Skylights

Newsletter of the Astronomical Society of Northern New England

JUL 2021

Member of NASA's Night Sky Network

Astronomical League

ASNNE MISSION

ASNNE is an incorporated, non-profit, scientific and educational organization with three primary goals:

1) To have fun sharing our knowledge and interest with others.

2) To provide basic education in astronomy and related sciences to all who are interested.

3) To promote the science of Astronomy.

What's Up In July

By Bernie Reim

We have now reached the first full month of summer. This July holds plenty of action and many interesting events in store for all of us. There is nothing like gazing deeply into a clear and warm summer night with some understanding of what we are really looking at to spark our imaginations and create a desire in us to learn more about where we really are and the nature of our celestial neighbors that share the sky and our little corner of the universe with us.

The highlights this month include a very close conjunction of our two next-door neighboring planets, Venus and Mars on the 12th. Jupiter and Saturn are both rising before midnight now approaching their oppositions next month when they will be at their best for the year. The asteroid Vesta can be seen traversing a rich field of galaxies in Virgo now. Pluto reaches opposition on the 17th and there will be several nice conjunctions of the moon with bright planets. No less than 3 comets will be visible this month through telescopes and the Delta Aquarid meteor shower peaks on the 29th emanating from an area of the sky in Aquarius near where Jupiter is now located.

We are just passed an eclipse season now, with the next one not due until December 4, about two weeks before the winter solstice. That will be a total solar eclipse visible only over parts of Antarctica, taking roughly an opposite path across the earth that the recent June 10 annular solar eclipse took over Greenland and Russia. That one was only a partial eclipse for us here right at sunrise, but it was still well worth seeing and photographing. That was the strangest sunrise we had in 63 years and I was surprised about how few people shared the beach with me to enjoy this great event.

If I could have seen it the very second it rose out of the Atlantic, the sun would have looked like a giant fiery canoe flying just above the ocean with its luminous bow and stern curving towards the heavens, perhaps seeking to return to its native lands on a truly fantastic voyage. No wonder ancient cultures had strange interpretations and explanations for unusual events that they could witness without an understanding of what was really happening. In any case, that partial eclipse should prepare us for the next total solar eclipse visible right here over Maine starting in Bethel and passing right over our highest point, Mt. Katahdin, in less than 3 years on April 8 of 2024.

Carefully watch and try to photograph Mars and Venus as they appear to get closer each evening until their close conjunction on Monday the 12th when they will be separated by less than the width of the full moon, which is half a degree. Just as Jupiter and Saturn get fairly close every 20 years, Venus and Mars get fairly close about every 2 years, but this will be their closest approach until 2034, so don't miss it.

The pair will meet in the constellation of Leo just to the west of the King star, Regulus. That is where the sun was located for that amazing total solar eclipse that I saw on August 21 of 2017 along with about 60 million others. Regulus even showed up in one of my pictures of the solar corona reaching 4 million miles into space around high noon.

Try to catch Venus passing right through the Beehive open star cluster in Cancer the

"Continued on page 2"

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What's Up "*Continued from page 1*"

crab on the first two nights this month. You will need binoculars since the Beehive cluster will appear very faint and low on the horizon and it will not be completely dark yet. Use this opportunity to learn more about our unique and individual next-door neighbors in space. If we could make them trade places somehow, Mars would warm up and Venus would cool off, and we could have two more living planets in our solar system. Venus has by far the longest day; it is 243 days long, even longer than its year which is 225 days long. Venus rotates extremely slowly, about 4 mph, or walking speed. It also rotates in retrograde, so the sun rises in the west. The earth-sun-Venus system revolves in a perfect resonance. There are 5 inferior conjunctions for every 8 earth years and 13 Venus years. All 3 of those numbers belong to the Fibonacci sequence when you just add the two previous numbers to create the next number. Many things in nature operate that way including the growth of most trees and bushes and plants.

Remember that we discovered trace amounts of phosphine gas, 20 ppb, in the Venusian atmosphere last fall. This is extremely intriguing since only a living decay process through bacteria or tiny microbes can create this gas. Probably nothing can live on its surface at 900 degrees F and constant sulfuric acid rain through its 97% carbon dioxide runaway greenhouse-effect atmosphere, but just maybe something could live higher up in where its atmosphere is less deadly.

Mars is much less extreme, but perhaps even more exciting since we have sent over 50 missions there in the last 50 years including an invasion of 6 new missions just this year. Our Perseverance Rover has been on its red surface now for over 4 months and our Ingenuity helicopter has made many successful flights already. One of them shows a column of tenuous dust trailing its entire flight. The Chinese have the Zhurong Rover which is now exploring the planet about 1000 miles away from our rover in Jezero Crater, which is a dry lakebed.

Then keep watching two fascinating points of light, one of which is almost 200 times brighter than the other, as a slender waxing crescent moon will appear just to the right of the pair on Sunday night the 11th 45 minutes after sunset low in the western sky. The moon will be 12 degrees farther east along the ecliptic and close to Regulus the next evening, when the pair will be just half a degree apart. Then keep watching as Venus continues to climb higher even as Mars sinks lower each evening. Mars will pass very close to Regulus on the 29th.

Mercury will reach its greatest elongation west of the sun on the morning of July 4th. You can see our first planet low in the east-northeastern sky half an hour before sunrise for the first two weeks this month. Notice that the waning crescent moon will pass close to Mercury in Taurus on the mornings of the 7th and 8th.

Saturn will rise first in Capricorn before 11 pm followed by Jupiter about an hour later in Aquarius. They will both rise about 2 hours earlier, around the end of twilight, by the end of this month. They are now about 20 degrees apart, a big difference from that historic conjunction on the last winter solstice when they were only a tenth of a degree apart, the closest in nearly 800 years. There will be a thrilling series of events with the 4 large moons of Jupiter on the 24th and 25th visible through a telescope.

Notice that the moon will pass near Saturn and Jupiter 45 minutes before sunrise on the mornings of the 24th through the 26th. The moon will be almost perfectly centered between Saturn and Jupiter on the 25th.

Pluto is at its best now just to the right of the teaspoon in Sagittarius the teapot. Even finding this dwarf planet in a 10 inch or larger telescope will be quite a challenge since it will only reach 14.3 magnitude, nearly 2000 times dimmer than anything you could see naked eye, which is 6th magnitude. I did manage to see it once through a telescope and I feel lucky to have met its discoverer, Clyde Tombaugh personally about 30 years ago. It will reach opposition on the 17th when it will rise right at sunset and not set until sunrise. Pluto is only 1500 miles in diameter and takes 248 years to orbit the sun once, so it spends nearly 21 years in each constellation and it actually orbits inside the orbit of Neptune for 20 years out of those 248. That last happened 20 years ago.

The New Horizons spacecraft passed within 7700 miles of its surface 6 years ago. We discovered a colorful and geologically active world with shifting seas of nitrogen ice, a thin blue atmosphere, broad canyons, mountains of frozen water, a giant glacier only 10 million years old and even ice volcanoes.

The Delta Aquarid meteor shower will peak on the 29th. Caused by Comet 96/P Machholz, you can expect about 15 meteors per hour.

July 1. Last quarter moon is at 5:11 p.m. EDT.

July 4. The Crab nebula in Taurus became visible on this day in 1054, the result of a supernova explosion that happened 6500 years before that day.

July 5. Earth is at aphelion at 94.5 million miles from the sun today.

July 6. On this day in 1687 Isaac Newton published his Principia Mathematica.

July 9. New moon is at 9:17 p.m.

July 12. The moon passes near Venus and Mars tonight.

July 13. Venus and Mars are just half a degree apart tonight.

July 16. The first of 21 fragments of Comet Shoemaker-Levy 9 hit Jupiter today in 1994. I remember watching 5 of those segments rotate into view as large, earth-sized black marks.

July 20. On this day in 1969 Apollo 11 landed Armstrong and Aldrin on the moon.

July 23. Full moon is at 10:37 p.m. This is also called the Hay or Thunder Moon.

July 24. The moon passes near Saturn this morning.

July 25. The moon passes near Jupiter this morning.

July 29. Mars passes near Regulus this evening. The Delta Aquarid meteor shower peaks.

July 31. Last quarter moon is at 9:16 a.m.

Moon Phases

July 1,31
Last Quarter

July 9
New

July 17
First Quarter

July 23
Full

Moon Data

July 4
Uranus 2° north of Moon

July 5
Moon at apogee

July 8
Mercury 4° south of Moon

July 12
Venus 3° south of Moon

Mars 4° south of Moon

July 21
Moon at perigee

July 24
Saturn 4° north of Moon

July 25
Jupiter 4° north of Moon

July 27
Neptune 4° north of Moon

OBSERVER'S CHALLENGE* – July, 2021
by Glenn Chaple

NGC 6572 – Planetary Nebula in Ophiuchus (Mag: 8.1, Size: 16" X 13")

The visual observer is all too aware that, with the exception of double stars like gold and yellow Albireo and ruby-red carbon stars like R Leporis, the deep sky is a pretty colorless place. Bright planetary nebulae like this month's Observer's Challenge, NGC 6572 in Ophiuchus, are a notable exception.

NGC 6572 was discovered by the Russian-German astronomer Friedrich Georg Wilhelm von Struve in 1825. Struve was in the midst of a survey to catalog double stars when he came upon "a star surrounded by bright green ellipse of fuzzy light." At the time, astronomers were unaware of the true nature of such a curiosity. Today we know that NGC 6572 is a planetary nebula – an expanding luminous shell of gas ejected by an aging star. It's relatively young as planetary nebulae go, perhaps no more than 2600 years.

The 2000.0 coordinates for NGC 5672 are: R.A. 18^h 12^m 06.6^s, Dec. +6° 51' 13". I star-hopped there by starting at the 5^{th} magnitude star 71 Ophiuchi, the unlabeled star just south of 72 Ophiuchi on Finder Chart A. Finder Chart B shows an 8^{th} magnitude star, SAO 123133 just northwest of 71 Ophiuchi. A line from this star through 71 Ophiuchi and extended 1.3° brought me to a triangle of 8^{th} magnitude stars, NGC 6572 was a little less than a degree SSE of the southernmost star in the triangle.

At 39X in my 10-inch f/5 reflector, NGC 6572 appeared stellar. At 208X, it was definitely non-stellar when compared to a pair of stars immediately to its east, It seemed slightly elongated in a north-south orientation and was decidedly pale blue. I was unable to detect the central star, which is said to be 13^{th} magnitude.

NGC 6572 is approximately 5000 light years away. This translates to an actual diameter of ⅓ light year.

*The purpose of the Observer's Challenge is to encourage the pursuit of visual observing. It is open to anyone who is interested. If you'd like to contribute notes, drawings, or photographs, we'd be happy to include them in our monthly summary. Submit your observing notes, sketches, and/or images to Roger Ivester (rogerivester@me.com). To find out more about the Observer's Challenge, log on to rogerivester.com/category/observers-challenge-reports-complete.

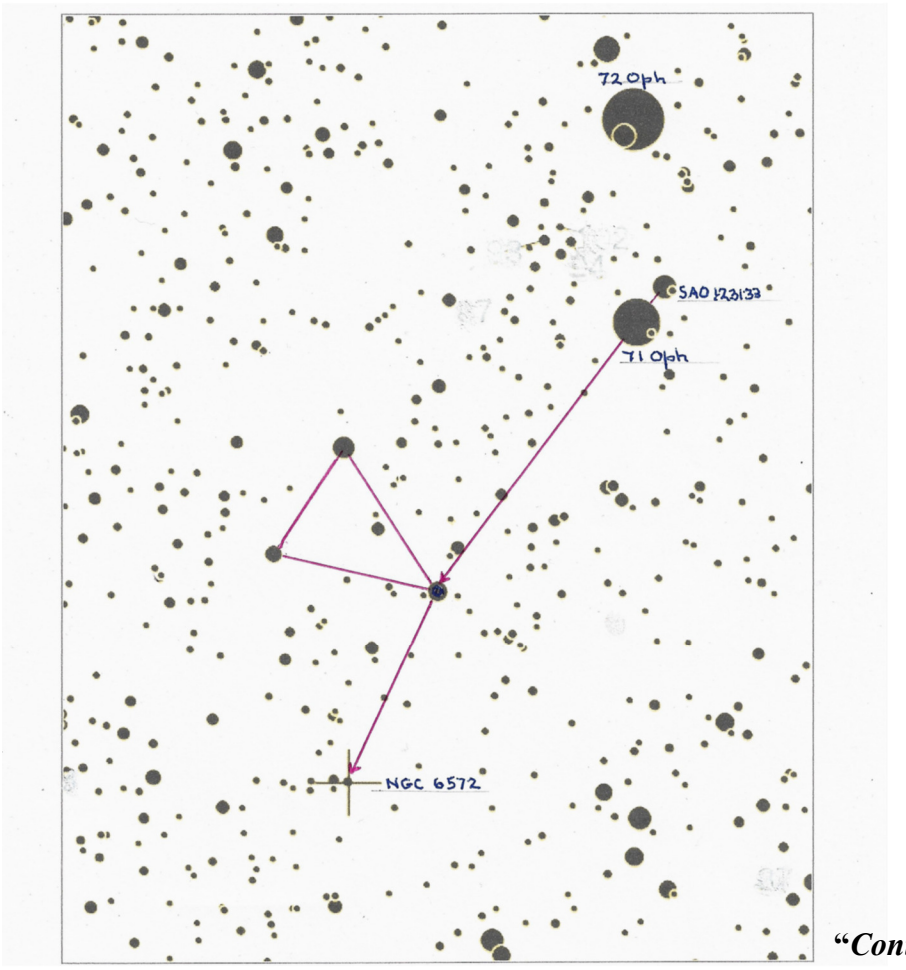
"Continued on page 4"

Finder Charts for NGC 6572

Chart A

Chart B

From AAVSO's Variable Star Plotter (VSP). Annotations by Glenn Chaple. Field 3° by 4°. Stars plotted to 11th magnitude.



"Continued on page 5"

Image for NGC 6572

Image by Mario Motta, MD (ATMoB) 32-inch scope. H alpha, O3 , and S2 filters -30 minutes each.

ATM of BOSTON

OBSERVING LOG

NAME: Glenn Chaple

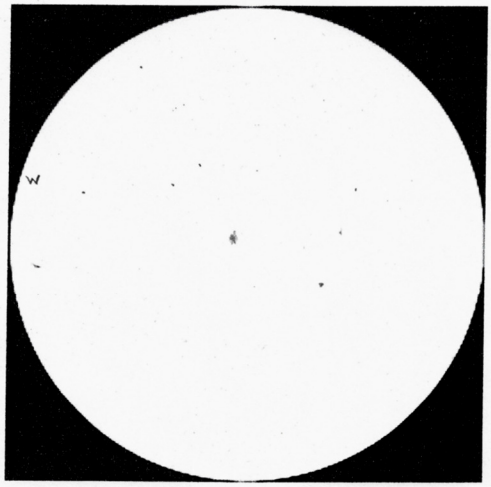
DATE (M/D/Y) 6/17/2021 TIME: 1:15 am EDT

OBSERVING SITE: 82 S. Harbor Rd. Townsend MA

SKY CONDITIONS: Seeing (Antoniadi Scale) bad Limiting Magnitude 5.0

OBJECT: NGC 6572 TYPE: PN CONSTELLATION: Oph

SKETCH (note direction of west)



NOTES:

Slightly elongated N-S.
Light blue color

OBSERVING EQUIPMENT

Binoculars ____X____

Telescope: 10-inch f/5 reflector Eyepiece: 6 mm Radian

Mag: 208X Field Diam: 0.3° Filter (if any): _____

Sketch by Glenn Chaple (ATMoB)

Principal Meteor Showers in 2021

January 4
Quadrantids

April 22
Lyrids

May 6
Eta Aquarids

July 30
Delta Aquarids

August 12
Perseids

October 9
Draconid

October 21
Orionids

November 9
Taurids

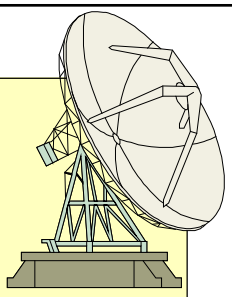
November 18
Leonids

November 26
Andromedids

December 14
Geminids

December 22
Ursids

Note: Dates are for maximum



Got any News?

Skylights Welcomes Your Input.

Here are some suggestions:

Book reviews -- Items for sale -- New equipment -- Ramblings -- Star parties -- Observing -- Photos.

Our Club has Merchandise for Sale at: www.cafepress.com/asnne



All money raised goes to our operating fund.
Any design can be put on any item.

Contact David Bianchi dadsnorlax@yahoo.com for further details.

Benefits of Membership

- Attend our monthly meetings and club star parties
- Our Monthly Newsletter: *Skylights*
- Discounts on *Sky & Telescope. and Astronomy magazine subscriptions*
- Automatic subscription to the Astronomical League's quarterly news-letter, *The Reflector*
- With proper training, access to the equipment at ASNNE's Talmage Observatory at Starfield.
- By special arrangement, free admission to the Southworth Planetarium at USM in Portland

Enjoy sharing your interest and have fun learning about Astronomy!

This article is distributed by NASA Night Sky Network

The Night Sky Network program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.org to find local clubs, events, and more!

Observe the Milky Way and Great Rift

By David Prosper

Summer skies bring glorious views of our own Milky Way galaxy to observers blessed with dark skies. For many city dwellers, their first sight of the Milky Way comes during trips to rural areas - so if you are traveling away from city lights, do yourself a favor and look up!

To observe the Milky Way, you need clear, dark skies, and enough time to adapt your eyes to the dark. Photos of the Milky Way are breathtaking, but they usually show far more detail and color than the human eye can see – that's the beauty and quietly deceptive nature of long exposure photography. For Northern Hemisphere observers, the most prominent portion of the Milky Way rises in the southeast as marked by the constellations Scorpius and Sagittarius. Take note that, even in dark skies, the Milky Way isn't easily visible until it rises a bit above the horizon and the thick, turbulent air which obscures the view. The Milky Way is huge, but is also rather faint, and our eyes need time to truly adjust to the dark and see it in any detail. Try not to check your phone while you wait, as its light will reset your night vision. It's best to attempt to view the Milky Way when the Moon is at a new or crescent phase; you don't want the Moon's brilliant light washing out any potential views, especially since a full Moon is up all night.

Keeping your eyes dark adapted is especially important if you want to not only see the haze of the Milky Way, but also the dark lane cutting into that haze, stretching from the Summer Triangle to Sagittarius. This dark detail is known as the Great Rift, and is seen more readily in very dark skies, especially dark, dry skies found in high desert regions. What exactly is the Great Rift? You are looking at massive clouds of galactic dust lying between Earth and the interior of the Milky Way. Other "dark nebulae" of cosmic clouds pepper the Milky Way, including the famed Coalsack, found in the Southern Hemisphere constellation of Crux. Many cultures celebrate these dark clouds in their traditional stories along with the constellations and Milky Way.

Where exactly is our solar system within the Milky Way? Is there a way to get a sense of scale? The "Our Place in Our Galaxy" activity can help you do just that, with only birdseed, a coin, and your imagination: bit.ly/galaxyplace. You can also discover the amazing science NASA is doing to understand our galaxy – and our place in it - at nasa.gov.

"Continued on page 8 "

The Great Rift is shown in more detail in this photo of a portion of the Milky Way along with the bright stars of the Summer Triangle. You can see why it is also called the "Dark Rift." Credit:

If the Milky Way was shrunk down to the size of North America, our entire Solar System would be about the size of a quarter. At that scale, the North Star, Polaris - which is about 433 light years distant from us - would be 11 miles away! Find more ways to visualize these immense sizes with the Our Place in Our Galaxy activity: bit.ly/galaxyplace

Point and Shoot Camera Astroimaging (no telescope)

Canon Powershot SX50 HS

Image & write-up submitted by Paul Kursewicz

The Hole in the Cluster (NGC 6811) Specs: RAW mode, FL 1200mm, ISO 2000, 4 x 1min 30sec, 6-2-21

NGC 6811 is an open cluster in the constellation of Cygnus. It has an angular size half that of the full Moon and includes about 1000 stars of similar magnitude. The stars do, however, have an unusual distribution, with an apparent stella corona surrounding the core, leaving the impression of a hole. Thus, it is also called, **"The Hole in the Cluster"** because of its dark center. NGC objects are often overlooked at star parties in favor of the brighter Messier objects. I'm enjoying my hunt for these fainter objects. In my 4.5–inch refractor NGC 6811 is dim but still obvious. Many amateur astronomers consider it an aesthetically pleasant object, even if the brightest members are just 10th magnitude. It appears as a hazy patch in 10x binoculars, but it is best seen at around 70x with a moderate-aperture telescope. It has been described by many amateurs as a "smoke ring of stars." NGC 6811 lies far away from the galactic plane, a feature it shares with many other old open clusters. It is about 3,285 light years distant, approximately 14–20 light years in diameter and 700 million to 1 billion years old. NGC 6811 was first observed by John Herschel in 1829.

ASNNE held its first "in person" club meeting on June 4th at Talmage Observatory at Starfield. It was good to get together again, and an extra treat to have clear skies that night. Dwight brought his telescope (the white object in the lower right hand corner in the first picture — it's in the closed position) and gave a stella presentation of what the telescope could do. In the second photo, Bernie is standing next to his 10-inch Dob. And behind him, the 16-inch Meade is pointed at Arcturus. We had some good looks at many different objects that night.

Astronomical Society of Northern New England (ASNNE) Meeting Notes of 4 June 2021

Submitted by Carl Gurtman

Record Note: This Meeting was the first in-person Meeting of ASNNE since March, 2020, because of the coronavirus (COVID-19) crisis. The Meeting took place at the Talmage Observatory at Starfield. No formal Meeting was held, so this record is in the form of 'Notes', rather than Minutes. Dave Bianchi conducted the Meeting. (Thank-you, David!)

Business Meeting: There was no specific Business Meeting. We started the Regular Meeting about 8:05 pm.

Regular Meeting: There were 13 members at our Meeting.

Items Related to ASNNE Business:

Even though there was no formal Business Meeting, the Members present discussed, and agreed, by consensus, with several important points.

a.) First, this will serve to document that Ian Durham has agreed, via several e-mails, to be our President *Pro Tem*, until we are settled back into a more normal routine, and formal elections held. Ron Burk, who was present at this Meeting, received a round of applause for his many outstanding years of service as ASNNE President. For at least the duration of Ian's Presidency, Dave Bianchi will continue receiving the Club's e-mails, and arranging Star Parties.

b.) We agreed that, as usual, Star Parties will be held free of charge for schools, Boy or Girl Scouts, Libraries, or other similar organizations. For others, we will strongly suggest a $200 donation. Note: That sum is no longer a 'large' amount of money.

c.) Starting in mid-August, (either the 3rd or 20th, ASNEE plans to hold Public Star Parties, at the most convenient date nearest the New Moon.

d.) We agreed that the July Meeting will be an in-person Meeting at the New School. After some discussion, we agreed that there was no need to move the Meeting because of the July 4th holiday. We also agreed that our in-person Meetings will also be available on Zoom. It was agreed that the New School will be called and permission obtained for our Meeting. Bernie, who has a contact at the New School, will call.

e.) As Secretary, Carl will write letters acknowledging gifts, thanking the people, and informing the donors that, as ASNNE is a 501(c)(3) organization, donations are tax-deductable. For any gift of equipment, the donor, not ASNNE, determines the equipment's value. We need to come up with a standard value that we put on conducting a Star Party. For example, if we value our Star Parties at $150, and the 'sponsor' donates $200, the sponsor can only deduct $50; his donation over and above the Star Party's worth.

"Continued on page 12"

f.) Carl provided the Talmage Observatory's plaque to Keith. Keith will mount the plaque at the top of the inner surface of the Observatory's right-hand door. (Right-hand from the vantage point of someone outside the Observatory looking inward.)

g.) We are tentatively planning an outdoor barbeque at the Talmage Observatory for our August Meeting. We are also tentatively planning for Starfest to be held in September, perhaps on the Labor Day Weekend. Either the August or September Meetings may be the Talmage Observatory's Dedication Date/Open House, depending upon the availability of Peter's family. The sign for the outer end of the driveway, also with Peter's name, will be at the Observatory, and both signs will be draped, and then unveiled. (We could invite the press.)

"What's Up?": Bernie gave his usual thorough, comprehensive, and complete discussion of what's in store for us in the skies of June.

June received its name from Juno, the wife of the (Roman) King of the Gods, Jupiter. Bernie covered visible planets, comets, and meteor showers.

Bernie covered the names of this month's moon, and what happened on this day in . . . including the famous astronomers & scientists born in June.

Note: I usually include more of Bernie's excellent presentation. However, each month's "What's Up?", is printed in full in that month's *Skylights*, ASNNE's newsletter, so ably edited by Paul Kursewicz.

Skylights may be found at: http://www.asnne.org/newsletter.php

Astroshorts: There were only a few Astroshorts.

Observing: Afterwards, the Talmage Observatory at Starfield was open for observing.

We will hold our next Meeting, in person, at the New School, on Friday, 2 July. Business Meeting commences at 6:30 pm, Regular Meeting at 7:30 pm. Any Member is welcome to attend the Business Meeting. Although an in-person Meeting, it will also be available on Zoom.

Respectfully submitted,

Carl Gurtman

Club Meeting & Star Party Dates

Date	Subject	Location
June 2	**ASNNE Club Meeting:** **In all likelihood we will be meeting indoors at The New School for the July club meeting. Bernie will contact the school. The meeting will also be available via Zoom.** **Business Meeting: 6:30 pm** **Regular Meeting: 7:30 pm** **Topic: TBD.** Bernie Reim will do "What's Up." Astro Shorts Last month's meeting was at Talmage Observatory at Starfield. It was good to get together again. The sky was clear all the time that we were there. So, a good night to do observing. Dwight had the opportunity to show us what his telescope could do. Amazing scope.	The New School, Kennebunk, Me.
Last Month		
June 2	**Club/Public Star Party:** If the weather is clear we can head out to the observatory after the meeting.	Talmage Observatory at Starfield West Kennebunk, Me.

Directions to ASNNE event locations

Directions to The New School in Kennebunck [38 York Street (Rt1) Kennebunk, ME]

For directions to The New School you can use this link to the ASNNE NSN page and then click on "get directions" from the meeting location. Enter your starting location to generate a road map with complete directions. It works great. http://nightsky.jpl.nasa.gov/club-view.cfm?Club_ID=137

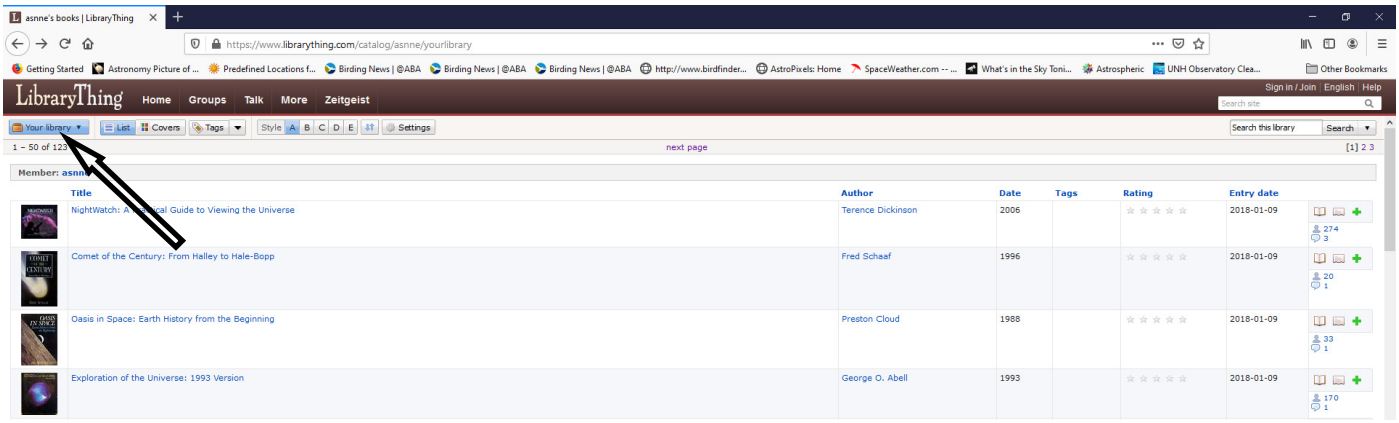
Directions to Talmage Observatory at Starfield [Alewive Road, Kennebunk, ME]

From North:
Get off turnpike at exit 32, (Biddeford) turn right on Rt 111. Go 5 miles and turn left on Rt 35. Go 2 miles on Rt 35 over Kennebunk River to very sharp 90 degree left turn. The entrance to the Starfield Observatory site is at the telephone pole at the beginning of the large field on the left. Look for the ASNNE sign on the pole.

From South:
Get off the turnpike at exit 25 in Kennebunk. After toll both turn right on Rt 35. Go up over the turnpike and immediately turn right on Rt 35. About 4 miles along you will crest a hill and see a large field on your right. Continue until you reach the end of the field. Turn right into the Starfield Observatory site at the last telephone pole along the field. Look for the ASNNE sign on the pole. If you come to a very sharp 90 degree right turn you have just passed the field.

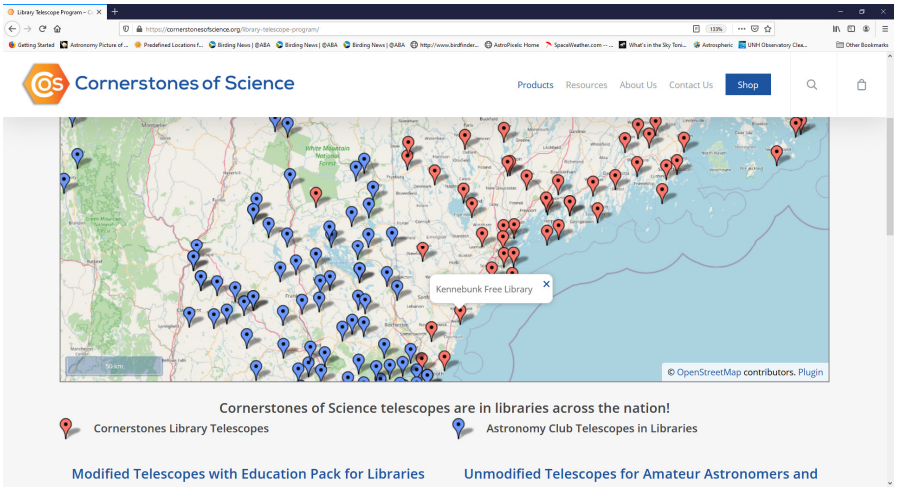
Astronomy Club & Library Resources

Our club has a library of astronomy books which are stored at The New School in Kennebunk, Maine (our monthly club meeting location). To request a book(s), contact one of the club officers. A listing of books is provided here: https://www.librarything.com/profile/asnne . After clicking on the link, a window will open. Click on "Your library" near the upper left corner (as shown by the arrow below). Then scroll down to the end of the page to go to the next page.



Would you like to borrow a telescope? While many astronomy clubs may have a scope to lend out, there are also many libraries which have telescopes for their guests to use. Here are a couple of links.

The following link will bring up an active map (see screen shot below) of the USA showing the libraries which have telescopes to lend out: https://cornerstonesofscience.org/library-telescope-program/



The below link will show a list of known participating library locations for the state of Maine.
https://www.librarytelescope.org/locations/usa/maine

To join **ASNNE**, please fill out the below membership form. *Checks should be made payable to: Astronomical Society of Northern New England (A.S.N.N.E).* For more details, please visit our website: **http://www.asnne.org**

Astronomical Society of Northern New England
P.O. Box 1338
Kennebunk, ME 04043-1338

2021 Membership Registration Form

(Print, fill out and mail to address above)

Name(s for family): _____

Address: _____
City/State: _____ Zip code: _____

Telephone # _____

E-mail: _____

Membership (check one):
Individual $35 _____ Family $ 40 _____ Student under 21 years of age $10 _____ Donation_____

Total Enclosed_____

Tell us about yourself:
1. Experience level: Beginner____ Some Experience ____ Advanced_____

2. Do you own any equipment? (Y/N) And if so, what types?

_____
3. Do you have any special interests in Astronomy?

_____
4. What do you hope to gain by joining ASNNE?

_____
5. How could ASNNE best help you pursue your interest in Astronomy?

_____
6. ASNNE's principal mission is public education. We hold many star parties for schools and the general public for which we need volunteers for a variety of tasks, from operating telescopes to registering guests to parking cars. Would you be interested in helping?
Yes_____ No_____

7. ASNNE maintains a members-only section of its web site for names, addresses and interests of members as a way for members to contact each other. Your information will not be used for any other purpose. Can we add your information to that portion of our web site?

Yes_____ No_____