



**Peoria Astronomical Society, Inc.**

P.O. Box 10111 Peoria, IL 61612-0111  
Section of Peoria Academy of Science  
Affiliate of the Astronomical League  
[www.astronomical.org](http://www.astronomical.org)

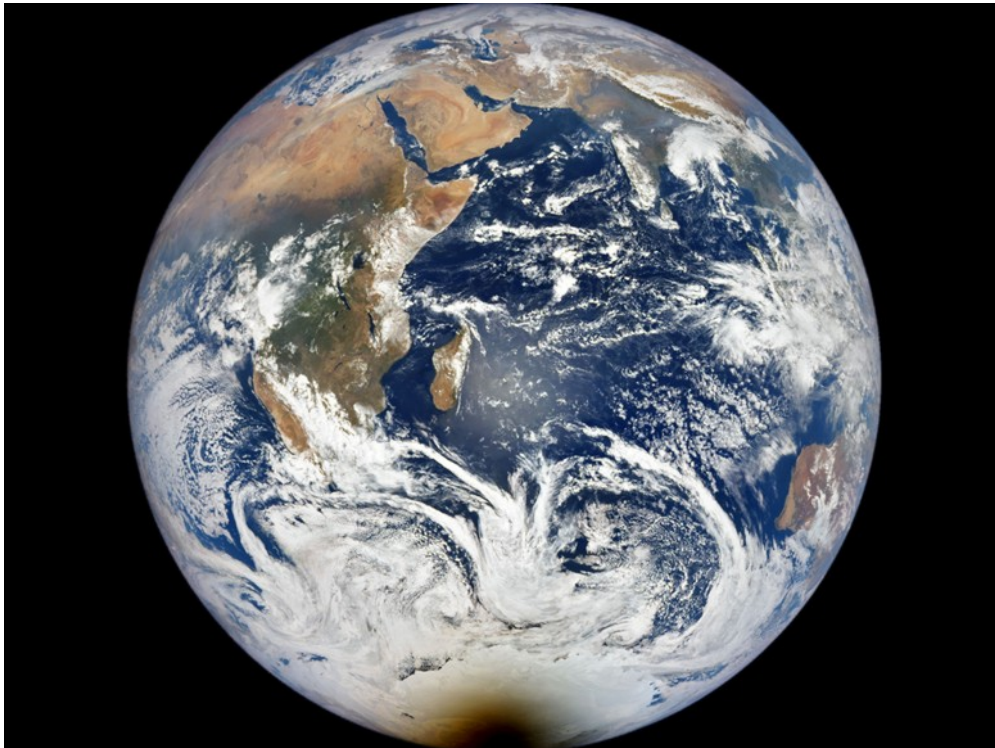
# STARLITE

*Spring, 2022*

*WHAT'S IN THIS ISSUE?*

List of Board of Officers & Directors  
Editor's Notes  
Address/email changes  
New Members  
2022 Meteor Shower Schedule  
Comet Finder  
Presidents Message  
Riverfront Planetarium News  
25 & 50 years ago

Submitting photos & Articles for Starlite  
Caterpillar Matching Gifts  
Reflector Magazine & NCRAL info  
Programs for 2022  
Board Meeting Information & Minutes  
Comet Leonard-Second Chance  
Photos  
Northmoor Schedule & Jubilee Schedule  
A Give away! Do you want it?



Eclipse of the Earth on December 04, 2021 from NASA (DSCOVER)

### ***Officers:***

President: Dan Son, [sonshine1992@gmail.com](mailto:sonshine1992@gmail.com)  
Vice-President: Brian Bill  
Secretary: Phil Burroughs  
Treasurer: Dave Monroe, [dave.monroe@comcast.net](mailto:dave.monroe@comcast.net)

### ***Directors:***

Parliamentarian: Dave Monroe, [dave.monroe@comcast.net](mailto:dave.monroe@comcast.net)  
Nominating Chairman:  
Legal Agent: Rodney Nordstrom  
Northmoor Chairman: Dan Son, [sonshine1992@gmail.com](mailto:sonshine1992@gmail.com)  
Jubilee Chairman: Jesse Hoover

### ***PEORIA ASTRONOMICAL SOCIETY IS NOW ON FACEBOOK:***

[www.facebook.com/PeoriaAstronomicalSociety](http://www.facebook.com/PeoriaAstronomicalSociety)

### ***Update your address, phone or email changes***

Please notify Dan Son at [sonshine1992@gmail.com](mailto:sonshine1992@gmail.com) if you will be getting a new mailing address, email address and/or phone number. It is important that he has your personal information correct so you will continue to receive the Starlite and the Reflector. He would also like to receive any changes to your e-mail address as this is part of his database.

If you would like to join the Peoria Astro e-group or if you have changed your e-mail address, please notify Dan Son at [sonshine1992@gmail.com](mailto:sonshine1992@gmail.com) with your e-mail address (for in-club use only – not given out to other sources). He does not need your mailing address or phone number. If you are not a member of the e-group, you may want to consider joining.

### ***NEW MEMBERS:***

The Peoria Astronomical Society welcomes new members: Subhasis Mukherjee, Craig Himegarner, Jim Carroll and Dean Regas

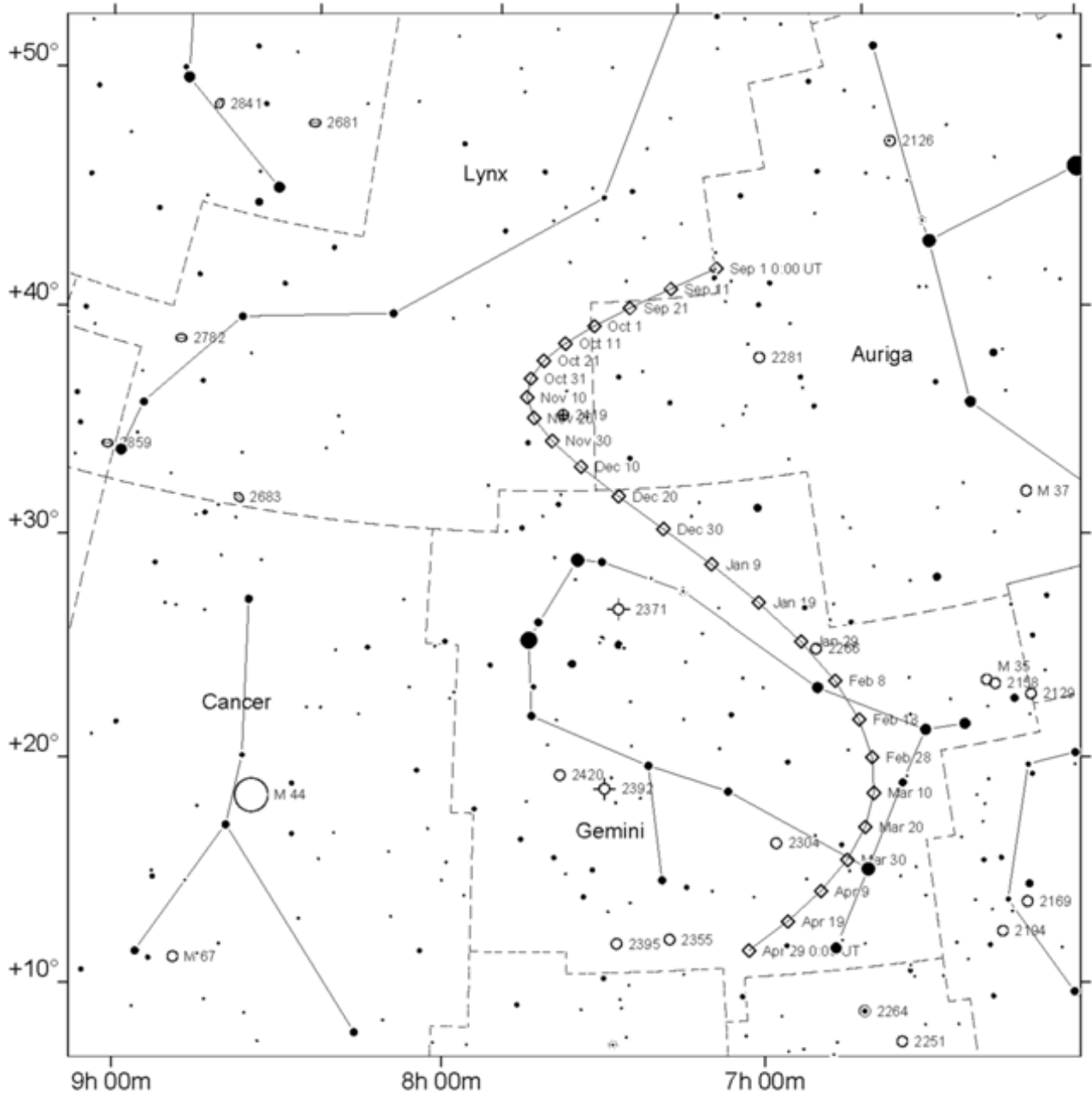
### ***2022 Meteor Shower Schedule:***

The Lyrids meteor shower takes place April 22-23 after midnight when Lyra rises. The last quarter Moon will also be rising after midnight so maybe look early. The Lyrids usually produce 10 to 15 meteors per hour.

Debris from Halley's Comet will appear early morning of May 6<sup>th</sup> as the Eta Aquarid Meteor shower. You might see anywhere from 20 to 60 per hour and the Moon will in first quarter so as not to interfere.

**Comet Hunting:**

There are always comets out in the night sky and right now we have 2 with a magnitude of less than 10. C/2019 L3 (ATLAS) and 19P/Borrelly are both evening comet visible in small telescopes. Information comes from <https://cometchasing.skyhound.com/>



Finder chart for Comet C/2019 L3 (Atlas)

## **Presidential Ramblings:**

We have survived this winter, snow and all to start looking forward to clear, warm nights with a telescope. Hope you have been cleaning, repairing parts, looking at eyepieces or filters for your observing fun. I have a new Explore Scientific 24mm eyepiece that I want to use and enjoy. Keep an eye out for an announcement about a Messier Marathon at Jubilee at the end of March. Spring is about renewal of life and it is true with things we care about.



I have enjoyed taking on the Starlite and getting articles for you and I am truly amazed at all the members we have that are doing Astrophotography. Look at all the pictures in this Starlite (this is a small sample that were submitted) and I enjoy the work and efforts they made to get these photos. Nothing comes easy and when I see these photos I know how much trial and error they took on, learning software and trying their patience when things did not go right. With time they succeeded at what they wanted to do and are still learning as they continue their work.. Thanks to everyone for submitting articles and photos for this issue.

## **Riverfront Planetarium Report:**

Would you like to participate in an Interplanetary 5K event or do a 1 mile fitness walk. Great for all ages and a good family outing. Information can be found here:

<http://www.peoriariverfrontmuseum.org/dome-planetarium/5k-race>

A new exhibit has opened at the Museum about the exploration of the Moon. This exhibit features NASA artifacts, including hardware from the Command and Service Module, pieces of a space suit and a jacket worn in space by Ken Mattingly on Apollo 16. Not to mention a highly realistic 13 foot diameter artwork of the Moon. Info here:

<http://www.peoriariverfrontmuseum.org/exhibits-collections/exhibits/moon>



# A Primer for the Beginner

## Lesson Two: Movements of the Constellations

by John Barra

*Lesson One: Learn the Sky appeared in Starlite Winter Issue #128, December 1996*

As you watch the same constellations over a period of months, you will complete the second step in learning the sky: learning the paths that different constellations take across the sky. Study your planisphere to follow their patterns of movement. These patterns will help you learn which constellations are visible during different times of the year and how long they are visible for.

The constellations near the North Star are visible all year long. They are called circumpolar constellations. However, when such constellations are below the North Star (due north and near the horizon), they are more difficult to see. It is better to view them when they are east, south ("above"), or west of the North Star. Examples of circumpolar constellations are Ursa Major, Cassiopeia, and Cepheus.

Another group of constellations rise generally in the east, travel across the sky to a point near the zenith or directly overhead, and set generally in the west. They are best viewed when they are up high in the sky, between forty-five degrees above the eastern horizon and forty-five degrees above the western horizon. These constellations are visible during normal nighttime viewing for approximately half of the year. Among this large group of constellations are Hercules, Cygnus, and Leo.

Finally, there are other constellations that rise between the south-east and south and set between the south and southwest. They may be viewable only two to four months out of the year. Because they are always low in the sky, they are often harder to see. You may need

to find an observing location that does not have city lights to the south to view these constellations effectively. Included in this group are Scorpius, Cetus, and Hydra.

You will soon learn other patterns. All the constellations are in our galaxy; however, those found within our solar system's galactic plane are considered to be in the "Milky Way." You will quickly see that these are much more dense with stars than the rest of the constellations. You will also learn the twelve constellations of the Zodiac. They too are found in the plane of our solar system, where you can also find the Sun, the Moon, and the planets.

### KEEPING A STAR LOG

You should keep a journal or star log beginning with the first time you gaze at the stars. Such a log will record your progress. In future years, you will be able to look back with satisfaction at what you have accomplished. It will also remind you to take a second or third look at objects you viewed in the past and found particularly noteworthy. Your journal will tell you when the best time would be to view these objects.

Your log book doesn't have to be anything fancy. It may be as simple as a spiral notebook. In fact, that is what I used in 1991, when I started my avocation of stargazing by learning the constellations. It is what I still use.

I suggest you create a monthly calendar on the left-hand pages. You can make the calendars a month or two in advance. List the dates of the phases of the Moon and the dates of any special events such as eclipses or occultations. You might consider subscribing to Astronomy or Sky & Telescope magazine. They contain such calendar information.

Put on your calendar page a list of constellations or other objects you intend to study or view that month. You can then use the right-hand pages to record your observations. Your entry can be as simple or as detailed as you choose. You should at least record the date, time, and place of viewing; the sky conditions; and a brief description of what you viewed. You may also want to include a simple sketch from time to time. At first you will be mainly listing the constellations you have studied and viewed. You may also want to

keep, on a separate page, a running list of constellations as you learn them. Before long you will be starting lists of other objects as well.

You'll be well on your way to learning the sky. At the same time you will also come to know the common names of some of the brighter stars within those constellations. Knowing them will also help you learn how to starhop. And soon you will be ready for Lesson Three.

NEXT ISSUE: LESSON THREE: HOW TO USE YOUR TELESCOPE ON OBJECTS IN THE SOLAR SYSTEM

*In future years, you will be able to look back with satisfaction at what you have accomplished...*

### Astro-Jeopardy! Answer #5

A pattern of stars that makes up part of a constellation.

### Astro-Jeopardy! Answer #6

The phase of the Moon during a solar eclipse.



## 50 Years ago:

THOSE AGONIZING QUASARS - R.P. Van Zandt

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Astronomical discoveries are coming to us at a dizzying pace, with findings so incredible that they put "Alice in Wonderland" to shame. I have picked out excerpts from R.C. Dickinson's very well written article that I want to share with you. It appeared in the December 1971 issue of "The Guide Star", a publication by The Amateur Astronomer's Association of Pittsburgh.

"From the first note of their unusual nature, the Quasars seemed impossible. The more that is learned about them, the more impossible they seem. Yet, most astronomers admit that they exist.

What was the first, incredulous thing noticed about Quasars? Well, let it be said that many photographs of Quasars had been taken for years; they appear on such plates as those of the National Geographic Society - Palomar Observatory Sky Survey. But on these plates, they appear simply as very faint stars. When their unusual nature was first found, by a combination of radio astronomy and optical red shift spectrograms, they seemed to be the most distant objects in the universe. The great first anomaly is that, if this is really true, they are giving out unbelievable amounts of energy as light and other electromagnetic radiation. For instance, Quasar 3C9 (1) has been found, by red shift measurements, to be moving away from us at more than 80% of the velocity of light, or about 150,000 miles per second. If this is true, and by all tests, it certainly seems to be true, then it is possibly 100 times as bright as an average galaxy, such as the Milky Way, or M31. Again, if this brightness is true, and if it is a galaxy, it would have 100 times as many stars as our average galaxy. And still one more "again", if it really were such a giant galaxy, it would be big enough to show a distinctly oval shape on a Mt. Palomar 200 inch photograph. But, it only shows a tiny dot, just a faint "star" among many others.

It is interesting to learn how it was discovered that these faint star-like dots seem to be pouring out such vast amounts of energy. One of them, 3C273 makes an especially interesting story. Well, 3C273 was first identified as a relatively compact radio source, but no optical object was identified with it. By clever work in Australia in recording the exact moment of radio "blackout" as the Moon occulted it, the location of 3C273 was pin-pointed to an optical object. Close examination of the new photographs show indications of a jet coming from it.

But, as the saying goes, you ain't heard nothin' yet! Take the case of 3C279. This Quasar was studied in October 1970 and in February 1971 by radio interferometry. This works in a way similar to optical interferometry, first tried on the Mt. Wilson 100 inch. A long beam was mounted across the open end of the telescope and two 45 degree mirrors were mounted 20 feet apart to direct star light to two other mirrors which directed it down to the main objective mirror. By examination and measurement of the resulting interference patterns or "fringes", the separation of hitherto inseparable double stars and even the diameters of a few stars were measured. The longer the base line of the two outer mirrors, the smaller the separation or diameter that can be measured. So radio interferometry works in a similar way, except that the fringes are much farther apart because of the longer wave length. 3C279 was studied with parabolic radio telescopes 2500 miles apart, one at Goldstone in California and the other at Haystack in Massachusetts. In the October 1970 study, regular fluctuations in signal strength and with minima  $3\frac{1}{2}$  hours apart were found. This was correctly interpreted to be a result of the Earth, and hence the 2500 mile interferometer, passing through the interference fringes of a double point source. OK! So there are two of them, so what else is new? Just this: The February 1971 study showed the minima to be  $4\frac{1}{2}$  hours apart and 12 days later, the time had increased by 5 minutes. The punch line is this: If 3C279 is as far away as the red shift indicates, the increase in time between minima for the period between October and February indicates the components are separating with a velocity as high as 10 times the velocity of light! Working backwards,  
cont'd

THOSE AGONIZING QUASARS - cont'd

components would have started to separate in 1967; 3C279 actually did show unusually intense emission at that time.

But you and Einstein and a lot of others say this just can't be! In a report (2) in "Science" for July 16, 1971, signed by nine scientists who worked on the project, six carefully thought out theories to account for this most strange phenomenon are discussed at length. All six theories are found to be untenable in some respects. Meanwhile, a complete explanation would be most welcome.

(1) = The 3C stands for the third Cambridge Catalog of Radio Stars.

(2) = From which much of the information for this treatise was taken. -- R.C.D.

How's that for a Science Fiction thriller? --- R.P. Van Zandt

### **Submission of photos / article content for the Starlite: Jesse Hoover**

If you have a photo that you would like to submit for the Starlite, please send these to Jesse Hoover [hooveje@gmail.com](mailto:hooveje@gmail.com) or Dan Son [sonshine1992@gmail.com](mailto:sonshine1992@gmail.com) along with a little write-up about the photo. Photos can be from star parties, club events, personal view, etc. Astrophotography is encouraged. Also, if you have educational content, tips, techniques, lessons learned or how-to articles with photos, we encourage that material for the Starlite. We can also put these on our Facebook page if you so desire. <https://www.facebook.com/PeoriaAstronomicalSociety>

### **The Caterpillar Matching Gifts Program: Brian Hakes**

As of July 1, 2012 the Cat matching gifts program changed. Employees/Retirees are asked to submit matching gift forms electronically via the Caterpillar Foundation website, [www.caterpillar.com/foundation](http://www.caterpillar.com/foundation). The process is easy. Once you made your gift to the PAS you can go online to the Cat Foundation website and complete the electronic form, there is no paper involved. Once the form is registered with the foundation they will notify the PAS and the treasurer will then verify the gift has been received. Because there will be no mailings, the turnaround time for the whole process will be negligible. This is especially advantageous at the end of the calendar (tax) year. This is an excellent way to support the PAS. If you can, please participate in this generous program. This is a great way to help the society and the promotion of astronomy in the greater Peoria area.



## **Reflector:**

Reflector Magazine digital edition is available for download

You may access an archive of digital issues from the AL website by visiting: <https://www.astroleague.org/reflector>

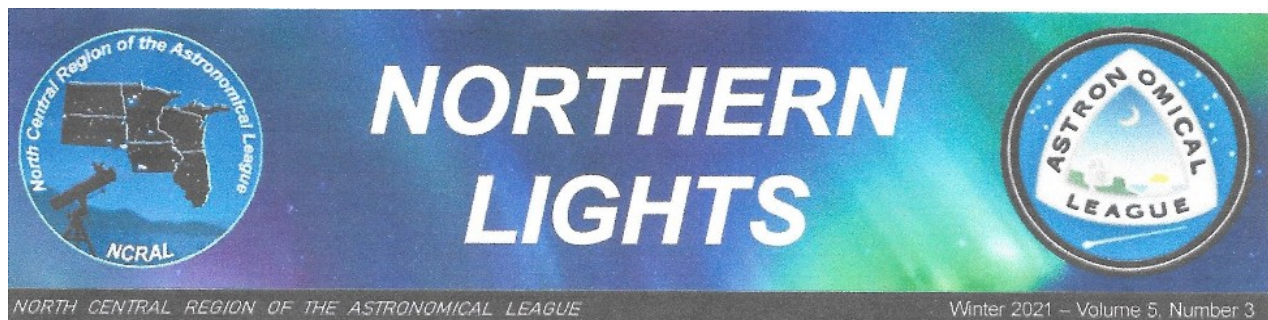
## **NCRAL Newsletter:**

The North-Central Region of the Astronomical League (NCRAL) is made up of member societies... the six states commonly thought of as the Upper Midwest of the USA, plus the Upper Peninsula of the state of Michigan. The PAS is a member of the NCRAL.

Their Region Newsletter, also named “Northern Lights”, has been resurrected and is better than ever! The latest issue’s can be read on their website can be found here:

<https://ncral.wordpress.com/newsletter-archive/>

You can access the current issue and all other back issues through this link.



## **Add Your Email Address to NCRAL Member Database**

Add your email address to the NCRAL member database now so that you can get direct mailings of NORTHERN LIGHTS and important and timely announcements about Regional conferences, star parties, and so forth. Your email address will never be shared with or sold to outside entities. Sign-up takes only about a minute. You’ll need to provide your name, email address, astronomy club affiliation (including at-large), and indicate if you hold particular positions within your club. Go to the following case-sensitive URL to add your information to our database: <https://goo.gl/gsS8SF>



## **Program Schedule 2021– 2022 5<sup>th</sup> – All speakers confirmed**

We expect to be meeting face-to-face in the Dome Planetarium at the Peoria Riverfront useum (svZ-speaker via Zoom)

March 2, 2022	The Artemis Mission to the Moon (svZ) Patricia Moore, Communication Strategist – Museum Outreach Deep Space Exploration Systems, NASA Johnson Space Center
April 6, 2022	Solar System Cratering (svZ) Carlisle Wishard, Ph.D (candidate), Purdue University
May 4, 2022	All New Astro-Jeopardy II Brian Bill

**Inclement weather notice:** Monitor email (e-group), local radio stations or PAS Facebook Page if a program, board meeting, viewing, or star party may be canceled due to weather. If we determine a risk in the weather, the Society will cancel the event. If we host an event and you feel the weather or road conditions are questionable, please take the safest actions and do not attend the event.

### **PAS Minutes: from January**

**Minutes:** (Phil Burroughs) - There were some minor corrections to the November 2021 PAS Board Meeting Minutes. The minutes of the November 2022 Board Meeting were approved as corrected on a motion by Eric and seconded by Sheldon.

**Treasurer's Report:** (Dave Monroe) –Dave presented the December Treasurer's Report. Receipts were 1550.00 and disbursements were \$ 29.90. . Dave also presented a year end Treasurer's Report. For the 2021 year, income was \$ 6,727.40 and expenses were \$ 3,382.98. Overall PAS had a net increase of \$ 3,344.42. The Treasurer's Report was approved.

**Jubilee:** (Jesse Hoover) – Dan checked on Jubilee about 2 weeks ago and everything was okay. Eric said Stu Whitaker is the new Jubilee Park Ranger and in the future he will not lock the gate during hunting season to the observatories. Kelly Allen takes care of the leases and plans to amend our Jubilee lease for a 30 year extension. Eric is going to check whether the gate can be removed.

**Northmoor:** (Dan Son) – Dan sent an E-mail to keyholders requesting dates they cannot work for 2022 schedule. He checked on Northmoor and found it to be okay. Dan made motion and Brian seconded the motion to give away the 8" Coulter at the May members meeting. The motion passed.

**Nominating:** (Jesse Hoover) –None

**Legal Agent:** (Rodney Nordstrom) – Rodney has made the draft of the Annual Report for the State of Illinois. Dave noted 2 minor changes. Bylaws may need to be reviewed and changed in the future.

**Membership/Alcor:** (Dan Son/Scott Swords) – New member is Subhasis Mukherjee. Dan will be taking over membership and Alcor.

**Starlite:**(Dan Son) – Deadline for articles for the Spring Starlite is the February Board Meeting.

**Program:** (Sheldon Schafer). – Sheldon said there are no changes to the program.

**Peoria Academy of Science:** (Renae Kerrigan) – Renae Kerrigan will let us know what is going on with the Academy.

**Light Control:** (Jesse Hoover) – None

**Website:** (Stan Pope). – None

**Old Business:** Friends of Donovan has a meeting the evening of January 24

### ***My Second Chance to See Comet Leonard***

Just like the days of old, I have some apprehension when I hear that a major comet is coming. I'm not concerned about earthquakes or crop failures. I just wonder if I will be able to get a good look!

We know in advance where a comet will appear in the sky, but we don't know what it will look like. So, I get excited when I hear that a bright one is approaching. Even with some good planning, success is uncertain.

Comet Leonard Comes to Town

As C/2021 A1 (Leonard) approached us, it was visible in the Northern Hemisphere before sunrise. I'll make no excuses: I wasn't motivated to get out of bed to look for it. I waited until it moved into the evening sky.

Unfortunately, the evening view was unfavorable. The comet was visible for only a short time after sunset and was very low in the sky. I made a couple of trips to the edge of the city but found the sky too hazy to see the comet.

Success in Australia

My astronomy budget didn't allow for a trip to the Southern Hemisphere, but for \$15, I was able to remotely operate a telescope in Australia. On my first try, I got a very good, sharp image.

I enjoy looking at details of a good image, but I especially enjoy standing outside and looking at objects "in person."

Maybe I will set my alarm next time. By John Manney

*Photos from Members*



*by James Armstrong*



*by John Mowack*





*by Jack Schmitz*



*by Nic Napier*



*by Subhasis Mukherjee*



*by Tim Lester*





*Done some 25 years ago by Eric Clifton and Greg Neaveile*



*By Tim Lester*



### Northmoor Hosting Schedule Dates for 2022

Date:	Keyholder	Helper 1	Helper 2
May 21	Sheldon Schafer	Brian Austin	Larry Reeves
May 28	Terry Beeachler	John Crow	John Manney
June 04	Dan Son	Brandt Bechtold	Jesse Hoover
<b>June 11</b>	Gerald Horst	Brian Bill	Rodney Nordstrom
June 18	Bob Pauer	Dave Grebner	Elias Samaha
June 25	Phil Burroughs	Jesse Hoover	John Crow
July 02	John Lyle	Trent Widmer	Brandt Bechtold
July 09	Dan Son	Rodney Norstrom	Brian Austin
<b>July 16</b>	Bob Pauer	Elias Samaha	Jesse Hoover
July 23	Gerald Horst	Larry Reeves	John Crow
July 30	Dan Son	Trent Widmer	Brian Bill
Aug 06	Sheldon Schafer	John Manney	Dave Grebner
<b>Aug 13</b>	Phil Burroughs	Brian Austin	Elias Samaha
Aug 20	John Lyle	Brian Bill	Dave Grebner
Aug 27	Sheldon Schafer	Brandt Bechtold	Phil Burroughs
Sept 03	Terry Bachler	Rodney Nordstrom	Larry Reeves
<b>Sept 10</b>	John Lyle	Dave Grebner	Trent Widmer
Sept 17	Bob Pauer	Jesse Hoover	John Manney
Sept 24	Phil Burroughs	John Lyle	Brian Austin
Oct 01	Terry Beachler	Rodney Nordstrom	Larry Reeves
<b>Oct 08</b>	Gerald Horst	Trent Widmer	John Manny
Oct 15	Dan Son	Elias Samaha	Brandt Bechtold

*If you have a conflict with any dates, let me know as early as possible and ask the Northmoor group for help to switch dates with another member. Everyone has 4 dates this year with 22 weekends and Bold print is full Moon weekend. Thanks Everyone.*

2022 Jubilee Maintenance Schedule		
(May 7th 2022 to Oct 1st 2022)		
May 7th	Jesse Hoover	Gary Bussman
May 14th	Eric Clifton	Gary Bussman
May 21st	Brandt Bechtold	Jon Crow
May 28th	Steve Russell	Dan Son
June 4th	Jesse Hoover	Gary Bussman
June 11th	Eric Clifton	Brian Bill
June 18th	Brandt Bechtold	Jon Crow
June 25th	Steve Russell	Dan Son
July 2nd	Jesse Hoover	Jon Crow
July 9th	Eric Clifton	Brian Bill
July 16th	Dan Son	Brandt Bechtold
July 23rd	Jon Crow	Steve Russell
July 30th	Brian Bill	Eric Clifton
Aug 6th	Jesse Hoover	Gary Bussman
Aug 13th	Brian Bill	Brandt Bechtold
Aug 20th	Jon Crow	Steve Russell
Aug 27th	Dan Son	Eric Clifton
Sept 3rd	Jesse Hoover	Gary Bussman
Sept 10th	Brian Bill	Brandt Bechtold
Sept 17th	Jon Crow	Steve Russell
Sept 24th	Jesse Hoover	Dan Son

**Responsibilities:**

- \* Check each building to ensure security of equipment.
- \* Sweep floors, mow lawn and trim around buildings, blow or sweep off grass clippings from walkways.
- \* Mowing once a week will help prevent clumping and the need to sweep up clumps.
- \* Bring gas to top off mower tank. Currently there is no line trimmer at Jubilee.
- \* Since only two people are scheduled each week, it is imperative they ensure that someone goes to Jubilee and perform scheduled tasks.
- \* Please notify me of any schedule conflicts or problems with the equipment.

**Jesse Hoover: 309-258-0343**

## **Give Away!!**

We have an old 8 inch Coulter f4.5 I believe, that the Society does not use. We would like to know if any club members would like it. If you would email me (Dan Son). If we get more than 1 person we will draw the name out of a hat at the May members meeting. We would like the winner their but it is not necessary. I have a picture of the scope and it the mirror is dirty. It needs some TLC and uses a helix focuser made out of PVC to my best guess. Email me at [sonshine1992@gmail.com](mailto:sonshine1992@gmail.com)

