

SPECTRUM

Northern Cross Science Foundation Newsletter

May, 2018

Looking Up

May 3, Thursday

General Meeting

7:00 p.m. - Astronomy 101

7:30 p.m. - Main Program

Business Meeting Follow

May 17, Thursday

Board Meeting

7:30 p.m.

House of Jeff Setzer

May 24, Thursday

NCRAL 2020 Meeting

7:30 p.m.

House of Mike Borchert

May 27, Sunday

Port Washington Street Festival

Noon - 5:00 p.m.

Downtown Port Washington

May 27, Sunday

Astronomy Day

Dusk - 11:00 p.m.

Harrington Beach

June 7, Thursday

General Meeting

7:00 p.m. - Astronomy 101

7:30 p.m. - Main Program

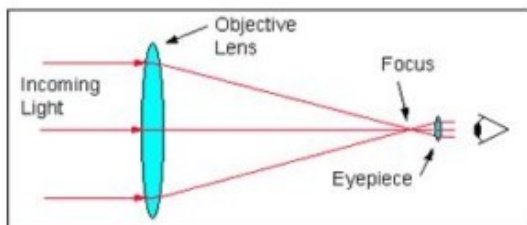
Business Meeting to Follow

The Real (and Totally Misunderstood) Purpose of a Telescope by Brian Ventrudo

Before you drop a week's salary on your first good astronomy telescope, here's one essential point you must understand. It may seem strange to start here... but once you understand this point, the rest of this guide will make sense. The fact is, most beginners believe the purpose of a telescope is to magnify objects... to make them appear bigger. This is not true. So what, then, is the real purpose of a telescope?

The purpose of a telescope is to collect light.

A telescope uses a curved lens or mirror (called an *objective*) to collect light from distant objects and to focus that light to an image. A bigger objective lens or mirror collects more light and creates a brighter and sharper image. The focused image formed by the objective lens of a telescope is magnified by a smaller second lens called an *eyepiece*. As visual observers, we look into the eyepiece to see the bright magnified image from the objective. But an eyepiece used with a small lens or mirror simply magnifies a dim and fuzzy image.



So, although magnification is useful, it has no effect in helping you see detail in a telescope. The detail and brightness of an image all comes down to the amount of light collected by the objective lens or mirror. And that depends on

its diameter of the objective, also called the *aperture*. Like a big bucket collects more raindrops than a small bucket, a big objective collects more light than a smaller one.

As an example, let's look at Jupiter with two telescopes, one with a main lens of 2" diameter and one with a main lens of 4" diameter, and pick eyepieces for each telescope to give a magnification of 100 times (or 100x). So each image will appear to be the same size. In the telescope with a 2" aperture, Jupiter's largest cloud belts will be clearly observable but a little dim and fuzzy. But in the 4" telescope, the same cloud belts will seem to take on more structure and color, and smaller cloud belts are now visible that could not be seen in the smaller instrument. The larger telescope's advantage in collecting light makes it possible to see more detail than is possible through the smaller telescope at the same magnification.

So a telescope that collects more light gives a better view. That means choosing a telescope should be simple, right? Simply choose the telescope with the biggest objective lens or mirror that you can afford.

Well yes, but there are trade-offs. Telescopes with bigger aperture are more expensive, heavier, and in some cases, harder to use than smaller telescopes. They create a narrower view of the night sky than smaller telescopes. So you need to take all of this into consideration. But we are getting ahead of ourselves. Just remember for now that the purpose of a telescope is to collect light, and more light makes for a better image and a more enjoyable observing experience. Before we get into telescopes, let's discuss binoculars, the most useful and overlooked optical tool for observing the night sky. *One Minute Astronomer*

May Planets by Gene R. DuPree

At the beginning of the month Venus is high in the west at sunset, -3.9 magnitude. Jupiter will be at opposition on May 8 and shines at -2.5 magnitude. Its fast spin and 4 visible moons are fun to watch every clear night. Just after midnight Saturn rises, and is always a sight to see. Saturn

currently has a 26° tilt and reaches opposition in late June. Up next is Mars, which rises shortly after midnight. It's opposition is in late July. Mar's will put on a great show, like it 15 years ago, if you remember. So get out there and see the great planets to view this year.

April Meeting Minutes

By Kevin Bert

The April 2018 Business meeting of the Northern Cross Science Foundation was held at the GSC Technology Center in Germantown. President Jeff Setzer called the meeting to order at 8:25pm and welcomed 18 members and guests. Jeff then asked for standard reports.

Treasurer Gene Dupree tells the membership that the checking balance is \$13,119.45 and the Observatory balance remains at \$418.49.

Secretary Kevin Bert reports that he hopes to have a finalized membership roster for 2018 included in the next newsletter. Under Astronomical League news the 2018 Regional Convention will be held in Sturgeon Bay on May 4th and 5th. For details visit the link in the Spectrum to the Door Peninsula Astronomical Society.

Observatory Director Dan Bert reports that the red rope light above the countertop is out and will be repaired soon. Observatory training will be held the upcoming Saturday

night at 7:30 for those new members looking to become operators of the 20-inch telescope or operators needing a refresher course.

Jeff Setzer informed the membership that the first meeting was held for planning the 2020 regional convention. Mike Borchert and Jeff volunteered as co-chairs. Any Northern Cross members that want to get involved are welcomed to join them at their next meeting and should contact Jeff for time and location.

On another topic Jeff explained the status of the Yerkes Observatory. A recent press release says it will cease operation as of October 1st of this year. It has recently seen a focus on education and outreach. The future is uncertain but it would be a shame to lose this historic facility. Join Save Yerkes on Face book.

With no new business Jeff noted the start of the public outreach season with Astronomy day on Memorial Day Weekend May 27th. As in other years we will join Port Washington's Street Festival for daytime activities and shift to Harrington Beach for evening viewing. We hope the entire membership will be active and attend.

The April 2018 Business meeting of the Northern Cross Science Foundation was held at the GSC Technology Center in Germantown. President Jeff Setzer called the meeting to order at 8:25pm and welcomed 18 members and guests. Jeff then asked for standard reports.

Treasurer Gene Dupree tells the membership that the checking balance is \$13,119.45 and the Observatory balance remains at \$418.49.

Secretary Kevin Bert reports that he hopes to have a finalized membership roster for 2018 included in the next newsletter. Under Astronomical League news the 2018 Regional Convention will be held in Sturgeon Bay on May 4th and 5th. For details visit the link in the Spectrum to the Door Peninsula Astronomical Society.

Observatory Director Dan Bert reports that the red rope light above the countertop is out and will be repaired soon. Observatory training will be held the upcoming Saturday night at 7:30 for those new members looking to become operators of the 20-inch telescope or operators needing a refresher course.

Why NASA Is Sending a Spacecraft to a Metal Asteroid Called 'Psyche'

By Elizabeth Howell, Space.com Contributor

An ambitious mission to a "world made of metal" will help scientists better understand how Earth and other rocky planets evolved, according to a new video from NASA's Goddard Space Flight Center.

The Psyche mission will depart Earth in 2022. The original plan called for a launch in 2023, but NASA moved up the timeline to save on cost and arrive at the asteroid sooner. Under the new plan, the spacecraft will pick up speed with a Mars flyby and arrive at the asteroid, also called Psyche, in early 2026. Observations from Earth hint that the 124-mile-wide (200 kilometers) world is 95 percent metal, just like the core of a rocky planet. [NASA's Mission to Metal Asteroid Psyche .

"All of the rocky planets we know of, they've all got a metal core in their center, and especially for the Earth, it's the source of our magnetic field," principal investigator Lindy Elkins-Tanton, a planetary scientist at Arizona State University (ASU), says in the video. "We don't know a lot about our core. What we've learned about it, we've learned indirectly, because we can't go there."

"It's too hot," deputy principal investigator Jim Bell, a planetary scientist at ASU who is also heavily involved in the Curiosity and Opportunity rover missions at Mars, says in the video. "The pressure's too high. Our instruments would melt. You can't drill a hole that deep in the Earth

or other planets. Turns out, we can study a planetary core out in space because there's this one object ... called Psyche."

Psyche has a unique history. Scientists suspect the Massachusetts-size world is the core of a planetesimal, or a small body that could have accreted with other worlds of its type to form a planet. But as Psyche formed, it may have crashed into other bodies that stripped away its rocky mantle instead, scientists say. All that's left today is the tiny metallic core.

Some of the mission's science objectives include figuring out if Psyche is indeed an old planetesimal core, learning about the age of its surface and discerning the asteroid's topography. In the video, Bell says images would be beamed to the public and to scientists at the same time, allowing everyone to share in discoveries at the same pace.

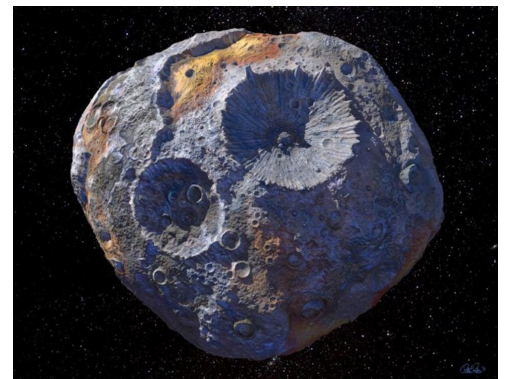
In the video, Elkins-Tanton says she is the first woman to lead a selected deep-space mission since Maria Zuber; Zuber led the Gravity Recovery and Interior Laboratory (GRAIL) mission that mapped the moon's gravity fields using probes called Ebb and Flow. GRAIL was successful and ended a year of operations in 2012, when its probes crashed into the lunar surface as planned.

"My drive is to make everyone feel welcome and to have every voice heard," Elkins-Tanton says in the video. "We want to have

as many undergraduates as we can. We want to involve as much of the public as we can. We want people to feel like this is their mission."

Elkins-Tanton adds that she did have the chance to look at Psyche once in an optical telescope in her backyard, after some colleagues generously brought one over for her to use. "It's a very, very tiny, faint dot, and that made a bunch of us cry, to think that we could send something to investigate that speck of light."

Credit ASU Artist conception



May General meeting

Astronomy 101 - Kevin Bert

"Star Charts and Constellation Patterns."

Many stargazers will tell you that star charts are essential to finding your way around the night skies. Simple naked eye viewing the constellations of the season or hunting for your favorite deep sky targets. We will look at some old favorites along with newer contenders.

Constellation of the month;

Coma Berenices

April Public Viewing Events

Winter Star Fest By Charlotte DuPree

CVAS Winter Star Fest was moved to April 21, because of the big snow storm on the 14th. So we made the four hour drive to be part of the attendees. There was a group dinner, with the food from Famous Dave's. Since this fell on the third Saturday, it was also the night of their monthly public astronomy lecture, and public viewing. The lecture was given by Lauren, a member of the club, about the Zodiacal lights. Gene had taken the 12.5 scope with, Mike set-up his 24 inch dob, and the two domes were open. The public was the largest group this year, partly because of Lauren's physic students. They really weren't interested in looking through the scopes, and just stood around talking. Because this was the day before first quarter Moon the sky was too bright to see most of the dimmer objects.

Main Program - Joyce Jentges

"Star Party Etiquette"

Star Party season is coming! Are you ready? Join us for a conversation on Star Party Etiquette presented by Joyce Jentges. We will discuss proper etiquette for attending star parties, NCSF sponsored, and other events. Join us, audience participation is required for this one. Please come and share your stories of star parties that didn't quite go as planned, or share good tips the new members would appreciate.

Astronomy, Astrophotography, and Traveling.

By Mike Borchert

Traveling presents great possibilities to explore astronomy. While traveling I love to listen to podcasts that are downloaded, free to my phone before I leave. There are many podcasts, out there on the Internet. Google the keyword "Planetary Radio" or, "Sky Tour Podcast" (monthly what's out tonight), and my favorite, "Astronomy Cast". You need a podcast app on your phone; they are free. Once that is accomplished, all you need is a pair of earphones while out for a walk, or a means to get it to play on your car radio. I keep my volume lower in the car, more of a background, as not to distract.

My trip to Southern Illinois to see the Solar eclipse was a chance to get out camping while also getting together with fellow astronomers, a few from other clubs. In Waupaca, we are able to stay in a hotel during some very wet weather, while also going into the park at night when the weather got better. Typically good seeing after a front goes through, while learning about collimation. Eau Claire last year ended up having poor skies. But, it gave me some time to discuss astrophotography with very sharing members from the local club. The poor weather was offset by the cabin/indoor sleeping quarters, which my wife appreciated.

There is usually some museum, scope, club, or astronomy event or program where ever I have travelled; it just takes a little investigation. This year I am able to spend some time in Phoenix while visiting my daughter. I did hook up with a local astronomy club and got directions to their club meeting, a public viewing night, and a dark sky viewing area fifty miles away. There I plan to do some astrophotography. More on that to come.

RELATED INFO

Conferences 2018

NCRAL

May 4 - 5

Surgeon Bay, Wi

Door Peninsula Astronomical Soc.

www.doorastronomy.org

ALCON

July 11 - 14

Minneapolis/St. Paul, Minnesota

Minnesota Astronomical Society

alcon2018.astroleague.org

Star Parties 2018

Pre-WOW

July 7—11

NCSF—Jeff Setzer

WOW

July 12 - 15

Hartman Creek State Park

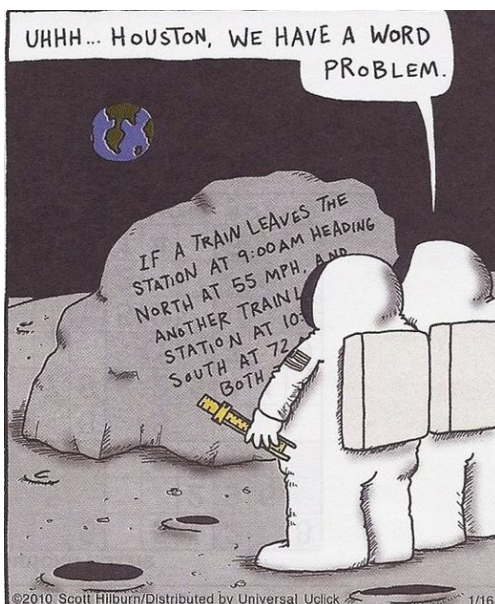
WWW.new-star.org

Northwoods

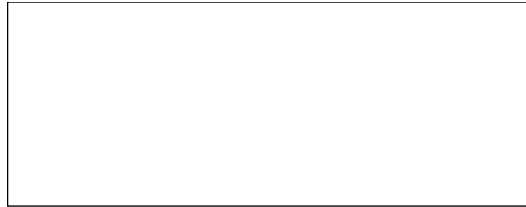
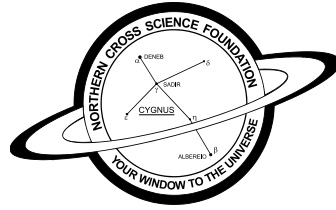
August 17 - 19

Hobbs Observatory

Beaver Creek Reserve



SPECTRUM
5327 Cascade Drive
West Bend, WI 53095



2018 Board of Directors

President - Jeff Setzer
1418 Trillium CT
West Bend, WI 53095
262-338-8614
astrosetz@hotmail.com

Vice-President - Joyce Jentges
336 N Main Street, Apt.3
Cedar Grove, WI 53013
262 483- 4270
joycejentges@hotmail.com

Secretary - Kevin Bert
2292 Ridgewood Road
Grafton, WI 53024
262-674-0610
kevin.bert@hotmail.com

Treasurer - Gene DuPree
6219 Jay St.
Myra, WI 53095
262-675-0941
grdupree@charter.net

Dan Bert - Observatory Director
262-357-1973
1517 Green Valley Rd.
Grafton, WI 53024
dbert64@gmail.com

Rick Kazmierski - Newsletter
262-305-1895
5327 Cascade Drive
West Bend, WI 53095
rickkaz@charter.net

Mike Borchert
3656 Willow Creek Rd.
Colgate, WI
gmborchert@charter.net

StarLight Festival at Yerkes Observatory

May 26-27, 2018



Let your kids get hands-on with science and astronomy at this amazing STEM event on the 80-acre estate of Yerkes Observatory. This is an entertaining, fun learning event with music, art, science, and scientists where you will party down and celebrate George Ellery Hale's 150th Birthday Bash at StarLight Festival (SLF).

The event is **free**, special tickets will be sold to view through the world's largest refracting telescope to help support the ongoing activities and preservation of historic Yerkes Observatory in beautiful Williams Bay, Wisconsin overlooking Lake Geneva!

For more info see "<https://starlightfestival.com/>".

SPECTRUM

Published by the Northern Cross Science Foundation, Inc. A non-profit organization based in South-eastern Wisconsin.

NCSF is a member of the North-Central Region of the Astronomical League.



NCSF supports the **International Dark Sky Association**

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

Monthly Meeting Information

7:00 p.m. Astronomy 101 Mtg.
7:30 p.m. Main Program
Location at the -

GSC Technology Center
W189 N11161 Kleinmann Dr
Germantown, WI 53022

Spectrum Newsletter
5327 Cascade Drive
West Bend, WI 53095

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