

# Skylights

Newsletter of the Astronomical Society of Northern New England



SEP 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 September

By Bernie Reim

September always marks the beginning of fall for us in the northern hemisphere. This year that will happen at exactly 3:21 p.m. on Wednesday the 22<sup>nd</sup>. That moment in time is also called the autumnal equinox and is further defined by the sun's path on the ecliptic crossing over the celestial equator moving southward or lower in the sky.

That moment along with the vernal equinox in March to begin the spring season are the only two days each year when the sun rises due east and sets due west for everyone on Earth except for the poles. Within a couple days of that day everyone on Earth will also experience 12 hour long days and 12 hour long nights, hence the name equinox, which simply means equal night.

Those are two important unifying days for everyone on Earth in a time of so much polarization and division. All of us already live under the same sky and share the same earth and the same air, but we don't usually think about that, so this would be a good time to do remember that and act accordingly.

We had a fairly good summer with no extreme droughts or floods, but many other parts of the world were not as lucky. Some of the smoke from the wildfires out west 3,000 miles away affected our astronomy viewing for just a couple of nights this summer. I remember that the moon had an odd pinkish-orange hue for many hours after it rose above the horizon and throughout the whole night before it set. Usually it takes on a similar color because of our viewing it through more of our atmosphere for just 20 minutes after it rises or before it sets.

Even though the nights are getting several minutes longer each night, they will also be much crisper and less humid, which will make for some great viewing this month and next.

The highlights for this September include 4 of our 5 brightest planets being visible in the evening sky, Neptune at opposition, another good comet visible in a telescope, some more asteroids at opposition, and some good conjunctions of the moon and planets.

We lost Mars last month into the western sky and it will not return until December as a

morning sky object. Keep in mind that all of our missions to the Red Planet are exceeding expectations now. The Chinese Zhurong rover is exploring the Utopia Planitia region, which is the largest known impact basin on Mars or anywhere else in our solar system. This terrain harbors many very interesting geological features including a frozen lake about a mile beneath its surface that holds about as much water as Lake Superior. Even more intriguing are several large bodies of liquid water farther below the cold and sterile Martian surface.

There are some exotic mud volcanoes where the Zhurong rover is now exploring. They just detected some more Mars quakes and found evidence that volcanoes were active on Mars until just 50,000 years ago instead of 3 million years ago as previously believed. This rover also plans to return samples to earth for the first time, as does our own Perseverance Rover. Our Ingenuity helicopter has already flown over 12 flights for over 22 minutes and nearly 2 miles. It doesn't fly very high or go very far each time, but that is still an amazing engineering feat to fly anything in that thin Martian atmosphere which is only 1 % of the density of

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

our own air at sea level. That is the equivalent of flying a helicopter on Earth at about 100,000 feet or 20 miles high, which has never been done. That is only 3 times lower than the two recent controversial forays to the edge of space about 60 miles high.

I think those two flights were beneficial and inspirational to humans on Earth as test flights to carry thousands of people into space over the next decade or so. Only about 500 people have ever been to space as of now, so that will change soon. It is vitally important that many more of us attain this overview effect that all of the astronauts have attained and our own local Maine astronaut, Jessica Meir talks about at length. Jessica was recently chosen as one of just 18 astronauts, 9 men and 9 women, 9 veterans and 9 rookies, as part of the Artemis mission to return to the moon and establish a permanent presence there.

We need to see the earth in a new light and treat it differently and with much more respect if we are to provide a higher quality and more sustainable life to all 7.9 billion humans currently inhabiting our blue planet.

I recently had a great experience of seeing our Earth in a new way without ever leaving its surface. I was up two hours before sunrise right on the beach. Orion and about half of the Winter Hexagon were directly in front of me rising out of the ocean with Jupiter and Saturn setting behind me in the west. Orion will be in the same place again rising out of the ocean soon after sunset as fall ends in about 3 months. The later you stay up, the farther you are looking into the next season, since the whole sky appears to rotate two hours per month or 4 minutes per day due to our revolution around the sun at 67,000 mph or 18.6 miles per second. So if you are up at midnight, you will see the same sky at 10 pm one month later.

The tide was coming in and the creatures in the nearby salt marsh were just beginning to stir. As the myriad hues of the dawn sky ever so slowly intensified on this humid summer morning, it looked just like an image of the elemental beach, ocean, and sky were developing in a huge heavenly dark-room and I was part of the whole picture.

I gained a sense of the round earth rotating at 750 miles per hour at our latitude as the stars were slowly fading out even as our own day star was beginning to announce its reappearance. We all really do live on "spaceship earth", but we need to make more time to recognize that fact and live up to some of the implications of that great truth.

Our two largest planets, Jupiter and Saturn were at opposition last month and they are still very well placed in our evening sky for the rest of the summer and for most of this fall. They each rise about 4 minutes earlier each night, so they are both up in the eastern sky well before the sun sets. Jupiter is about 15 times brighter than Saturn. They are both still in retrograde or westward motion against the fixed background of stars and they are both dwelling in opposite ends of Capricorn the Sea Goat.

You can see the four large Galilean moons of Jupiter with just a pair of binoculars, but you will need a telescope to see Saturn's rings, up to 5 of Saturn's moons, cloud bands and the red spot on Jupiter, and eclipses and shadow transits of Jupiter's Galilean moons.

Both Venus and Mercury are evening planets and they can be seen close together very low in the western sky just half an hour after sunset. The star Spica in Virgo is directly between them and a slender waxing crescent moon will join the pair on the 9<sup>th</sup>.

Neptune reaches opposition in Aquarius on the 14<sup>th</sup>, but you will need a pair of binoculars to see its bluish-greenish disk at 7.7 magnitude. It will be near the full moon on the 19<sup>th</sup>.

The comet of the month is 67P/ Churyumov-Gerasimenko. We dropped a probe on this strange-shaped comet 7 years ago. It has an odd, rubber duck-shaped nucleus about 2 miles across, as if two comets were somehow stuck together like a snowman. It will glow at 10<sup>th</sup> magnitude so you will need an 8 inch telescope to see it. It returns every 6.4 years.

Sept.3. On this day in 1976 Viking 2 landed on Mars.

Sept.5. Venus will be 2 degrees north of Spica this evening.

Sept. 6. New moon is at 8:52 p.m. EDT.

Sept.8. The moon passes near Mercury this evening.

Sept 9.The moon passes 4 degrees north of Venus this evening.

Sept. 10. The asteroid Pallas is at opposition.

Sept. 11. The moon is at perigee, or closest to the earth today at 228,951 miles.

Sept. 13. First quarter moon is at 4:39 p.m. Mercury is at greatest eastern elongation.

Sept. 14. Neptune is at opposition and visible all night long in Aquarius.

Sept. 16. The moon passes 4 degrees south of Saturn tonight.

Sept. 18. The moon passes 4 degrees south of Jupiter tonight.

Sept. 20. Full moon is at 7:55 p.m. This is the famous Harvest Moon.

Sept.22. The autumnal equinox is at 3:21 p.m. EDT.

Sept. 23. On this day in 1846, J. Galle discovered Neptune, which has made just over one orbit around the sun since then, since it takes 165 years.

Sept. 25. Ole Romer was born on this day in 1644. He is a Danish astronomer who first measured the speed of light in 1676 along with Cassini by timing eclipses of the moons of Jupiter.

Sept.26. The moon is at apogee at 251,432 miles from Earth today.

Sept. 28. Last quarter moon is at 9:57 p.m.

Moon Phases**Sept 6**

New

**Sept 13**

First Quarter

**Sept 20**

Full

**Sept 28**

Last Quarter

Moon Data**Sept 8**Mercury 4° south  
of Moon**Sept 9**Venus 4° south  
of Moon**Sept 11**

Moon at perigee

**Sept 16**Saturn 4° north  
of Moon**Sept 18**Jupiter 4° north  
of Moon**Sept 20**Neptune 4° north  
of Moon**Sept 24**Uranus 1.3° north  
of Moon**Sept 26**

Moon at apogee

**OBSERVER'S CHALLENGE\* – September, 2021**  
by Glenn Chaple**NGC 6823/20 Open Cluster/Emission Nebula in Vulpecula**  
**(Mag: 7.1, Cluster Size: 7', Nebula Size: 40' by 30')**

A popular celestial designation for clear, moonless September evenings is M27, the "Dumbbell Nebula." Next time you visit the Dumbbell, take a side trip three degrees west and slightly north to the open cluster NGC 6823 and its surrounding nebula NGC 6823.

The 2000.0 coordinates for NGC 6823 are R.A. 19h43.2m, dec. +23°18'. I star-hopped there using a 10-inch f/5 Dobsonian-mounted reflector and a magnifying power of 80X. My starting point was alpha (α) Vulpeculae - a wide optical double situated about 3 degrees south of Albireo (beta [β] Cygni).

Before arriving at NGC 6823, I came across an eye-catching half-degree-long chain comprised of 6 magnitude 9 and 10 stars. It began about a half degree west of the cluster and ended just north of it. NGC 6823 itself proved to be a neat little group dominated by a bright double star. In all, I saw some dozen stars down to about 14<sup>th</sup> magnitude.

A scan of the online edition of the Washington Double Star Catalog uncovered a stellar pair of magnitudes 9.4 and 10.4 and 37 arc-second separation at NGC 6823's coordinates. This is most likely the double I saw. The brighter component has a spectral class of O6.5V, which makes sense as NGC 6823 is dominated by hot, young stars.

What about NGC 6820? There was no sign of the surrounding nebula, even when I used a narrowband filter. Resources note that it is extremely difficult to see visually. This is understandable when you consider that William Herschel discovered the cluster in 1785 and the nebula remained unknown until seen by Albert Marth nearly 80 years later. A noticeable feature of NGC 6820 is a dark trunk-like pillar similar to the "Pillars of Creation" seen in the Hubble image of the Eagle Nebula (M16) in Serpens.

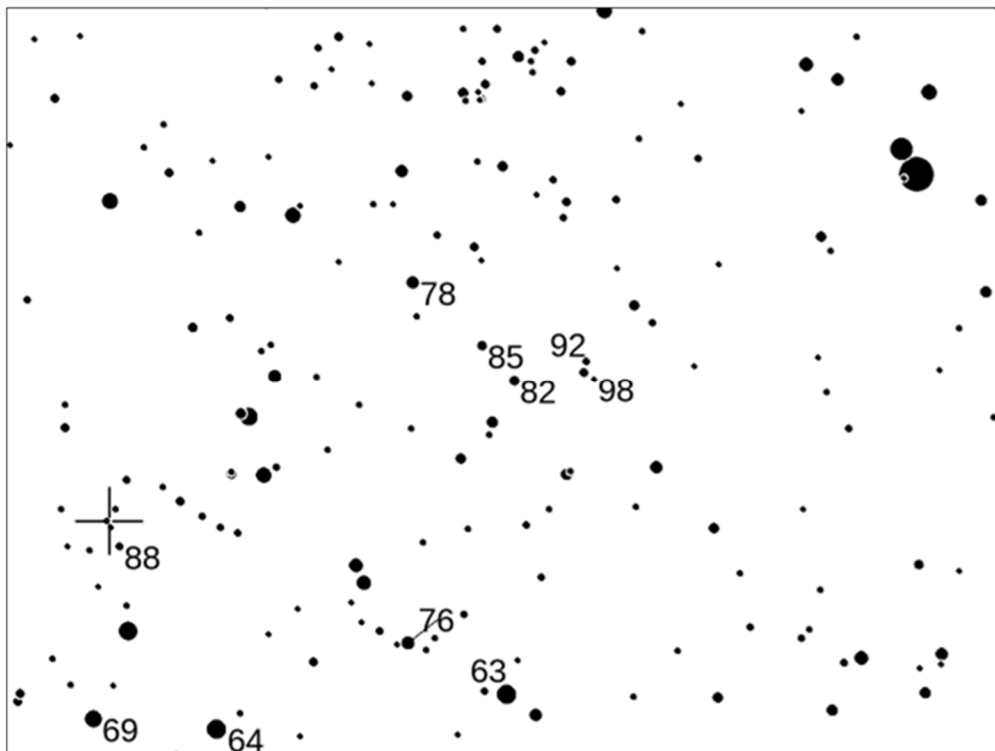
NGC 6823 and NGC 6820 are approximately 6000 light years from the earth. The cluster is about 50 light years in diameter.

\*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"*

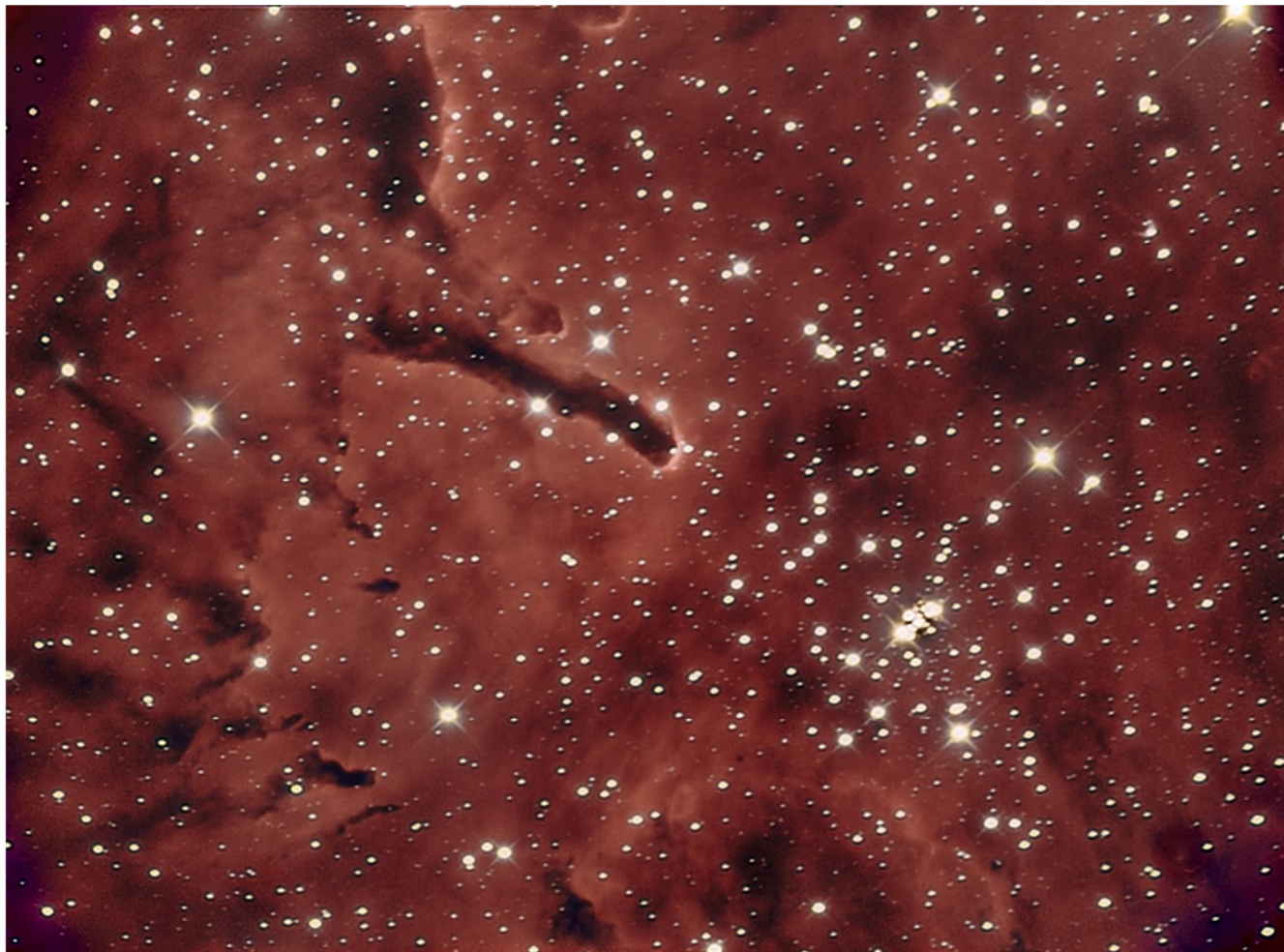
### Finder Charts for NGC 6823/6820

Finder chart from AAVSO's Variable Star Plotter (VSP). Numbers are stellar magnitudes, decimals omitted. Bright star at upper right is alpha Vulpeculae. Field size is 4° by 3° with north up. Stars plotted to 10<sup>th</sup> magnitude.



*“Continued on page 5”*

Close-up view of NGC 6823/6820. Image by Mario Motta. MD (ATMoB) Taken with 32 inch f6.5 scope, with ZWO ASI6200 camera, using 2 hours Halpha, 1 hour each O3 and S2 NB filters. Processed Pixinsight.



## 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

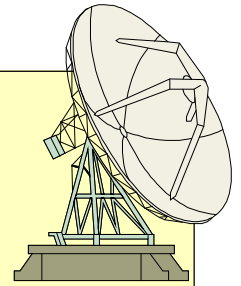
**December 14**  
Geminids

**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](http://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](mailto: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 newsletter, *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](https://nightsky.jpl.nasa.org) to find local clubs, events, and more!

## Catch Andromeda Rising

By David Prosper

If you're thinking of a galaxy, the image in your head is probably the Andromeda Galaxy! Studies of this massive neighboring galaxy, also called M31, have played an incredibly important role in shaping modern astronomy. As a bonus for stargazers, the Andromeda Galaxy is also a beautiful sight.

Have you heard that all the stars you see at night are part of our Milky Way galaxy? While that is mostly true, one star-like object located near the border between the constellations of Andromeda and Cassiopeia appears fuzzy to unaided eyes. That's because it's not a star, but the Andromeda Galaxy, its trillion stars appearing to our eyes as a 3.4 magnitude patch of haze. Why so dim? Distance! It's outside our galaxy, around 2.5 million light years distant - so far away that the light you see left M31's stars when our earliest ancestors figured out stone tools. Binoculars show more detail: M31's bright core stands out, along with a bit of its wispy, saucer-shaped disc. Telescopes bring out greater detail but often can't view the entire galaxy at once. Depending on the quality of your skies and your magnification, you may be able to make out individual globular clusters, structure, and at least two of its orbiting dwarf galaxies: M110 and M32. Light pollution and thin clouds, smoke or haze will severely hamper observing fainter detail, as they will for any "faint fuzzy." Surprisingly, persistent stargazers can still spot M31's core from areas of moderate light pollution as long as skies are otherwise clear.

Modern astronomy was greatly shaped by studies of the Andromeda Galaxy. A hundred years ago, the idea that there were other galaxies beside our own was not widely accepted, and so M31 was called the "Andromeda Nebula." Increasingly detailed observations of M31 caused astronomers to question its place in our universe - was M31 its own "island universe," and not part of our Milky Way? Harlow Shapley and Heber Curtis engaged in the "Great Debate" of 1920 over its nature. Curtis argued forcefully from his observations of dimmer than expected nova, dust lanes, and other oddities that the "nebula" was in fact an entirely different galaxy from our own. A few years later, Edwin Hubble, building on Henrietta Leavitt's work on Cepheid variable stars as a "standard candle" for distance measurement, concluded that M31 was indeed another galaxy after he observed Cepheids in photos of Andromeda, and estimated M31's distance as far outside our galaxy's boundaries. And so, the Andromeda Nebula became known as the Andromeda Galaxy.

These discoveries inspire astronomers to this day, who continue to observe M31 and many other galaxies for hints about the nature of our universe. One of the Hubble Space Telescope's longest-running observing campaigns was a study of M31: the Panchromatic Hubble Andromeda Treasury (PHAT): [bit.ly/m31phat](https://bit.ly/m31phat). Dig into NASA's latest discoveries about the Andromeda Galaxy, and the cosmos at large, at [nasa.gov](https://nasa.gov).

*“Continued on page 8”*



Spot the Andromeda Galaxy! M31's more common name comes from its parent constellation, which becomes prominent as autumn arrives in the Northern Hemisphere. Surprising amounts of detail can be observed with unaided eyes from dark sky sites. Hints of it can even be made out from light polluted areas. *Image created with assistance from Stellarium*



While M31's disc appears larger than you might expect (about 3 Moon widths wide), its "galactic halo" is much, much larger – as you can see here. In fact, it is suspected that its halo is so huge that it may already mingle with our Milky Way's own halo, which makes sense since our galaxies are expected to merge sometime in the next few billion years! The dots are quasars, objects located behind the halo, which are the very energetic cores of distant galaxies powered by black holes at their center. The Hubble team studied the composition of M31's halo by measuring how the quasars' light was absorbed by the halo's material. *Credits: NASA, ESA, and E. Wheatley (STScI) Source: <https://bit.ly/m31halo>*



## Point and Shoot Camera Astroimaging (no telescope)

Canon Powershot SX50 HS

*Image & write-up submitted by Paul Kursewicz*

The Butterfly Nebula (in Cygnus)

Specs: RAW mode, FL 213mm, ISO 1600, 34 x 2min, 7-10-21



The **Butterfly Nebula** in Cygnus is the portion of bright nebulosity shown just below the bright supergiant star Gamma Cygni. The star's proper name is Sadr (meaning "chest" in Arabic), and it lies at the center of the Swan. The Butterfly Nebula (IC 1318) is not to be confused with NGC 6302, which is also known as the Butterfly and is a planetary nebula in the constellation Scorpius. IC 1318 is an emission nebula that is about 4,000 light years away. Its glow comes as a result of nearby stars releasing streams of charged particles known as stellar winds, which ionize the gasses, causing them to emit light. The nebula is not associated with the foreground star Gamma Cygni, which is around 1,800 light years away. The Butterfly lies in the heart (the brightest part) of the Milky Way. Hence, why there are so many stars shown in my image. We are looking deep into the Orion Arm of our Galaxy in the direction of the Butterfly.

*"Continued on page 10"*

## Butterfly Nebula & The Cygnus Star Cloud

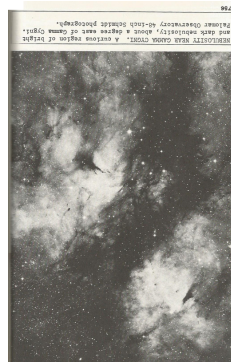


THE CYGNUS STAR CLOUD. This is one of the most spectacular regions of the Milky Way, just north and east of Beta Cygni. Gamma Cygni is at upper left.

Lowell Observatory photograph

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The photo above is a copy taken from “Burnham’s Celestial Handbook” copyright 1978. The 13-inch telescope at Lowell Observatory was used to obtain this photograph. It shows “The Cygnus Star Cloud” one of the most spectacular regions of the Milky Way. It also captured the “Butterfly Nebula,” seen in the lower left region of the photo. The stars in “The Cygnus Star Cloud” are more richer than in any similar area of the sky, and present a glorious sight in binoculars or a small telescope. Burnham notes: “Sweep the area with a low-power wide-angle eyepiece, and notice the huge numbers of stars, groups, and clusters, and the occasional dark gaps caused by clouds of non-luminous material.”



Also in “Burnham’s Celestial Handbook” is this close-up of the “Butterfly” which was taken with the Palomar Observatory’s 48-inch Schmidt telescope.

### STAR PARTIES

Two different groups from **Wells Library** came to Talmage Observatory on August 3rd and on August 11th. There were close to 30 people on each of those nights. On August 15th, we had the **Wertman Family** Star Party.



August 3rd



August 11th



August 15th

**Club Meeting, BBQ, & Star Party**

On August 6th, we had our club meeting at Talmage Observatory at Starfield. We fire-upped the grills around 7 PM and finished eating around 8 PM. In conjunction with the club star party we also scheduled a public star party for this night which began at 8 PM. About 40 people from a Group Home showed up. Thus, we did not have time for our formal club meeting. All had a great time being outdoors.



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[Astronomical Society of Northern New England \(ASNNE\) Meeting Minutes of  
6 August 2021](#)

**Directors Present:** Ian Durham, President *Pro Tem* and Treasurer  
Bernie Reim, Vice President  
Carl Gurtman, Secretary  
Gary Asperschlager, Director

**Others Present:** People started arriving at approximately 6:00 pm. By the time we settled down, there were 14 Members and guests present. David, with approval from the Board, had invited several groups to come for a Star Party; inviting them to come after the barbeque was over. An estimated 30 guests, of all ages, arrived later for the Star Party.

**Record Note:** This Meeting was held at the Talmage Observatory at Starfield, as a barbeque. There was no formal meeting.

**Talmage Observatory at Starfield Plaque:** Keith had mounted the bronze plaque that memorializes Peter Talmage, and honors his major role in establishing the Observatory at Starfield. It is mounted on the inner side of the right-hand door (looking inward), which will protect it when the Observatory is closed. The plaque, and road sign, will be formally unveiled when Peter's family is present.

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

August was named for Augustus Caesar.

The astronomical highlight of August will be the Perseid meteor shower.

Bernie also covered the names of this month's moon, and what happened on this day in . . . , including astronomers' birthdays.

Bernie's excellent presentation, in its entirety, can be found, this month, and every month, in *Skylights*, ASNNE's newsletter; editor, Paul Kursewicz. Skylights may be found at: <http://www.asnne.org/newsletter.php>

The remainder of the evening was that of a typical open-to-the-public Star Party.

Respectfully submitted,

Carl Gurtman

## Club Meeting & Star Party Dates

Date	Subject	Location
<u>Sept 3,4,5</u>	<p style="text-align: center;"><b><u>STARFEST WEEKEND</u></b></p> <p>Our September Club Meeting will take place during Starfest Weekend. So, no club meeting at The New School.</p> <p style="text-align: center;"><b>Bring a chair, table, and utensils.</b></p> <p><b><u>FRIDAY:</u></b></p> <p>Starfield Observatory gates open in the morning. Tent set-up in the afternoon. Solar Viewing during the day. And night viewing all night if you would like.</p> <p><b><u>SATURDAY:</u></b></p> <p><i>Day Time:</i> - BBQ (2 PM?), Solar Viewing, Raffle Table, What's Up, Tent Talks, Show &amp; Tell, Astro Shorts.</p> <p><i>Night Time:</i> - Observing, Campfire.</p> <p><b><u>FRI/SAT:</u></b> Astro "B" Movie Theater (conditional).</p> <p><b>SUNDAY:</b> Clean-up. TYO Trash.</p> <p>Last Month Last month's club meeting was held at the Observatory. We had a BBQ, followed by a club and public star party.</p>	<p>Talmage Observatory at Starfield West Kennebunk, Me.</p> <p style="text-align: center;"><b><u>NOTICE</u></b></p> <p style="text-align: center;"><b>As of this posting Peter Talmage's memorial plaque hanging and the official renaming to "Talmage Observatory at Starfield" has not been confirmed for Saturday afternoon. Check our List Serve for updates.</b></p>
<u>Sept 3,4</u>	<b>Club/Public Star Party:</b> If the weather is clear.	Talmage Observatory at Starfield West Kennebunk, Me.

### Directions to ASNNE event locations

#### Directions to The New School in Kennebunk [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](http://nightsky.jpl.nasa.gov/club-view.cfm?Club_ID=137)

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

##### **From North:**

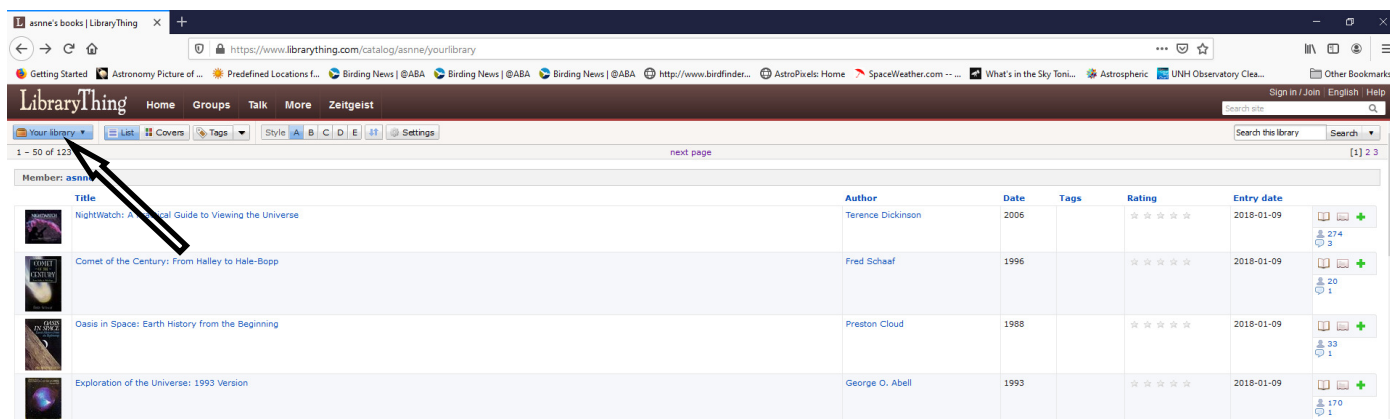
Get off turnpike at exit 32, (Biddeford) turn right on Rt 111. Go 5 miles and turn left on Rt 35. Go 2 miles on Rt 35 over Kennebunk River to very sharp 90 degree left turn. The entrance to the Starfield Observatory site is at the telephone pole at the beginning of the large field on the left. Look for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

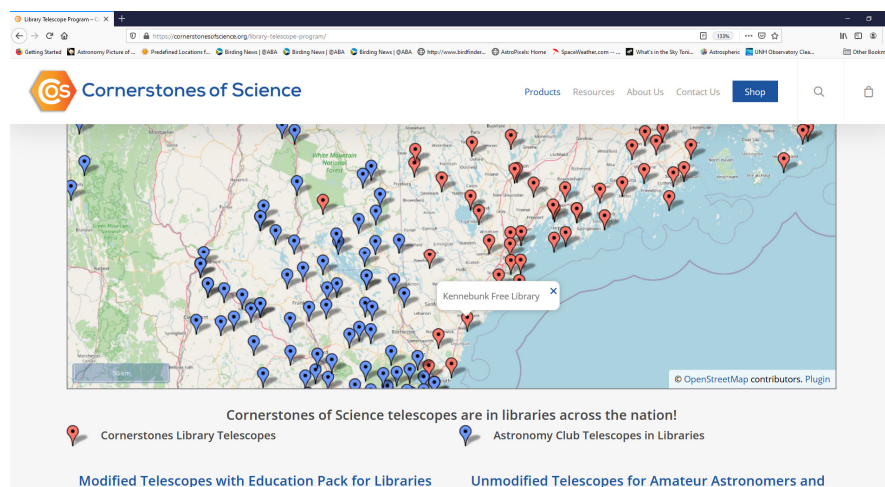


The screenshot shows the LibraryThing website interface. The user is logged in as 'asmne'. The page displays a list of books in the user's library. The first book is 'NightWatch: A Practical Guide to Viewing the Universe' by Terence Dickinson, published in 2006. Other books include 'Comet of the Century: From Halley to Hale-Bopp' by Fred Schaaf (1996), 'Oasis in Space: Earth History from the Beginning' by Preston Cloud (1988), and 'Exploration of the Universe: 1993 Version' by George O. Abell (1993). The 'Your library' link in the top navigation bar is highlighted with a black arrow.

Title	Author	Date	Tags	Rating	Entry date
NightWatch: A Practical Guide to Viewing the Universe	Terence Dickinson	2006		☆☆☆☆☆	2018-01-09
Comet of the Century: From Halley to Hale-Bopp	Fred Schaaf	1996		☆☆☆☆☆	2018-01-09
Oasis in Space: Earth History from the Beginning	Preston Cloud	1988		☆☆☆☆☆	2018-01-09
Exploration of the Universe: 1993 Version	George O. Abell	1993		☆☆☆☆☆	2018-01-09

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 screenshot shows the Cornerstones of Science website. The main feature is a map of the United States with numerous red and blue pins indicating library locations. A legend below the map identifies the pins: red pins for 'Cornerstones Library Telescopes' and blue pins for 'Astronomy Club Telescopes in Libraries'. A callout box over the map highlights 'Kennebunk Free Library'. Below the map, there are two categories: 'Modified Telescopes with Education Pack for Libraries' and 'Unmodified Telescopes for Amateur Astronomers and...'

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 \_\_\_\_\_

