SPECTRUM

Northern Cross Science Foundation Newsletter January 2012

LOOKING UP

January 5, Thursday

General Meeting

See Details on Pg 3

January 7, Saturday

Candlelight Ski & Hike

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

Harrington Beach

January 19, Thursday

Board Meeting

7:30 p.m.

Home of Jeff Setzer

January 21, Saturday

Horicon Marsh

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

February 2, Thursday

Annual Banquet

Fox & Hounds Restaurant

Hubertus, WI

See Insert

February 4, Saturday

Candlelight Ski & Hike

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

Harrington Beach

February 11, Saturday

Candlelight Ski & Hike

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

Pike Lake

Edwin Hubble / Mariner of the Nebulae *Author - Gale Christianson*

A Book Review ...*by Tom Schmidtkunz*

I have long admired the work of Edwin Hubble, a leading figure in modern cosmological thought. This book covers a range of Edwin Hubble's life, and that of some of the other key players of modern cosmology.

Hubble's father moved the family to the Chicago area to pursue an insurance career in 1900. Hubble grew up in Wheaton, and had a strong interest in science. An uncle fired Edwin's interest, as many summer evenings were spent under the skies with a telescope. Hubble did very well in school, and was accepted at the University of Chicago. He wanted to study science, but his father assured him that law school was the correct choice.

In 1907, the University of Chicago was in the news due to the Michelson experiment, which very accurately measured the speed of light. This greatly fascinated Hubble. By 1910, Hubble was accepted into Oxford as a Rhodes Scholar. He immersed himself in all things British. He pursued law, but had a greater interest in science.

By this time, interesting astronomical developments were occurring in the US. Slipher had measured red shifts to certain nebula, and found some to be receding from earth at 1000 miles per second. Hubble viewed a law career as less satisfying, and began to pursue his science dreams. By 1915, Hubble made his way to Yerkes. He dove into research there. Upon hearing that the new 100" telescope was nearing completion at Mt Wilson, however, he promptly made his way west to California.

After a brief stint in the service for World War I, he returned to Mt Wilson, just as the Curtis/ Shapley debate was being scheduled. This debate covered the crucial cosmological question of the day: are the nebulae parts of the Milky Way (Shapley's view), or are they external, and possibly island universes in themselves (Curtis). The outcome of the debate was inconclusive, as there was no way to know how far away the nebulae were.

Hubble decided to try to categorize the nebula, because no system existed yet. He tried to learn as much as possible about them. A great moment came in October of 1923. He had been taking plates of M31, looking for novae. He reasoned that novae have an average intrinsic brightness, and so it would be possible to estimate the distance to M31 by the study of novae. But he found something even better. He found Cephied variables on his photographic plate. Because he had a great history of other plates taken of M31, he could compare them. So, as he was able to determine the variable's period and its apparent brightness, he could calculate the distance. They were much farther away than anyone suspected. Hubble thought M31 was about 1 million light years distant. He also found Cephieds in M33 and NGC 6822. Everyone then realized that the Curtis/ Shapley debate was settled. The "island universes" (the term galaxy had not been invented yet), were indeed very far away. The universe was much larger than most astronomers thought. Hubble published these findings in 1931.

By this time, Hale was starting to suggest that a larger telescope was needed to resolve the cosmological issues of the day. The area of Mt Palomar was chosen, as Mt Wilson was suffering increasing light encroachment from nearby Los Angeles. Plans were made, but development ground to halt at the onset of World War II. Hubble served his country in various projects, some classified. He was happy to return to southern California, however, after the war.

By 1948, two important telescopes came online. The 200" was completed, and the 48" Schmidt was started in its survey work. It captured wide-angle sections of sky in unprecedented detail. These survey images were very helpful starting points for research. More research could be done later with the 200.

In 1948, Hubble had a heart attack. After a

(*Cont'd Pg 4)*

December Meeting Minutes

By Kevin Bert

The December business meeting of the Northern Cross Science Foundation was held at the Unitarian Church North in Mequon. President Joyce Jentges opened the meeting at 7:30 pm. and welcomed over 28 members and guests. She then explained that we would deviate from standard reports and get to the main business of election of officers.

Joyce reported that Jeff Setzer was finishing his 3 year term as board member of the NCSF in December and agreed to run again when nominations were open last month. Joyce confirmed Jeff's willingness to run again, and then opened up the floor to accept other nominations. With no other names advanced, Paul Gruener made a motion to close nominations and Robert Radtke seconded the motion. With no opposition for the one position, Jeff's re-election was passed by acclimation.

Under new business, Joyce reported that the Adult membership dues had gone up by $1.00 to $36.00 making it easier to break down the monthly prorated amounts for new members. She encouraged members to promptly get their dues in to the treasurer.

Jeff Setzer reported that Michael Bakich is selling a 12-inch LX200 GPS for $2500 and will deliver it to this area. Interested parties should contact Jeff by email.

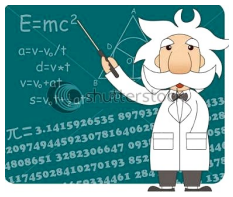
In closing Joyce announced the first scheduled viewing event for the new year will be at the Jim & Gwen Plunkett Observatory for the Harrington Beach Candlelight Ski & Hike on January 7th.

With no further business, the meeting was closed at 7:45m.

Christmas Greeting

Astronomical League

The Executive Committee of the League wishes all our members a Merry Christmas & a prosperous and healthy 2012. We appreciate your support for the League. Thanks to all the volunteers who handle observing clubs, the website and all our other committees. Also thanks to the national office staff for their splendid work again this year.



Astro Humor

Modern Science

If the facts don't fit the theory, change the theory.

Medieval Science

If the facts don't fit the theory, change the facts.

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

Venus, Neptune, & Uranus: All trail the Sun, and they're best viewed right after the Sun sets. Venus (mag -3.9) is now much brighter than bright Jupiter, and it's very easy to find as it's the brightest "star" in the evening sky. Venus sets about 7:30pm *early in the month*, and by about 5:15 *later in the month* (*7:30 / 5:15pm*). Look right behind the Sun as it's setting, and the first bright "star" you'll see will be Venus. It will start the month in the constellation Capricornus, but will move eastward into Aquarius by the end of the month. Neptune (mag 8.0) still straddles the border of the constellation Aquarius & Capricorn, and will move very little throughout January. Watch for brilliant Venus to pass beneath tiny Neptune by a little over 1 degree the night of the 13th. If you can (and the weather cooperates), keep an eye on Neptune for reference, and watch the great distance Venus covers from one night to the next during January. Print out a close-up map of the path of Venus, and track it over the course of even as little as 15 minutes at higher power. You'll be amazed (if you can stand the cold).

Uranus (mag 5.9) sets about (*11:00 / 9pm*), and also remains pretty stationary for January. Look just east of the lower "fish" in Pisces for a "star" with a blue-green color to it. Next month (Feb 9th), as Venus is racing eastward, it will pass even closer to Uranus than its brush with Neptune.

Jupiter: Now at (mag -2.4), bright Jupiter is up as the sun sets, and will be highest in the sky by about (*7 / 6:30pm*). This month Jupiter will move very little, as it hovers above and to the left of the knot holding the fish together in the constellation Pisces. Jupiter sets about (*1:30 / Midnight*).

Mars: Rises around (*1:30am / 11:30pm*) in the constellation Leo below the hind feet, and will continue to drift eastward until the end of the month. Around the 25th, it becomes stationary for a couple of days, and then drifts westward towards Regulus again. It's around (mag 0.2), and is highest in the sky about (4:30 / 3am). Mars grows in apparent size through January from 9.1" (arc-seconds) in diameter to 12". It will continue to appear to grow to approximately 14" at maximum by March 3rd, when it is at opposition.

Saturn: Rises around (*1:30am /11:30pm*), and is at (mag. 1.3). The rings are still at an excellent angle to see detail in the rings. The best views will also be right before sunrise as it's highest in the sky.

Mercury: Is just ahead of the rising Sun and can be seen right before sunrise the first two weeks of this month. After that, Mercury (mag -0.3) will be too close to be comfortably viewed.

Moon:

January 1st: First Quarter

January 9th: Full Moon

January 16th: Last Quarter

January 23th: New Moon

January 30th: First Quarter

Special Events:

There is only one meteor shower to speak of this month, and those are the Quadrantids. They peak the early evening of the 3rd, after the sky reaches full darkness (about 7pm), and into the later evening. This debris trail is very narrow, so if you've got clear skies, you won't have to freeze all night long looking for one or two. They are predicted to peak around 40/hr, and are known to have a bluish color to them. Look in the direction of Arcturus in Bootes (to the northeast).

January General Meeting

*** Modified Meeting Schedule**

7:00pm Setup & telescope workshop

7:30pm Understanding Telescopes

8:15pm Planetary Highlights

8:30pm NCSF business meeting

8:45pm Telescope workshop continued

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101 Class... *By Kevin Bert*

This months 101 class is entitled:

"Planetary Highlights for 2012"

Get a feel for the kind of show that will be in store for you this year with the planets of our solar system. Mars returns for a close approach and Venus moves in transit across the Sun.

Main Program… *By Jeff Setzer*

Telescope Workshop

Did you recently get a telescope as a gift? Do you have a New Year's resolution to take your old telescope out of the closet? This session will show you how telescopes work, and more importantly, how to get satisfying views with them.

As part of the discussion, we'll have a number of expert amateur astronomers on hand to give personalized help and one-on-one advise. Bring your telescope with you to the meeting and get help with setup and maintenance indoors. At the conclusion of the workshop, weather permitting, we can move outside and help you find objects under a real night sky.

This event is free and open to the public. Kids are especially encouraged. We are looking forward to meeting you!

December Events 2011

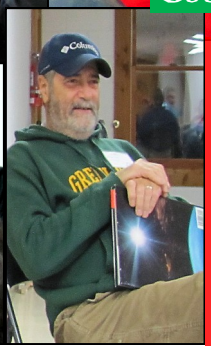
Lunar Eclipse *December 10*

By Charlotte Dupree

Since this was the last visible lunar eclipse for this part of the country until 2014, we made sure to watch it. We arrived at the corner of Oak and Paradise around 6:20 am. Before the eclipse started, we took a look Saturn with the 8 inch dob. The eclipse started around 6:30 am and wouldn't you know, it was the coldest day of the year, around 8 degree F and very windy. Gene took a few pictures with his Cannon digital point and shoot camera, thru the eyepiece. The Moon set around 7:15 am; we were pleasantly surprised how much we saw!

Lunar Eclipse Photo *by Gene DuPree*

Club's Holiday Party 2011!



S M I L E S

RELATED INFO

Leaders for Public Viewing

January 7

Candlelight Ski & Hike

Harrington Beach

Gene and Charlotte Dupree

January 21

Candlelight Ski & Hike

Horicon Marsh

Gene and Charlotte Dupree

"2012 NCSF Annual Banquet"

The Annual NCSF Banquet form is enclosed in this Newsletter. If you receive the Newsletter digitally, you will find the form as an attached .pdf file which can be printed. The form is also available on the Club's website at www.ncsf.info. Mail the completed form to Gene DuPree by January 21st.

"Board Notes"

At the December Board Meeting, Executive Officers were elected. Our 2012 list of officers is as follows;

President - Jeff Setzer

Vice President - Joyce Jentges

Secretary - Kevin Bert

Treasurer - Gene DuPree

A special *"Thank You"* to outgoing President Joyce Jentges for her four years of service as NCSF President.

Jim and Gwen Plunkett Observatory

Observatory Director: Dan Bert: 262-375-

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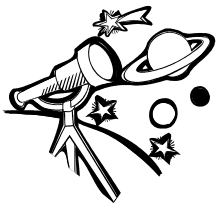
5327 Cascade Drive
West Bend, WI 53095



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brief period of rest, he was anxious to *get* back to "the mountain" to continue his work. Humason and Sandage were assigned to help him, mostly in physically obtaining images. They could then discuss results, and plan their research projects. An ambitious project was stated to obtain spectra of many of the newly discovered galaxies as possible. It was well known that the spectra would show the speed of the galaxies. The spectral lines show the presence of specific chemicals, and would be shifted to the blue side if the galaxy was approaching, and to the red side, if the galaxy was receding. Hubble's team soon realized that all but a handful of galaxies were receding. Further, the closer, brighter galaxies were receding, but the distant, fainter ones were receding much faster. A linear relationship was established between a galaxy's distance and recession speed. The greater the distance a galaxy was from earth, the faster it was receding. Hubble's law is one of the cornerstones of modern cosmology. We live in an expanding universe. Space itself is expanding.

Einstein had great respect for Hubble's work. When Einstein developed his theories, the universe was thought to be static. Einstein's own equations showed the universe could not be static. But, Einstein created a "cosmological constant" to make relativity fit the imagined view of the universe. Einstein later called this the greatest blunder of his life. The static universe concept from an earlier era was discarded.

Thus, the two key contributions of Hubble are that the universe is much larger than just the Milky Way, and that the universe is expanding; the more distant a galaxy is, the faster it is receding from us.

In our day, of course, we honored Hubble by naming the Space Telescope after him. It reaches out billions of light years, and reaches 28th magnitude. The research done with this telescope will drive the discoveries of the future, just as the 100" of Mt Wilson, and the 200" of Mt Palomar had done earlier. I suspect Hubble would be very proud of this.

Our club has a ***Discussion Group*** on Google: http://www.ncsf.info/

SPECTRUM

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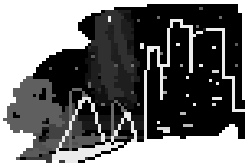

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This Issue, along with back Issues of SPECTRUM, can be found on the NCSF Web Site.

http://www.ncsf.info

Monthly Meeting Location
Unitarian Church North
13800 N. Port Wash. Rd.
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