

SPECTRUM

Northern Cross Science Foundation Newsletter

June 2014

Looking Up

June 4, Wednesday

Public Viewing

8:00 p.m.

Bayshore Towne Center

June 5 Thursday

General Meeting

7:00 p.m. - Astronomy 101

7:30 p.m. - Main Meeting

June 7, Saturday

Discovery Day

8:00 a.m. - Noon

Pike Lake State Forest

June 8, Sunday

Solar Observing

Noon - 5 p.m.

Harrington Beach State Park

June 19, Thursday

Board Meeting

7:30 p.m.

Home of Jeff Setzer

June 21, Saturday

Sun Day on Saturday

Members Family Event

2:00 p.m.

Home of Kevin Bert

(See article Page 2)

July 3, Thursday

General Meeting

7:00 p.m. - Astronomy 101

7:30 p.m. - Main Meeting

The Hottest Planet in the Solar System By Dr. Ethan Siegel

When you think about the four rocky planets in our Solar System—Mercury, Venus, Earth and Mars—you probably think about them in that exact order: sorted by their distance from the Sun. It wouldn't surprise you all that much to learn that the surface of Mercury reaches day-time temperatures of up to 800 °F (430 °C), while the surface of Mars never gets hotter than 70 °F (20 °C) during summer at the equator. On both of these worlds, however, temperatures plummet rapidly during the night; Mercury reaches lows of -280 °F (-173 °C) while Mars, despite having a day comparable to Earth's in length, will have a summer's night at the equator freeze to temperatures of -100 °F (-73 °C).

Those temperature extremes from day-to-night don't happen so severely here on Earth, thanks to our atmosphere that's some 140 times thicker than that of Mars. Our average surface temperature is 57 °F (14 °C), and day-to-night temperature swings are only tens of degrees. But if our world were completely airless, like Mercury, we'd have day-to-night temperature swings that were *hundreds* of degrees. Additionally, our average surface temperature would be significantly colder, at around 0 °F (-18 °C), as our atmosphere functions like a blanket: trapping a portion of the heat radiated by our planet and making the entire atmosphere more uniform in temperature.

But it's the *second* planet from the Sun -- Venus -- that puts the rest of the rocky planets' atmospheres to shame. With an atmosphere **93 times as thick as Earth's**, made up almost entirely of carbon dioxide, Venus is the ultimate planetary greenhouse, letting sunlight in but hanging onto that heat with incredible effectiveness. Despite being nearly twice as far away from the Sun as Mercury, and hence only receiving 29% the sunlight-per-unit-area, the surface of Venus is a toasty 864 °F (462 °C), with *no difference* between day-and-night temperatures! Even though Venus takes hundreds of Earth days to rotate, its winds circumnavigate the entire planet every four days (with speeds of 220 mph / 360 mph), making day-and-night temperature differences irrelevant.

Catch the hottest planet in our Solar System all spring-and-summer long in the pre-dawn skies, as it waxes towards its full phase, moving away from the Earth and towards the opposite side of the Sun, which it will finally slip behind in November. A little atmospheric greenhouse effect

seems to be exactly what we need here on Earth, but as much as Venus? No thanks!



Venus's upper-atmosphere
NASA

Ten Need-to-Know Things About Venus:

1. Venus is only a little smaller than Earth.
2. Venus is the second closest planet to the sun at a distance of about 108 million km (67 million miles) or 0.72 AU.
3. One day on Venus lasts as long as 243 Earth days (the time it takes for Venus to rotate or spin once). Venus makes a complete orbit around the sun (a year in Venusian time) in 225 Earth days.
4. Venus is a rocky planet, also known as a terrestrial planet. Venus' solid surface is a cratered and volcanic landscape.
5. Venus' thick and toxic atmosphere is made up mostly of carbon dioxide (CO₂) and nitrogen (N₂), with clouds of sulfuric acid (H₂SO₄) droplets.
6. Venus has no moons.
7. There are no rings around Venus.
8. More than 40 spacecraft have explored Venus. The [Magellan](#) mission in the early 1990s mapped 98 percent of the planet's surface.
9. No evidence for life has been found on Venus. The planet's extreme high temperatures of almost 480 degrees Celsius (900 degrees Fahrenheit) make it seem an unlikely place for life as we know it.
10. Venus spins backwards (retrograde rotation) when compared to the other planets. This means that the sun rises in the west and sets in the east on Venus.

Article: Courtesy of



May Meeting Minutes

By Kevin Bert

The May Business meeting of the Northern Cross Science Foundation was held at Unitarian Church North. President Jeff Setzer opened the meeting at 9:00pm and welcomed 26 members and guests. He noted that the Cosmos series was half over and then asked for standard reports.

Treasurer Gene DuPree stated checkbook balance of \$14,791.11 and Observatory balance of \$1,055.06.

Secretary Kevin Bert reports that the final 2014 roster totaled 62 and a copy of one was included in every Spectrum. He noted that the Astronomical League's national convention, (ALCON), will take place July 10-12 in San Antonio. He will have a flyer available with all the details including a registration form to anyone interested.

Observatory Director Dan Bert noted leaders for Friday May 2nd Scott Nehring and Saturday May 3rd Gene and Charlotte DuPree.

Jeff Setzer covered upcoming events for May. Harrington Beach PVN on the 2nd & 3rd. West Bend library has a viewing offering on the 5th. Pike Lake PVN is on the 17th. Sidewalk Astronomy at Bayshore on the 7th has been canceled. Sunday May 25th is Astronomy day with daytime activities at Port Washington's Street Festival followed by nighttime viewing at the Jim &

Gwen Plunkett Observatory.

With the regional convention completed it was noted by Jeff that the final numbers showed nearly a \$1000 loss primarily due to the lack of attendance. It was hoped that some of that loss could be recovered from our region of the Astronomical League.

Nolan Zadra talked of taking the next step with the imaging committee after redirecting the focus to an instrument in the southern end of the observatory. He would contact the committee members and look to take some measurements on site.

With no further business Jeff closed the meeting at 9:35 pm. Respectfully submitted by Kevin Bert Secretary.



You are Invited to:

Sun-Day on Saturday, June 21 **An NCSF Members Family Event** *Hosted by Kevin Bert*

June 21st is the date set for this year's Sun-Day on Saturday members' family event at my home in the town of Grafton. What better day to promote the sun than to have it on the summer solstice. This relaxed setting

away from the public gives members a chance to spend time conversing while enjoying the sights of our nearest star. Solar activity remains high as 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.

This is a "**member's family event**" that combines leisurely solar viewing with a picnic type atmosphere. I will provide soft drinks and snacks throughout the day. Feel free to come and go as you please, as we will view into the evening if there is an interest. Those that plan to be here at 5:00 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.



Things to See In the June 2014 Night Sky By Don Miles

Mercury & Jupiter: Mercury can still be seen very early in the month, but will quickly slide towards the Sun on its way around the "front" side. It's at (1.4 mag), and will set at about 10pm, but will get very close visually to the Sun after the first week. It will again be a morning object early in July. Jupiter is the next to set, and will continue to set earlier until it also becomes a morning object around mid-August. It is already as high in the sky as it will get as the Sun is setting, and sets by about (11:15/9:45pm). It starts the month in the constellation Gemini, but will begin to drift eastward into Cancer.

Mars, Saturn, & Pluto: Mars (-0.5 mag) transits around sunset early in the month, but will working its way towards the Sun and setting earlier as the month progresses by around (3/1am). It remains in the constellation Virgo, but will steadily work its way eastward directly towards the bright star Spica. Saturn (0.2 mag) is rising as the Sun sets, and transits by about (11:30/9:30pm) while remaining in the constellation Libra. It sets about (4:30/2:30am), and will be an excellent

object to view throughout the summer and into fall. Pluto rises about (10:30pm/sunset) at (14.1 mag), and still in the constellation Sagittarius. It will transit at about (3/12:45am).

Neptune, Uranus, & Venus: Neptune rises about (1:30am/11:30pm) in the constellation Aquarius, and at (7.9 mag). Uranus rises about (3/1am), and is at (5.9 mag) in the constellation Pisces. Brilliant Venus is the last to rise, and will by about (3:45am). It's at (-4.0 mag), and will keep pace with the rising Sun and stays at about this same distance ahead of the Sun all month. Being an inner planet, it will quickly move from western Aries eastward into the constellation Taurus ending up at the base of the right horn.

Moon:

June 5th: First Quarter
June 13th: Full Moon
June 19th: Last Quarter
June 27th: New Moon

Special Events:

There are numerous meteor showers this month, and as usual, the Moon will wash out many of the more faint ones. The two that have the best potential of a good show would be the Scorpiids, and the Draconids. The Scorpiids peak the night of the 5th with predicted rates of about 20/hr. The Moon sets at about 1am, so early morning will give you the best conditions. The Draconids peak the night of the 30th with rates ranging greatly from less than a dozen to well over 100/hr. The peaks listed can give the impression of a noticeable lull in meteors, or one great night compared to the next...but since meteor showers are typically spread over a couple of days (or even weeks), they are often hard to group which "belong" to which shower. If you can avoid the Moon, you'll probably be rewarded by one or another. Numerous smaller showers are scattered throughout the month, so if you get the chance, look up.

June General Meeting

Astronomy 101 by Kevin Bert

"Observing the Sun"

The Astronomy 101 class for June will be observing the Sun. We will use the Coronado and other means to view. Please bring your sun viewing telescopes if you like.



Main Program by Rick Kazmierski

"Composite Image Processing"

After imaging the April lunar eclipse, I wanted to try something different with the image processing. Working in Photoshop, I was successful in producing an eclipse composite using a technique I hadn't considered before and will share the process at the June meeting.

May Public Events

Harrington Beach, PVN, May 3rd

Reported by Charlotte DuPree

Harrington Beach, PVN, May 3rd. When we arrived at the observatory, Al had his 8 inch set-up, in his favorite spot, as did Rich Sauve and Rick Dusenbery. We opened the roof because the editor/photographer Gary Feider, from the Random Lake Souder, was there to write an article about us. We closed the roof when a light rain started. We stayed about another hour hoping that the cloudy sky might give us a break.

Pike Lake State Forest, May 17th

Reported by Charlotte DuPree

We had a good crowd of visitors from the campground and from Hartford, because of the Pike Lake advertising on Hwy 60. One of better nights we have had despite some thin clouds passing thru. Thanks to Jeff Setzer, Rick Dusenbery, and Al Steinberg for their help.

Harrington Beach, PVN, May 25

Reported by Charlotte DuPree

With a partly cloudy sky we opened the observatory at 8:00. While waiting for darkness, the big scope was aimed at Jupiter. Because of the large crowd we did not start looking for anything new until 10:00. Thanks to Rich, Al, Rick, Joyce, Kevin, Ken. Steve Schowalter supplied the Ethos eyepieces for the evening.

Port Washington, May 25

Reported by Kevin Bert

The skies were clear for the afternoon's Northern Cross Astronomy Day event on May 25th. Port Washington's Street Festival was the site for hundreds of people and many had a look at our active sun. Members of the NCSF had six telescopes available showing different perspectives of the sun with one scope targeting our sister planet Venus. Many families had

their first view and were amazed at what could be seen. Dozens of spots were visible in white light filters and H-Alpha views revealed a large prominence jetting out into space. Handouts were distributed to promote the evenings viewing at Harrington Beach and a good number expressed an interest in attending.



*Photo's,
Courtesy
of Harvey
Sherman*



RELATED INFO

New Member

NCSF welcomes new club member

Peter Doering

Public Viewing Leaders

June 4

Bayshore Towne Center

Leader - Jeff Setzer

June 7

Pike Lake State Forest

Leader - Gene and Charlotte DuPree

June 8

Harrington Beach State Park

Leaders Needed

Star Parties

Northwoods Starfest

August 22-24th

Hobbs Observatory

Fall Creek, WI

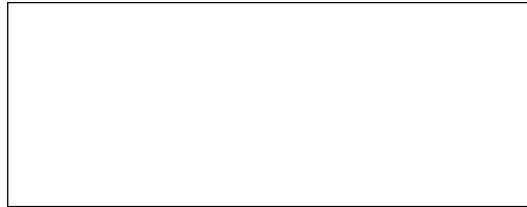
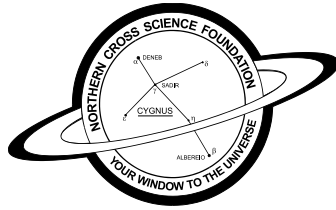
Jim & Gwen Plunkett

OBSERVATORY



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Observatory Plaque

After finalizing the membership roster for 2014 the board has updated the observatory plaque that recognizes the Supporting Members that voluntarily pay higher dues to support the activities of the Northern Cross. The board of Directors would like to thank all the supporting members for their generosity toward the club and encourage all members to check out the plaque next time they are out at Harrington Beach.

Deborah Kern
Terrence K. Knudsen
Jerry Kohlmann Jr.
William Large
Scott Nehring
Rob Powell
Rich Sauve
Alan Steinberg
Dave Wierzba
Kenneth Dunn

Imaging Committee

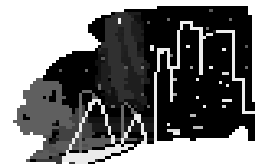
Imaging Committee Chairman Nolan Zadra met with committee members at Plunkett Observatory on May 17th to determine the feasibility of placing an imaging platform on the south end of the observatory. Concerns included whether the instrument could be placed without obstructing the flow of people through the observatory, and whether the south wall would pose too daunting of an obstruction for southern imaging. The initial feeling of those present was that these would not be significant problems and the committee should consider this alternative.

SPECTRUM

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The NCSF supports the International Dark sky association.



Send inquiries to:

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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 Information

7:00 p.m. Astronomy 101
7:30 Main Program
Unitarian Church North
13800 N. Port Wash. Rd.
Mequon, WI 53097