

SPECTRUM

Northern Cross Science Foundation Newsletter

August 2005

LOOKING UP

August 4 Thursday

General Meeting

6:30 p.m. Astronomy 101

7:30 p.m. Business Meeting

August 5—7 Friday—Sun

Northwoods Starfest

Hobbs Observatory

Fall Creek, WI

Aug. 12 & 13 Friday & Saturday

Public Viewing Night

8:00 p.m.

Harrington Beach St. Park

Aug. 18 Thursday

Board meeting

7:30 p.m.

Home of Jeff Setzer

August 27 Saturday

Ice Age Center

7:30 p.m.

September 1 Thursday

General Meeting

6:30 p.m. Astronomy 101

7:30 p.m. Business Meeting

September 9 & 10 Fri. & Sat.

Public Viewing Nights

8:00 p.m.

Harrington Beach St. Park

September 15 Thursday

Board meeting

7:30 p.m.

Home of Jeff Setzer

September 17 Saturday

Community Campfire

8:00 p.m.

Pike Lake State Park

The Seduction of Aperture

By Jack Kramer

[Http://www.bpccs.com/lcas/Articles/Aperture.htm](http://www.bpccs.com/lcas/Articles/Aperture.htm)

Aperture is seductive. Perhaps you already know that. And the quest for more aperture is often fueled by ads for telescopes that proclaim, for example, that an 8" scope has 77% greater light gathering than a 6". How is this light gathering figure derived and what does it mean in the real world of observing?

First of all, the result of larger aperture is really twofold: you get greater light-gathering, and with that comes improved resolution. The ability to gather more light simply means that you can see things that are fainter. Resolution refers to the ability to distinguish details, instead of seeing them as a blur. It's often measured in terms of being able to clearly split a double star system where the two components are separated from each other by a certain apparent distance, measured in seconds of arc. Larger optics will resolve objects that are closer to each other. Thus the resolution of a 6" scope may be stated as .76 arc sec, while the resolution afforded by a 4" is 1.14 arc sec.

In looking at how the comparison between scopes is measured, we'll simplify matters by ignoring the effects of the atmosphere and light pollution on larger telescopes. We'll also assume that all the telescopes have optics of uniformly good quality. But there is one thing that should be kept in mind -- it's inappropriate to directly compare a reflecting telescope with an unobstructed system, such as a refractor. When it comes to resolution, a refractor will usually outperform a reflector of like aperture.

The comparison of light gathering involves dividing the square of the radius of the larger optic by the square of the radius of the smaller. In our example of the 8" versus the

6", the calculation is 16 (4²) divided by 9 (3²), which equals 1.77. This means that the light gathering of the larger scope is 177% of the smaller, or 77% greater.

Recalling high school geometry, you've probably realized that we're comparing the areas of the two mirrors. (Of course, the formula for the area of a circle is πr^2 , but for the ratio of one to the other, only the radius is different, so we can ignore π . Anyway, the result is the same.)

One aspect is that with large optics, the step up to the next larger size results in a less dramatic increase in light gathering. A move from an 8" scope to a 10" nets a 56% increase. Now let's jump a bit. Even though the difference in aperture is still two inches, going from a 14" to a 16" scope nets only about a 30% increase in light gathering. Actually, most people go up several inches at a time. Let's say you have an 8" scope and decide to go hog wild with a 16"; you'd get a 300% increase in light gathering! The diameter of the mirror has doubled, but the light gathering has quadrupled. To place it in perspective, if you have a small telescope, even a relatively minor increase in aperture will yield notable results. If you're already in the light bucket category, there are more factors to weigh in deciding on the value of a larger scope.

When it comes to the real world of observing, what can be expected? My most vivid recollection in moving from a 6" scope to an 8" was that globular clusters were much more dramatically resolved. With the move from the 8" to a

(Aperture on page 4)

July Meeting Minutes By Kevin Bert

The July business meeting of the Northern Cross Science Foundation was held at the Unitarian Church North in Mequon. President Jeff Setzer opened the meeting at 7:35 p.m. to 27 members and guests.

Jeff welcomed all members and asked for standard reports.

Treasurer Rob Powell was not in attendance for a treasurer's report. Secretary Kevin Bert informed the membership that John Jardine Goss was running the Astronomical League office of secretary and would require a vote from the membership to fulfill the clubs obligation. It was noted that a biography was listed in the March Reflector. With him running unopposed, a verbal vote was conducted and the majority gave John the nod. Kevin mentioned that the clubs League dues were up for renewal too. Membership cards were distributed for members that paid club dues and were informed to cross their names off a master list so remaining cards could be mailed out in the next Spectrum.

Jeff talked about the successful July 2nd Brat Fry at the West Bend Piggly Wig-

gly. It started slow but a steady stream of customers made it possible for the club to make about \$200. The weather even cooperated for solar viewing. This seemed to be a very good outreach event and had the benefit of making a few dollars. It was noted that our outreach at the Ozaukee County Fair was omitted this year due to lack of interest and the terrible viewing conditions and that another brat fry event would better serve our club.

Jeff informed the audience that progress is still being made on the proposed observatory at Harrington Beach. Plans were review by the chief engineer and minor changes need to be made. Construction manager at Backyard Observatories is clued in and serious fundraising details will be presented at the next meeting.

The park has committed to surveying and site prep, grading, removal of trees and power supply to the site. Location of the observatory would be off the NE corner of the picnic shelter at Puckets Pond. Other questions on security, procuring fundraising materials, access and curfews were addressed too. Future meetings held at

Harrington Beach would be a possibility once the nature center is complete. These would only be occasional at best.

Jeff ran down a list of upcoming NCSF events.

Under new business, Joyce Jentges said that an order form for club apparel would be in the next Spectrum. Specific details on items and minimum orders will be addressed.

Jeannine Nichols thanked Jeff for the excellent Pre-WOW arrangements last month. All attendees acknowledged Jeff too.

One additional Brat Fry event was set for the Saukville Piggly Wiggly on September 17th. A sign-up sheet will be at the August meeting for those interested. A tentative 3rd brat fry was set on August 20th at the Saukeville Pick & Save.

With no further new business, Jeff closed the business meeting at 8:05 p.m.

Respectfully submitted,

Observatory Update

By Jeff Setzer

Hello Friends,

Our plans for the Harrington Beach observatory site are progressing. A site plan is being drawn up by the folks at the DNR and we are going over final details on the building drawings with the DNR Engineering Office in Madison. This is a bit of an arduous process, but once the drawings get final approval, we will have the go-ahead to begin construction! We are proceeding with cautious anticipation that approval will come in the next month or two.

Therefore, our efforts now turn to fundraising. Rob Powell is rolling out our fund-raising program as we speak, but it's up to all of us to make this observa-

tory a reality. When we have these discussions, keep in mind that this is something each and every one of us can enjoy. We are putting together an observatory and a half-meter telescope that YOU can use for your own observing!

On a similar note, please consider participating in one of our upcoming "brat fry" events. These are truly unique opportunities to raise money for the group while performing outreach at the same time, and I intend to make them an ongoing part of our public outreach tradition here at the Northern Cross Science Foundation.

Finally, as I write this, we are a week in front of Northwoods Starfest, a month away from Astrofest and three months away from our observing finale on Halloween weekend. These are the days where observing is at it's finest; be sure to take advantage of them before things get cold and snowy!

Clear skies!

-Jeff Setzer

Upcoming Brat Fry

By Joyce Jentges

With the success of the brat fry in early July, we will be doing 2 more of these. One will be August 20, at Pick N Save in Saukville, the next will be Sept. 17 at Piggly Wiggly in Saukville. We will do solar viewing at both of these because this is a great way to combine fund-raising and outreach.

For August 20th, I would like to have about 13 or 14 people signed up to help because this store is very busy. We will sell food from 10 a.m.—3 p.m. The first shift will work 9 a.m.—12, and 2nd shift will be 12—3 p.m. Shifts for the brat fry on Sept. 17 will be the same, but we will need maybe 10 or 11

people.

A sign up sheet will be passed around at the August meeting for both brat fries.

Call or email me if you cannot make it to the meeting and you would like to help out. If you are not able to make the observing nights (or even if you do!) this is a great opportunity to help us raise some much needed money for the new observatory, and help to promote our organization. I will admit, even though we worked, the time went fast, and it was fun to visit with people, and fellow members.

Astronomy 101 And Main Program

By Kevin Bert

The August 101 class will be led by Kevin Bert and will briefly explain all of the Astronomical League's Observing Programs. If there is enough interest in one of the programs the club might pursue it as a group and schedule specific nights in addition to members nights to fulfill the observing and recording requirements.

The featured constellation will be Lacerta.

The main program this month will be given by Dan Bert on a cooling system designed for use with the Panarusky telescope mirror. Teamed up with two other classmates, they took on the task to design and construct the device for their senior design project as part of the mechanical engineering program at UWM. A summary of the semester long project and the final design will be presented.

Registration is now available online for Astrofest. For Astrofest, the website is www.chicagoastro.org. Astrofest is September 8-10, 2005.

FOR SALE: Meade 10 -Inch LX200 Schmidt Cassegrain Telescope with field tripod.

Three years old, hardly used and in excellent condition. Case full of eyepieces and photographic accessories.

Only selling all items together and asking for \$2500.00 If interested call Betty Kemper at 414-228-7379.

For Sale: One unopened copy of Sky Tools, version 2. This program is great for logging the items you have observed, and for printing custom sky maps tailored to your telescope. \$59.97. See Jeff Setzer if interested.

Mark your calendar! There is a members night scheduled at Nick and Jeannie Nichol's Observatory in Richfield on Saturday October 29th. Mark your Calendar, as Mars will be in optimum observing position.



Public Viewing Night Leaders Needed

By Joyce Jentges

After going over the list of people who have signed up to lead public viewing nights for the rest of the observing season, the Board has found that we are in need of having people fill in for a few dates. Please check your calendar, and see if any of these fit into your schedule. Don't be bashful!

August 12—Mark Hirschmann

August 13—Gene & Charlotte DuPree

August 27—Jeff Setzer ?

September 9 & 10 —Open (this is during Astrofest —if you are not going to Astrofest, please consider being a leader for one of these nights.)

Sept. 17—Gene & Charlotte DuPree

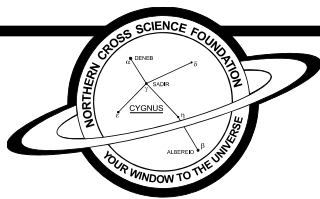
October 7 & 8—Open

October 29—Open

Kevin Bert will pass around a sign up sheet for this at the meeting. See the May 2005 newsletter for more details on the responsibilities of a PVN Leader.



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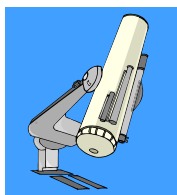
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(Aperture from page 1)

10", the big change was in the subtle details. The first object I observed with the 10" was the galaxy M31 in Andromeda; I was most impressed with how the dark lanes stood out. On one observing night, the Veil Nebula was seen especially well in my 10", but in Rich Burns' 13" (a 69% increase over the 10") it had a more three-dimensional look, appearing as a luminous, tangled braid. When it comes to the solar system (primarily the Moon and bright planets), I find the results of small percentage increases in aperture are more difficult to detect, with the ability to distinguish fine details increasing dramatically only with substantial increases in aperture.

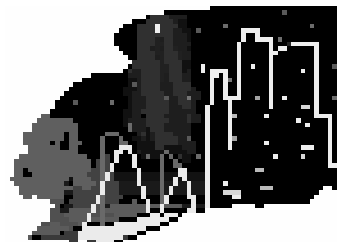
Aperture certainly is only one of the many considerations in a move to a larger scope. But it becomes the item of overwhelming importance to most people. That's why there's a disease called "aperture fever"!

SPECTRUM

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



The NCSF supports the International Dark sky association.



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<http://www.ncsf.info>