

Skylights

Newsletter of the Astronomical Society of Northern New England



JAN 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 January

By Bernie Reim

The month of January is named for the Roman god Janus, who is the protector of gates and doorways. Janus is depicted with two faces, one facing forwards to the future and the other one facing backwards into the past. This month will not have nearly as many exciting, dramatic, and rare events packed into it as the last month of 2020 had, but there will still be at least the usual number of interesting events that will be worth braving the cold to go out and see.

The Great Conjunction of Jupiter and Saturn is winding down now and both planets will dive below our western horizon towards the end of this month, but they will still be much closer together than usual. Mercury will make a brief appearance near Jupiter and Saturn during the middle of this month. Mars is getting too small to see much detail in an average telescope after the middle of this month, so catch it earlier for the last good telescopic views in 2 more years until it gets close to us again. Earth will be at perihelion or its closest point to the sun for the year on January 2nd. The Quadrantid Meteor shower will peak on the night of the third into the morning of the fourth. The waning crescent moon and Venus will have another close conjunction on the 11th.

Jupiter and Saturn have now traded places in their great celestial dance around the sun. They start the month just one degree apart and then that distance slowly increases. Last month they were both visible in the same field of view of a telescope, along with 9 of their combined 161 moons. Notice that Jupiter is still 10 times brighter than Saturn, but that it is to the upper left of Saturn now instead of the lower right where it was all last summer and fall. It finally caught up with the ringed planet right on the winter solstice. They are both still in direct or eastward motion against the fixed background of stars, but they have drifted into Capricorn now, the neighboring constellation to the east of Sagittarius which they inhabited for the last year. Since Jupiter's orbit lasts 12 years and Saturn's is nearly 30 years, they do end up fairly close every 20 years, but not nearly as close as they just were. The next good conjunction will be in 80 years, so I hope you caught the one last

year at the solstice.

As if to enhance their last few days of being close together in our sky, Mercury will join the pair for only a week starting on the 9th. It will start out below Saturn and then work its way up past Jupiter. You may need binoculars and a perfect western horizon to see all 3 of them well because they are getting very low. Try to see how long you can spot these three as they sink deeper and deeper into our evening twilight. Mercury is two and half times fainter than Jupiter, but Saturn will be the hardest one to see since it will be the faintest and lowest of the three. We will lose Saturn by the 23rd and Jupiter a few days later. As if they are now exhausted from their great show last month, they will both go into hibernation until late February when they will return as morning planets.

Mercury is a very interesting planet that still harbors many mysteries, as all of our planets do. Europe and Japan launched a joint mission named BepiColombo in honor of the Italian mathematician and engineer who first calculated its notoriously difficult path to orbit to our first planet. It was launched just over 2 years ago and it won't get there for 5 more years.

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What's Up "Continued from page 1"

Mercury is quite close to us, averaging about the same distance as the sun, 93 million miles, but it takes as long to get there as it takes us to get all the way to Saturn, nearly one billion miles away. The reason for this that it is very complicated to get into orbit around Mercury due to its proximity to the sun with its powerful gravitational field. We have to spiral around Mercury for 4 years before we can get into a stable orbit to take our measurements. It will make several flybys of Venus and Earth first to slow it down. When we sent the Voyager missions to the outer planets we used the same slingshot maneuvers around Jupiter and some other planets to speed them up as they transfer energy from the planet to the spacecraft.

The European Space Agency contributed the Mercury Planet Orbiter and the Japanese Aerospace Exploration Agency made the Mercury Magnetosphere Orbiter. They will separate when they get there into two different orbits and they should last for over a year of making careful measurements and learning many new things about this enigmatic little planet whose core is 85% of the entire planet.

We have only sent two other missions to Mercury. The first one was Mariner 10 and it only orbited Mercury 3 times to get some close-up images. The only one to really study our first planet was Messenger, which was orbiting for 4 years from 2011 to April 30 of 2015, when it purposely crashed into the planet after running out of fuel and made a crater 50 feet wide as it slammed into the planet at over 8000 miles per hour. We can't see this man-made crater from Earth, but Bepi-Colombo should be able to see it.

The Quadrantid meteor shower will peak on Sunday evening the 3rd. Unfortunately the moon will be a waning gibbous that will rise around 9 pm to spoil the show just 5 hours after sunset. This shower can produce over 100 meteors per hour, but it is hard to actually see that many because its peak is very narrow and the weather is not usually very clear this time of year. This year the west coast will have a better chance to see more meteors than our east coast, but the moon will still interfere a few hours into the shower.

This is one of only two meteor showers caused by an asteroid and not a comet. The Quadrantids are caused by an asteroid named 2003 EH1, which orbits the sun every five and a half years and was discovered in 2003 by LONEOS, which stands for Lowell Observatory Near Earth Object Search. That one is similar to several other telescopes like NEAT, LINEAR, and ATLAS which have all discovered many comets and potentially hazardous asteroids along with thousands of supernovae.

The Quadrantids are named for an extinct constellation named Quadrans Muralis, which means "wall quadrant". It was located near the Big Dipper and Draco the Dragon.

There will be another good conjunction of Venus and the slender crescent moon on the Monday morning the 11th an hour before sunrise. The moon always has to be a thin crescent when it is near Venus because it also has to be near the sun at that time. That makes for a more dramatic view of the pair as the earthshine on the moon is only visible during its crescent phases. The moon will not occult Venus this time anywhere on Earth like it did last month. Through a telescope you would see that Venus is nearly full now since it is approaching its superior conjunction with the sun when it will be farthest from Earth.

Jan.1. On this day in 1801 G. Piazzi discovered the first and largest asteroid, Ceres, which was considered a planet for a while. Ceres is 600 miles in diameter and may have a liquid ocean underneath its icy surface. We have a spacecraft named Dawn which is orbiting Ceres right now. It first orbited Vesta until 2 years ago. Vesta has interesting geology and a differentiated core and mantle and crust along with a lot of hydrated material on its surface. Many of our meteorites found on earth come from Vesta. Then Ceres is more icy like the outer moons even though they are both in the main asteroid belt between Mars and Jupiter. These are both proto planets that were on their way to becoming planets until they were disrupted by Jupiter.

Jan.2 Earth is at perihelion to the sun today at 91.4 million miles away. Its average distance is 93 million miles and its aphelion distance on July 4 is 94.5 million miles.

Jan.3. The Quadrantid meteor shower peaks tonight into the next morning.

Jan. 6. Last quarter moon is at 4:38 a.m.

Jan.7. On this day in 1610 Galileo discovered 3 moons of Jupiter, Io, Europa, and Callisto. He would discover Ganymede, whose 3200 mile diameter makes it the largest of all our 210 current moons in our solar system, 6 days later.

Jan.9. Mercury joins Jupiter and Saturn and will form a tight triangle with them the next evening.

Jan.11. The slender waning crescent moon will pass just 4 degrees up and to the right of Venus this morning half an hour before sunrise.

Jan. 13. New moon is at 12:01 am.

Jan.19. On this day in 2006 the New Horizons mission was launched to Pluto. That was the same year that Pluto was reclassified as an icy dwarf. New Horizons had a perfect mission, passing just 7700 miles above its icy surface on July 14 of 2015.

Jan.20. First quarter moon is at 4:03 p.m. Mars and the moon will be just 6 degrees apart tonight. Buzz Aldrin was born on this day in 1930. He was the second man to walk on the moon.

Jan.28. Full moon is at 2:17 pm. This is known as the Wolf, Old, Moon-after-Yule, or Ice Moon.

Moon Phases

Jan 6
Last Quarter

Jan 13
New

Jan 20
First Quarter

Jan 28
Full

Moon Data

Jan 9
Moon at perigee

Jan 11
Venus 1.5° north
of Moon

Jan 13
Jupiter 3° north
of Moon

Jan 14
Mercury 2° north
of Moon

Jan 17
Neptune 4° north
of Moon

Jan 21
Mars 5° north
of Moon

Uranus 3° north
of Moon

Moon at apogee

OBSERVER'S CHALLENGE* –January, 2021

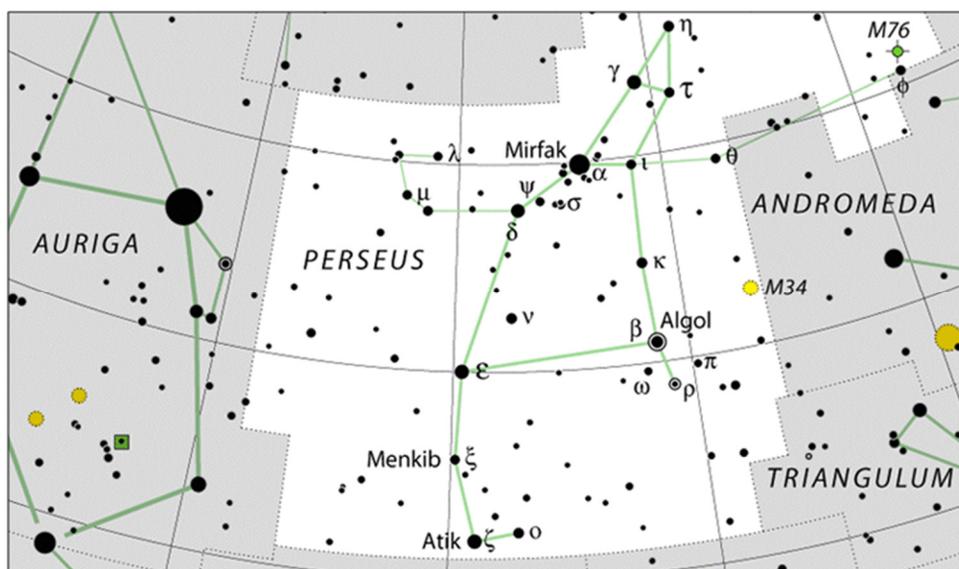
by Glenn Chaple

IC 348– Cluster and Reflection Nebula in Perseus (Mag: 7.3, Size: 8')

IC 348 is a star-forming region in Perseus, located just 7 arc-minutes south and slightly east of the magnitude 3.8 star omicron (o) Persei. It contains several hundred stars, most of which are too faint to be seen with typical backyard scopes. The cluster illuminates the surrounding reflection nebula VdB 19. Visually, a small-aperture scope will capture a dozen or so of the brighter cluster members, while the nebulosity mandates medium to large apertures and a dark-sky location.

In her book *Deep-Sky Wonders*, Sue French mentions a triple star, $\Sigma 439$, and a double star, $\Sigma 437$, that are associated with IC 348. In most scopes, $\Sigma 439$ appears as a magnitude 8.8 and 10.3 double separated by 23.4". The brighter star is actually a tight binary system (BD+31° 643) whose magnitude 9.3 and 9.5 components, both hot B5-type main sequence stars, are just 0.6" apart. $\Sigma 437$ is a near twin system comprised of magnitude 9.8 and 10.0 stars separated by 11.4".

IC 348 is a young open cluster, perhaps no more than 2 million years old. Cluster and nebula are 900 to 1000 light years away.

IC 348 Finder Charts

IAU and *Sky and Telescope*

**The purpose of the Observer's Challenge is to encourage the pursuit of visual observing and is open to everyone who is interested. Contributed notes, drawings, or photographs will be published in a monthly summary. Submit them to Roger Ivester (rogerivester@me.com). To access past reports, log on to rogerivester.com/category/observers-challenge-reports-complete.*

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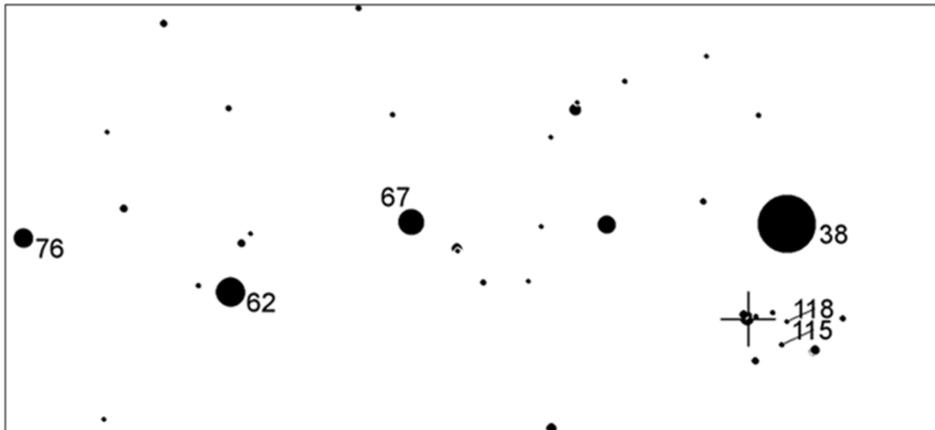
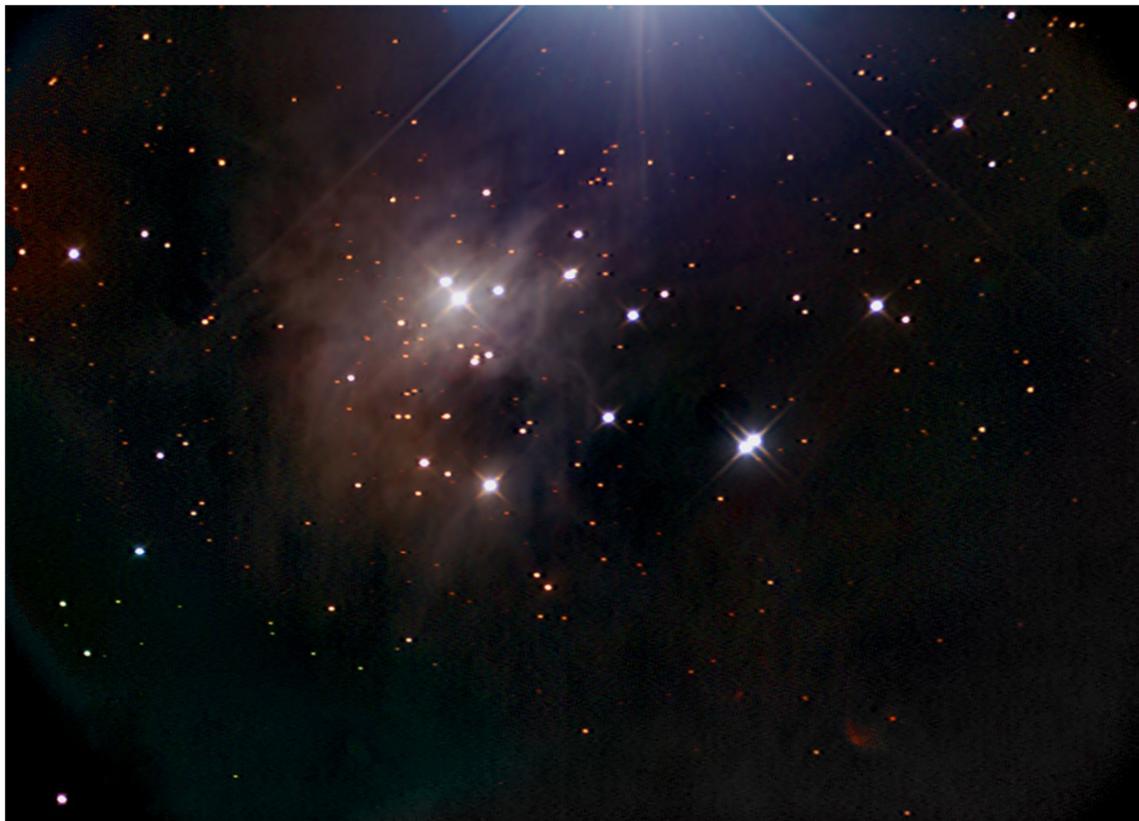


Chart made using AAVSO's Variable Star Plotter. Numbers are magnitudes, decimals omitted. Field of view is 1.0 by 0.5 degrees. North is up. Bright star is omicron Persei.



Taken with 32-inch scope using asi6200 camera. About 90 minutes total imaging, 30 minutes each red/green/blue. North is up. Image by Mario Motta (ATMoB)

“Continued on page 5”

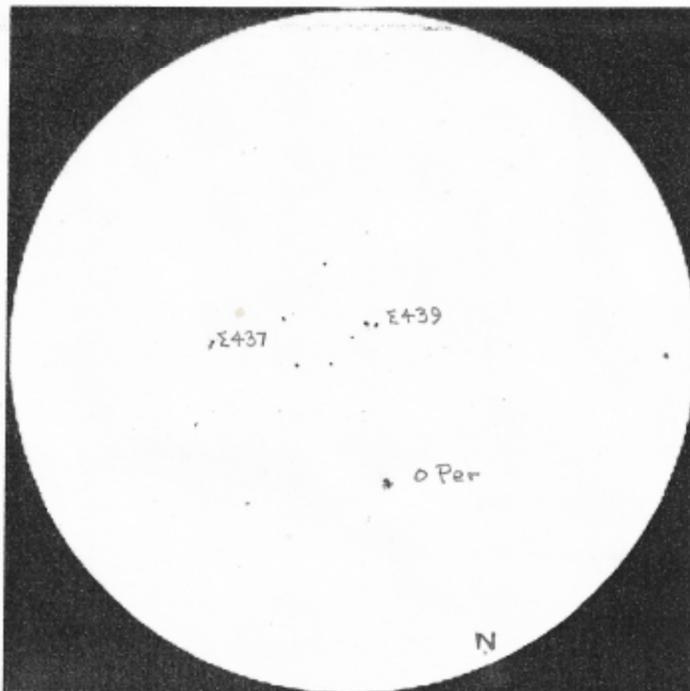


OBSERVING LOG

NAME: Glenn Chaple
 DATE (M/D/Y) 12 / 08 / 2020 TIME: 8 : 15
 OBSERVING SITE: 82 S. Harbor Rd. Townsend MA
 SKY CONDITIONS: Seeing (Antoniadi Scale) IV Poor Limiting Magnitude 5
 OBJECT: IC 348 TYPE: OC CONSTELLATION: Per

SKETCH (note direction of west)

NOTES:



Rather sparse cluster.
 Only a handful brighter than 11th magnitude.
 Cluster dominated by the wide double Σ439.
 No sign of nebulosity, even with narrowband filter

OBSERVING EQUIPMENT

Binoculars X
 Telescope: 10" f/5 reflector Eyepiece: 9mm Nagler
 Mag: 141 X Field Diam: 0.6 ° Filter (if any): _____

IC 348, as seen with 10-inch f/5 reflector at 141X. Field is 0.6 degrees across. Sketch by Glenn Chaple (ATMoB)

Astro Short Submitted by Peter Gillette

November 29th. First clear day and semi-clear night in a while. I had had the pleasure of some day-time observing of the large sunspot group, and then swung over to catch Venus, and even Mercury before moving back over to weekend chores. A late-afternoon walk to "our" overlook to the west netted a fine sunset, but as I was about to head inside for an early dinner, a light on my easterly ridge caught my eye, and I knew right away that the moon was coming, so I grabbed my camera, and this is one of my shots...



I knew the moon would be taking up most of the sky, and planned to make the most of it. It didn't hurt that I'd recently been reading about the "Murs Enigmatiques" of Etienne Trouvelot in the British magazine, *Astronomy Now* (the best astro-mag out there, in my humble opinion!), wherein a strikingly straight wall or at least beam of light was seen cutting across the crater Eudoxus. I knew that it was seen only once, and at "sunrise" at that part of the moon, so I had no hopes of seeing anything more than the crater itself, but I thought it would be fun to take a look, anyway.

I don't have anything like the knowledge of the lunar surface that some people have, like Lawrence Garrett, but I do have a GoTo scope and an installation of the Virtual Moon Atlas, and 'tho' I had hardly ever popped open the software, I was pretty sure I had noticed that it could, in theory, run a GoTo scope around the lunar features, so I gave it a shot. After some snags, I updated my version, and away I went. First was Eudoxus, but the light was so flat that I really didn't see much, and was unsure that I was in the right area, so I decided to head for familiar ground, and see how things went from there. Proclus is a favorite, with it's angled sprays, and the VMA got it into the field of view. After centering it, I was able to "Sync" the scope to the software, and I moved to a 10mm eyepiece.

“Continued on page 7”

Astro Short “Continued from page 10”

The thin clouds overhead made contrast even tougher than just the full moon, but the higher magnification helped a bit. From there I selected another favorite, Posidonius, and VMA nailed it, even at high power. I could see another favorite, Daniell, up in the corner of the view, and headed there. I'm partial to it for its name, which, if I drop one "L", is the name of one of my sons. In that view, I saw an interesting crater at the top of the field, with a center peak? or was it a smaller crater? It turned out to be named Hercules, and was a fine sight, but again, I got distracted by an odd feature of a neighboring crater. On the southern rim was a - very- dark patch. Quite distinctive, there was nothing else like it that I could see. VMA to the rescue, it told me that it is a pyrochlastic feature called “Atlas South.”

I'd had so much fun, cruising the moon with the help of VMA, that I just wanted to share it. Are others using this tool and just keeping quiet about it?

I closed out the night by swinging over to Mars, the GoTo nailed it with a 10mm EP, and yeah, I was surprised at the detail I could still pull. I then swept up Uranus and Neptune, and closed out with falling in love with Almach. The color of the second star there is so gemmy, it reminded me of the gem-cutting I have had to put away while my life is so full of higher priorities. Superb aquamarine came to mind...

Watching the moon rise over my eastern ridge is a monthly joy. This month it rises almost at it's northernmost spot, quite the opposite of what the sun is doing.

Glad to hear that you liked my write-up. Pretty sure its a first for me, but I came into the house, at the end of the evening, just so pumped up that I really thought I should try to share it.

The VMA is a joy, and it's free! The interface with the latest version, #7, is seamless, going thru ASCOM. I only had to tell it that I had a Meade , and click "show menu", and up came the ASCOM scope control panel, where I just told it to connect, and I was in!

After that, I could scroll over a feature, click it and then click it to go to, and wheee! The program also has tons and tons of info, images, and links to other sites with further info. I highly recommend it.

The Great CHRISTMAS Conjunction

Submitted by Paul Kursewicz

Camera: Canon Powershot SX50 HS

Jupiter & Saturn (no telescope)

Specs: JPEG, f/3.5, FL 4800mm, ISO 800, 1/4 sec, 12-21-20



On the day of the conjunction it was completely cloudy throughout the day. Around 4 pm I noticed a slight brightening low in the Western sky. My instinct told me to pack up my equipment, get into my truck, then drive down the road a ways to a site that has a clear view of the Western horizon. Around 5 pm a small patch of clear blue sky appeared and soon it grew big enough so I could see the conjunction. It stayed clear for about 10 minutes, just enough time to take some pictures. I did not have the time to find the correct exposure or f-stop, I had to work fast and be satisfied with what I got. I was pleasantly surprised to capture what I did, especially because it was one hour before astronomical twilight. The planets were separated by 0.1° (6.2 arcminutes). The four Galilean moons were all visible. Starting with the top left: Callisto, Io, Ganymede, and Europa. I added the picture of the Moon which shows my image of Jupiter and Saturn scaled in comparison to the Moon's size. At this time of day (late afternoon / early evening) the sky was still blue looking and I could not separate the planets with my naked-eyes. They looked like one very bright object. That memory will forever stay with me. If it had been an hour later I might of separated them. The last time Jupiter and Saturn were this close in the night sky was in 1276. However, in 1623 they were just as close in the daytime.

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

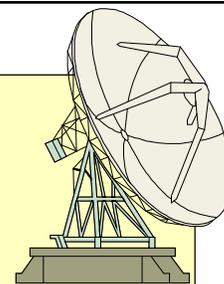
December 14
Geminids

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 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 to find local clubs, events, and more!

Check Your Sky's Quality with Orion!

By David Prosper

Have you ever wondered how many stars you can see at night? From a perfect dark sky location, free from any light pollution, a person with excellent vision may observe a few thousand stars in the sky at one time! Sadly, most people don't enjoy pristine dark skies – and knowing your sky's brightness will help you navigate the night sky.

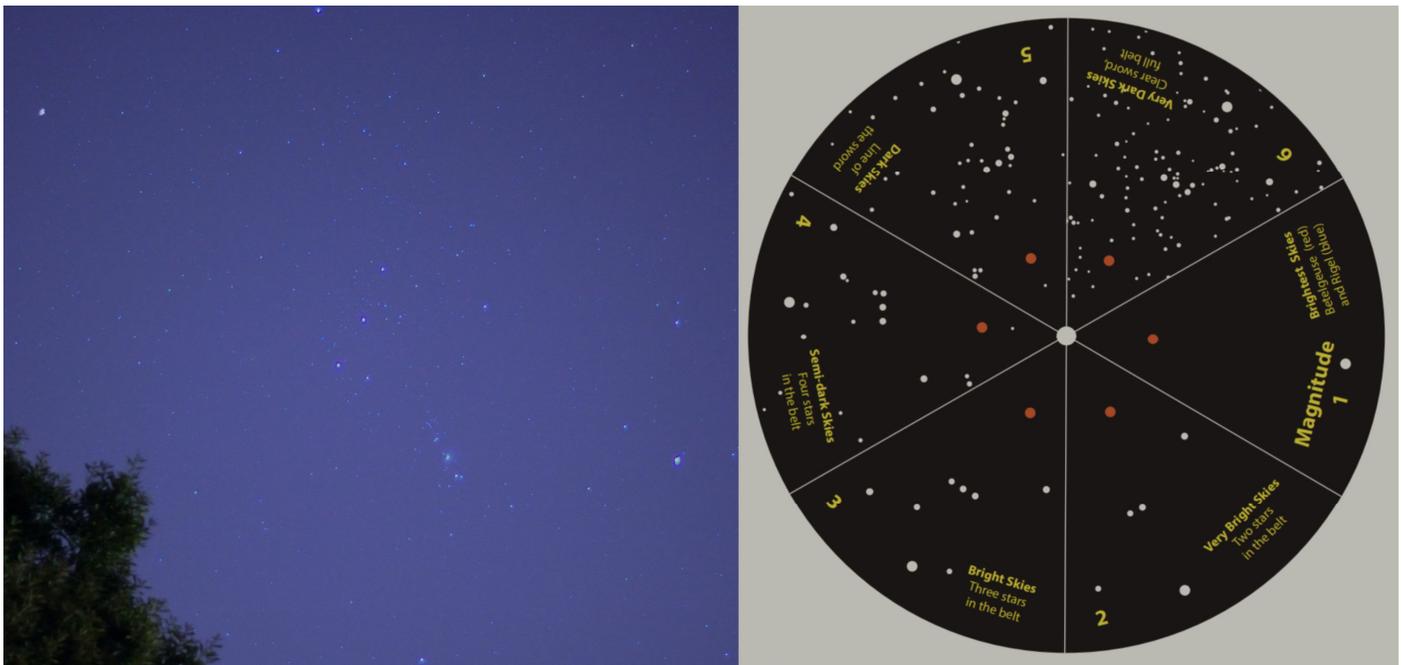
The brightness of planets and stars is measured in terms of **apparent magnitude**, or how bright they appear from Earth. Most visible stars range in brightness from 1st to 6th magnitude, with the lower number being brighter. A star at magnitude 1 appears 100 times brighter than a star at magnitude 6. A few stars and planets shine even brighter than first magnitude, like brilliant Sirius at -1.46 magnitude, or Venus, which can shine brighter than -4 magnitude! Very bright planets and stars can still be seen from bright cities with lots of light pollution. Given perfect skies, an observer may be able to see stars as dim as 6.5 magnitude, but such fantastic conditions are very rare; in much of the world, human-made light pollution drastically limits what people can see at night.

Your sky's **limiting magnitude** is, simply enough, the measure of the dimmest stars you can see when looking straight up. So, if the dimmest star you can see from your backyard is magnitude 5, then your limiting magnitude is 5. Easy, right? But why would you want to know your limiting magnitude? It can help you plan your observing! For example, if you have a bright sky and your limiting magnitude is at 3, watching a meteor shower or looking for dimmer stars and objects may be a wasted effort. But if your sky is dark and the limit is 5, you should be able to see meteors and the Milky Way. Knowing this figure can help you measure light pollution in your area and determine if it's getting better or worse over time. And regardless of location, be it backyard, balcony, or dark sky park, light pollution is a concern to all stargazers!

“Continued on page 11”

How do you figure out the limiting magnitude in your area? While you can use smartphone apps or dedicated devices like a Sky Quality Meter, you can also use your own eyes and charts of bright constellations! The Night Sky Network offers a free printable Dark Sky Wheel, featuring the stars of Orion on one side and Scorpius on the other, here: bit.ly/darkskywheel. Each wheel contains six “wedges” showing the stars of the constellation, limited from 1-6 magnitude. Find the wedge containing the faintest stars you can see from your area; you now know your limiting magnitude! For maximum accuracy, use the wheel when the constellation is high in the sky well after sunset. Compare the difference when the Moon is at full phase, versus new. Before you start, let your eyes adjust for twenty minutes to ensure your night vision is at its best. A red light can help preserve your night vision while comparing stars in the printout.

Did you have fun? Contribute to science with monthly observing programs from Globe at Night’s website (globeatnight.org), and check out the latest NASA’s science on the stars you can - and can’t - see, at nasa.gov.



The Dark Sky Wheel, showing the constellation Orion at six different limiting magnitudes (right), and a photo of Orion (left). What is the limiting magnitude of the photo? For most observing locations, the Orion side works best on evenings from January-March, and the Scorpius side from June-August.

Point and Shoot Camera Astroimaging (no telescope)

Canon Powershot SX50 HS

Image & write-up submitted by Paul Kursewicz

Gemini and Orion

Specs: JPEG, f/3.5, FL 39mm, ISO 800, 24 x 1 min, 12-13-20



I took this picture during the night of the Geminid meteor shower. I centered my camera between the constellations Gemini and Orion. Orion is obvious in the lower right quadrant of my picture; while a 3/4 lower partial image of Gemini is seen in the middle left quadrant. Just above one of the feet of the twins is the open cluster M35 located in Gemini. M42, the bright reddish nebulosity located in the sword of Orion shines brightly. While a dimmer roundish red nebulosity is seen in the lower middle section of my picture. This is the Rosette Nebula, and the small open cluster NGC 2244 can just be seen in its center. A pretty large serpentine line of stars is seen beginning just to the right of the top star of Orion's belt, and then snaking up and off the edge of my picture. The bright orange/reddish star Betelgeuse, lies near the center of my picture and diagonally to its right near to the edge of my picture is the bright star Rigel. I took many pictures with this set-up in hopes of catching some Geminids. But, came up empty. The Geminids were flying around, but avoiding this section of the sky.

[My story continues — next page.](#)

Geminids in Orion**12-13-20**

Before rapping things up on the night of the Geminids, I decided to point my camera in a new direction. I zoomed in the camera lens at the bright star Rigil in the constellation Orion. Shown here in the upper left quadrant of my picture. There is a faint nebulosity located here on the right side of Rigil that is called the "Witch Head Nebula." As the name implies, this reflection nebula looks suspiciously like a fairytale crone. So I was taking test exposures to see if I could see the Witch in my camera's LCD view screen. No such luck. The nebula is too faint. So I put things away and headed indoors. When I looked at my images on my computer screen, I noticed that on one of the images I had captured 3 faint Geminid meteors streaking away from the constellation Gemini. That was a very pleasant surprise! If you are having difficulty seeing the third Geminid, it is positioned just above the right streak.

Astronomical Society of Northern New England (ASNNE) Online Meeting Notes of**4 December 2020****Submitted by Carl Gurtman**

Record Note: Because of the coronavirus crisis (COVID-19), the Regular Meeting of 4 December 2020, was not held in person. Rather, the meeting was held via the teleconferencing application, "Zoom". Ian Durham hosted these meetings. (Thank you Ian!). The following Notes are provided. They are not meant to take the place of regular Minutes, which were not taken, but rather to serve as documentation.

Zoom Teleconferencing Meetings of Friday, 4 December 2020

Business Meeting: There was a brief Business Meeting. Nine people attended via Zoom.

Officer Rotation: Ron reported that he has served long enough as ASNNE President. As an example of the stresses of the position, all mail ASNNE gets is forwarded to him. He was thanked for his long and successful tenure. Ron will be hard to replace.

Snow Removal Equipment: Keith reported that yesterday he was preparing the tractors for winter use. One has two flats, and the trans-axle belt needs to be fixed. Keith can fix the trans-axle belt, and Ron will meet him at the Observatory with a portable air compressor.

Speakers: Ian brought up the subject of speakers. They can speak to ASNNE either via Zoom, or in person, as circumstances dictate. Ian is thinking of Irene & Nicole. Carl said he will check with past speakers, and if a minimum of two years has elapsed since they last spoke, Carl will re-invite them.

Social Media Vehicle: Because Yahoo will be no longer supporting our e-mails and document storage, we have had to move to a new provider. We are in the process of changing over to ".io". However, we have started out on the lowest tier of this provider, the free version. There is a middle tier, which would cost us \$220 per year, and a very high end version, which is about \$20,000 per year (!!). The higher-end level is clearly beyond us, but the free level we are currently on does not provide us with sufficient memory. There was quite a bit of discussion on this topic.

Next ASNNE Meeting: The usual progression would have us having our January meeting on Friday, 1 January 2021. However, because of the New Year's holiday, we will have the Meeting on Friday, 8 January. It will be a Zoom meeting.

Regular Meeting: After the Business Meeting, we held our regular Meeting. There were 14 participants via Zoom.

From the Business Meeting:

After discussion of the different levels of ".io" available to us, a vote was taken, and we will move to the \$220/year tier. Ian reported that that level was within our financial means.

We will hold our next Meeting, via Zoom, on Friday, 8 January.

"What's Up?": Bernie gave his usual thorough, comprehensive, and complete discussion of what's in store for us in the skies of December. The three most important upcoming events are: the Winter Solstice, The Geminid Meteor Shower, which may be the best meteor shower of the year, and the Jupiter-Saturn conjunction. Bernie also covered the names of this month's moons, and what happened on this day in . . . ?

The Talmage Observatory at Starfield: Carl displayed, via Zoom, the Memorial Plaque that will be mounted at the Observatory.

Astroshorts: There were then some Member Astroshorts.

Our Next Meeting is Friday, 8 January, 2021, via Zoom.

Club Meeting & Star Party Dates

Date	Subject	Location
<u>Jan 8</u>	<p><u>ASNNE Club Meeting:</u></p> <p>Our Jan Club meeting at The New School has been cancelled due to the Coronavirus.</p> <p>In all likelihood the plan for the January meeting is to have our Club Meeting while staying at home by using ZOOM.</p> <p>So, a computer or a phone will be required. Ian Durham will likely organize all of this. And as we get closer to the 8th, Ian will post a connection link to join Zoom.</p> <p><u>Topic:</u> TBD. Bernie Reim will do "What's Up." Astro Shorts</p>	<u>The New School, Kennebunk, Me.</u>
<u>Last Month</u>	<p>At last month's Zoom meeting Bernie Reim did "What's Up." Club members also participated in Astro Shorts. Some of the topics: Ron Burk discussed the speed of the Moon's shadow on the Earth; Peter Gillette shared his experience using "Virtual Moon Atlas" software; various members talked about the collapse of the Arecibo Telescope.</p>	
<u>TBD</u>	Club/Public Star Party: TBD	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

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.

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 _____

