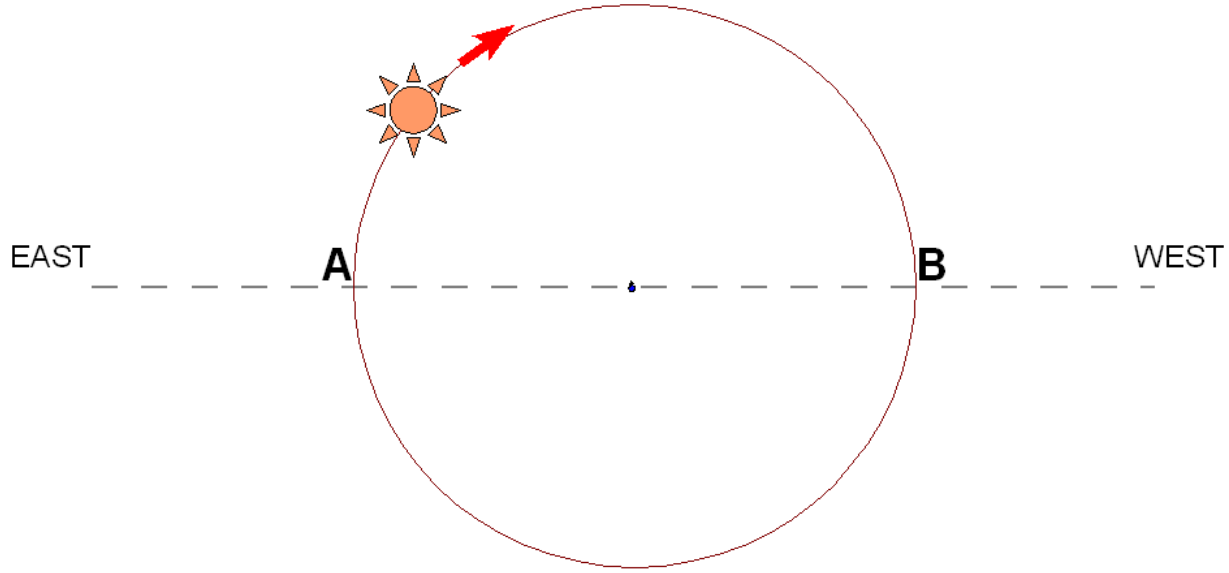


Now notice that while there is still less distance from A to B than from B to A, the difference is not so great.

Let's make you and the Earth smaller still:



Now the distance going from A to B is almost the same as B to A! And in fact, if we make the Earth and you really tiny, A to B and B to A become exactly the same:



So, only if the Earth is small compared to the distance to the sun will the sun be above the horizon for the same amount of time that it is below the horizon when it rises at a point due East and sets at a point due West. But that is exactly what happens – on the first day of Spring (the equinox) days and nights are equal. The length of daylight on the first day of Spring tells us that the sun must be very far away. And those early astronomers figured that out using just their eyes, their brains, and a pencil. How about that!

About South Harrison Park

Images from www.harrisoncoparks.com

The new observatory is located in South Harrison Park. South Harrison Park is operated by the Harrison County Parks & Recreation Department, who refers to it as the "Best Kept Secret in Harrison County" -- the park to come to when you need a little peace and quiet. For Louisville area residents who live in Indiana, central Louisville, or east of Louisville, it generally takes less time to get to South Harrison than it took to get to Otter Creek. Those who live south of Louisville will have to drive considerably further to get to South Harrison than they had to drive to get to Otter Creek. South Harrison Park is 220 acres of woodlands, open areas (including several playgrounds and a pool), and athletic fields. It is located between Elizabeth and Laconia, Indiana. The newly renovated camping area draws campers from all parts of the country. If you are looking for a good place to camp, especially if you used to camp at Otter Creek, South Harrison is worth checking out.

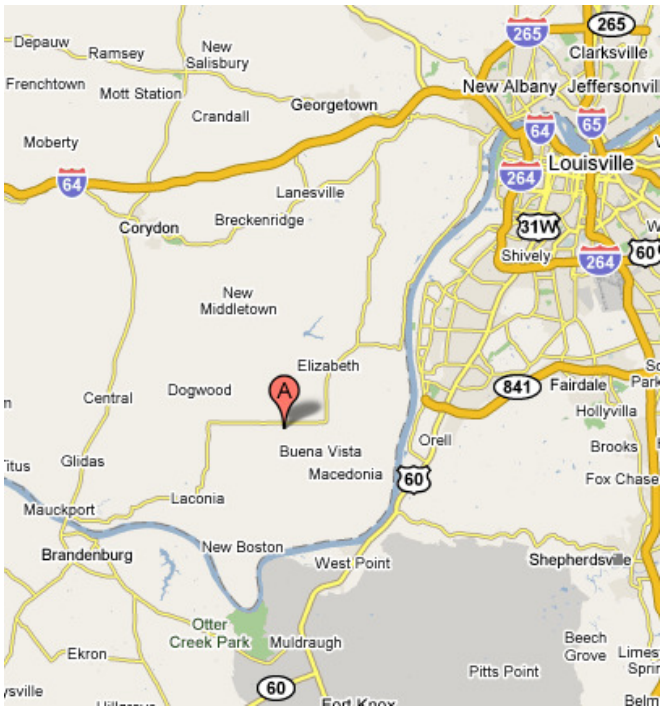
Park amenities:

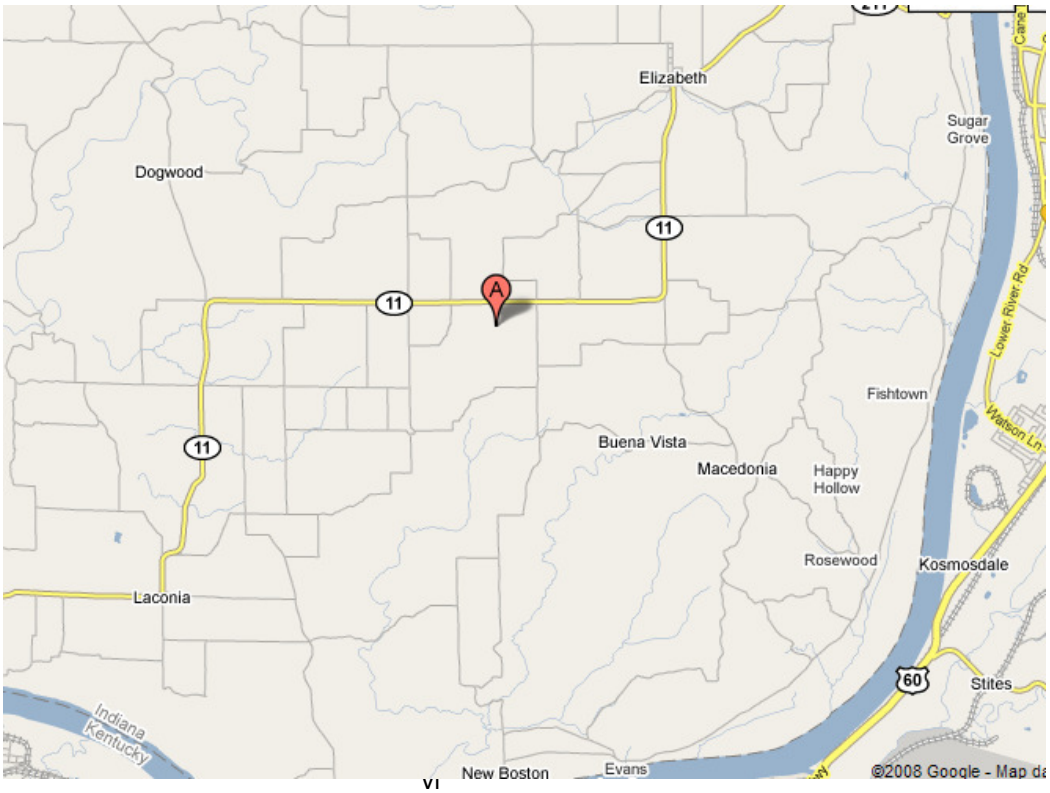
Olympic Outdoor Swimming Pool with Diving Board
Kids' Wading Pool
25 Modern and 6 Primitive Campsites
4 Picnic Pavilions
2 Lighted Tennis Courts
Basketball and Sand Volleyball Courts
4 Lighted Baseball Diamonds
Nature Trails
5 Playgrounds
Horseshoe Pits
Shower House
RV Disposal Station
Observatory

On the following pages are detailed directions (with pictures thanks to Google Street View) to South Harrison Park.

Directions to South Harrison Park (for those who wish to map this on the internet, the address is South Harrison Park Dr SE Laconia, IN 47135).

South Harrison Observatory is located at South Harrison Park, on Indiana 11 between Laconia and Elizabeth, Indiana -- a few miles due North of Otter Creek Park.





From Louisville:
Take I-64 West out of Louisville, getting off at Indiana 111 (the route to the casino boat).

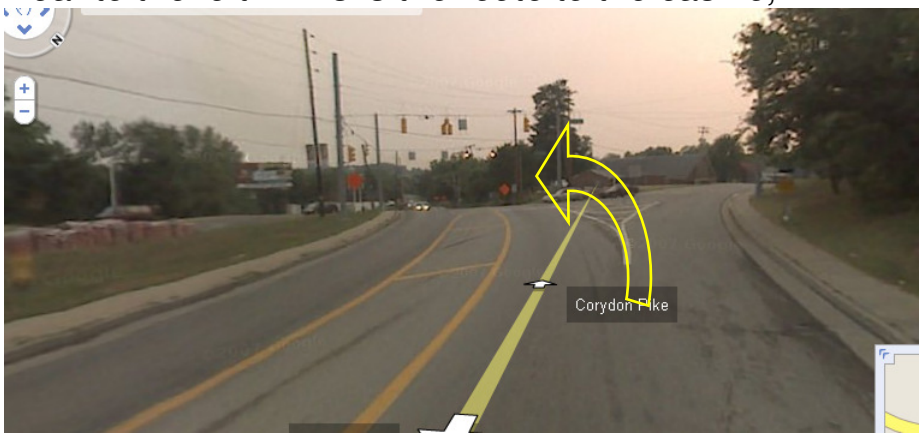
Take the New Albany Exit…

At the first intersection as you come down the ramp, turn right…

Follow the road (toward the bridge) for a few blocks until it ends…

Then turn right…

Follow the road until you come to a fork just past a gas station on the left. Bear to the left. This is the route to the casino, INDIANA 111…



You will travel several miles before you reach the casino. Just follow IN-111 on past the casino…

After about 12 mi on IN-111 you will reach INDIANA 211.
Turn right at IN-211…

Go 2.0 mi until you reach INDIANA 11. Turn left…

Follow IN-11 for 1.7 miles into the town of Elizabeth.
In Elizabeth IN-11 will turn left…

Continue to follow IN-11 for 4.6 mi. After you pass a complex of schools you should look for a sign for South Harrison Park. Turn left at S Harrison Park Drive.

Follow the road to the park. When you get to the park go though the toll house entry (do not go towards the ball fields) and follow the drive until it ends in a parking lot. You are at the observatory.

From Brandenburg:
Cross the Ohio River bridge at Brandenburg and then take Indiana 11. Follow IN-11 for 7.1 miles to S Harrison Park Drive. Turn right -- there will be signs for South Harrison Park.

Follow the road to the park. When you get to the park go though the toll house entry (do not go towards the ball fields) and follow the drive until it ends in a parking lot. You are at the observatory.