

SPECTRUM

Northern Cross Science Foundation Newsletter

January 2021

Background: New member Steve Sweeney captured this wide angle view of the conjunction on Dec. 23 using a Nikon digital camera.

Below: Joyce Jentges held an iPhone above the eyepiece of the DuPree's 12.5 inch Dobsonian and got this shot that revealed both planets and moons (from left) Io, Callisto, Ganymede, Titan, and background stars as well.

Despite clouds, NCSF members enjoyed fleeting views of Jupiter-Saturn conjunction

Clouds might be the most-observed objects in a stargazer's portfolio, and the late December overcast in southeastern Wisconsin brought plenty at year's end. But occasional breaks in the weather allowed many members to see the spectacular pairing, if only briefly.

From Joyce Jentges:

For the third time in a week, I found myself on the way to Gene and Charlotte's house near West Bend. The clouds were not being kind, but Charlotte



texted me to let me know skies were clear. I was coming right from work and was not really dressed for the weather. This was on Wednesday, December 23rd, and it was incredibly windy. Gene had his big 12.5 inch Dobsonian set up in the driveway to allow the garage to act as a wind block. Jupiter and Saturn looked fantastic!

For all the times I've looked at Jupiter and Saturn, I've never seen See page 2

New way to pay dues, January program

The 2021 NCSF membership dues of \$36 are due this month. This year, you'll have more options to pay. As always, you can write a check, but now you can pay with Paypal or credit card via an [online link](#). Also new is the adult/family membership rate: we are no longer collecting \$6 per additional participating family member. More information is on the attached PDF dues form which separate from the newsletter PDF.

Monthly program

The January General Meeting program will be presented by *Spectrum* editor Ernie Mastroianni. He'll talk about how his interest in amateur astronomy led to the assignment of a lifetime: 20 years ago this week, he visited Amundsen-Scott South Pole Station in Antarctica to report on the newly-built

neutrino detector called AMANDA. It was a proof-of-concept project led by University of Wisconsin astrophysicists which paved the way for the IceCube neutrino observatory now in place.

He also wrote about other UW projects including weather stations, penguin research, and the new South Pole headquarters that replaced the venerable geodesic dome.



January 7, Thursday

General Meeting

Online via Zoom
7:30 pm

General Meeting

Post-pandemic

7:00 p.m. Astronomy 101

7:30 p.m. Main Program

Location:

GSC Technology Center
W189 N11161 Kleinmann Dr.
Germantown, WI

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Please email editor Ernie Mastroianni with dates and times of any upcoming NCSF events:
ernie.mastroianni@gmail.com

from page 1 them together in an eyepiece field. It blew my mind. Because of the wind, the telescope tube was bouncing around and it was difficult to get a good picture. But I did get several passable photos which will allow me to remember the experience. It was well worth the wait, even though it wasn't the actual day of the conjunction.

From the DuPrees:

Gene had been watching Jupiter since its opposition in July. Rick K. and Gene took a serious look at our back yard in early December and decided it would be suitable to see the conjunction low in the southwest.

Observing Report

We were telling friends to come by our house starting Saturday, knowing if there were no clouds, it might be the only chance to see the two planets close together. Joyce joined us on Sunday and Monday, Rick brought his big binoculars on Monday the 21st. We knew it was a hopeless night, even though the day was looking like we might have a chance. On Tuesday, Joyce, Rick, and Jeff joined us, it was also a washout.

On Wednesday, around 4:30 the sky was completely clear in just the right location! Gene put a 32mm eyepiece on the 12.5 Dob, and both planets were visible with room to spare in the field. He then used a 25mm. I could not believe how good Saturn looked, and Jupiter with its moons. He then changed to a 13mm Nagler, both planets were still in the field, but you did have to move your eye around the edge to see them.

Even though it was not the night of the conjunction, it was interesting to see how close the two planets were. We added this exciting event to our astronomical list.

From Steve Sweeney:

The southwestern winds at my house were howling and it was getting colder as I stood there watching the conjunction. I'm surprised I got anything at all. I've been watching Jupiter and Saturn come closer together since early this month and have used them, Mars, and the ISS as entry points into stargazing for me and those of my kids who are interested.

Even though I did not see the conjunction with my own eyes on the 21st, this was pretty neat. And the couple of pics I did get showed interesting color. Can't wait for 2080!

From Mike Borchert:

Like many observers in the local area, I was disappointed on December 21. The overcast sky did not let me see the Jupiter and Saturn conjunction. However, in the evening of Wednesday, December 23, I mentioned to Gayle that we would probably not get a chance to see the conjunction at all. Gayle gave a glance outside and said, "I see Jupiter".

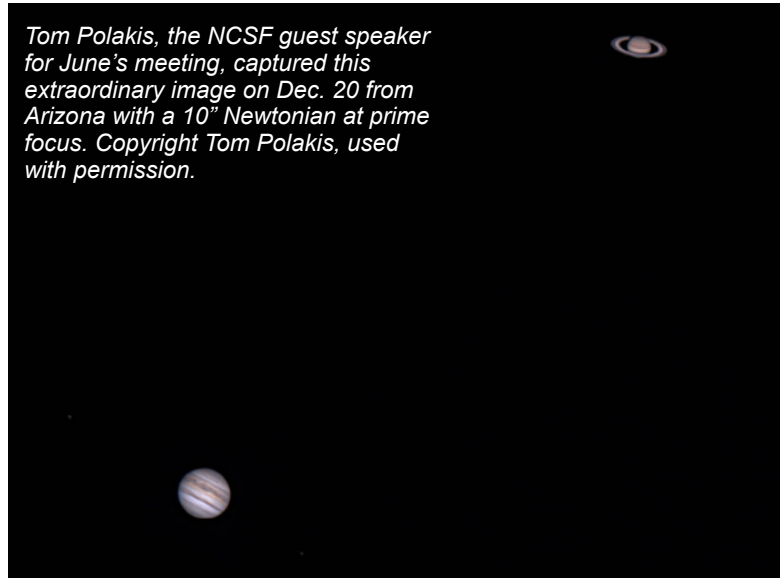
The race was on. Gayle helped me get my 10" Dob outside and helped me try to focus on the two planets while taking some quick shots with my phone camera. Well, it was great to see through the telescope and the images were for posterity. I did get an image without the telescope; it did look a little like a Christmas star.

From Ernie Mastroianni

Attempt 1, Dec. 18:

From an open field behind a Whitefish Bay school, I was able to see Jupiter and Saturn for about five minutes as the choppy clouds briefly parted. They were both well inside a 58x field using my Questar 3.5 inch telescope. The seeing was fairly steady, but the clouds came through before I could try a photo. Saturn was not naked eye, but high clouds affected the transparency. Even though it was a few days before the close approach, it was still pretty cool to see both planets and moons in the same field of view.

Tom Polakis, the NCSF guest speaker for June's meeting, captured this extraordinary image on Dec. 20 from Arizona with a 10" Newtonian at prime focus. Copyright Tom Polakis, used with permission.



Solid clouds greeted Ernie Mastroianni shortly after he set up at McKinley Marina on Dec. 20. It had been clear most of the day.

Attempt 2, Dec. 20: Clear skies lent some hope so I packed my mount, my 5-inch Maksutov, and photo gear into my car.

Astrospheric predicted some cloud breaks in the Milwaukee area, so I set up at the McKinley Marina parking lot. Clouds coming from the west very quickly. I was able to see Jupiter through the scope for just 10-15 seconds until opaque clouds rolled in shortly after sunset. I was not able to see Saturn.

Attempt 3, Dec. 22: The skies cleared at mid-day so I tried a daytime viewing. I set up my Questar in the back yard, leveled the tripod and lined up on north by using the setting circles and the filtered sun. I dialed in Jupiter's location and saw it clearly in the mid-day sky. Saturn was not immediately visible, but by waiting a few moments for haze to pass, I may have barely viewed it via averted vision and moving the scope slightly. The clouds rolled in just minutes after, thwarting my photography attempts before I had time to set up.

Attempt 4, Dec. 25: Christmas night broke clear and cold, and I made my final attempt. I leveled and lined up on north with the Questar, dialed in Jupiter's RA and Dec., and shortly after sunset, it immediately appeared in the field with Saturn. Looking at my phone, I logged the time at 4:32 pm, ten minutes after local sunset.

Seeing was not good, but for a about 20 minutes, I viewed both well within the same field at 70x.

Collapse destroys venerable Arecibo observatory

By Ernie Mastroianni

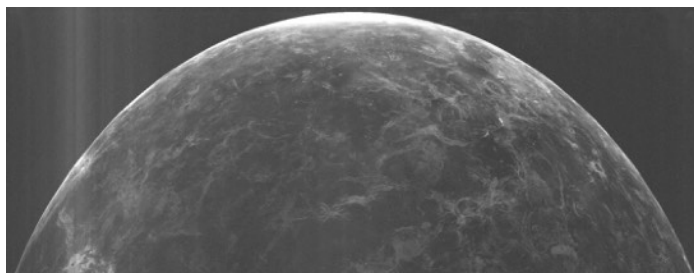
The renowned Arecibo Observatory, an immense radio telescope nested into a Puerto Rico valley, collapsed on December 1 after several supporting cables failed. Spectacular [video](#) released by the National Science Foundation shows the 900-ton instrument structure falling 450 feet into the main dish while 3-inch thick cables snapped cleanly from a support tower as a drone hovered nearby. No one was injured. A second video showing the collapse aftermath can be seen at this [YouTube link](#).

The collapse was the end result of two previous and separate cable failures. On August 10, a cable snapped from a supporting tower and fell into the main dish, creating a 100-foot long gash. Engineers were studying the integrity of the structure when a second cable unexpectedly failed on Nov. 6. Further study revealed weaknesses and wire breaks in other cables. Engineers concluded that any attempts at repairs would be unsafe and recommended a controlled demolition. The final cable failures on Dec. 1 occurred before any further work could be done.

But the collapse might not be a total loss. A letter signed by 85 scientists and published in [Physics Today](#) urges Arecibo managers to consider a careful salvaging of the remaining instruments and structure. From the letter: *..significant observatory resources located on the ground near the Arecibo reflector are not completely destroyed. These items have great potential for future scientific observations and should not be immediately consigned to materials recycling without an assessment of salvage potential and a subsequent plan for careful extraction and preservation.*

With a diameter of 1,000 feet (305 meters), Arecibo was the world's largest single-unit radio telescope when it was built in 1963. Its huge dish is fixed, while the the overhead instrument structure moves to aim the telescope.

China's [FAST](#) telescope, at 500 meters, became the world's largest when observations began there in 2016.



From top: Damage from the first break on Aug. 10; the explosive cable failures on Dec. 1; the damage after the final collapse; Venus surface as imaged by Arecibo and Green Bank. Photos by UCF, NSF, D.A.S. Drones, NRAO/NASA/NSF

Arecibo achieved much in its nearly six-decade run. A National Science Foundation release described its major accomplishments: the demonstration of gravitational waves from a binary pulsar, the first discovery of an extrasolar planet, composition of the ionosphere, and the characterization of the properties and orbits of a number of potentially hazardous asteroids.

Arecibo is also home to a team that runs the Planetary Radar Project supported by NASA's Near-Earth Object Observations Program. Arecibo is managed for the NSF by the University of Central Florida.

Looking ahead

February 4, Thursday

General Meeting

Online via Zoom

7:30 pm

Sheboygan Swap-n-Sell

March 27, 2021

Aviation Heritage Center,
Sheboygan Airport

NEAF

Northeast Astronomy Forum

April 10 and 11, 2021

The twice-canceled conference will try for the third time. Rockland Community College, Suffern, NY

<https://www.neafexpo.com>

NCRAL convention

May 7-8, 2021

St Norbert College Bemis Center,
De Pere, Wis.

Hosted by the Neville Public Museum
Astronomical Society

See the [NCRAL autumn 2020 newsletter](#), page 3

Pre-WOW

June 4-9 2021

Hartmann Creek State Park

IMPORTANT NOTE:

If anyone is thinking of attending Pre-WOW, June 4-9 2021, please let us know. We will release the early weekend dates if no one interested in camping. You would not have to come for all of the pre-dates. You can camp and leave anytime during if you cannot attend WOW on June 10 - 13. Contact: 262-675-0941 or grdupree@charter.net
Gene and Charlotte DuPree

Wisconsin Observers Weekend

June 10 - 13, 2021

Hartmann Creek State Park

<http://www.new-star.org/index.php?Itemid=82>

Pike River Starfest

July 7-11

Amberg, Wis.

Contact Gerry Kocken

gerryk@kockenwi.com

Nebraska Star Party

August 1 - 6, 2021

Merritt Reservoir Snake Campground

<https://www.nebraskastarparty.org/>

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NCSF is a member of the [North-Central Region of the Astronomical League](#).



NCSF supports the [International Dark Sky Association](#)

December General Meeting report

The un-Zoomable communal holiday dishes were off the table this year, so the December Holiday Meeting included novel activities organized by board members Joyce Jentges and Mike Borchert to keep the holiday spirit alive.

Borchert assembled a trivia quiz on astronomy and spaceflight topics that challenged those who attended the December 3 meeting. Did you know that Soviet cosmonaut Valentina Tereshkova was the first woman to orbit the earth? Or that Pluto (then known as a planet) was closer to the sun than Neptune from 1978 to 1999? NCSF president Jeff Setzer knew those answers and all the others too, winning the quiz by answering all six questions correctly.

Jentges asked members to send photos that reflected some of their best stargazing memories, which she then combined into a presentation that elicited much discussion and recollection of the club's collective experience.

Many showed striking photos from the 2017 eclipse. Some featured

visits to far off observatories such as Lowell Observatory in Arizona and Manua Kea in Hawaii. Others shared the spectacle of the Venus transit in 2012 and the incredible Leonid meteor shower of 2001, where up to 10 meteors a second could be seen. The well-attended sidewalk astronomy experiences at Bayshore Mall In the general business meeting were also mentioned,

Mike Borchert was re-elected unanimously to the NCSF board. The board will then select the office holders at the next board meeting.

Also discussed was the spectacular collapse of the historic Arecibo radio observatory in Puerto Rico.

Setzer showed a video from an inspection drone that happened to be flying over the dish at the time of the collapse. Other ground-based webcams also captured the failure and aftermath. See the full story on page 3.

The meeting was adjourned at around 10 pm.



Top: Gene and Charlotte Dupree's sunset image of the Venus transit, taken with a point-and-shoot Canon held above the eyepiece of an Astroscan telescope.

Mike Potter shot the 2017 eclipse with a Canon DSLR and a zoom lens set at 600mm, with no solar filter.

SPECTRUM newsletter

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