

# SPECTRUM

Northern Cross Science Foundation Newsletter

May 2012

## LOOKING UP

**May 3, Thursday**

**General Meeting**

7:00 p.m. - Astronomy 101  
7:30 p.m. - Main Program  
Business Meeting to follow

**May 12, Saturday**

**Small Scope Party**

7:00 p.m.  
Harrington Beach

**May 17, Thursday**

**Board Meeting**

7:30 p.m.  
Home of Jeff Setzer

**May 26, Saturday**

**Public Viewing**

8:00 p.m.  
Harrington Beach

**May 27, Sunday**

**Astronomy Day**

**Street Festival**

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

**Public Viewing**

8:00 p.m.  
Harrington Beach

**May 30, Wednesday**

**Sidewalk Astronomy**

7:00 p.m.  
Bayshore Towne Center

## Mark your Calendar Small Scope Star Party - May 12, 2012

*By Kevin Bert*

A special night is once again being set aside for you and others to gaze through those amazing little instruments that are often neglected. It may be the simple refractor or other similar aperture-challenged telescopes but all are welcome at the fourth "Small Scope Star Party," (SSSP), on Saturday May 12th at Harrington Beach State Park. No feelings of aperture inadequacy here as you might at other star parties. Feel right at home and have a chance to learn from other members as advice runs freely. A starting time of 7:00 pm. will allow some time for sun viewing and time to look at and enjoy the variety of scopes before it gets dark. Expect views of Venus, Saturn and Mars with skies dark enough for deep sky viewing by 9:30. No moon all evening.

You are in no way obligated to bring a telescope but we are looking for members to bring as many small scopes as possible. I know some of you have two or more lurking in attics, closets and basements. Bring them all! I hope to see the parking lot full of them either set up or only on display. The night will be treated very much like a members night. Scaled up enough to call it a party, scaled down, (in aperture), enough to appreciate the joy, (and sometimes frustration), of small scopes. This year the event will be held prior to having campers at the park. Members should use the parking lot to set up and the

observatory will remain closed to focus on the small scope theme.

We will open up the observatory and have an 11:00pm snack. Members can assist by bringing food and beverages if you wish. If it turns out to be a night to look at your scope instead of through it because of clouds, please consider still bringing your scope so those in attendance can still appreciate it.

### **SSSP RULES**

Like other classy events, a few ground rules need to be set up. This is to insure that no bloated aperture light buckets ruin the setting. This is strictly a visual equipment event. Please don't set up photographic accessories.

- 1) No telescopes over 6.0-Inch in aperture are permitted to be set up.
- 2) Larger scopes, stopped down do not qualify.
- 3) Telescopes of any optical configuration, (Reflector, Refractor, Catadioptric), are acceptable.
- 4) No binoculars please.
- 5) No photon amplification equipment allowed. Visual use only!
- 6) Items for sell or trade are permitted.

## Optimizing Observations of Deep Space Objects I

*A Series by Carl J. Wenning Twin City Amateur Astronomers...2/2009*

I now begin a short series of articles that can help observers improve their telescopic observations of deep space objects – nebulas, clusters, supernova remnants, and galaxies. I want to address those factors that have greatly improved my own observing and added immeasurably to my enjoyment as an amateur astronomer. Yes, I greatly enjoy working with the general public, but nothing can beat a good night of observing that provides excellent views of the heavens. I restrict my comments to viewing deep space objects because, frankly, solar system objects require viewing conditions that can be quite a bit different. Nonetheless, many of the things I will mention during this series of article definitely do apply to observations of

planets, comets, asteroids, and such.

A number of factors determine the quality of ones telescopic views. The stability of the atmosphere (seeing), the transparency and darkness of the sky, filter use, dark adaptation, the size and quality of ones telescope (including the mount), and even the powers of ones telescope can adversely affect ones view of the heavens. If one is to optimize telescopic observations, then one needs to understand how these factors interact to produce the best (and worst) telescopic observations.

Telescopes have three "powers" – light-gathering, resolving, and magnifying. Bigger

*(Cont'd on Pg 3)*

## April Meeting Minutes

By 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 7:50 pm and welcomed 24 members and guests. Jeff then asked for standard reports.

Treasurer Gene DuPree reports that the balance in the checkbook was \$10,253.46.

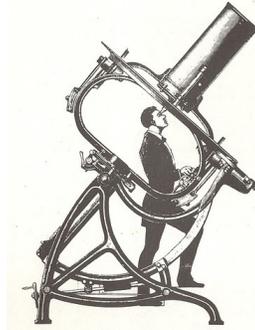
Secretary Kevin Bert noted that the final 2012 membership roster was included in the last spectrum. He asked the members to look over their information and contact him if any corrections are needed. Membership cards were available and remaining cards will be mailed in the next newsletter. A discussion on the Astronomical League national convention, (ALCon), and our regional convention, (NCRAL), on July 4 – 7 in Chicago followed.

Under old business, Jeff reports that the cost of the observing mound project has escalated to the point that is now on hold pending a re-evaluation.

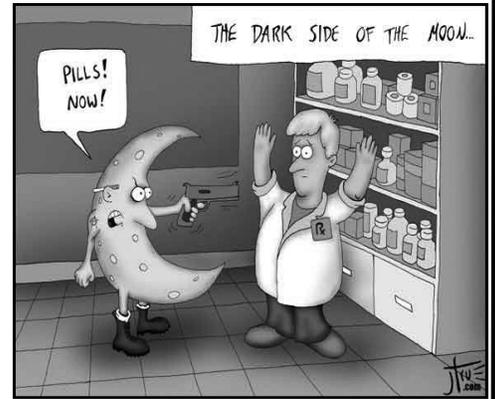
Under new business Jeff continued on with

a list of upcoming NCSF events. April 21<sup>st</sup> is an observatory training event that will start at 8:00 pm. May 12<sup>th</sup> at 7:00 pm is the Small Scope Star Party (SSSP), also at Harrington Beach. Look for details next month. Saturday May 26<sup>th</sup> is the first Public Viewing night of the spring. The following day is our Astronomy Day with daytime activities at the Port Washington Street Festival and Observing at the Jim & Gwen Plunkett Observatory in the evening. May 30<sup>th</sup> is the first Sidewalk Astronomy at Bayshore.

With no further business Jeff closed the meeting at 8:20 pm.



## Astro Humor



### 2012 Membership Cards

Those who did not pick up their 2012 NCSF Membership Card at the April General Meeting will find it attached within the May Spectrum. If you have not received your card and your dues are current, contact Kevin Bert at 262 375-2239 to request a duplicate.

## Things to See In the May 2012 Night Sky *By Don Miles*

**Jupiter:** Closely trails the Sun, and will slip even closer on its way around the "back side", where it will be until mid-June, when it will again be viewable...but this time as a morning object.

**Venus:** Also trails the Sun and still brilliant (mag -4.4). Venus will set about 11:30pm *early in the month*, and 9:30 *later in the month (11:30 / 9:30pm)*. Venus starts the month near the upper tip of the right horn of Taurus, and by mid-month will slide westward towards the Sun until it's also too close to view. Whereas Jupiter went to the "back side" of the Sun, Venus will work its way across the "front side", where it will ultimately transit on the 5th of June (which will be the last one in any of our lifetimes).

**Mars:** Will be highest in the sky at sunset in the constellation Leo. Look for Mars (mag -0.3) about 6 degrees to the left of Regulus, and will drift to the East throughout the month. Mars transits about (9pm / Sunset), and sets about (4 / 2am).

**Saturn:** Rises as the Sun is setting, and will transit around (*midnight / 10pm*). Yellowish Saturn (mag. 0.4) is still in the constellation Virgo, and above and to the left of the whitish star Spica by about 5 degrees. With the days getting longer and mosquitoes hopefully not yet at full-force, this is an excellent time to take a long relaxed view of the ringed planet.

**Pluto & Neptune:** Pluto (mag 14.0) is highest in the southern sky right before the Sun rises, and hasn't moved any perceivable distance from last year's position. It's still about 7 degrees above and to the left of the top of the teapot of Sagittarius. Neptune (mag 7.9) is also best to see right before the sun rises, and can be found in the constellation Aquarius. Neptune is easy to spot using generic charts, but you'll need much more specific charts and at least an 8" scope to pick out Pluto optically.

**Mercury & Uranus:** Like Venus, Mercury is also on the "front side" of the Sun this month so is not viewable, but will return as an evening object in mid-June. Uranus (mag 5.9) rises right before the Sun early in the month, and will rise by about 3am later in the month, and will continue to rise earlier and earlier as the summer progresses.

### **Moon:**

**May 5th: Full Moon**

**May 12th: Last Quarter**

**May 20th: New Moon**

**May 28th: First Quarter**

### **Special Events:**

There is only one meteor shower this month, and that will be the Eta-Aquarids. They'll peak the night of the 4th, (the night before the full moon). The source of this shower is Halley's Comet, and peak rates are typically about 60/hr. If you look for them before midnight, you'll see more than after midnight when the Moon will have risen. (Normally, you get the best views after midnight, but since the Moon will be coming up and wash out the more faint meteors, you'll have to view before the Moon gets high in the sky). These are known to have brilliant fireballs mixed in, leaving "smoke trails" as they pass.



## May General Meeting

### 101 Class... by Kevin Bert

The Astronomy 101 class for May is entitled

#### "The Universe Sampler"

This Astronomical League material is one of many observing clubs the league offers.

Chapters in the book that precedes the observing program are appropriate for a 101 program and are going to be covered in the next several months. A manual of the Universe Sampler is available for \$10.00.

*The Constellation of the month:*

#### Coma Berenices



### Main Program...by Gene DuPree

#### "Making a Solar Filter"

The Venus transit is next month, are you ready for it? Have you been watching the solar activity? If not, why don't you have a **solar filter**? Here is a chance for you to make one. We will have a demonstration on how to make a solar filter. Baader solar film and limited supplies for making solar filters will be available at the May meeting. Measure the tube or better yet, bring your scope, finder, or binoculars, to the meeting for the best fit of the filter. Be ready for the Venus transit and solar maximum viewing.

Any questions, give Gene a call 262-675-0941.

## April Events

### Observatory Training April 21

*Reported by Dan Bert*

We had 2 members in attendance besides my Dad and I, Teddy and Terry, no other visitors. Early on we tested out the 6" dynascope after it's repairs to the clock drive, it gave good images of Venus in a neat crescent phase as it approaches the sun for the June transit. Mars was high in the sky and revealed some good detail and markings. The 20" later observed Mars and then Saturn low in the east before the haze thickened. We closed up around 10pm.

*(Cont'd from Pg 1)*

objectives, if well made, produce brighter and sharper images that can be viewed with the use of an eyepiece. The choice of an eyepiece can be critical in optimizing the view.

Perhaps the least understood of the powers of the telescope is magnifying power. I've been reflecting on this aspect of telescopes for several months now, and have resolved to cast some light on this particular power, and provide some implications for eyepiece selection.

**Magnifying Power:** The magnification of a telescope – the size of an object seen in an eyepiece compared to the size of that same object seen in the sky with an unaided eye can be determined with a simple expression:  $\text{Magnifying Power} = \text{FL}(t) \div \text{FL}(e)$

Because the effective focal length of a typical telescope FL(t) remains fixed (unless, say, one inserts a telecompressor or Barlow lens into the optical train to change the effective focal ratio of an instrument from f/10 to f/6.3 or

### June Venus Transit by Gene DuPree

Remember to put June 5th - 5:10 P.M. on your calendar for the Venus Transit! NCSF needs volunteers at Harrington Beach and Pike Lake. Bring your scopes and share the experience with others. Even in your own neighborhood, get out and do some viewing.

This is a once in a life time event! Unless you saw the transit in June 2004. But, it's worth seeing twice if you have! This time the transit happens at SUNSET. The next one will take place in the year 2117. NCSF will host two public viewing sites for the transit. Gene and Charlotte will have the Observatory open and Al Steinberg will be the leader at Pike Lake. We need volunteers at both of these sites, we hope to have a lot of visitors.

from f/8 to f/16 respectively), one varies the magnification by using eyepieces of different focal lengths FL(e). My f/10 configured CPC 11" telescope has a focal length of 2800mm. When used with an 18mm eyepiece, I get a magnifying power of  $2800\text{mm} \div 18\text{mm} = 156\text{X}$ ; with the use of a 32mm eyepiece, I get a magnifying power of 88X. The shorter the focal length of the eyepiece, the higher the magnifying power it will provide.

#### **Drawbacks of High Magnifying Power:**

Many people misunderstand magnifying power. They think "the more the better." Not so. First and foremost increased magnification reduces image brightness. A telescopic image magnified 50X will appear 2,500 times (50<sup>2</sup>) dimmer than the image obtained with the unaided eye. Granted, this is offset somewhat by the light-gathering power of a telescope, but telescopes rarely provide increased image brightness. This is the province of some of the lower powered binoculars with large objective lenses. Higher magnifying powers also amplify (Cont'd on Pg 4)

## RELATED INFO

### Leaders for Public Viewing

May 26

#### Harrington Beach

Kevin and Dan Bert

May 27

#### Port Washington

Joyce Jentges

May 27

#### Harrington Beach

Gene and Charlotte DuPree

May 30

#### Bay Shore Towne Center

Jeff Setzer

### STAR PARTIES - 2012

#### NCRAL/ALCon2012

July 4 - 7th

Chicago, IL

[www.alcon2012.astroleague.org](http://www.alcon2012.astroleague.org)

#### Wisconsin Observers Weekend

July 19 - 22nd

Hartman Creek State Park

[www.new-star.org](http://www.new-star.org)

#### Northwoods Starfest

August 17-19th

Hobbs Observatory

Fall Creek, WI

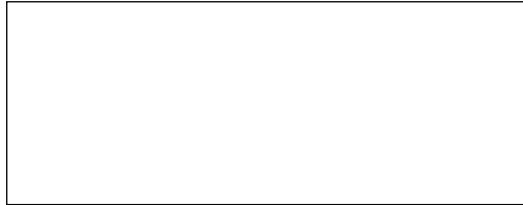
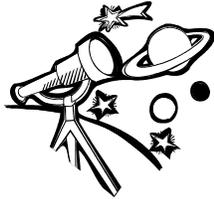
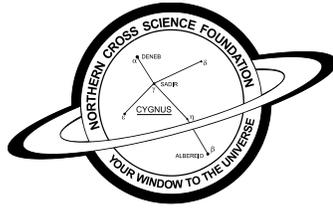
[www.cvastro.org](http://www.cvastro.org)

### Jim and Gwen Plunkett Observatory



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

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(Cont'd from Pg 3)

the rate of motion of celestial objects through a field of view, and reduce the field of view making things harder to find. Higher powers also can negatively affect image quality as perceived by the eye as well. If a telescope mount is wobbly, any vibrations will be similarly magnified.

**Exit Pupil:** Before moving on to lowest and highest useful magnifications for a particular telescope-observer combination, I need to mention a bit about the exit pupil. The exit pupil is the diameter of the small disk of light emanating from an eyepiece. For optimal viewing at lower powers, an observer must place his or her eye at such a position that the eye's pupil is coincident with the eyepiece's exit pupil. If the diameter of one's fully dilated eye pupil is less than the telescope's exit pupil, the observer will see a vignetted image, wasting much of the light-gathering power of the telescope. (This effectively reduces the aperture of a telescope.) The diameter of the exit pupil of the telescope is dependent on the aperture of the objective and the magnification, and they are related in the following manner.

**Eyepiece exit pupil diameter = Aperture ÷ Magnification:** The equation shows, lower magnifications produce larger exit pupils, higher magnifications produce smaller exit pupils. In order to obtain the best low-power views in a telescope, the exit pupil of the eyepiece-telescope combination must match the maximum pupil diameter of the observer's eye. Now, the pupil diameter of the typical adult human eye is mostly a function of age. Young adults on the order of 20 years of age will have a fully-dilated pupil diameter of as much as 7.5mm, whereas someone who is 70 years of age will have a dark-adapted pupil diameter on the order of 3mm. A simple formula relating average pupil diameter of the eye to the adult observer's age ( $\geq 20$ ) is given as follows:  $\text{Average pupil diameter} = (-0.09\text{mm/yr}) \times \text{Age} + 9.3\text{mm}$  ( $\text{Age} \geq 20\text{yr}$ )

Hence, in my case (56 years old) selecting a low power eyepiece-telescope combination that produces an exit pupil of greater than 4.2mm probably would not be advisable.

*"Watch for the Optimizing Observations of Deep Space Objects (Part -2) – in the June Spectrum!"*

Our club has a "Discussion Group on Google"  
See our website: <http://www.ncsf.info/> for details.

## SPECTRUM

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