

SPECTRUM

Northern Cross Science Foundation Newsletter

July 2011

LOOKING UP

July 6, Wednesday

Sidewalk Astronomy

7:00 p.m.

Bayshore Town Center

July 7, Thursday

General Meeting

7:00 p.m. - Astronomy 101

7:30 p.m. - Main Program

Business Meeting to follow

July 8, Friday

Public Viewing

8:00 p.m.

Harrington Beach

July 9, Saturday

Public Viewing

(Solar & Evening)

3:00 p.m.

July 21, Thursday

Board Meeting

7:30 p.m.

Home of Joyce Jentges

July 23, Saturday

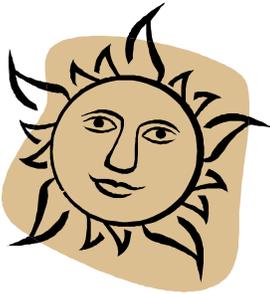
Sun-Day on Saturday

2:00 p.m.

Home of Kevin Bert

(Address on page 4)

Sun-Day on Saturday *by Kevin Bert*



July 23rd is the date set for this year's Sun-Day on Saturday members' event at my home in the town of Grafton. In past years, astronomy was primarily thought of as a night time activity

and I felt there was a need to spend time appreciating the sun and what it had to offer. Over the last few years there has been a new awareness of the sun thanks to the purchase of a 90mm Coronado H-alpha dedicated telescope. This will be another opportunity to view through the Coronado and a variety of the members' sun viewing telescopes. I will give a demonstration on how to set up and operate the club's Coronado for those that are interested in using it in the future, at 2:30. The event will start at 2:00 pm and you can

park on the lawn as in other years to set up your own telescopes any time after 2:00 pm. Feel free to come and go as you please, as we will view into the evening if there is an interest. This is a member's family event that combines leisurely solar viewing with a picnic type atmosphere. There are some non astronomy activities as well. Yard games, swimming if it ever warms up, or get exercise or bird watching with a hike down the inter-urban bike trail. I will provide soft drinks and snacks throughout the day. Those that plan to be here at 6:00 pm. and would like to stay and eat should bring a dish to pass. I will provide soft drinks and your choice of sloppy Joes or brats. Please bring a lawn chair too.

If it is raining, the event will be cancelled. If cloudy, you can still come to eat and talk astronomy as I will still give the Coronado demo. My address is on the back cover of the Spectrum. If in doubt of conditions or in need of directions, call me at 375-2239. I hope to see you there.

The Global Positioning System (GPS)...*by Rick Kazmierski*



"For centuries, navigators and explorers have searched the heavens for a system that would enable them to locate their position on

the globe with the accuracy necessary to avoid tragedy and to reach their intended destinations. On June 26, 1993 however, the answer became as simple as the question. On that date, the U.S. Air Force launched the 24th Navstar satellite into orbit, completing a network of 24 satellites known as the Global Positioning System, or GPS. Each satellite orbits the earth every 12 hours in a formation that ensures that every point on the planet will always be in radio contact with at least four satellites. The first operational GPS satellite was launched in 1978, and the system reached full 24-satellite capability in 1993. With a GPS receiver that costs less than a few hundred dollars you can instantly learn your location on the planet--your longitude

and even altitude--to within a few hundred feet.

This incredible new technology was made possible by a combination of scientific and engineering advances, particularly the development of the world's most accurate timepieces: atomic clocks that are precise to within a billionth of a second. The clocks were created by physicists seeking answers to questions about the nature of the universe, with no conception that their technology would some day lead to a global system of navigation.

For the system to work, the receiver has to know exactly where the satellites are and the satellites have to be able to keep reliable and extraordinarily accurate time. Accuracy is ensured by having each satellite carry four atomic clocks, the most accurate timing devices ever made. Reliability is ensured by the satellites' 11,000-mile-high orbits, which put them far above the (cont'd on pg. 4)

June Meeting Minutes

By Kevin Bert

The June business meeting of the Northern Cross Science Foundation was held at the Unitarian Church North in Mequon. Vice President Jeff Setzer opened the meeting at 8:30 and welcomed over 22 members and guests. He then asked for standard reports.

Treasurer Gene Dupree reported \$7,084.20 in the checking account.

Secretary Kevin Bert said he had nothing new to report on the membership. The Astronomical League's national convention ALCON Expo would be held June 28 through July 2 at Bryce Canyon Utah and noted that it would conflict with Wisconsin Observers Weekend.

Jeff Setzer gave a few final words on the NCRAL Convention and was pleased to note that NCSF representatives will be involved with our region of the League. Charlotte Dupree had been elected as Vice Chair of the region and Becca Setzer as Chairperson. There was a genuine concern over the lack of information and apparent poor planning from a place just

south of the Wisconsin border for the 2012 North Central Regional Convention. It was to be held in conjunction with the AL National Convention too. Our new officers will keep us posted on any developing news that they uncover.

Jeff offered a follow-up on some of the most recent events. Bad weather was the theme for most of the events. National Astronomy Day had great member attendance and started cold & windy with clouds but eventually cleared. Public attendance was weak. Bayshore Town Center events were rescheduled two times because of rain with no success. The May 29th Community Street Festival held in Port Washington turned into a rain storm too. The follow up viewing was cancelled..

Under new business, Jeff continued on with a list of upcoming NCSF events. Sunday June 5th is a solar viewing day at Harrington Beach starting at noon. June 10 & 11 are Public Viewing Nights at Harrington Beach with 8:00 pm starts. Kevin Bert said that June 17 & 18 have the Observatory reserved for a church youth group that will be camping at Harrington Beach. June 18 is a Bayshore sidewalk astronomy event.

Jeff continued with members events. Wisconsin Observers Weekend (WOW) is held at Hartman Creek State Park in Waupaca and runs from June 30th to July 3rd. Members interested in pre-WOW should see Jeff Setzer. The Nebraska Star Party will be held from July 31 to August 5th.

Gene Dupree said that it is not too early to plan for the 2017 total solar eclipse in Kentucky.

On that note, and with further business, Jeff closed the meeting at 9:05 pm.



Things to See In the July 2011 Night Sky By Don Miles

Mercury: This month Mercury (mag -0.4) will be trailing the Sun, and will be far enough away from it to make it fairly easy to see. On the first of the month, start looking about 45 minutes after the Sun has set above and to the left of where the Sun was. The moon will help you find Mercury on the 2nd as the moon will be right below it. On the 3rd, the moon will be to the left of Mercury. The moon will continue to drift further and further behind the pair. Around the 19th, Mercury will have reached its greatest separation from the Sun, and will start to slide back towards it again on its way around the front side.

Saturn: Look for beautiful Saturn (mag. 0.9) still in the constellation Virgo highest in the sky as the sun is setting. For a reference, Saturn starts the month about ½ degree below and to the left of the fairly bright double-star Porrima, and will slowly move to the lower left until their separation is about 2 degrees by months end.

Pluto, Neptune, & Uranus: As is the case with most of the outer planets, they don't seem to change much...this is true again this month. Your best time to see faint Pluto (mag 14.0) will be about 12:30am. Pluto is still in the constellation Sagittarius, and so the best time of the year is now as the southern constellations are high on the

southern horizon. Neptune (mag 7.9) straddles the border of the constellation Aquarius & Capricorn, and is best seen about 3am. Uranus (mag 5.8) rises about an hour after Neptune, and is just to the East of the lower "fish" in Pisces.

Jupiter: Your best view of Jupiter (mag -2.3) this month is right before the Sun rises. Look above the "tail" of Cetus. It actually rises about 1:30am, but will be highest in the sky as the Sun is coming up.

Venus & Mars: They both are very close to the Sun with Venus being the closer of the two and difficult to observe. Venus is on its way around the back side of the Sun, and won't be easily observable until mid-late October, when it will then be an evening object. Mars (mag 1.4) will rise about 4am in the constellation Taurus. Look for the reddish-orange tint to it and compare it to Aldebaran (the bulls "eye" in Taurus) early in the month as they will be fairly close. Mars will start the month near the base of the right "horn", and will briskly move eastward to end up close to the tip of the left "horn" by months end.

Moon:

July 1st: New Moon

July 8th: First Quarter

July 15th: Full Moon

July 23rd: Last Quarter

July 30th: New Moon

Special Events:

There are two meteor showers this month, but the one with the higher predicted rate (the Southern Delta Aquarids) is only about 20/hr. These will peak the night of Wednesday the 27th into the morning of the 28th. The second shower (and may be the more memorable to watch) is the Capricornids. They span from the 28th thru the 30th, with the peak being the night of Friday the 29th. They only peak at about 15/hr, but of the few, they're known to include brilliant fireballs. Both showers are yellow as their predominant color. There will be no problems with the moon washing out either shower as there will be a New Moon on Saturday.

July General Meeting

101 Class... by Tony Marek

This months 101 class is entitled:

"Skygazer's Almanac"

"The other observer planning tool"

Find out how to use the Almanac to get information that you can't get on a Planisphere. By using the two tools you can get total picture of what the sky will look like.

Constellation of the month

"Bootes"

Main Program by

This Months Main Program is entitled .

"Wisconsin Observers Weekend 2011"

Jeff Setzer will give a report on this years WOW Star Party. He will share experiences and pictures of the event. The NCSF experience began with Pre-WOW on June 18th, making for an eight day event.

June Events

Sunday, June 5

Gene DuPree reported clear skies for this solar viewing event. There were several exceptional prominences on the solar limb and 70 plus visitors had a chance to view through the Club's Solarmax 90.

Friday, June 10

Kevin & Dan Bert & Scott Nehring in attendance. Cloudy skies kept the roof closed. Four visitors stopped by, one with a 12" mirror looking for an appraisal. Kevin offered to test the full thickness mirror vintage 1976.

Friday, June 17

The evening began with the disposal of 4 mice and several wasp nests. Skies thankfully cleared just in time for the campers to observe some of the showpiece objects from about 9:30-11:15pm. About a dozen visitors in total attended.

Saturday, June 18

Joyce Jentges reported that following discussion with MP at Bayshore, it was decided to rescheduled this event due to scheduling conflicts.

Observatory Note

Special thanks to Tom Shmidtunz for scraping and painting the door frames at the observatory this past month.

Jim and Gwen Plunkett Observatory



Observatory Director:
Dan Bert: 262-375-2239

FOR SALE!!!

"Long Focus Primary for sale."
12.5 inch full thickness primary mirror with a whopping 100 inch focal length, (f/8). Kept in storage crate since the 1970's. Tests show the surface to be smooth and the figure to be slightly under corrected, but is still within the acceptable range of a maximum wavefront error of less than 1/4 wave. Beral coating is starting to show it's age but is useable as is. Asking \$400. Contact Kevin Bert for more information.
kevin.bert@hotmail.com

Sherlock Holmes

"It's a capital mistake to theorize before you have all the facts."

It therefore follows that Astronomers are bad detectives!

CURRENT CLACK

Leaders for Public Viewing

July 6

Bayshore Town Center

Jeff Setzer

July 8

Public Viewing

Leaders Needed

July 9

Public Viewing

Gene and Charlotte DuPree

July 23

Sun-Day on Saturday

Home of Kevin Bert

Star Parties

Northwoods Starfest

August 26 - 28

www.cvastro.org

Prairie Skies

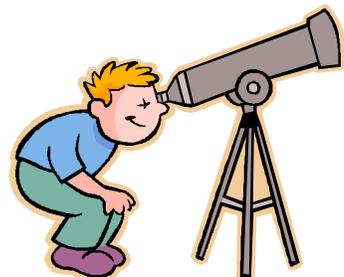
September 22 - 25

Kankakee, IL

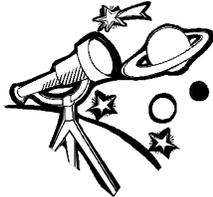
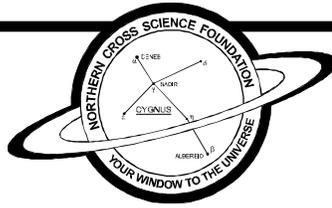
www.prairieskies.org

Note

Those who did not pick up their 2011 NCSF Membership Cards at the May or June Meetings will find them taped to the inside of this Newsletter.



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(continued from pg. 1)

atmosphere and keep them moving in very predictable trajectories. The Department of Defense monitors the satellites as they pass overhead twice a day and measures their speed, position, and altitude precisely. That information is sent back to the satellites, which broadcast it along with their timing signals.

Considering how extraordinarily sophisticated the technology is, the operating principle of GPS is remarkably simple. Each satellite continuously broadcasts a digital radio signal that includes both its own position and the time, exact to a billionth of a second. A GPS receiver takes this information--from four satellites--and uses it to calculate its position on the planet to within a few hundred feet. The receiver compares its own time with the time sent by a satellite and uses the difference between the two times to calculate its distance from the satellite. (Light travels at 186,000 miles per second: if the satellite time happened to be, for example, one-thousandth of a second behind the GPS receiver's time, then the receiver would calculate that it was 186 miles from that satellite.) By checking its time against the time of three satellites whose positions are known, a receiver could pinpoint its longitude and latitude.

The method just described would require that the three satellites and the receiver carry clocks of remarkable accuracy. However, having a receiver pick up a signal from a fourth satellite allows the receiver to get by with a relatively simple quartz clock--like that used in most watches. Once the receiver has made contact with four satellites, the system takes over and computes its position almost instantaneously.

From a personal standpoint, my handheld GPS has guided me down country roads to observing sites that weren't even on a paper map. Once there, I was able to get my exact latitude and longitude with several clicks of a button, thus completing alignment of my goto telescope. At the end of the observing night, dark country roads and unfamiliar landscapes were no problem, as the GPS seamlessly guided me home. Isn't modern technology great!

SPECTRUM

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The NCSF supports the International Dark sky association.



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This Issue, along with back Issues of SPECTRUM, can be found on the NCSF Web Site.

<http://www.ncsf.info>

Monthly Meeting Location
 Unitarian Church North
 13800 N. Port Wash. Rd.
 Mequon, WI 53097