

SPECTRUM

Northern Cross Science Foundation Newsletter

November 2014

Looking Up

November 6, Thursday

General Meeting

7:00 p.m. Astronomy 101

7:30 p.m. - Main Program

Business Meeting to follow

November 15, Saturday

Observatory Training

6:30 p.m.

Harrington Beach (See pg.2)

November 20, Thursday

Board Meeting

7:30 p.m.

Home of Jeff Setzer

*Scheduled Public Viewing for 2014 ended in October. **We have Winter Public Viewing** (see below). Also, we may still have impromptu observing events, so check the Spectrum or our website at www.NCSF.info for the latest updates*

Public Viewing Winter 2015

January 17, Saturday

Candlelight Ski & Hike

6:00 p.m.– 9:00 p.m.

Horicon

February 7, Saturday

Candlelight Ski & Hike

6:00 p.m.– 9:00 p.m.

Harrington Beach

February 7, Saturday

Candlelight Ski & Hike

6:00 p.m.– 9:00 p.m.

Pike Lake State Forest

Miss Leavitt: Stars and the Size of the Universe...By Brian Ventrudo

Nature does not give up her secrets easily. But sometimes, with great skill and effort, someone makes a truly important discovery and reveals knowledge even the wisest philosophers once believed to be beyond the reach of mankind.



The composition of stars is one example. In 1835, the French scientist Auguste Comte declared the composition of stars to be an example of knowledge forever beyond human understanding. Just a few years after Comte's death, 19th century astronomers carefully measured starlight with spectroscopes and discovered that stars are made of the same material found on Earth... hydrogen and carbon and oxygen, and other common elements.

The distance to the stars and nearby galaxies was another example of the "unknowable" becoming known to determined and patient observers. Until the mid-19th century, many be-

lieved the distance to the stars was another example of knowledge beyond reach. Then, careful measurement of the parallax of a few nearby stars as the Earth moved around the Sun revealed the distance to a few nearby stars. But the true scale of our galaxy was a complete mystery. No one knew for sure whether the Milky Way was all there was to the universe, and whether it was a hundred light years across, or a thousand, or a trillion.

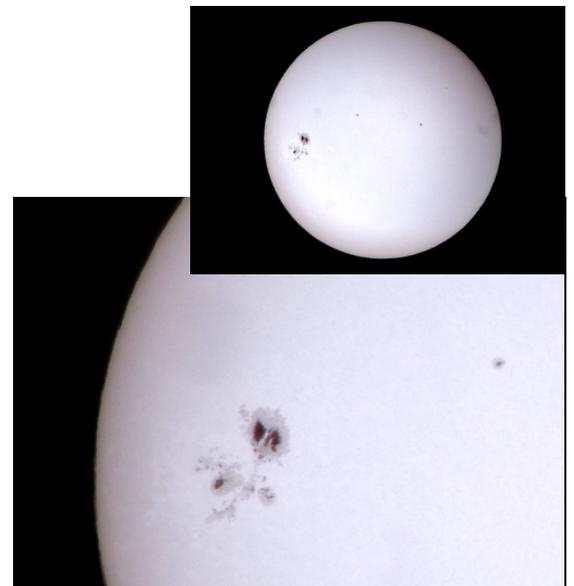
This changed in 1912 when an obscure and underpaid astronomer named Henrietta Leavitt discovered a type of bright variable star pulsated with a period directly proportional to its true brightness. She studied these variable stars in the Large Magellanic Cloud, a small irregular galaxy associated with the Milky Way, and noticed that brighter stars had longer pulsation periods. Since all these stars were roughly the same distance from Earth, she was able to use the period of these variable stars to determine their true brightness by calibrating them with similar stars closer to our solar system. And the true brightness of these variable stars could be compared to their apparent brightness to figure out their true distance, as well as the distance to star clusters and galaxies to which these stars belonged

This was a revolutionary discovery. Edwin Hubble used Leavitt's work to *Continued on Pg 4*

Personal Viewings...By Rick Dusenbery

Yesterday and today, Oct. 25 and 26, I set up my 8" Dob in my apartment parking lot to observe and photograph the huge sunspot group; AR2192. It is described as the largest such group in 24 years, being about 80,000 miles wide; the width of Jupiter. Just before mounting the solar filter onto my telescope, I held it up to the sun and immediately saw this sunspot with naked eye! Then it was time to study it with the scope at various magnifications and photograph it with my Sony point & shot camera. I also had the chance to share these observations and talk about astronomy and our club with neighbors on both days.

To me, this sunspot looks like E.T. complete with big head, bulging eyes and small mouth, long skinny neck, his two arms with fingers (a large deformity in his right arm), and unequal length legs. What does it look like to you?



October Meeting Minutes

By Secretary Kevin Bert

The October business meeting of the Northern Cross Science Foundation was held at the Unitarian Church North in Mequon. Vice President Joyce Jentges opened the meeting at 7:55 pm. and welcomed over 22 members and guests. She then asked for standard reports.

Treasurer Gene DuPree reported a balance of \$6598.45 in the general fund.

Secretary Kevin Bert informed members of the two newest members. Pat Stucke from Fond du Lac and Jim Macak from Cedarburg. That makes the total membership 67. No new Astronomical League information was presented.

Observatory Director Dan Bert said he was in need of a leader for the 17th Public Viewing Night.

Under new business, Kevin Bert reports that the 127 Explore Scientific telescope was being readied to attach to the new mount in the Observatory. Thanks to Wally Gersmehl it will piggyback a 65mm f/6.5 scope. They will be used for both imaging and visual work. Having had experience with similar equipment, Chad Andrist explained some of the imaging details of the setup and volunteered to be available for questions on the scopes capabilities.

Under upcoming events, Joyce said that the next public viewing opportunity would be at the Pike Lake campground this coming Saturday while October 11th is the Lac

Lawrann event that includes telescope viewing. October 17th and the 18th Haunted Hike concludes the scheduled Public Viewing nights at Harrington Beach. October 31st will be the Great Pumpkin Event at Bayshore Towne Center to finish the years public viewing schedule.

It was noted that a total lunar eclipse would take place on the morning of the 8th. A partial solar eclipse would follow on the 23rd late in the afternoon.

With no further business, Joyce closed the meeting at 8:25 pm.



Chad Andrist and Ernie Mastroianni working with the ES127 imaging scope.

Observatory Training by Kevin Bert

On Saturday November 15th at 6:30 p.m., Kevin Bert will have a training class on how to open up the Observatory and operate the 20 inch Panarusk telescope. It is required for any member that would like to use the scope and a great chance for a refresher to those that may be a bit rusty on the details. Once completed you will have the privilege to come out on any unscheduled evening to use the facility on your own. The only thing you would need to do in return is help out as a leader or an assistant to a leader for one Public Viewing night a year.

Those members interested in using the new imaging equipment will also need to know how the Observatory operates too. Here is your opportunity to familiarize yourself to the process before any formal training is given.

Imaging Scope - First Light

On Saturday, October 18th members of the Imaging Committee met at the Observatory to set-up and become familiar with our new imaging scope. Initial GOTO alignment went well and there was high praise during visual use. Kevin did a public viewing with the scope later in the evening and wowed the remaining crowd of visitors.

Later in the evening Chad and Ernie experimented with a DSLR camera on the ES127 and found that it would not come into focus without some type of focusing extender tube in the optical train. This will be a simple fix. Along with careful polar alignment, the scope should be ready for serious astro imaging.

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

Venus & Saturn: Both follow the Sun very closely this month with Venus keeping pace and setting within a half hour of the Sun, so Venus is not viewable this month. As far as viewing Saturn...If you look right **after** sunset for the first week, you might be able to pick it out of the fading light. After the first week, it slides too close to be viewable also. (*Remember, looking for objects near the Sun can be done, but be sure you do so taking extreme caution as even an accidental error in aiming your instrument to within view of the Sun can cause irreversible blindness even before you can react to look away*). It will be a morning object early next year, so you'll be able to get your next safe Saturn view as early as January.

Mars, Pluto & Jupiter: Mars is at (0.9 mag) and the first to set. It will do so by about 8pm both (early/late) this month. It's in the constellation Sagittarius. It's still moving eastward the whole month. The night of the 10th, Mars passes within 4 degrees below the outcast rock Pluto. Pluto is faint as always (14.2 mag), and

like last month, you'd have to start looking right after twilight as it will set about (9:30/8pm). Jupiter rises about (midnight/10pm), and will transit about (6:30/5am). It is at (-2.1 mag), and the views will keep getting better as the month goes on as it keeps rising earlier and earlier throughout spring.

Neptune & Uranus: Both are already up at sunset and Neptune (7.9 mag) transits by about (7:30/5:45pm). It is the first to set, and will do so by about (1am/11:15pm). It's still in the constellation Aquarius. Uranus (5.7 mag) transits about (10/8pm), and sets around (4:30/2:30am). Uranus is in the constellation Pisces.

Mercury: This month, Mercury is a morning object, and will rise by about 5am early in the month. By mid-month, it's already sliding back towards the Sun in its way around the back side. On November 1st, Mercury will be at its "Greatest Western Elongation", meaning it will be as far to the West (from our point of view) as it will get before it appears to slip back towards the Sun (from our point of view).

Moon:

November 6th: Full Moon

November 14th: Last Quarter

November 22nd: New Moon

November 29th: First Quarter

****Daylight Savings** Time ends early Sunday morning (11/02) ** (All times mentioned in this article are Daylight Standard times, so reflect the bulk of the month's references. For November 1st only, add one hour to the times mentioned).

Special Events

Meteor Showers: There is one meteor shower worth mentioning, and those are the Leonids. They peak around the night of the 17th, but can be seen for a couple of days before and after the peak. Their source is debris from Comet Temple-Tuttle, and past rates can be as high as 100/hour. These are fast movers, and will generally appear to originate from the constellation Leo.

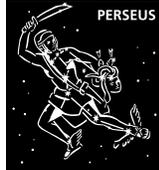
November General Meeting

Astronomy 101 by Kevin Bert

The Astronomy 101 class for November is entitled "The Planisphere,". One of the simplest types of star charts that can show the whole sky at any time of the night or year is the Planisphere. It is a favorite of most observers for seeing what constellations are above the horizon at a given time. I am asking for members to bring in your favorite model to help solve a few scenarios that I will present and to give a quick show and tell of your model.

The Constellation of the Month:

PERSEUS



Main Meeting - By Jack Heisler

"Adaptive Optics"

The presentation at this month's meeting will be another in the "how things work" series by Jack Heisler. The topic is the adaptive optics and laser guided telescopes currently in use at the Keck Observatory in Hawaii. Come and learn how these telescopes have improved our seeing.

Some say the results achieved are equal to and perhaps surpass the results obtained from extra-terrestrial telescopes, such as Hubble.

October Public Events

Pike Lake, October 4th

Public Viewing Night...By Charlotte DuPree

There was a threat of rain all day, but we were still hopeful for some sucker holes, since we could see some sunlight in the West. Because we were the leaders we waited for a half hour, and when the rain started we decided it was time to go home.

Lac Lawrann, October 11th

Luminary Walk By Rick Kazmierski

The skies for the Lac Lawrann Conservancy Luminary Walk turned out to be ideal for stargazing. People began showing up at the telescopes shortly after the sun set and we had to advise them it wasn't dark enough yet and to return after the hike. Jeff Setzer, al Steinberg, Rick Dusenbery, and myself were set-up on a grassy area just west of the parking lot. It was a nice spot, but incidental light from the nearby building was obstructive. The hike ended around 7:30 and each telescope had 10 -15 people in line for the next 2 hours. Lac Lawrann organizers estimated over 500 attendees and we were a big hit. Each of us concentrated on one object throughout the event and finally began packing at 9:30pm.

Harrington Beach, October 17th

Public Viewing By Jeff Setzer

The skies were overcast with occasional light rain, but five NCSF members came out to the Observatory anyway. We stayed for almost two hours before we went home, and I very much appreciate the company. There were no visitors that evening.

Harrington Beach, October 18th

Haunted Hike...By Charlotte DuPree

We open the observatory at 6:00. Since it was not dark, we gave tours to the people standing outside. We had a steady line of visitors, handed out Trick and Treats while they were looking at M57, and later on Neptune. Gene had his 12.5" Dob out on the south end. Kevin was using the new refractor imaging scope, and looking at different objects. Thanks to Al, Rich, Joyce, Ernie, Chad, and anyone else that did not sign-in.

Riveredge, October 18th

Halloween Hike By Rick Kazmierski

A moonless, clear night greeted us at Riveredge Nature Center. Jeff Setzer, Rick Dusenbery, and myself set-up in the overflow parking lot, which was reserved just for telescopes. Five groups of 20 hikers each showed up every 30 minutes for several hours. Jeff gave a brief Astronomy introduction to each group before splitting them between each telescope. We each stayed on one object during the evening; Jeff on M11, Rick D. on M31, and I was on M31. An unexpected surprise were free memberships at Riveredge for each of us who set-up telescopes.



Bayshore Towne Center, October 31st

The Great Pumpkin...By Jeff Setzer

Sadly, due to unseasonably cold temperatures, Bayshore Towne Center cancelled the Great Pumpkin Event.

NOTE

The November General Meeting will include nominations for several board members whose term of office end in December. Elections will be held at the December Meeting.

Cold Weather Tip

The next time you buy gloves, look for a pair that has rubber covered fingers or non-slip material on the undersides. These are typically work gloves or those intended for skiers (to better grip ski poles). This type will allow you to get a better grasp of eyepieces and telescope parts without removing the gloves and exposing your hands to the cold.

RELATED INFO

Leaders for Public Viewing

November 15

Observatory Training

Kevin Bert

January 17

Horicon

Charlotte and Gene DuPree

February 7

Pike Lake

Charlotte and Gene DuPree

February 7,

Harrington Beach

Leaders Needed

DECEMBER Holiday Party!!!



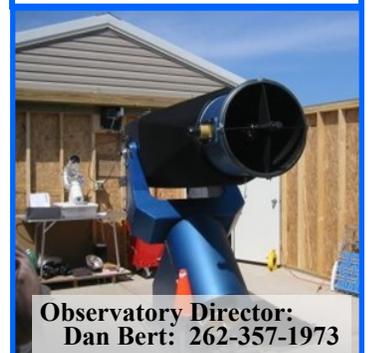
The White Elephant Exchange!

An NCSF Tradition, easy as 1,2,3

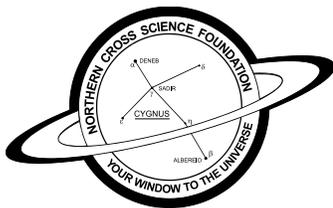
1. Bring an *astronomy-themed, wrapped gift!
2. When the gifts arrive we will have numbers attached to them with matching numbers in a hat.
3. One by one, each participant will draw their prize number and open it to the oohs and ahhs of all present.

*A White Elephant gift is something lurking around in your astronomy closet gathering dust. Like a book, map, etc. Perhaps in your travels you see something funny or yummy, the imagination soars! Why, last year someone got an old astronomy book and an Alien key ring which made an "annoying alien" sound!.

Jim & Gwen Plunkett OBSERVATORY



SPECTRUM
5327 Cascade Drive
West Bend, WI 53095



2014 BOARD OF DIRECTORS

President - Jeff Setzer
1418 Trillium CT
West Bend, WI 53095
262-338-8614
astrosetz@hotmail.com

Vice-President—Joyce Jentges
262-483-4270
joycejentges@hotmail.com

Secretary - Kevin Bert
2292 Ridgewood Road
Grafton, WI 53024
262-375-2239
kevin.bert@hotmail.com

Treasurer - Gene DuPree
6219 Jay St.
Myra, WI 53095
262-675-0941
grdupree@charter.net

Rick Kazmierski
5327 Cascade Drive
West Bend, WI 53095
262-305-1895

Dan Bert
262-357-1973
1517 Green Valley Rd.
Grafton, WI 53024

Jack Heisler
862 Fall Rd.
Grafton, WI
harch@wi.rr.com

Newsletter Editor & Publisher
Rick & Mickey Kazmierski
rickkaz@charter.net

Miss Leavitt - Continued from Pg 1

measure these variable stars in the Andromeda “nebula” and determined it was not a nebula at all, but a galaxy in its own right lying more than 2 million light years away, some 20 times the span of our Milky Way. This discovery exploded the size the known universe, and was one of the most stunning and famous scientific discoveries in history.

Hubble became famous, of course, and remains so to this day. For her effort, Henrietta Leavitt was paid just \$10.50 a week. She died in obscurity in 1921 at the age of 53, nearly forgotten, one of dozens of women employed as human “calculators” in the late 19th and early 20th centuries to help astronomers make many key discoveries. To his credit, Hubble said Leavitt deserved the Nobel Prize for her work.

The stars discovered by Leavitt are called “Cepheid variables”, after the prototype star δ (delta) Cephei in the constellation Cepheus. There are more than 700 known Cepheid variables in our galaxy, and thousands more in most galaxies visible out to a distance of 100 million light years. You can see a few other Cepheid variables yourself. Bright stars such as η (eta) Aquilae and Polaris, the North Star, are Cepheid variables. These stars, along with δ Cephei, are easy targets for even the most casual stargazer armed with a modest pair of binoculars. If you’re keen, you can track for yourself the change in brightness of some of these stars.

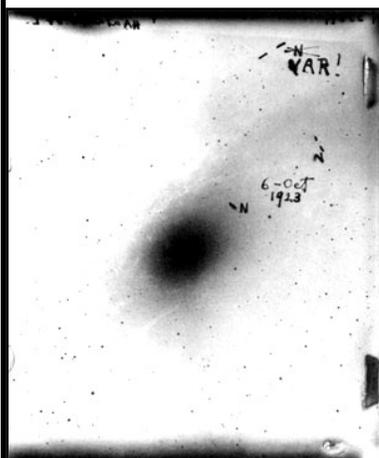


Image of galaxy M31 in which Hubble discovered his first Cepheid variable in the galaxy. The star is marked “VAR”

SPECTRUM

Is published by the Northern Cross Science Foundation, Inc. A nonprofit organization based in Southeastern Wisconsin and is a Member of the North-Central Region of the Astronomical League.



The NCSF supports the International Dark sky association.



Send inquiries to:

SPECTRUM
5327 Cascade Drive
West Bend, WI 53095

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