

SPECTRUM

Northern Cross Science Foundation Newsletter

May 2015

Looking Up

May 7 Thursday

General Meeting

7:00 p.m. - Astronomy 101

7:30 p.m. - Main Program

May 16, Saturday

Public Viewing

8:00 p.m. - 10:00 p.m.

Ackermann Grove

Washington County

May 21, Thursday

Board Meeting

7:30 p.m.

Home of Jeff Setzer

May 23, Saturday

Public Viewing

8:00 p.m. - 10:00 p.m.

Pike Lake State Forest

May 24, Sunday

Street Festival

12:00 p.m. - 5:00 p.m.

Pt. Washington Downtown

May 24, Sunday

Astronomy Day

8:00 p.m. - 11:00 p.m.

Harrington Beach State Park

June 4, Thursday

General Meeting

7:00 p.m. - Astronomy 101

7:30 p.m. - Main Program

June 6, Saturday

Discovery Day

9:00a.m. - 1:00 p.m.

Pike Lake State Park

Hubble Space Telescope - 25th year!



The Hubble Space Telescope celebrates its 25th year of service on April 24, 2015. During its 25 year long mission the NASA/ESA Hubble Space Telescope has changed our view of the Universe significantly. Some of the most ground breaking discoveries made in astronomy in the 20th century were made by Hubble.

There are a lot interesting facts that the average Hubble fan may not know about this famous telescope.

NASA named the world's first space-based optical telescope after American astronomer Edwin P. Hubble (1889 to 1953). Dr. Hubble confirmed an "expanding" universe, which provided the foundation for the Big Bang theory.

Hubble weighed about 24,000 pounds at launch and currently weighs about 27,000 pounds following the final servicing mission in 2009. It has traveled more than 3 billion miles along a circular low Earth orbit currently about 340 miles in altitude.

NASA

The primary mirror diameter is 94.5 inches and weighs 1,825 lbs. The secondary mirror has a diameter of 12 inches and weighs 27.4 lbs. Power is supplied by two 25 foot solar panels which generate 5,500watts of power. Average usage is 2,100 watts.

In order to take images of distant, faint objects, Hubble must be extremely steady and accurate. The telescope is able to lock onto a target without deviating more than 7/1000th of an arc second, or about the width of a human hair seen at a distance of 1 mile.

Hubble has no thrusters. To change pointing angles, it uses Newton's third law by spinning its wheels in the opposite direction. It turns at about the speed of a minute hand on a clock, taking 15 minutes to turn 90 degrees.

Hubble has the pointing accuracy of .007 arc seconds, which is like being able to shine a laser beam on a dime 200 miles away.

Outside the haze of our atmosphere, Hubble can see astronomical objects with an angular size of 0.05 arc seconds, which is like seeing a pair of fireflies in Tokyo from your home in Maryland.

The Hubble archive contains more than 100 Terabytes, and Hubble science data processing generates about 10 Terabytes of new archive data per year. Astronomers using Hubble data have published more than 12,800 scientific papers, making it one of the most productive scientific instruments ever built.

Bayshore Towne Center Ends Sidewalk Astronomy...by Jeff Setzer

After several years of collaboration, Bayshore Town Center — which is under new ownership — has informed us they are going in "a different direction" and will no longer be doing Sidewalk Astronomy. Our contact at Bayshore has passed on her regrets and will stay in contact with us, but her title has changed from "community" to "marketing" manager, and there are no other community-type events listed on the Bayshore Town Center website, so I think this is a permanent situation.

As you may know, Bayshore Town Center had a Foundation which donated between \$1,500 and \$3,000 to us each of the past several years. Those donations are, as of now, ended.

Our 90mm Coronado solar telescope, as well as the bulk of the funds for our new photo-visual telescope, have come from these past Bayshore donations, and while we still have some money saved, that source of fund replenishment is now gone.

Please join me in thanking all the NCSF members who contributed towards a resounding success in our Bayshore Sidewalk Astronomy efforts!



April Meeting Minutes

By Secretary Kevin Bert

The April Business meeting of the Northern Cross Science Foundation was held at Unitarian Church North. President Jeff Setzer opened the meeting at 7:55pm and welcomed 24 members and guests. He then asked for standard reports.

Treasurer Gene DuPree tells the membership that the regular accounts balance is \$10,916.63 and the observatory account balance remains at \$1,109.06.

Secretary Kevin Bert reports that the 2015 membership roster was in the last Spectrum. The newest member was David Schenk from Milwaukee. The Astronomical League has a new Sketching & Observing program that was previewed in the latest Reflector. Jeff was disappointed to inform us that the Fargo-Moorhead Astronomical Society, the hosting club for the 2015 NCRAL convention, had backed out of this year's convention. If no other club steps up on short notice, this year's event will be canceled.

Observatory Director Dan Bert noted that all things are in order at the Observatory. Kevin Bert noted that the Messier Marathon night started with clear skies but was

quickly overtaken by the Wisconsin nebula advancing from the West.

Members of the imaging committee highlighted some of their efforts in the last newsletter. The online newsletter presents a much better quality of image. It was noted that the next item to purchase would be an imaging camera.

Under New Business:

Jeff Setzer covered the upcoming event for April with an 18th viewing evening at the Horicon Marsh Visitor Center. The 16th of May is the first observing session at Ackermann Grove Washington County Park. May 23rd is the first Public Viewing Night at Pike Lake State Park. The following day will be busy with Astronomy Day activities. Starting at the Port Washington Street Festival in the afternoon and later continuing out at the Jim & Gwen Plunkett Observatory.

It was noted that the Sheboygan Swap & Sell was a well attended event. Pat Marek and Dale Matthies still have items to sell. Comet Lovejoy was in Cassiopeia and fading. And the Aurora on St. Patrick's day was one of the best ever. Great timing to David Eicher and his eclipse trip to Iceland.

The NCSF Imagers Report:

By Ernie Mastroianni



I'm always surprised to see what the night sky will reveal to a digital single lens reflex with a wide angle prime lens and just 30 seconds of exposure. For my wide field astrophotography, I prefer my modestly-priced Nikon 24mm f/2.8 lens. It's sharper than my 18-200mm zoom lens and much easier to use.

But any camera needs to be set properly for consistent results, so I disable every automatic feature. I set the color balance to daylight and turn off the autofocus. I select a shutter speed of up to 30 seconds stop the lens to f/4, or one stop below the wide open. I record in RAW mode, not JPEG, so that all data recorded by the camera's sensor is will be written to the image file.

Knowing the best ISO setting can be tricky. Older cameras don't record dim light as well as the latest models, but one rule almost always applies. A camera's highest ISO setting will always produce images that are too grainy and full of digital noise. My Nikon D700 can record ISO up to 12,800, but I rarely need to set it *Continued on Pg 3*

Things to See in the May 2015 Night Sky By Don Miles

Mars, Mercury, & Venus: All of these planets are up at sunset, and all set right after the Sun. This month Mars sets within an hour of the Sun, so isn't viewable. Next to set is Mercury (-0.2). It's now trailing the Sun on its way around the "front" side. It will reach its greatest eastward elongation the evening of the 7th (meaning it will appear to be at the greatest easterly separation between it and the Sun from our vantage point on the 7th, then it slides back towards the Sun as it comes between the Sun and the Earth). Brilliant Venus (-4.2) is the next planet to set, and does by about (9:30/sunset). This is the brightest object in the sky (besides the Sun & Moon). It starts the month in the constellation Taurus, but works its way eastward thru the month to wind up in Gemini.

Jupiter: Is the still an excellent target this month as it is already high up at sunset, and transits before the Sun sets. It sets around (2:30/12:30am). It's in the constellation Cancer, but is slowly working its way to the East.

Saturn: This crowd favorite rises around (9:30/7:30pm), and transits about (2:30/12:15am). It's at (0.1 mag), and slowly works its way westward from the constellation Scorpius into Libra. As mentioned in recent newsletters, the views will continue to get better as the season pro-

gresses. It will continue to set later and will remain viewable as an evening object thru late November. Then in early December, it will rise before the Sun as a morning object. The rings are tilted at an excellent angle to view the gaps or "divisions".

Pluto, Neptune, & Uranus: Pluto will rise by about (12:30am/10:30pm), and still in the constellation Sagittarius. (If no other reason to like Pluto, it remains consistent). Like usual, it's still low in the sky, and still faint (14.1 mag). Neptune is the next to rise, and will by about (3:30/1:30am). It remains stationary in the constellation Aquarius. Uranus is the next to rise, and will by about (5/3am). Early in the month might be a little too close to pick it out in the glow of the trailing Sun. But by mid-month, it will have put some distance between it and the Sun and make it much easier to observe. It's in the constellation Pisces, and will remain there for the next couple of years.

Moon:

May 3rd: Full Moon

May 11th: Last Quarter

May 18th: New Moon

May 25th: First Quarter

Special Events/Objects:

There is only one major meteor shower this month, and that will be the Eta-Aquarids. They'll peak the night of the 5th (two days after the Full Moon). The source of this shower is Halley's Comet, and peak rates are typically about 60/hr, but since the Moon will wash out all but the brightest, the ones you do see should be worthwhile. The ones you do see may be brilliant fireballs, leaving "smoke trails" as they pass. The Moon will rise a little before 9pm, and set around 7am, so there will be little relief.



A Note from Don Miles:

Unless there is a membership response to continue this segment of the newsletter, this will be my last installment of Things to See in the Night Sky. I'm convinced that this column is an outdated way to pass limited information that can change daily.

But, if you find value in this monthly segment, send your responses to Rick Kazmierski: rickkaz@charter.net *Thanks! Don*

May General Meeting

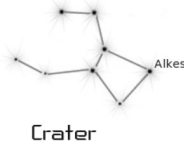
101 Class...By Kevin Bert

The Astronomy 101 class for May is entitled "The Planetary Observing Club," . The Astronomical League supports over thirty observing programs or clubs. Many specialize in a particular kind of subject. Planetary Nebulae make up one of the later entries in this list of clubs. Hear what rules are set up to satisfy the requirements for receiving recognition for these small and sometimes illusive objects.

Constellations of the month:



Corvus
and Crater



Crater

Main Program By Jeff Setzer

Title:

"Everything you wanted to know about Planetary Nebula and were afraid to ask!"

April Public Events

Horicon Marsh, Saturday, April 18th

Jeff Setzer and Rick Dusenbery hosted about 30 guests at the Visitor Center . Skies were clear, but strong gusty winds made steady viewing difficult. Jeff told visitors that it would not have been a viewing night under other conditions.

RELATED INFO

Welcome to
New Member

David Schenk



Leaders for Public Viewing

May 16

Ackermann Grove Wash Cty PK
Gene & Charlotte DuPree

May 23

Pike Lake State Forest
Gene & Charlotte DuPree

May 24

Port Washington Downtown
Joyce Jentges

May 24

Harrington Beach State Park
Gene and Charlotte DuPree

STAR PARTIES

NCRAL 2015 Cancelled

Wisconsin Observer Weekend

WOW

June 11 - 14th
Hartman Creek State Park,
Waupaca, WI
Register Form at
www.new-star.org/

Northwoods Starfest

August 14 - 16
Hobbs Observatory
Fall Creek, WI
cvastro.org@gmail.com

Imagers Report - Continued from Pg 2

beyond 3200 to record deep star fields. Higher than that, and light pollution and digital noise overwhelm the sky. So I dial down the ISO for a more natural-looking image.

This recent photo taken at Harrington beach last April shows Orion, Venus and the Pleiades. But when cropped (see Image A) to just a small part of the frame, Venus is seen nestled neatly between Taurus and the Pleiades. Because twilight lingered, this exposure was only 15 seconds at ISO 1250, but stars down to 9.75 magnitude are visible.

This Milky Way panorama (see Image B) was taken from Costa Rica, at a location where the sky was darker than Harrington, but still marred by local light pollution. It reveals broad detail in the Milky Way near Scorpius and stars to 11th magnitude. This is a 30-second exposure is at ISO 2500, using a table top tripod placed on the roof of a parked car.

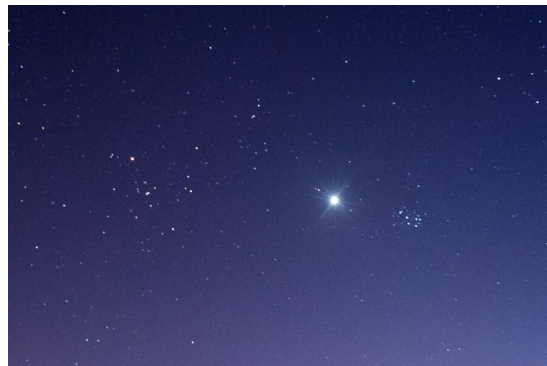


Image A - Venus between Taurus and Pleiades taken at Harrington Beach...by Ernie Mastroianni

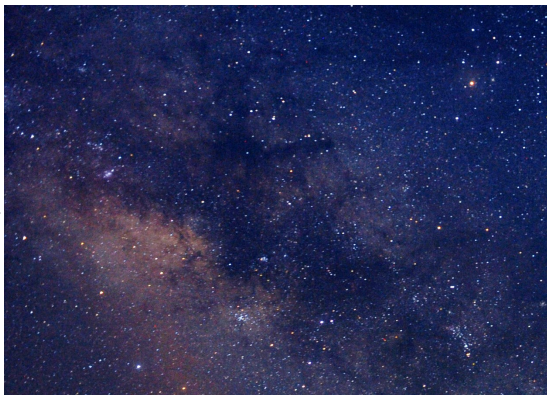


Image B - Photo to the left, is the Milky Way Panorama

Image C - Photo above is a blown-up section of the Image B Panorama

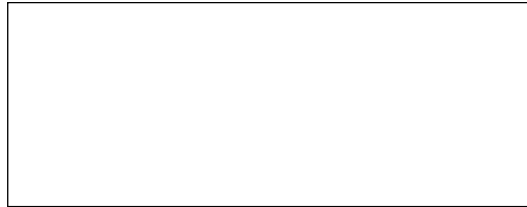
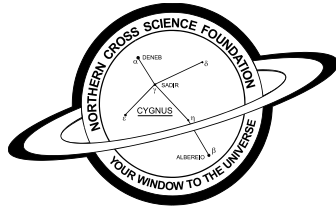
Photo's -

Ernie Mastroianni



Observatory Director: Dan Bert
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Partial Lunar Eclipse - April 4, 2015

Photo by Gene DuPree



Gene used a **Canon Power Shot camera A590 IS, f/2.6, 1/160 sec. ISO 80** Taken through his **12inch Dob with a 32mm at 62 power**, using eyepiece projection. Looking closely, you will see the start of limb darkening. This shot was the last one he took before cloud-covering began.

Observatory Use Reminder

The Board of Directors would like to remind NCSF members that the privilege of using our Club Observatory requires:

1. One night of Leading
or
 2. Assist at one public observing session
- In the past, we have been lax in our enforcement of this rule.

The same few people have done the majority of leading and assisting, which has allowed NCSF to meet our agreement with Harrington Beach State Park.

We are going to be emphasizing the rule starting this year.

So, if you are one of the many people using the observatory outside of public events, please be sure to sign up to Lead or Assist at one of our Public Events this year, 2015.

To sign-up, please contact Observatory Director, Dan Bert.
Dan - 262-357-1973

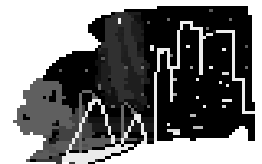
Thank You! - *Your NCSF Board of Directors*

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