

SPECTRUM

Northern Cross Science Foundation Newsletter

December 2012

LOOKING UP

December 6, Thursday

General Meeting

7:30 p.m. - Business Meeting

Board Elections (3)

Holiday Party to follow

"Elephant Gift Exchange"

(See Pg. 3 for details)

December 20, Thursday

Board Meeting

7:30 p.m.

Home of Jeff Setzer

January 3, Thursday

General Meeting

7:00 p.m. - Astronomy 101

7:30 p.m. - Main Program

Business Meeting to follow

January 5, Saturday

Candlelight Ski & Hike

6:00 p.m. to 9:00 p.m.

Harrington Beach

January 19, Saturday

Horicon Marsh

6:00 p.m. to 9:00 p.m.

February 7, Thursday

Annual Banquet

Fox and Hounds Restaurant

Hubertus, WI

(Banquet reservation forms will be available in the January Issue of the Spectrum.)

Optimizing Observations of Deep Space Objects III

by Carl J. Wenning, Twin City Amateur Astronomers ~

(Part I & II of this four part series were featured in the May and July, 2012 Spectrums.)

While telescope aperture and magnifying powers are critical components for optimizing views of extended deep space objects (dark, emission, reflection, and planetary nebulas as well as galaxies), they are not the only considerations. Another way to enhance visibility of these celestial objects is to increase their contrast relative to the background sky. This can be achieved in two different ways: (1) observing celestial objects from a location with a darker sky, and (2) using filters that transmit only certain wavelengths of light while blocking others. Additional considerations also apply and these include: (3) observing only with dark-adapted eyes, (4) using averted vision properly, (5) observing only when the sky is very transparent, (6) maintaining your optics, and (7) observing objects only when they are higher up in the sky.

Enhancing the contrast of extended celestial objects relative to the background is most easily accomplished by observing from remote dark-sky locations (e.g., mountain tops, Chile, or in some years the Illinois Dark Sky Star Party). Even viewing from sites not terribly far removed from cities (e.g., Sugar Grove Nature Center) enhances the views over those obtainable by observing under urban skies. Also, observe when the moon is not present in the sky to achieve maximum darkness. When the night sky is at its darkest, the celestial objects are viewed at their best.

Increasing the contrast between an extended celestial object and the sky also can be accomplished with the use of narrow-band filters such as the OIII (doubly ionized oxygen), UHC (ultra high contrast), Skyglow, and so on. Anyone who has observed with me recently and seen the North American, Veil, or Helix nebulas knows the "power" of the OIII filter to improve visibility of these objects, especially on nights when the contrast between the object and the

sky is low. As experience has shown, these objects are essentially invisible from SGNC with my telescope without the use of the OIII filter no matter what the conditions.

Another way to get a good view of extended deep space objects is to allow your eyes to properly adapt to the dark. Eyes will typically take about 30 minutes to reach most of their dark adaptation, but observers will notice additional adaptation after several hours in darkness. Note that subjecting your eyes to very bright daylight can affect your ability to dark adapt for several days.



A variety of filters are available to enhance contrast in both visual and photographic astronomy applications.

Using a dark red-filtered flashlight of low intensity is one way to maintain your dark adaptation. Red wavelengths of light do not have sufficient energy to destroy the chemical rhodopsin that is created by the retina as a means of adapting to the dark (the other means is to dilate the pupil). Deep red LED flashlights with dimmers are the ideal. (I have found the *Orion RedBeam II LED variable –brightness astro flashlight* to be ideal, thanks to a recommendation by William Carney.) When observing, don't let nearby lights or passing headlights of cars ruin your night vision. Close your eyes and look away when a car is approaching an observing sight. While observing, (Cont'd on Pg 3)

November Meeting Minutes

By Kevin Bert

The November Business meeting of the Northern Cross Science Foundation was held at the Unitarian Church North. Vice President Joyce Jentges opened the meeting at 7:45 pm and welcomed 24 members and guests. She then asked for standard reports.

Treasurer Gene DuPree said the check-book balance was \$8225.00 and the Observatory account remained at \$894.00. He reminded members that they should see a dues invoice in the next newsletter and recommended that subscribers to Astronomy Magazine should add an additional year or two to their subscription. Sky and Telescope magazine can be renewed directly by members at any time.

Secretary Kevin Bert had no revisions to the membership roster to report. He showed the membership the Supporting member's plaque that will be placed in the Jim & Gwen Plunkett Observatory. It will be updated every year to reflect the current year's supporting members. There was no Astronomical League news to report on.

Under old business, Joyce allotted 20

minutes to conversations about the December vote to start an Imaging committee. The narrow focus eliminated the lengthy talk on equipment and building that would later be done inside the committee. The consensus was that all interested club members would be open to the committee, and meetings would be scheduled as needed. The goal would be to present a proposal

Joyce opened nominations for the board of directors. She explained that three vacancies are available for 2013. Don Miles, Kevin Bert and Joyce Jentges three year terms have expired. Robert Radtke nominated Kevin Bert. Nolan Zadra seconded and Kevin was willing to run again. Gail Sherman nominated Joyce Jentges, Kevin Bert seconded and Joyce was willing to run. Gene DuPree nominated Rick Dusenbery, Joyce seconded and Rick declined to run.

With no other names called Joyce closed nominations and said they will open again in December prior to the vote.

Joyce gave a brief explanation of the December meetings activities. Business meeting at 7:00 pm. followed by some time to socialize and enjoy the variety of goodies that members will provided. A time will be set aside for a white elephant exchange to those that would like to participate.

With no new business Joyce closed the meeting at 8:30 pm.

Astro Humor



Things to See In the December 2012 Night Sky By Don Miles

Mars & Pluto: Both trail the Sun, sinking low into the last light of the Sun. Mars is tiny and dimmer than its respectable (mag 1.2) might sound, but compared to the light of the recently set Sun, it appears pretty faint. It is small and shows no discernible detail, and sets about (6:30pm early in the month / 6:30pm late in the month). Pluto (mag 14.2) technically should also be viewable early in the month as it also sets around 6:30, but being so faint to start with, and so low in the not-so-perfect southern sky, is not practical until next summer.

Neptune & Uranus: Both are highest as the Sun sets, with Neptune being the next to set at about (11pm / 9:15pm). Neptune (mag 7.9) is in the constellation Aquarius. Uranus is at (mag. 5.8) in the constellation Pisces, and sets about (1:45am / midnight).

Jupiter: Rises about sunset, is highest in the sky around (midnight / 10pm), and is located in the constellation Taurus. Very bright Jupiter (mag -2.8) works its way to the West across the right horn of the bulls head, towards the Pleiades. It will be at "opposition" (where we will be between the Sun and Jupiter making it appear opposite us from the Sun) the night of the

3rd, so will be up whenever the Sun is down this month.

Saturn, Venus & Mercury: All morning objects with Saturn rising about (4:30am / 2:45am) at (mag 0.6). Saturn starts the month in Virgo, but slowly drifts eastward into Libra by the end of the month. Brilliant Venus (mag -4.0) also rises around (4:30am / 5:30am) this month, but as the times suggest, will rise closer and closer to the Sun until it's so close by the end of the month to be comfortably viewed. Mercury (mag 0.3) rises about (5:15am / 6:30am), and is at its greatest western elongation the morning of the 4th (the furthest away from a trailing Sun). Mercury will be below and to the left of Venus by less than 7 degrees the first week, and the pair will slide closer to the Sun.



Moon:

December 6th: Last Quarter

December 13th: New Moon

December 19th: First Quarter

December 28th: Full Moon

Special Events:

There are a couple of meteor showers worth looking for this month. The first are the Geminids which peak the night of the 13th, and into the morning of the 14th. The debris trail is pretty wide, as the showers start around the 6th and last thru the 19th. The just past new moon will set at 5:01pm, so won't be an issue here. They are predicted to peak at 60-120/hr., and are moderately slow (21.75 miles / second) and are known to produce bright fireballs. The next are the Ursids, which peak the night of the 21st with predicted rates of 10-20/hr. These are known to leave smoke trails behind. The recent first quarter moon will set about 1am, so it would be best to watch for these in the early morning.

December General Meeting

Holiday Party

The meeting will begin at 7:30 p.m. Nominations for the Board of Directors will be reopened, followed by an election to fill the three open positions on the Board. In addition, a vote will be taken on whether to proceed with the formation of an advisory committee to study the feasibility of the proposed "Imaging Initiative". After the meeting is over, we will have our Holiday Party. Drinks will be supplied. We ask that everyone bring a dish to pass. Some suggestions are appetizers, salads, vegetable dish, meatballs, casseroles, cheese/sausage and of course... desert. (cookies, cake, brownies, pie, etc.)



White Elephant

Holiday

Exchange!

We will once again include a "White Elephant" gift exchange at our December Holiday Party. The only rule is to bring something with an "astronomical theme". Examples include something lying around the house that you don't want (some old book item that someone gave you as a gift, something with a humorous theme, something no longer needed, etc.). *The goal is "entertainment, not gain"*. Rules of the exchange will be explained at the meeting.



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some observers will employ hoods that cover the observer's head and extend all the way to the telescope eyepiece. Failing that, some observers will cup their hands around the eyepiece providing for a bit darker situation. Such approaches can perceptibly improve and preserve one's night vision.

Be certain to use averted vision to see additional detail. The cones at the back of the eye are color receptors, but don't work very well under dim light conditions (explaining why we tend to see things in shades of gray at night). The rods surrounding the fovea's cones at the back of the eye are more sensitive to subtle differences in lighting. Look at extended space objects "out of the corner of your eye" if you'd like to see more detail. This method requires and improves with practice, as the eye's peripheral vision rods are not attached to the brain in the same way the direct vision cones are. Too little attention is paid to this important observing technique and, frankly, I was using improper technique for years. Don't turn your eye toward your nose when using averted vision due to the blind spot at the back of the eye. Directing light into this blind spot will reduce an object's visibility rather than enhance it.

Projecting and maintaining your optics will lead to improved visibility. Scattered light, dust, and dew can destroy image quality, brightness, and contrast. If observing with a truss-tube assembly, be certain to cover the open parts of the optical tube assembly with a shroud. Also, be certain that stray light cannot

strike the secondary mirror. Keep your optics clean. Dust can scatter light making for a more diffuse image. Watch out for dew, but especially if you are using a refractor or Schmidt-Cassegrain where the corrector plate is not protected by a tube assembly. On nights when water vapor is condensing (or freezing) on exposed optics, be certain to either use a dew shield to prevent or a low-wattage hair dryer to evaporate condensation. Dew shields provide an added benefit in that they reduce the presence of scattered light in the optical tube assembly and that following on a secondary mirror.

Heightened sky transparency will also increase the visibility of extended deep space objects. The best views occur on cold winter nights, and following the passage of cold fronts at other times of year. Often associated with these weather conditions is enhanced twinkling. Fortunately, the twinkling phenomenon doesn't tend to strongly influence the quality of views of extended deep space objects that are most often diffuse.

Lastly, to get the best views of extended deep space objects, be certain to view them when they are higher up in the sky. Personally, I rarely observe objects when they are less than 30 degrees above the horizon. When looking close to the horizon, one is peering through a thicker layer of atmosphere than when an object is viewed higher up in the sky. The light of objects close to the horizon travels through as much as five times as much atmosphere as objects viewed overhead. To get the best (Cont'd to Pg 4)

RELATED INFO

Leaders for Public Viewing

January 5

Candlelight Ski & Hike

Harrington Beach

Gene and Charlotte DuPree

January 19

Candlelight Ski & Hike

Horicon Marsh

Gene and Charlotte DuPree

2013 Dues

Your 2013 Dues invoice is included with this Newsletter. New members having joined the Club this past year will find their dues have been prorated, making them payable on the same schedule as the rest of our general membership (at the beginning of each calendar year). Members receiving electronic mailing can download the Dues Invoice from the Club website or print the attached pdf file. Additional copies of the Invoice will be available at the December Membership Meeting.

Instructions for submitting Dues are indicated on the Invoice.

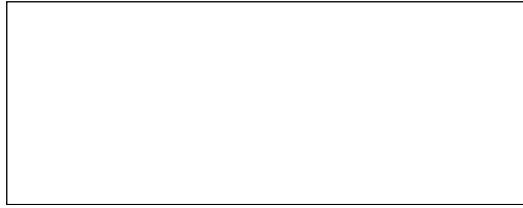
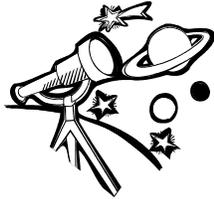
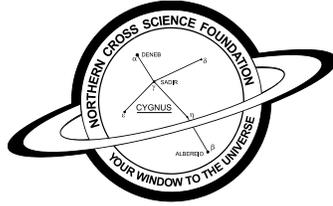
Note: Astronomy Magazine can only be renewed through the Club to receive the discount rate. However, you can renew an existing Sky & Telescope Magazine subscription on your own and the Club discount will automatically be available.

Jim and Gwen Plunkett Observatory



**Observatory Director:
Dan Bert: 262-375-2239**

SPECTRUM
5327 Cascade Drive
West Bend, WI 53095



2012 BOARD OF DIRECTORS

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

Vice-President—Joyce Jentges
102 N. Montgomery St. Apt #1
Port Washington, WI 53074
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
262-305-1895

Don Miles
262-675-2796

Jennifer Ryan
414-232-4338

Newsletter Editor & Publisher

Rick & Mickey Kazmierski
262-305-1895/ rickkaz@charter.net

(Cont'd from Pg 3)

views of celestial objects, be certain to observe them when they are transiting the meridian, crossing from east to west across the north-south line in the sky.

Next month, in part IV of this series, I'll provide additional information about the use of go-to telescopes and observing programs for enhancing one's ability to view deep space objects. Stay tuned.

SPECTRUM

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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