The Prairie Astronomer

November 2019 Volume 60, Issue #11

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Mercury Transit by Brett Boller

Night Sky Network

The Newsletter of the Prairie Astronomy Club

The Prairie Astronomer

NEXT PAC MEETING: November 26 at 7:30pm at Hyde Observatory

PROGRAM

November: How to Buy a Telescope.

FUTURE PROGRAMS (Tentative)

December: Club Holiday Gathering
January: How to Use Your Telescope

Buy the book! The Prairie Astronomy Club: Fifty Years of Amateur Astronomy.
Order online from Amazon or lulu.com.

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PAC Meeting
Tuesday November 26, 2019, 7:30pm
Program: How to Buy a Telescope

December PAC Meeting
Holiday Gathering
Location and Date :to be announced

PAC Meeting
Tuesday January 28, 2020, 7:30pm
Program: How to Use Your Telescope

2019 STAR PARTY DATES

Photo by Brian Sivill

	Star Party Date	Star Party Date
January	Dec 28	**Jan 4**
February	Jan 25	**Feb 1**
March	Mar 1	**Mar 8**
April	Mar 29	**Apr 5**
May	Apr 26	**May 31**
June	Jun 21	**Jun 28**
July	Jul 26	**Aug 2**
NSP	**July 28 - Aug 2**	
August	Aug 23	**Aug 30**
September	Sep 20	**Sep 27**
October	Oct 18	**Oct 25**
November	Nov 22	**Nov 29**
December	Dec 20	**Dec 27**

Dates in **BOLD** are closest to the New Moon.

PAC E-MAIL:

info@prairieastronomyclub.org

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Subscribe through GoogleGroups.
To post messages to the list, send to the address:

pac-list@googlegroups.com

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WEBSITES

www.prairieastronomyclub.org
https://nightsky.jpl.nasa.gov
www.hydeobservatory.info
www.nebraskastarparty.org
www.OmahaAstro.com
Panhandleastronomyclub.com
www.universetoday.com/
www.planetary.org/home/
http://www.darksky.org/

Night Sky Network

Meeting Minutes

Bill Lohrberg

PAC meeting minutes October 29, 2019

The meeting was held at Branched Oak Observatory, Pizza and refreshments served, Dan Delzell led the meeting for Bob Kacvinsky, approximately 20 in attendance.

Upcoming events:

Nov 8th South Pointe shopping center scavenger hunt (this to be the 2nd year for this event and is an Apollo 11 themed event.) We will have it covered, but more volunteers encouraged.

Hyde open for the transit of Mercury will already be in progress at sunrise Monday Nov 11th.

Motion to close the nominations for election of club officers for 2020 was put forth by Jim Kvasnicka and seconded by Lee Taylor and carried with none opposed for the following club officers:

President – Bob Kacvinsky
VP1 – Rick Brown
VP2 – James Quach
Secretary – Bill Lohrberg
Treasurer – John Reinert

Jim Kvasnicka gave a brief observing report.

November 11th Transit of Mercury (which was discussed previously)

Planets in November Saturn, Jupiter and Venus together in line, and Jupiter and Venus move closer and closer together by a degree and a half by end of month

Reminder his observing report is available to view on the PAC newsletter online.

Other business

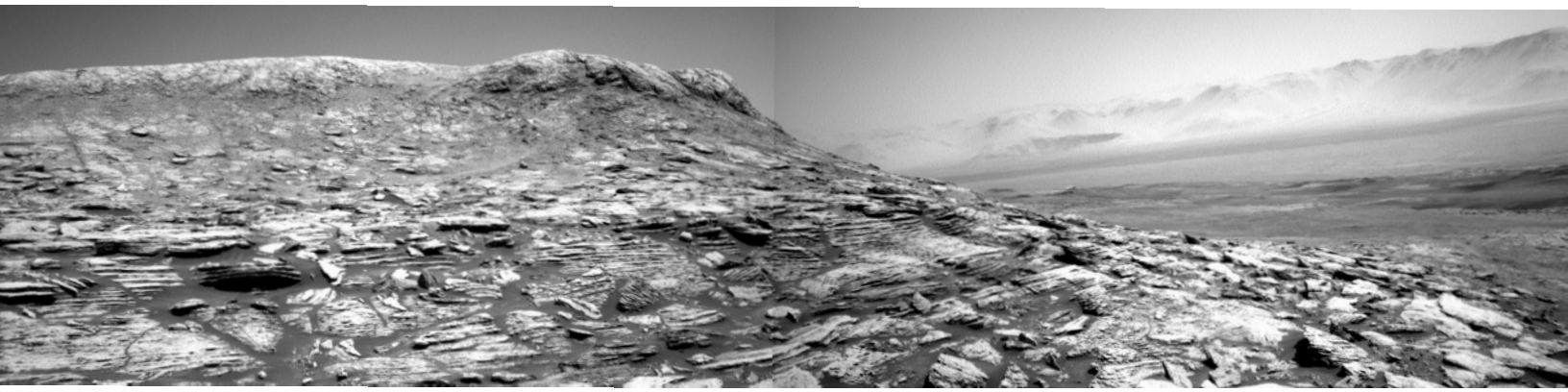
Reminder next meeting November 26th will be the annual "how to buy a telescope"

January meeting "how to use your telescope"

December club meeting / Holiday party will be held at Mueller planetarium, details will be announced as to the date.

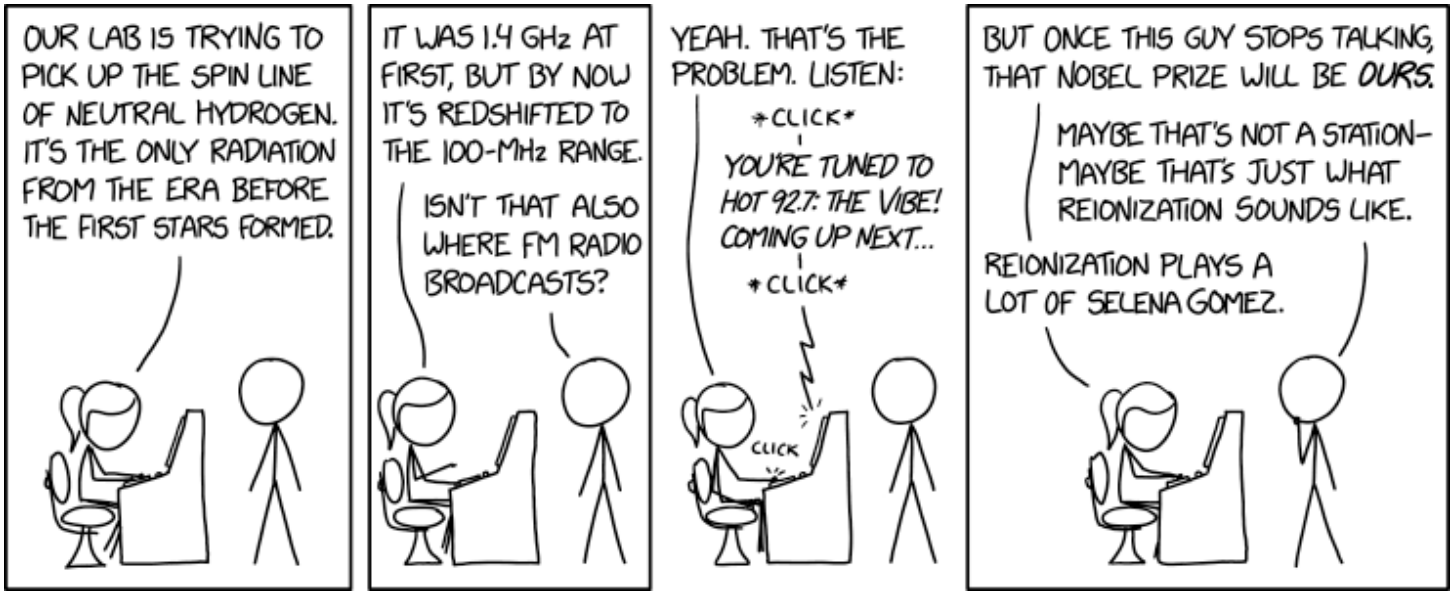
There is a plan in the works for the disposition of donated equipment, Bob will present this plan to the club for approval.

With no further business the meeting was adjourned to the program which was to be a club star party on the PAC funded pad – unfortunately the sky was overcast so we were treated with a history and tour of the Branched Oak Observatory by Brian Sivill and Brett Boller.



On November 1, the Mars Curiosity rover took this panorama that shows the distant rim of the Gale Crater, a dried-up lake with a mountain in its center. The media reports only showed the right half of the above image which is by itself stunning and described by one reporter as looking like a "winter day somewhere in the New Mexico desert." But they didn't show the whole panorama - the left hand side of the above image shows the rest of a feature called "Central Butte" which is equally impressive.

It was cloudy on October 29th but we had a nice pizza dinner and tour of Branched Oak Observatory.



xkcd.com

The President's Message

Bob Kacvinsky

Special thanks to everyone who helped out in October with the numerous PAC Activities. On Oct 5th, Hyde Public Observing night was taken over by High School youth in the Lead Up Development Program. We had in attendance over 40 first time HS students. In mid October a subcommittee met to discuss and plan for distribution of the Astronomy materials from Jim Rains Estate. We will have more details coming up over the next couple of months.

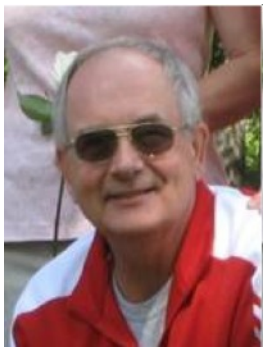
I want to welcome our new PAC Board member, James Quach, as 2nd VP in charge of communications and promotions. James has been an active member participating in numerous outreach events. We all look forward to his expertise with our social media presence. Welcome James to the Team. I also want to publicly thank Christine Parkyn for her excellent service on the Board this past year. Thank You.

Howling Halloween event at the Homestead Memorial had 6 members set up for the public viewing. We had couple hundred kids and parents enjoying the views of Jupiter, Saturn, and several deep sky objects. The clouds canceled our Nov 1st event at the Lazy Horse Brewery – some were more disappointed than others. Lastly, Nov 8th looks like a nice night of Saturn and moon observing for the Kids Scavenger Hunt at SouthPoint Mall. Thanks to all of the members who make PAC Outreach such an overwhelming success in our community. Without you this would not be possible.

As we look forward into the Holiday season, our November 26th club meeting will be "How to Buy a Telescope" program. Even if you have a telescope please come and participate. We are hoping to have potential future members attending from the public. There will be the normal brief club meeting along with a brief telescope 101 review followed by discussions with each type of telescope. Come help and enjoy sharing your expertise.

As you begin your Holiday shopping, please consider upgrading the default Amazon to using Amazon Smile. This is a free service from Amazon that does everything the same as the base Amazon website except Amazon donates .5% of all purchases to your designated charity – ie Prairie Astronomy Club. Set up is very easy:

1. Go to smile.amazon.com and log in the same as you would with your amazon account
2. Once signed in, you will be directed to the charity selection page
3. Select "or pick your own charitable organization"; enter "CHEST Foundation"; then click search for Prairie Astronomy Club and hit enter. Follow any other directions. Simple. Easy. Free to you.
4. After set up, when you search the internet and it takes you to an Amazon page, there should be a pop up screen that asks you to switch to Amazon Smile. Click yes. Then when you make a purchase Amazon will automatically add the donation into the PAC account. No action needed.



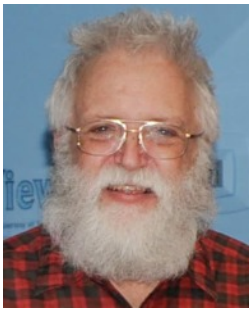
https://foundation.chestnet.org > way to go > amazon smile set instructions

You can designate any charity, but if you select Prairie Astronomy Club your club will receive a donation from all Amazon purchases. The .5% does not sound like much, but just in 2019 so far my small purchases alone have brought in over $27 which matches my annual dues. If even half our members were use Amazon Smile it could net PAC over $500 a year in additional revenue we could use for club activities and outreach. Please consider setting up this free service from Amazon so PAC or your favorite Charity can capture these free donations from Amazon.

Dark and Clear Skies to you during this joyous holiday season. Bob Kacvinsky PAC President

Mantrap Skies Image Catalog: ARP 11

Rick Johnson



Rick Johnson, a founding member of the Prairie Astronomy Club, passed away in January, 2019. His legacy lives on through his comprehensive catalog of over 1600 images at www.mantrapskies.com.

Arp 11 falls under Arp's category: Spiral Galaxies: Split Arm. It is located in eastern Pisces not far from M74. It and the galaxy to its northeast (upper left) have a redshift that puts them a half billion light-years away. Arp 11 is cataloged as UGC 00717, an SBb spiral. Its companion to the northeast that it is likely interacting with is UGC 00719 also classed as SBb though not as distorted. Arp makes the comment about UGC 00717; "Outer arms do not start at termination of bar." I guess that depends on how you define the arms. To me, they do come from the bar, make a 180-degree arc coming close to the end of the opposite bar then being flung off wildly at a different angle. The same could be said for its companion UGC 00719.

There are quite a few other galaxies in the immediate area. Only one, MCG +02-04-004 to the southeast of Arp 11 and closer to it than UGC 00719, has a redshift given. It apparently is not part of the group as it appears to be nearly 800 million light years distant, 60% further than the other two.

The galaxy just below UGC 00719 is 2MASX J01092954+1421169.

Further out there are galaxies with known redshifts. There is a distant 21st magnitude galaxy best seen in the enlarged cropped image that is 4.2 billion light years distant. It is southwest of Arp 11 and identified in the annotated image which gives the distances to galaxies with a known redshift based on 5 year WMAP data at NED. In the annotated image G preceding the distance is for galaxy while GC is for galaxy cluster and Q for quasar. The label is immediately right of the object. When not possible or identification could be confusing a line is drawn to the object.

I found three quasars in this image. But one is closer than some galaxies in the image and has a physical size indicating I'm seeing the galaxy itself, not just the quasar. Its FWHM is a good two seconds larger than that of the stars on either side of it. A quasar should be a point source. The other two fit the classic quasar. The classic blue color is obvious as well. Both are near the western (right) edge, one at the top the other near the bottom.

The annotated image shows that while Arp 11 and its companion are at about a half million light years they are surrounded by a group of galaxies with a distance of 780 million light years. This is the galaxy cluster SDSS-C4 2083 which NED lists as having 28 members. It is anchored by the large elliptical galaxy 2MASX J01092719+1415359 which is only one second of arc from the center of the cluster. So I've combined it with the cluster center in the annotated image even though its redshift puts it 20 million light years more distant than the cluster itself. This is well within expected variations in a galaxy cluster of this size. This happens twice in this field. Over near the eastern edge is the cluster SDSS-C4 2087 listed at 769 million light years that shares the same position (within one second of arc or one pixel) with the galaxy SDSS J011021.37+141642.2 listed at 713 million light years. This is an even larger discrepancy. No galaxy count is listed for this cluster. It seems to me this is just an extension of the first cluster.

To the right of Arp 11 is another odd galaxy. It appears to be much further away if size is any indication. It is 4.3 minutes nearly due west of Arp 11 and seems to have a tail on its east end that curves northward. With no distance data, I have no idea what it interacted with to create its odd tail. Seems worthy of including in Arp's catalog if he had noticed it but it's outside his image's field.

There are 3 asteroids in the image. The big and bright one is 13th magnitude Alemannia to the lower left of Arp 11. The other two are to the upper right near the top of the image. At magnitude 19.6 (230452) 2002 RF17 may be a bit hard to find. It is labeled in the annotated image. Immediately above it is the very oddly designated (42379) 2013 P-L. It is magnitude 18.2 so easy to spot. It has a designation that was new to me. When not named the designation is normally the year of discovery followed by a letter that denotes when in that year it was found. A means the first half of January, B the second half etc. I is not used. The second letter denotes when in the half month it was found. First found in January of this year would be 2010 AA, Second AB, again I is skipped. Once 25 are found then a number is used so after AZ comes AA1, AB1, AC1... through to AZ1 then AA2, AB2 etc. Hence the designation of asteroid 42379 made no sense to me. It was found in 1960 not 3 years in the future. If that was a name then that would be fine but the minor planet center doesn't show it as being named. It does show it used to be known as 1986 QH. But then the designation changed to 1999 RU119 before it became 2013 P-L. I had to find out more about the 1960 discovery to solve this one. Turns out there was a 1960 survey to find asteroids known as the Palomar-Leiden survey. This one was the 2013th found in that survey. It was then found to be the same as the other two asteroids and the survey designation replaced both with the orbit better defined by the later observations. One mystery solved. Old hat to asteroid hunters but new to me. There are three other survey's used to designate asteroids, the First, Second and Third Trojan Surveys T-1, T-2 and T-3. I've not run across any from those surveys as yet.

Arp's image is at:

http://ned.ipac.caltech.edu/level5/Arp/Figures/big_arp11.jpeg

December Observing: What to View

Jim Kvasnicka

This is a partial list of objects visible for the upcoming month.

Planets

Venus, Jupiter and Saturn: To start the month Saturn is 10° to the upper left of Venus and Jupiter is 7° to the lower right of Venus. Jupiter is lost from view around mid-month and reaches conjunction on December 27th. On December 10th and 11th Saturn and Venus are less than 2° apart.

Uranus and Neptune: Finder charts are in the September issue of Sky & Telescope.

Mars: Rises about 3 hours before the Sun.

Mercury: Rises about 1½ hours before the Sun to start the month but is too low to be seen after December 17th.

Meteor Showers

Geminids: Peaks the night of December 13-14. The waning gibbous Moon will be up.

Messier List

M2: Class II globular cluster in Aquarius.

M15: Class IV globular cluster in Pegasus.

M29: Open cluster in Cygnus.

M31: The Andromeda Galaxy.

M32/M110: Companion galaxies to M31.

M39: Open cluster in Cygnus.

Last Month: M27, M30, M56, M57, M71, M72, M73

Next Month: M33, M34, M52, M74, M76, M77, M103

NGC and other Deep Sky Objects

NGC 246: Planetary nebula in Cetus.

NGC 247: Elongated galaxy in Cetus.

NGC 869/884: The Double Cluster in Perseus.

NGC 972: Galaxy in Aries.

NGC 1365: Galaxy in Fornax.

Double Star Program List

Eta Cassiopeiae: Yellow primary with a rose colored secondary.

Sigma Cassiopeiae: Yellow and light blue stars.

Theta Aurigae: Bright white and pale blue pair.

1 Camelopardalis: White and pale blue stars.

32 Camelopardalis: Equal white pair.

Gamma Ceti: White primary with a pale yellow secondary.

Chi Tauri: White primary with a pale blue secondary.

118 Tauri: White and yellow stars.

Challenge Object

Arp 318 Galaxy Group: Galaxies in Cetus that includes NGC 833, NGC 835, NGC 838, and NGC 839.

More Mercury Transit photos - above: James Quach, below: Brett Boller.

Comet Observing Program

Jim Kvasnicka

This month we focus on the Comet Observing Program. To some astronomers there are no more wondrous and beautiful objects as comets. Since the invention of the telescope astronomers have searched the skies for new comets.
Comets are invisible except when they are near the Sun. When they are near the Sun and active, comets have several distinct parts:

Nucleus: Relatively solid and stable, mostly ice and gas with a small amount of dust and other solids.

Coma: Dense cloud of water, carbon dioxide and other gases sublimed from the nucleus.

Dust Tail: Up to 10 million km long. Made up of dust particles driven off the nucleus by escaping gases.

Ion Tail: As much as several hundred million km long. Made up of plasma and laced with rays and streamers caused by interaction with solar wind.

There are two levels of recognition for the Comet Observing Program.

Silver Level

- Observe at least 12 different comets.
- Two of the comets can be observed prior to January 1, 2001.

Gold Level

- Observe at least 18 additional comets.
- Two of the comets can be observed prior to January 1, 2001.

Your observations should include the standard information: your name, date and time, comet name, size of your telescope, location, observing notes, a sketch or image of the comet.
When you complete the Comet Observing Program you will need to submit a copy of your observing logs to me for review. If your logs are accurate and complete I will submit your name to the Comet Observing Program chair for approval. The chair will mail to me your certificate and pin which I will present to you at the next monthly PAC meeting.
If you have any questions regarding the Comet Observing Program or any other observing program, or need help getting started please contact me and I will be glad to help.

The planet Mercury is seen in silhouette, low center, as it transits across the face of the Sun Monday, Nov. 11, 2019, from Washington. Mercury's last transit was in 2016. The next won't happen again until 2032. Photo Credit: (NASA/Bill Ingalls)

Hyde Observatory Roof Repaired

Lee Thomas

PAC volunteers at Hyde Observatory have known for some time that the nearly-42-year-old rolling roof that protects the observing deck was – how can we charitably put it? – aging somewhat gracelessly. Or, more bluntly, it was making a lot of noise, not closing completely, and required some increasingly bothersome contortions on the part of operators to make it work.

There was the "trick" of pressing a metal bar against the drive belts on the motor to get the roof to move. Without the bar, the belts slipped and squealed and the roof sat unmoving like a block of stone.

And, as the gap between the wall and roof grew with each attempt at closing, the metal lock-down rods required more bending to make them fit, until they began to resemble pretzels.

Finally, last winter the roof simply froze. It wasn't just snow and ice up there. Spring thaw arrived, and still the roof wouldn't budge. Plus, there was the lurking fear: What if we got it open somehow, and then couldn't get it closed?

So, the Hyde Board voted to close the observatory for a few months. Engineer and Hyde Board Secretary Ron Veys theorized that the springs which push the roof down on its seals had aged and gotten out of adjustment. So, in quest of a quick fix, we purchased a house jack and a 4x4 and with the help of volunteers Brett Boller and Ethan Johnson, we cranked the roof up, adjusted the bolts on the springs and got it to move ... reluctantly, noisily, with a slightly incomplete close. But it worked.

The observatory re-opened in April. The tricks were applied, silent prayers and incantations were uttered with each roof operation and the fix lasted ... barely ... until early on the morning of October 24 when the contractor hired by Lincoln Parks & Recreation, Dickey- Hinds-Muir, lifted the roof off its trolleys with a crane and deposited it on the lawn, allowing them to work on its mechanical parts.

Ron's diagnosis proved correct: The problem was the springs, with maybe some added stress because of missing or damaged bearings in the wheels. Both springs and wheels were replaced. Concerns about the rails that the trolleys rolled on proved unfounded: they were fine and didn't require replacement. The roof was returned to its perch the same day, adjustments were made, the rods were bent back straight, and the crew reported that they could actually move the roof by pushing on the trolleys – with no assist from the motor!

During the 10 months that all this took, a lot was going on behind the scenes. The architectural company that designed the observatory 42+ years ago, Clark Enersen Partners, was enlisted to appraise the problem and recommend a long-term solution. Ancient blueprints from Clark Enersen and Lincoln city archives were retrieved that amazingly showed the parts and original suppliers, two of which were still in business (though not manufacturing exact replacements.)

Parks & Recreation Department personnel, particularly J. J. Yost, Facilities Manager, and Bobby Bartja, Parks Planner, worked through the complex process of bidding and managing the contractors. And Jamie Kelley, who is Hyde's go-to Parks liaison threaded the bureaucracy for us.

The project also includes new siding for the rolling roof, parts of which were rusting and corroding – with actual holes appearing in places. The new panels should be in place before serious snow flies.
Total price tag is likely to be in excess of $30K, most of which will come from trust funds established by Mrs. Hyde and Carroll and June Moore (Carroll was the founder of Hyde Observatory) ... and from the dollar bills and pennies deposited in the donations box at Hyde.

Next: An all-new projection and sound system for the classroom. And another 40 years of the Prairie Astronomy Club and Hyde Observatory showing the universe to thousands of Lincoln kids and their parents. Which makes it all worthwhile.

A Non-profit plans to Reopen Yerkes Observatory

The University of Chicago and the Yerkes Future Foundation (YFF) are pleased to announce an agreement in principle for transfer of ownership of Yerkes Observatory and related property located in Williams Bay, Wisconsin to the Yerkes Future Foundation.

Over the next several months, both organizations will be working closely on all aspects of the proposed transfer. Additional information will be made available as appropriate.

YFF's objectives include restoration and refurbishing of the telescopes and building, reopening the space for visitors and establishing educational, research, seminars and various additional opportunities for students, astronomers, astrophysicists and others.

Students and faculty in the University of Chicago's Department of Astronomy and Astrophysics have continued to do educational and research work at Yerkes Observatory in the past year. The transfer to YFF will mark the conclusion of the University's historic affiliation with Yerkes, allowing the University to make further investments in the future of the field, including projects such as the Giant Magellan Telescope.

Both the University and YFF would like to express their appreciation for the support shown by the Yerkes family, the Village of Williams Bay and many educators and scientists.

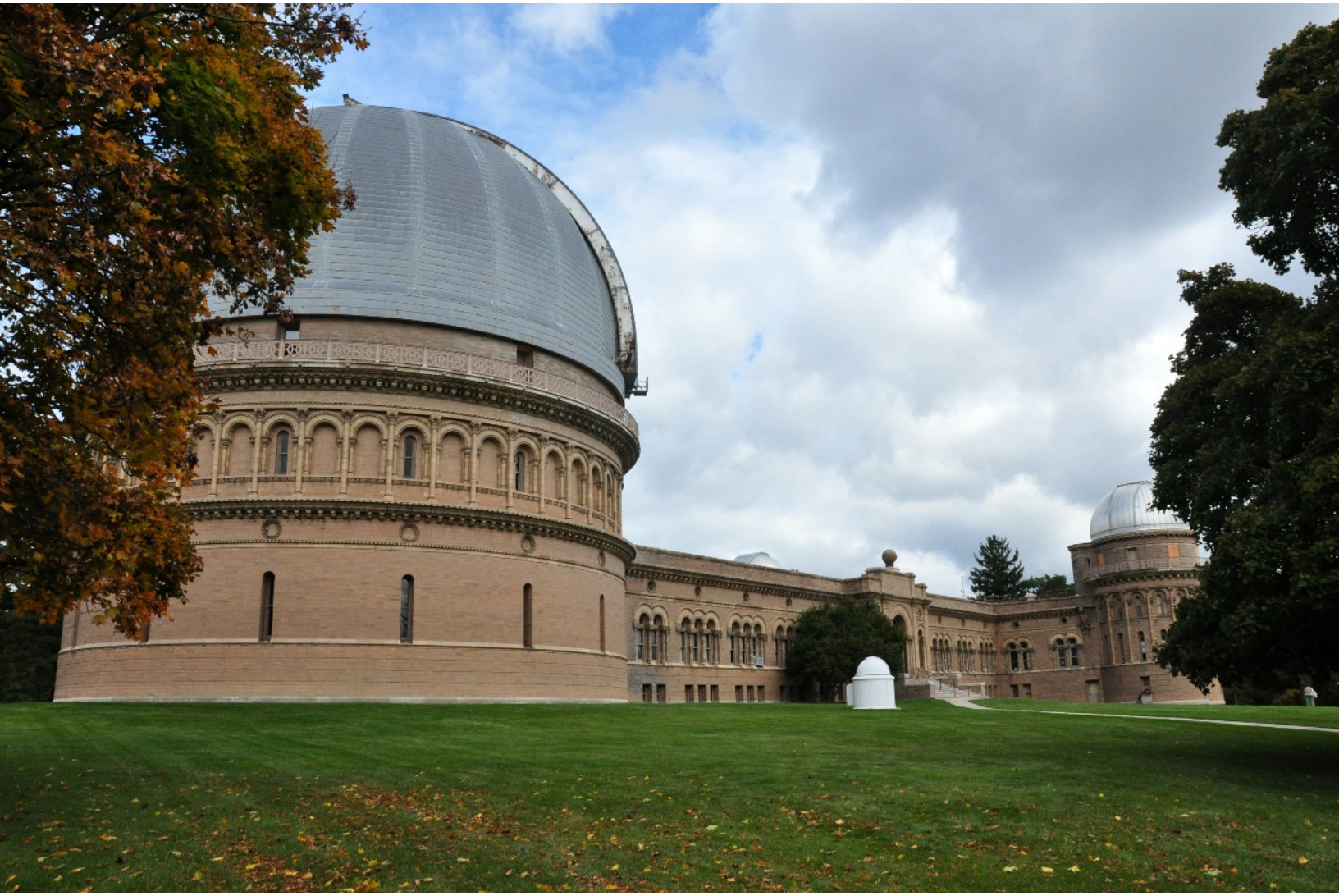


Image courtesy of Wikicommons user munford

President's Message

by Dave Knisely

Ah Christmas! This holiday, more than any other, takes me back to my beginnings as a young amateur astronomer. I got my first "good" telescope on Christmas morning 22 years ago, and for several nights afterwards, I would just sit in a lawn chair in the back yard under a cold December moon with my brand new 2.4 inch refractor, feeling an incredible sense of power.

This was MY TELESCOPE, the long awaited instrument that would take me to the stars! Often, I would wonder eagerly just what views awaited me as I sat in the cold. I had visions of Martian markings and Saturnian rings, of distant nebulae and galaxies, just waiting for me to explore. It was a little disappointing when I found out just how difficult and dim Deep Sky objects were, but that feeling of power still remained, egging me on to go deeper and fainter. I learned most of the techniques I use today to push my vision to its ultimate limits on that little 2.4. I have long since gone to using large apertures and fancy filters for much of my viewing, but I still have my little beat-up 2.4, stored in my closet. On its side are the faint marks of the tape I used when I strapped a 2 inch reflector to it, and the dent in its tube tells of when it crashed against the mount of my eight inch after the cradle broke. I still have the crude drawings I made with it and the notes I took while learning where things were.

My 2.4 inch refractor reminds me of my beginnings, and helps me realize just how incredibly far I have come in this wonderful hobby of mine. At star parties, some people seem amazed at how quickly and easily I find faint and obscure objects without star charts or setting circles. They are sometimes astounded when I correctly identify the number of a faint galaxy after only a single glance. I woe all this ability to one very special Christmas gift given so many years ago, and to the years of wonderful experience which it gave to me. To this day, it is the best gift I ever received.

Editor's Note: while looking for a suitable article from the Archives I did a double-take on this one. 1990 - 22 years = 1968, the same year I got my first telescope - a 2.4" Tasco refractor. Before that I only had a pair of low power binoculars and no way to see the rings of Saturn, which was very frustrating.

Mark Dahmke

CLUB MEMBERSHIP INFO

REGULAR MEMBER - $30.00 per year. Includes club newsletter, and 1 vote at club meetings, plus all other standard club privileges.

FAMILY MEMBER - $35.00 per year. Same as regular member except gets 2 votes at club meetings.

STUDENT MEMBER - $10.00 per year with volunteer requirement.

If you renew your membership prior to your annual renewal date, you will receive a 10% discount.

Club members are also eligible for special subscription discounts on Sky & Telescope Magazine.

CLUB TELESCOPES

To check out one of the club telescopes, please contact a club officer. Scopes can be checked out at a regular club meeting and kept for one month. Checkout can be extended for another month if there are no other requests for the telescope, but you must notify a club officer in advance.

100mm Orion refractor: Available
10 inch Meade Starfinder Dobsonian: Available
13 inch Truss Dobsonian: Needs repair
10 inch Zhumell: Needs mount

CLUB APPAREL

Order club apparel from cafepress.com:

Shop through Amazon Smile to automatically donate to PAC:

amazonsmile

CLUB OFFICERS

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