

SPECTRUM

Northern Cross Science Foundation Newsletter

August 2016

Looking Up

August 4, Thursday

General Meeting

7:00 p.m. Astronomy 101

7:30 p.m. – Ice Cream Social

(Last meeting at the Church)

August 12, Friday

Cash Bash

8:00p.m. - 11:00 p.m.

West Bend

August 13, Saturday

Public Viewing

7:00p.m. - 11:00 p.m.

Pike Lake

August 18, Thursday

Board Meeting

7:30 p.m.

Jeff Setzer Home

August 26, Friday

Public Viewing

7:00p.m. - 11:00 p.m.

Harrington Beach

August 27, Saturday

Public Viewing

7:00p.m. - 11:00 p.m.

Harrington Beach

August 27, Saturday

Solar Viewing

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

Sandy Knoll Park

Washington County

September 3, Saturday

Evening with Nature

8:00p.m. - 11:00 p.m.

Ice Age Visitors Center

NCSF New Club Location September 1st...News from Club President Jeff Setzer

Hello Friends,

The NCSF has had a few meeting places since our inception in 1974: Basement of Cedarburg State Bank, basement of Carlson Tool & Manufacturing, basement of Unitarian Church North. Beginning with the September 1st meeting, we will have a new home: The brand-new GSC Technology Center in Germantown, WI. And, we won't be in the basement — we'll be in the prime meeting spot!

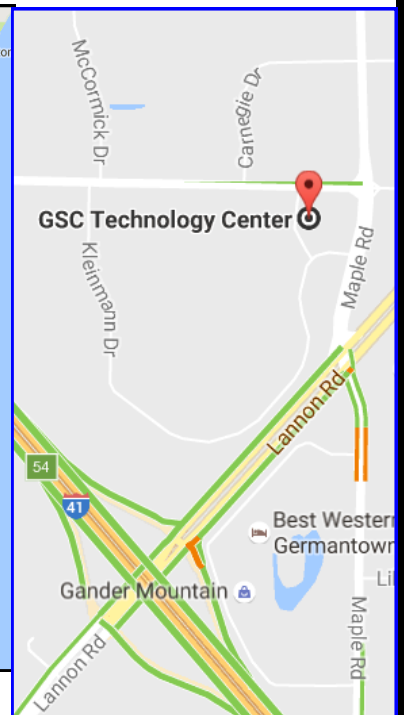
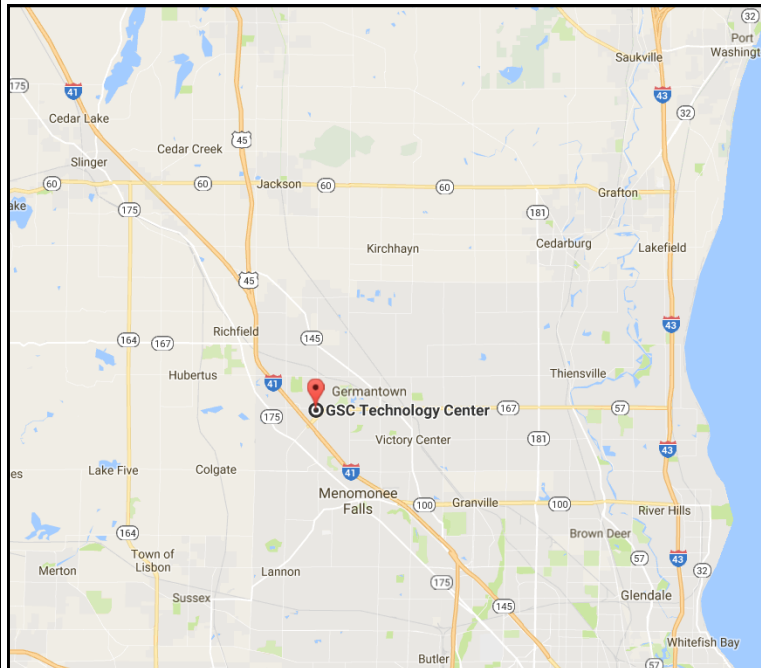
GSC is the company I've been working for since 1992. Our company has also had several homes, but after a two-year effort, we are moving into our newly remodeled building at W189 N11161 Kleinmann Dr, Germantown, WI 53022.

GSC's owner and founder, Dave Kasinskas, has personally invited the NCSF to have our meetings at the new building (rent-free), and the NCSF

Board Of Directors has accepted Dave's generous offer.

The GSC Technology Center is a state-of-the-art building in every way. Of special interest to us, the classrooms feature fast wireless internet with large ceiling-mounted projectors, screens and sound system. New furniture from an education-specific manufacturer makes the rooms highly-functional and comfortable. In addition, the classrooms are adjacent to a commercial-grade kitchen and "cafe" lounge area, which includes an outdoor patio element.

I would enclose some photos of the interior of the new building, but I want to keep that a surprise for our September 1 meeting. I'll just close with this: as a member who's "seen it all" over the Foundation's long history, I can tell you this new location will be far and away the best NCSF meeting facility in the history of the organization.



GSC Technology Center -

W189 N11161 Kleinmann Dr, Germantown, WI 53022

Polar Opposites...

By Ernie Mastroianni

Two deep sky icons - M81 and the Eta Carina nebula, could not be much farther apart. From Milwaukee, M81 (at 70 degrees north) never sets. The Eta Carina nebula resides at nearly 60 degrees south, so being in Hawaii or farther south is a required for a decent view. But Northern Cross member Tom Schmidtkunz recently photographed both and never left home.

Schmidtkunz leases astrophotography time through the iTelescope website (iTelescope.Net), which connects users to numerous robotically controlled telescopes in California, New Mexico, Spain and Australia. Imaging time is by subscription and costs about a dollar a minute. Larger telescopes are more. According to Schmidtkunz, you file a plan in advance of your shooting session: what telescope, when, the target, and the length of time you need.

"You want to match the scope to your objects. A four-inch refractor is perfect for M31, M45, and the Eta Carina. A scope with a narrower field and more light gathering power is great for a galaxy," he said. The scopes are highly automated and let you know what is happening: slewing to

M3, finding a guider star, focusing, centering, tracking, taking picture 1, taking picture 2 and so on. "It's fun to watch it run."

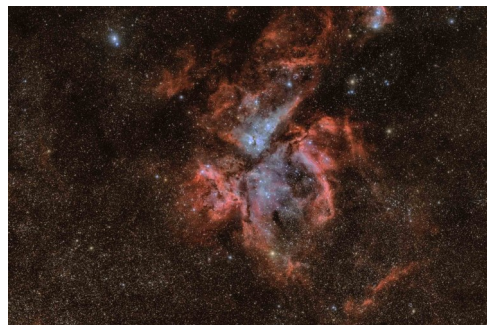
After the exposures are complete, the website loads the files into an accessible page. "What I really like is that all images are processed with darks, flats, and bias frames applied," he said. If it's cloudy, the session is canceled and no charge is applied to your account.

Schmidtkunz likes having access to the best scopes, mounts, software, and dark skies around the globe. It's not free though: one 90-minute run can cost \$100. But even a \$40 monthly subscription matches the cost of just one very high-end eyepiece.

Northern Cross member Chad Andrist helped Schmidtkunz process these images. The M81 image was taken with a massive PlaneWave 17" Dall-Kirkham telescope and a Finger Lakes Instrument camera at New Mexico Skies. Three exposures of 5 minutes each were made through red, blue, and green filters. Nine luminance exposures (in monochrome) of five minutes each were taken. Total sky time was 90 minutes.

The much larger Eta Carina nebula required a much smaller 4" Takahashi refractor, based at the Siding Spring Observatory in Australia.

A Finger Lakes Instrument camera was used at the same exposure times used for M81.



Venus and Jupiter Conjunction a "close-up" - by Ethan Siegel Provided by NASA Space Place Astronomy Club Article

As Earth speeds along in its annual journey around the Sun, it consistently overtakes the slower-orbiting outer planets, while the inner worlds catch up to and pass Earth periodically. Sometime after an outer world—particularly a slow-moving gas giant—gets passed by Earth, it appears to migrate closer and closer to the Sun, eventually appearing to slip behind it from our perspective. If you've been watching Jupiter this year, it's been doing exactly that, moving consistently from east to west and closer to the Sun ever since May 9th.

On the other hand, the inner worlds pass by Earth. They speed away from us, then slip behind the Sun from west to east, re-emerging in Earth's evening skies to the east of the Sun. Of all the planets visible from Earth, the two brightest are Venus and Jupiter, which experience a conjunction from our perspective only about once per year. Normally, Venus and Jupiter will appear separated by approximately 0.5° to 3° at closest approach. This is due to the fact that the Solar System's planets don't all orbit in the same perfect, two-dimensional plane.

But this summer, as Venus emerges from behind the Sun and begins catching up to Earth, Jupiter falls back toward the Sun, from Earth's perspective, at the same time. On August 27th, all three planets—Earth, Venus and Jupiter—will make nearly a perfectly straight line.

As a result, Venus and Jupiter, at 9:48 PM

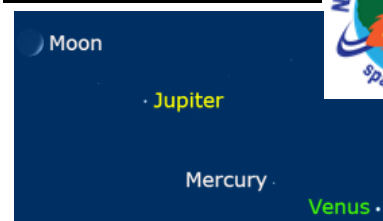
Universal time, will appear separated by only 4 arc-minutes, the closest conjunction of naked eye planets since the Venus/Saturn conjunction in 2006. Seen right next to one another, it's startling how much brighter Venus appears than Jupiter; at magnitude -3.80, Venus appears some *eight times brighter than* Jupiter, which is at magnitude -1.53.

Look to the western skies immediately after sunset on August 27th, and the two brightest planets of all—brighter than all the stars—will make a dazzling duo in the twilight sky. As soon as the sun is below the horizon, the pair will be about two fists (at arm's length) to the left of the sun's disappearance and about one fist above a flat horizon. You may need binoculars to find them initially and to separate them. Through a telescope, a large, gibbous Venus will appear no more distant from Jupiter than Calisto, its farthest Galilean satellite.

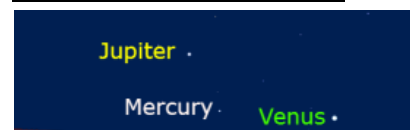
As a bonus, Mercury is nearby as well. At just 5° below and left of the Venus/Jupiter pair, Mercury achieved a distant conjunction with Venus less than 24 hours prior. In 2065, Venus will actually occult Jupiter, passing in front of the planet's disk. Until then, the only comparably close conjunctions between these two worlds occur in 2039 and 2056, meaning this one is worth some special effort—including traveling to get clear skies and a good horizon—to see!

CDT—Central Daylight Time is 5 hours behind Coordinated Universal Time

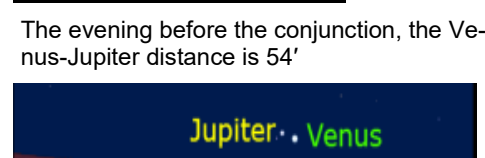
**August 6, 2016 - 8:30 p.m.
CDT - Looking West**



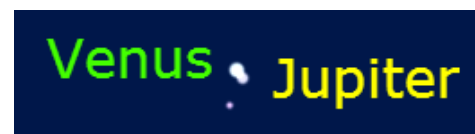
**August 15, 2016 - 8:30 p.m.
CDT - Looking West**



**August 26, 2016 - 8:15 p.m.
CDT - Looking West**



**August 27, 2016 - 8:15 p.m.
CDT - Looking West**



August General Meeting

101 Program ...by Kevin Bert

Telescope Mirror Grinding

Working to within millionths of an inch by hand.

July Public Viewing Events

Horicon Marsh, July 5

By Charlotte DuPree

Library night at Horicon marsh and solar viewing. At the start of the event we had a mostly hazy sky. We had solar filters on the Astroscan and the C4.5. Unfortunately, there were no sun spots to see. The Coronado filter worked pretty good on the spotting scope and we saw a few prominences. Before sunset the big clouds started and the sun was behind the building anyway. We had a steady flow of families, around 100. A few people were hoping we would be there after dark. The event only lasted until 8:30 and we had to go to work the next day anyway.

Pike Lake, July 9

By Charlotte DuPree

Pike Lake State Forest, July 9, PVN. This was a perfectly clear night! We had visitors before dark, and cars driving pass stopped to see what we were doing. The campers started coming, and were in awe at the "incredible" view of the 5 day first quarter Moon. Saturn, Mars and Jupiter were looking pretty good also. We looked at the usual deep sky objects and many other interesting one also. Thanks to Al S, Rick D, and Rick and Georgine for helping out.

Mirror Lake

By Charlotte DuPree

We went camping at Mirror lake on the weekend of July 15-17. The first thing I always do is to find the naturalist programs for Saturday. Much to my surprise, I see a telescope on the flyer for solar viewing! "**Universe in the Park**", would be having a slide program, with star gazing in the evening. Since there was going to be a full moon we did not have a big scope with us. We did have the Astroscan and Coronado solar max and saw the large group of sun spots and some prominences. The program was at the beach, so there was a captive crowd. The evening was partly cloudy, but the Astroscan had a good workout and Saturn looked very good with a 6mm eye piece.

For those of you who do not know, UWM Madison Astronomy Dept. presents programs at many of the different state parks throughout the summer. You can Google "universe in the park schedule" to find locations close-by, or where ever you travel with your scopes! They usually have one or two grad-students with one scope between them and they enjoy assistant from others.

Main Program...

Ice Cream Social

Help celebrate the last meeting at the church.

Tips for Beginners and Experienced Observers Alike... by Alan MacRobert

Try stargazing with Binoculars

Binoculars make an ideal "first telescope" — for several reasons. They show you a wide field of view, making it easy to find your way around — whereas a higher-power telescope magnifies only a tiny, hard-to-locate bit of sky. Binoculars show a view that's right-side up and straight in front of you, making it easy to see where you're pointing. (An astronomical telescope's view, by contrast, is often upside down, is sometimes mirror-imaged as well, and is usually presented at right angles to the direction you're aiming.)

Binoculars are also relatively cheap, widely available, and a breeze to carry and store. And their performance is surprisingly respectable. Ordinary 7- to 10-power binoculars improve on the naked-eye view about as much as a good amateur telescope improves on the binoculars — for much less than half the price.

For astronomy, the larger the front lenses the better. High optical quality is also important, more so than for binoculars that are used on daytime scenes. Modern image-stabilized binoculars are a tremendous boon for astronomy (though expensive). But *any* binoculars that are already knocking around the back of your closet are enough to launch an amateur-astronomy career.

Lose your ego

Astronomy teaches patience and humility — and you had better be prepared to learn them. Not everything will work the first time. You'll hunt for some wonder in the depths and miss it, and hunt again, and miss it again. This is normal. But eventually, with increasing knowledge, you *will* succeed.

There's nothing you can do about the clouds that move in to block your view, the extreme distance and faintness of the objects of your desire, or the special event that you missed because you got all set up one minute late. The universe will not bend to your wishes; you must take it on its own terms.

Most objects that are within the reach of any telescope, no matter what its size, are *barely* within its reach. So most of the time you'll be hunting for things that appear very dim or very small, or both. You need the attitude that they will not come to you; you must go to them. If flashy visuals are what you're after, go watch TV.

Relax and have fun

Part of losing your ego is not getting upset at your telescope because it's less than perfect. Perfection doesn't exist, no matter what you paid. If you find yourself getting wound up over

RELATED INFO

New Member

NCSF welcomes New Member

Mike Schactner

Leaders for Public Viewing

August 12

West Bend - Cash Bash

Jeff Setzer

August 13th

Pike Lake

Gene and Charlotte DuPree

August 26th

Harrington Beach

Leaders Needed

August 27th

Harrington Beach

Leaders Needed

August 27th

Sandy Knoll Beach

Gene and Charlotte DuPree

September 3rd

Ice Age Center

Gene & Charlotte DuPree

Star Parties!

NORTHWOODS STARFEST 2016

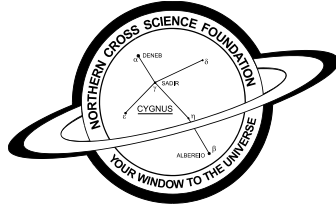
Hobbs Observatory
Beaver Creek Reserve
Fall Creek, Wisconsin
August 5-7, 2016

www.cvastro.org

Pluto's invisibility or the aberrations of your eyepiece, take a deep breath and remember why you're doing this. Amateur astronomy should be calming and fun.

Learn to take pleasure in whatever your instrument can indeed show you. The more you look and examine, the more you will see — and the more you'll become at home in the night sky. Set your own pace, and delight in the beauty and mystery of our amazing universe.

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Historic Space Quotes:

"We have your satellite. If you want it back send 20 billion in Martian money. No funny business or you will never see it again."

A joke reportedly written on a wall in a hall at NASA's Jet Propulsion Lab, California, after losing contact with the Mars Polar Lander in December 1999.

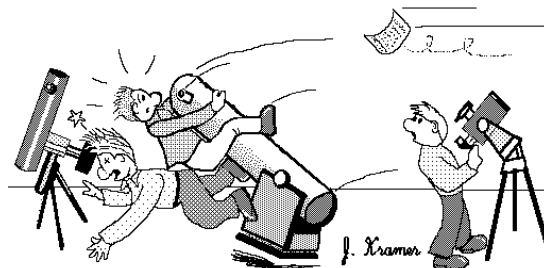
"Mars has been flown by, orbited, smacked into, radar examined, and rocketed onto, as well as bounced upon, rolled over, shoveled, drilled into, baked and even blasted. Still to come: Mars being stepped on."

Buzz Aldrin, in his new book Mission to Mars: My Vision for Space Exploration (2013).

"Equipped with his five senses, man explores the Universe around him and calls the adventure Science"

Edwin Hubble, Astronomer

Strong gusts of wind tend to severely affect the stability of larger telescopes.



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>

Spectrum Newsletter
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Please send your Questions, Suggestions, Articles, and photos to:
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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