

SPECTRUM

Northern Cross Science Foundation Newsletter

February 2016

Looking Up

Notice

The Church is using our usual basement meeting area this February for an outreach program. Therefore, we will be meeting upstairs and are to enter through the Main West Doors.

February 4, Thursday

General Meeting

7:00 p.m. - Astronomy 101

7:30 p.m. - Business Meeting

"Show & Tell" to follow

February 6, Saturday

Candlelight Ski & Hike

6:00 p.m. - 9:00 p.m.

Harrington Beach

February 6, Saturday

Candlelight Ski & Hike

6:00 p.m. - 9:00 p.m.

Ice Age Center Campbellsport

February 13 Saturday

Candlelight Ski & Hike

6:00 p.m. - 9:00 p.m.

Pike Lake State Forest

February 18, Thursday

Board Meeting

7:30 p.m.

Home of Jeff Setzer

March 3, Thursday

NCSF Annual Banquet

Fox & Hounds Restaurant

1298 Friess Lake Road

Hubertus, WI

Social Hr. 6:00 - Dinner 7:00

See the Banquet Form attached

Total Solar Eclipse – One to Come and One in the Past...By Rick Dusenbery

Excitement is beginning to grow now as many of us are planning to travel to southern Illinois next year to view the total solar eclipse on August 21st. But my thoughts drift back to February 26, 1979; the last time America got to see a total eclipse of the sun. And I happened to be in the path of totality! That eclipse started off the Oregon coast, then followed an arc across southern Washington State, Idaho, Montana, then headed up into Canada. Thus most of the U.S. only got to see a partial eclipse (and you know they don't count!).

In 1976 following discharge from the U.S. Navy, I moved out to Washington State to begin my working career at the Hanford Nuclear Site. In my early days there, I was looking at Astronomy magazine and noticed that there would be a total solar eclipse in three years, and my new home was in the totality path! Like we are all doing now, I began to anticipate this great event. Furthermore, I read that the next total eclipse would not be until 2017. And now we are almost there!

As 1979 began, I started to prepare for the eclipse. By now I was working rotating shifts at a test reactor plant and February 26th was on one of my off days! I thought of how I could safely observe the partial stages and came up with a solar pinhole viewing device. It is shown with me using it in the digitized old polaroid photo above. Using corrugated cardboard, I taped three pieces together to form a triangular tube, then cut two triangular end pieces. One of the end pieces has a small hole over which I taped a small piece of aluminum foil with a pin hole. The other end has a white sheet of paper taped to the inside to receive the sun's image as projected through the pinhole. On the bottom of this contraption, I cut a

hole big enough to stick the top of my head through to view the image without blocking the sun's rays. The rest of the inside surfaces were painted flat black.



Monday morning, Feb. 26, finally came, and with my viewing device loaded in the car, I headed to a high hill south of Kennewick, WA. There were several hundred people, many with telescopes, gathered on this 2500 ft. hill with a commanding all-around view of the Mid-Columbia Basin. Totality was scheduled for a little after 8:00 A.M. but there was a thin cloud cover. Through a few cloud breaks, I was able to see parts of the beginning stages using the viewer. The projected image of the sun's disc was about 2-3 inches in diameter; enough to see the steadily increasing bite out of the sun's edge. Then the fairly black shadow of the moon began to approach from the west. At the moment of the start of totality, someone started their car stereo playing the theme music from "2001, A Space Odyssey". This really set the mood as all eyes now looked directly at the blocked-out sun. The stars came out and it got noticeably cooler. I remember looking around the horizon where it was still light. Totality lasted for about three minutes, then I heard people shouting "Look away!" as totality was about to end. Light returned, the stars disappeared and the temperature warmed. The great show was over! It was one I'll never forget. But I won't have long to wait. August 21, 2017 is almost upon us!

Earths Formation Solved...ish - By Jaime Hanson

I have recently been reading about the formation of the earth up through roughly the end of the heavy bombardment period. There are some really fascinating things that came out of that period; so fascinating in fact that the skeptic in me is not convinced that astronomers and geologists have made an air tight case for explaining the world around us. I'm going to share with you the latest findings and let you make up your own minds.

The earth formed about 4.5 billion years ago. Carbon dating of moon rock shows that the moon

formed just a short time after. Scientists have debated for decades whether the moon was a captured asteroid or whether it somehow broke off from the earth during its formation. The leading theory today is that a Mars-sized protoplanet (called Theia) smashed into the Earth while it was still accreting mass. The collision, so goes the theory, blasted debris out into space, which formed a ring around our planet. This ring eventually coalesced into the moon and slowly the orbit moved further away from the earth to where we see it today. *Continued on Pg 3*

January Meeting Minutes

By Kevin Bert

The January Business meeting of the Northern Cross Science Foundation was held at Unitarian Church North. President Jeff Setzer opened the meeting at 7:35pm and welcomed 13 members and guests. He informed the membership of the new officer positions decided at the last board meeting. Gene DuPree remains as treasurer and Kevin Bert as secretary. Rick Kazmierski stepped into the vice president position while Jeff Setzer continues on as president. Jeff then asked for standard reports.

Treasurer Gene Dupree tells the membership that the regular accounts balance is \$9,710.35 and the observatory account balance remains at \$1,042.01. He says that membership dues have continued to come in and almost half have paid for 2016.

Secretary Kevin Bert reports that there was one change in the club roster. Dave Schoofs is the latest person to join the club and he is from West Bend. The 2016 Astronomical League North Central Regional Convention will be held April 29 and 30 at Bloomington Normal IL. Look for more information next month.

Observatory Director Dan Bert reports that he is working on the final report required

by the park on volunteer hours at the park. Due to a scheduling conflict a new leader and assistant are needed for the February 6th Candlelight Ski & Hike. All is well out at the Harrington Beach Observatory. He tells the membership that the board has a meeting scheduled with the new property manager and plans to get acquainted and also highlight a lighting problem that developed recently near the Observatory. On another note, Dan is looking for anyone interested in storing two loaner telescopes. Any interested member should contact him.

Imaging committee members talked about ways to display results of imaging efforts. The clubs Facebook account would satisfy one aspect of outreach and something called Astrobin would give imagers more in depth details that they would be interested in. Final decisions and details will be made sometime soon.

Jeff Setzer covered upcoming 2016 events. January 16th is a Candlelight Ski & Hike at Horicon Marsh. The February meeting will be held upstairs at UCN instead of the lower level. February 6th is a Candlelight Ski & Hike at Harrington Beach State Park and in parallel a viewing night at the Ice Age Center in Campbell-sport. The 13th is another Candlelight Ski & Hike at Pike Lake State Park. Member telescopes would be appreciated at any of these events. In place of the March meeting will be the annual banquet at the Fox &

Hounds restaurant in Hubertus. Look for a form with all the details in the next Spectrum. April 9th is the Swap & Sell at Sheboygan.

Observing Summary for 2015!

Dan Bert - Observatory Director NCSF

The volunteer participation forms completed at each public viewing event have now been totaled. Looking back at this past year, a total of 26 viewing nights were held at the Jim & Gwen Plunkett Observatory. All together 17 different members logged a combined total of 278 volunteer hours towards public outreach at the park. A big thank you to everyone who gave of their time to help provide a window to the universe for others. Looking forward to the 2016 viewing season, clear skies.



Imagers Report...By Ernie Mastroianni

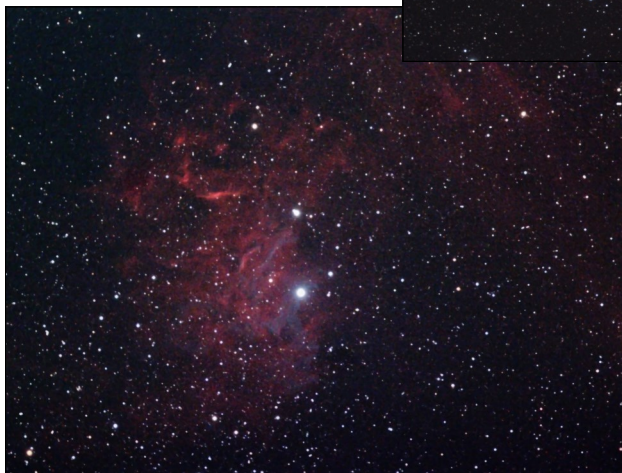
During two widely separated clear nights in November and early January, I trained the club's five inch refractor and SBIG 8300 camera on a pair emission objects that glow nicely in HII light. The first was the Bubble Nebula, also known as NGC 7635 or Sharpless 162 in Cassiopeia. It features a nearly spherical bubble among its glowing strands, and lies near the open cluster M52.

The club's dedicated astrocamera is much better suited to capturing the glowing red emission nebula than an unmodified digital single lens reflex camera. Modern DSLRs have a filter over the sensor that cuts out much of the light in which HII glows brightest.

This photo is a stack of 6 images of five minutes each, captured, preprocessed and aligned with Nebulosity 4 software on a Mac. Final processing done with Photoshop CS6. The scope's focal length of 950mm combined with the SBIG 8300 sensor size provided a perfect setup to capture these two objects, shown in a field that is nearly uncropped.

In early January on a very windy night, I aimed the refractor to the Flaming Star

Nebula (IC 405) in Auriga. This object features emission and reflection nebula, which glow red and blue respectively. The blue filaments reflect the light of the irregular variable star AE Aurigae which shines at 6th magnitude and is the brightest visible star in the frame. IC 405 is not bright. It could use many more sub frames than the 16 I took that night at five minutes each. Processing was done with the same programs used for the Bubble Nebula.



Experience the WOW Factor!

Receiving a paper newsletter? The Spectrum Newsletter is e-mailed to the entire club as an attached PDF file. This way you can zoom in and experience the full detail of these powerful images submitted by our clubs astro-photographers.

...Mickey

February General Meeting

101 Meeting...By Kevin Bert

The Astronomy 101 class for February is

“The Winter Hexagon.”

Many are familiar with the Summer Triangle pattern that rides overhead in late summer. Find out about the winter pattern of bright stars that make up the winter Hexagon.

January Public Viewing Event

Horicon Marsh, January 16th

By *Charlotte DuPree*

Horicon Marsh held their 6th annual snowshoe and hike, Saturday January 16th. We had another year with cold and wind. Fortunately, at the 5:00 starting time, there was a clear sky. The bus drop off point was where we were set-up, so there was a steady line of people to look through the scopes. Gene stayed on the Moon and Rick D. had M42, the Orion nebula in his scope. I stayed inside with the table display, until Gene came in and said it was my turn at the scope. By 7:30 the wind was too bad for the scopes so they packed them up.

Earths Formation Solved...ish

Continued from Pg 1

Moon rock, brought back by the Apollo mission showed a similar chemical composition between the earth and moon, which supports the giant impact theory. The impact may have also produced the tilt in axis which gives us our seasons. Nice tight theory, right? Except for one thing. The giant impact would have heated both objects into molten balls of goo. Iron loving elements (called siderophile elements) would have migrated into the core of both the earth and the moon. Yet, we know that the crusts of both are abundant with tungsten and other iron-seeking elements. Scientists have patched on a “late veneer” model, but it doesn’t make me sleep well at night. The densities of earth and moon are also dramatically different.

Where did the water come from? Earth today has 100 million trillion gallons of water on it. Where did it come from? The two most likely sources, say scientists, are steam from primordial volcanos and ice-bearing comets that pummeled the earth during the heavy bombardment. Earth’s oceans are massive, covering 71% of our planet and averaging about 2 miles deep. That’s a lot of water. So, did all of it come from space? One estimate states that comet Hale Bop carried enough water to fill about 10% of the volume of the great lakes. That’s a lot. Estimates are that large comets hit the earth about a dozen times per year over the course of 100 million years. Ice has been discovered in craters on the moon, which supports the icy comet theory. I get it, but 100 million trillion gallons worth? Something doesn’t seem to add up. Several studies con-

Main Meeting

“Annual Show & Tell”

We will have a Show & Tell session for members to share Astronomy purchases and/or projects from the past year. Bring your items and be ready to give a short description and/or demonstration for the group.

ducted on comet ice seem to agree. The issue has to do with the amount of “heavy water” on comets called deuterium. Studies on Hale Bop and comet Linear show mixed results on matching the deuterium abundance of earth’s oceans. And, how did all of this water stick around? Was earth’s magnetic field strong enough so early on to protect it from being vaporized by Solar wind?

The most astounding theory to me about the formation of the earth has to do with how early in its existence water was present. Studies of zircon, which is a diamond hard mineral contained in ancient rocks in the Outback of Australia, show that liquid water was not only present, but abundant 4.3 billion years ago! What now? Liquid water was bubbling up from crannies and fissures only 200 million years after the earth was born? With all of the comets and protoplanets bombarding the young planet, that seems too amazing to believe. Yet, mass spectroscopy shows that the ratio of oxygen in these zircon crystals is consistent with the presence of water - and lots of it - 4.3 billion years ago. Precious, live-giving water. I’m speechless. Wouldn’t the giant impact have vaporized the water?

A lot of good, robust scientific studies have been published on various aspects of Earth’s formation. I’m not challenging the rigor of any of them. The difficult part is putting their individual conclusions together into a cohesive story. Virtually none of the computer simulations run at various distances from the sun have started with a large collision and ended with a single moon orbiting a single large planet. Stay tuned folks, there’s more to come on this.

Cut Us Some Slack...By Jeff Setzer

We have established a presence on the team communication online platform known as **Slack**. This is a free tool that will allow NCSF members to interact in a members-only setting using “channels” to organize our conversations, share pictures, observing lists, and the like. There are mobile apps available to allow people to access Slack on-the-go.

Access to our Slack space is provided on an invitation-only basis. Members who elect to participate are asked to use their real name as their login (for example, mine is jeff_setzer). No personal information is required to use Slack, or even asked — this is NOT like Facebook or Google Plus. I highly encourage all members to give it a try!

RELATED INFO

Leaders for Public Viewing

February 6

Harrington Beach

Rob Powell and Kevin Bert

February 6

Ice Age Center

Gene and Charlotte DuPree

February 13

Pike Lake

Gene and Charlotte DuPree

Star Parties!

WOW

June 2nd through 5th
Hartman Creek State Park
www.newstar.org
Registration later February

NORTHWOODS STARFEST 2016

Hobbs Observatory
Beaver Creek Reserve
Fall Creek, Wisconsin
August 5-7, 2016
www.cvastro.org

NCRAL 2016

Bloomington-Normal
April 29 - 30th
Registration is now online at:
<http://www.ncral2016.org>

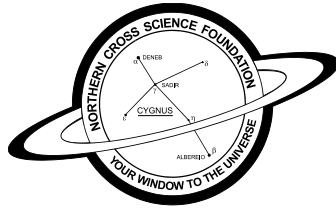
Check out the entire program with full-description of speakers, off-site activities, astro-photo contest and more!

2016 Dues

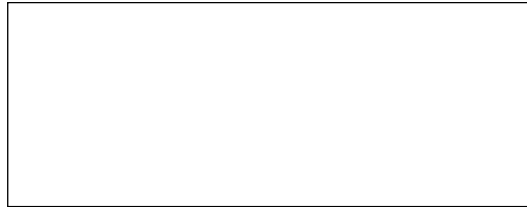
Just a reminder that if you haven’t payed your NCSF 2016 Dues yet, it is not too late. Submit a completed Dues Invoice form to Secretary Gene DuPree. Form is attached with the digital copy of the Newsletter.

Not receiving a digital copy of the Spectrum by e-mail? Then we probably don’t have your correct e-mail address. Send corrections to rickkaz@charter.net.

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Observatory Director Request *.Dan Bert*

I have two club loaner- telescopes in my shed that need to find a new home. They are not for sale, I need to make room for yard equipment.

Anyone storing them, also has the option of using them. If there are any new members considering the purchase of a larger telescope these scopes are great to try out. And, can be used as a part of the Loaner-Telescope Program, available to all Club Members. The two scopes are an 8" Meade Starfinder Dobsonian and a home-made 10" reflector that separates at the end of the tube from the square base. Both telescopes include several eye pieces and finders.

Please contact Dan at: dbert64@gmail.com or 262-357-1973.



Viewing the August 21, 2017 total solar eclipse

By Charlotte DuPree

I have found a hassle free way to view the 2017 eclipse. There is a campground that is just north of the center line. They are very willing to take reservations now, and they have a large open area that he is setting aside for our group. There are 150 sites with full hook-up, water, electric and sewer for \$25 a day. Two tents and four adults, or one family group are allowed on each site. We will be down there starting on Aug. 17 to Aug. 24, to beat the rush of traffic and any travel problems. You can come and go anytime you want. So far we have around a dozen people that plan on camping. Make your reservation at:

Cedar Lake Campground,

2090 Gillead Church Rd., Vienna, Ill., 63995, Ph.618-695-2600.

Latitude N37,5006°, Longitude W88,7968. Totality is 2M 39.4 Sec.

Tell them you are with the Wisconsin Astronomy group. This is a newer campground, and they hope to have 6 person bunk-house cabins available by 2017. Please let me know if you plan on making reservations so we know how big of a group to plan for. For additional questions. Gene, 262-675-0941, grdupree@charter.net. P.S., The next total solar eclipse in the US is April 2024.

SPECTRUM

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NCSF supports the *International Dark Sky Association*



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

<http://www.ncsf.info>

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5327 Cascade Drive
West Bend, WI 53095

Please send your Questions, Suggestions, Articles, and photos to:
rickkaz@charter.net

Newsletter Editor & Publisher
- Rick & Mickey Kazmierski

Monthly Meeting Information

7:00 p.m. Astronomy 101
7:30 Main Program
Unitarian Church North
13800 N. Port Wash. Rd.
Mequon, WI 53097