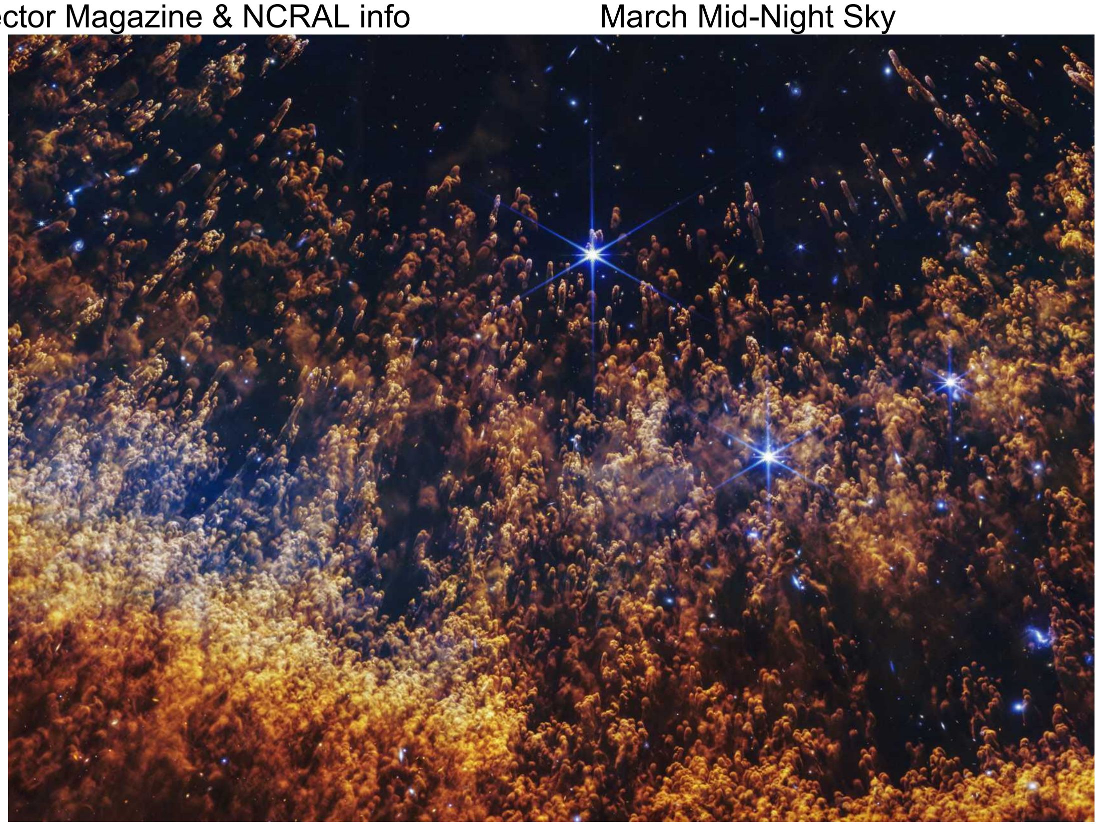
Peoria Astronomical Society, Inc.

P.O. Box 10111 Peoria, IL 61612-0111
Section of Peoria Academy of Science
Affiliate of the Astronomical League
www.astronomical.org

STARLITE

Spring, 2026

WHAT'S IN THIS ISSUE?



Helix Nebula from JWST NIRcam

Officers:

President: Dan Son, sonshine1992@gmail.com
Vice-President: Jesse Hoover
Secretary: Carol Hootman
Treasurer: Dave Monroe, dave.monroe@comcast.net

Directors:

Parliamentarian: Dave Monroe, dave.monroe@comcast.net
Nominating Chairman: Open
Legal Agent: Chris Schmidt
Northmoor Chairman: Dan Son, sonshine1992@gmail.com
Jubilee Chairman: Jesse Hoover

PEORIA ASTRONOMICAL SOCIETY IS NOW ON FACEBOOK:

www.facebook.com/PeoriaAstronomicalSociety

Update your address, phone or email changes

Please notify Dan Son at sonshine1992@gmail.com if you will be getting a new mailing address, email address and/or phone number. It is important that he has your personal information correct so you will continue to receive the Starlite and the Reflector.

2026 Meteor Showers & other events:

The **Lyrids** meteor shower peaks on the night of April 21-22 of 2026. The moon will be a waxing crescent with 24% illumination and set early in the evening. The best viewing is in the early morning hours of April 22.10-20 meteors per hour, including potential fireballs. Look towards the constellation Lyra after midnight'

Eta Aquariids peak around Mat 5-6 in the early morning hours. The moon will be a waning gibbous just 3 days after full moon so it will be big and bright all night.

Comet C/2026 A1 (MAPS) is a newly discovered comet. It will reach perihelion (closest to the sun) on April 4th at a distance of .005AU. It is to early to tell if this will be a bright comet so we will have to wait and see. It's closest approach to Earth will be April 6th, 2026 at a distance of .96AU.

Ramblings from the President

Well spring is here and as a result the central Illinois lunar eclipse was clouded out..thank you! We are still working with the state of Illinois to put on a new roof at our Jubilee site, with talks about redoing the outside wood siding as well. This Starlite has a nice article by Eric Clifton on the beginnings of our Decker-Grebner-Van Zandt Observatory aka Jubilee Observatory. The mowing season at Jubilee is about to start so rev up those motors!

I again want to thank Sheldon Schafer for 11 years of being Program Chair for PAS and doing a great job with finding speakers for members meeting and banquets. I also want to welcome Chris Schmidt as the incoming Program Chair and look forward to the fall and 2027 season with her.

We have had a lot of new members join PAS in the last year (30) and I know I have not called them all and talked to them. I want to thank you all for joining and I want to let you know we have scopes at Jubilee for members to use, we have a Seestar S50 smart telescope and a Lunt Solar scope for members to use. We are always looking for members to help at Northmoor during the summer Saturday night public viewing sessions and I am available to train anyone on these projects. Pay close attention to the peoriaastro email group, when the weather warms we will be going to Jubilee for Friday & Saturday night viewing and all are welcome and encouraged to come out. Members love to share their scope and show you wonderful objects in the night sky.

Take some time to learn, observe and meet our members and have fun!

Hope to see everyone out at the May members meeting.

Jubilee Observatory - The Very Beginning

This photo by multi-decade PASer, Bart Benjamin, shows our Jubilee Observatory over 50 years ago just after Bill Rutherford and the Forest Park Foundation 'gave' the hilltop to us. Later, the Foundation donated ~2500 acres (along with our hilltop) to the Illinois Dept. of Conservation to be incorporated into Jubilee College State Park. We now have a 30-year lease to the site, signed by Gov. Jim Edgar, and recently extended until the year 2052.

You're looking west across the feed-lot, which we try to dignify by calling it the 'courtyard'. On the right is the skeleton of our current 'warm-up building.' (Previously, it had been the pig shed … with a couple of feet of a 'really nasty pork by-product' inside.) Our building was constructed from lumber salvaged from the barn on the left … which was later razed completely to provide an unobstructed view of the southern skies,

The 10-foot dome in the background originally came from NorthMoor Observatory, where it had previously housed a 12-inch f/5-f/20 Newt-Cassegrain. It became the new home of the 14-inch reflector (donated by Dr. Phil Holwick). (Later it housed an auto-aiming C14 Compustar (donated by Sam Decker), then a 14-inch Meade (donated by ICC) and now a 12-inch Meade LX200.)

Note the green weeds … 8-10 feet high … behind the dome and which covered most of the entire 3-acre hilltop off to the right behind our building … along with about a dozen other structures, from pig feeders to corn cribs and other ramshackle barns … all of which were eventually either torn down or simply burned down.

Then a couple years later, Dr. Sam Decker offered a donation which led to the construction of the 24-inch telescope and the 16-foot dome donated by Art Grebner.

Today, we owe a huge 'THANK YOU' to Bart, Van, Russ, Darrell, Sam, Art, Scott and Barry and many others you don't even know for giving us the foundations of Jubilee Observatory. It was an honor … and a pleasure …. to work with everyone of them to turn the hill-top from a debris-strewn, abandoned farmyard into our park for astronomy.

Eric Clifton
Jubilee Chairman 1978-20xx (?)

Facts..just the Facts..

Earth is slowly shrinking. Every year, our planet gains about 45,000 metric tons of mass from meteorites and dust that falls to the surface. At the same time, Earth loses about 100,000 tons of mass through the escape of atmospheric gases.

If you were born after Nov. 2, 2000, there has never been a time in your life when every living human being was on Earth at the same time. That date marked the beginning of 25 years of constant occupancy on the International Space Station, meaning some humans have always been in space since then.

Dimorphos and Didymos, the targets of the DART and Hera missions, are a pair of asteroids gravitationally bound to each other. Scientists estimate that as much as 16% of all asteroids are found in pairs like this.

Submission of photos / article content for the Starlite: Dan Son

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

The Caterpillar Matching Gifts Program IRA RMD: Brian Hakes

If you are a CAT Employee/Retiree you can gift the PAS through the CAT matching gift program. Employees/Retirees are asked to submit matching gift forms electronically via the Caterpillar Foundation website, www.caterpillar.com/foundation. The process is easy. Once you made your gift to the PAS you can go online to the Cat Foundation website and complete the electronic form, there is no paper involved. Once the form is registered with the foundation they will notify the PAS and the treasurer will then verify the gift has been received. Because there will be no mailings, the turnaround time for the whole process will be negligible.

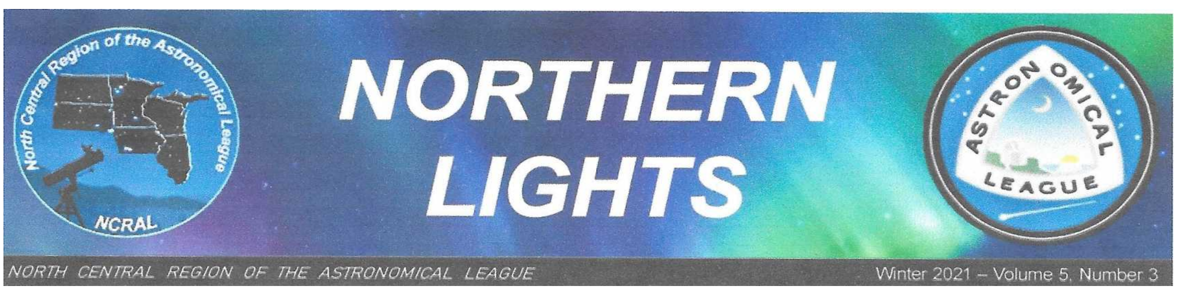
If you are required to make an annual mandatory with drawl from an IRA you can also designate an amount to the Peoria Astronomical Society. Don't forget that the PAS is a 501C(3) organization.
These are excellent ways to support the PAS and is a great way to help the society and the promotion of astronomy in the greater Peoria area.

Reflector:

Reflector Magazine digital edition is available for download. You may access an archive of digital issues from the AL website by visiting:
https://www.astroleague.org/reflector

NCRAL Newsletter:

The North-Central Region of the Astronomical League (NCRAL) is made up of member societies... the six states commonly thought of as the Upper Midwest of the USA, plus the Upper Peninsula of the state of Michigan. The PAS is a member of the NCRAL. Their Region Newsletter, also named “Northern Lights”, has been resurrected and is better than ever! The latest issue’s can be read on their website can be found here:
https://ncral.wordpress.com/newsletter-archive/
You can access the current issue and all other back issues through this link.



Program Schedule 2026

May 6 Meet at Northmoor Observatory, Donovan Park, 7:00 p.m.
Get to know - all about Northmoor Observatory
Get ready for the start of our public observing season in May
Learn all there is to know about our historic public observatory, including the history, and the operation of the telescope. Social time bring cookies.

Inclement weather notice: Monitor email (e-group), local radio stations or PAS Facebook Page if a program, board meeting, viewing, or star party may be canceled due to weather. If we determine a risk in the weather, the Society will cancel the event.

Smart Telescope Captures

M 27 The Dumbell Nebula by Mike Frasca

M 45 The Pleadies by Mark Hootman

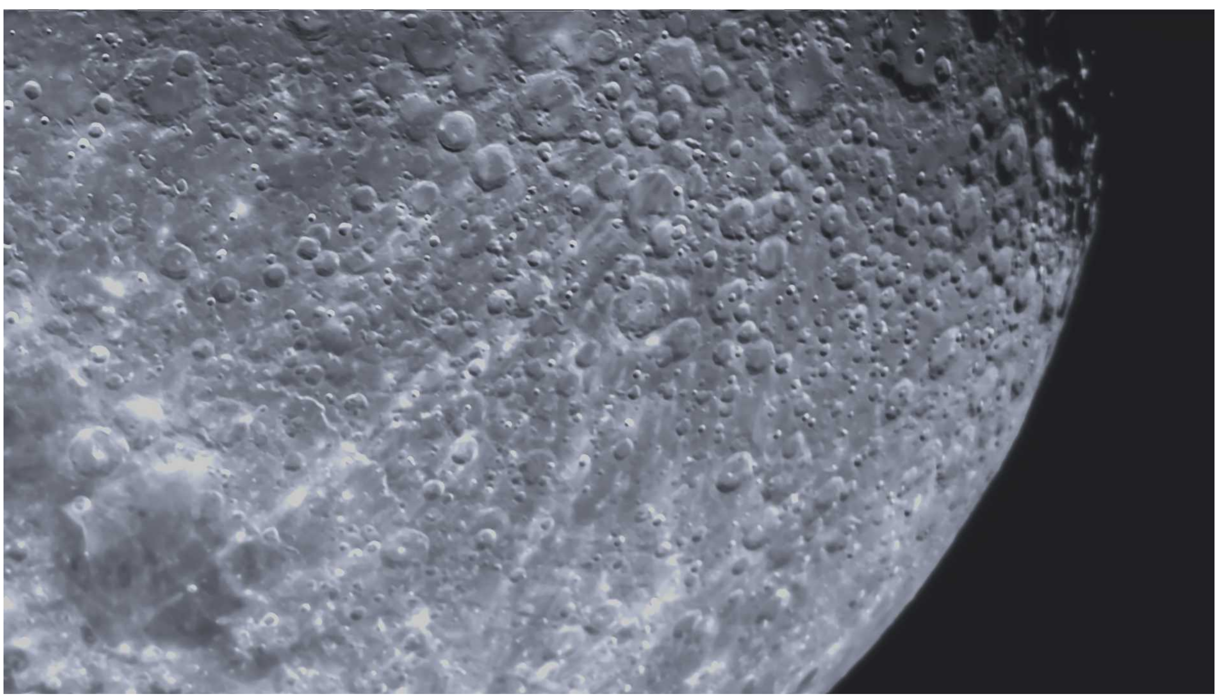
Photos from Members:

Stephens Quintent by Tim McGrath

NGC 2359 Thors Helmet by Tim McGrath

NGC 2237 Rosette Nebula by Linda Groezinger

The Moon by Linda Groezinger

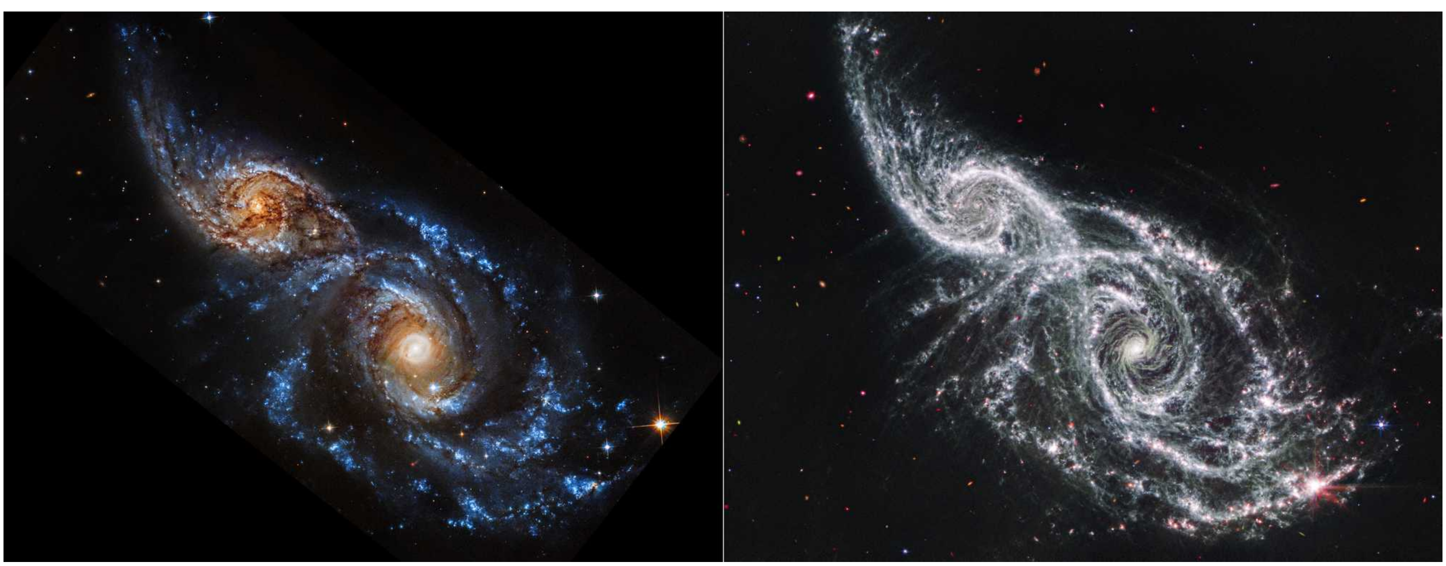


And from other Instruments:

iras-04302+2247 JWST & Hubble

NGC 6822 MIRI camera on JWST

Virgo Cluster from Vera C Rubin Observatory



NGC 2207 IC 2163 Hubble & JWST side by side images

25 Years ago Spring 2001

PAS Loses a Friend....

by Michael Frasca

Long-time Peoria Astronomical Society member and friend Barry Redenbo passed away on November 30, 2000, at the age of 54, after a short illness.

He was born on September 17, 1946, in Peoria. After graduating with a degree in engineering from Bradley University, he worked for Ferguson Enterprises for the past 22 years.

Barry Redenbo at a recent Astrofest
Photo courtesy of Calene Fleming

Redenbo joined the PAS in the mid-70s. His electronic skills were instrumental in building and maintaining the observatories at Jubilee State Park. In addition to serving as Chairperson of the 24-inch dome and being an active member of the PAS Board of Directors over the years, he served a stint as President in the mid-80s. Heart problems and several surgeries over the past few years did nothing to slow down his activities in service to the PAS.

Redenbo was also an avid ham radio operator and part of the official severe weather/tornado spotting network that covers the Central Illinois area.

At the funeral services, the Rev. Dr. Tom Barth used the night sky as a metaphor for Redenbo's life. He was laid to rest in Oakwood Cemetery, Metamora. Memorials may be made to the American Heart Association or Emergency 116. y

Can You Spot This?

Kemple's Cascade

by John Barra

Can You Spot This? *premiered in* Starlite *Issue # 144, December 2000*

One of the more beautiful binocular objects in the sky is in one of the regions of the sky that is barren of bright stars. That is probably the reason that this month's featured object is not well known and therefore seldom seen. The lack of bright stars makes its constellation, Camelopardalis, and itself tough to find.

The object, known as Kemple's Cascade, actually is an asterism. It is a 3° line of mostly 8th-magnitude stars, culminating with a small, tight open cluster — NGC 1502.

To locate Kemple's Cascade, a spring-to-fall object, become familiar with Chart 1.

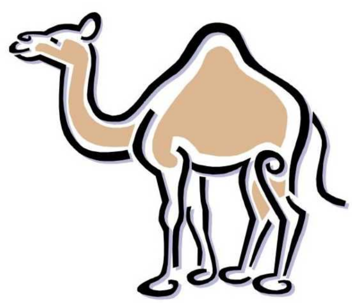
Start by finding the left two bright stars of the W that makes up Cassiopeia. Follow those two stars, from Delta to Epsilon, and continue to scan in that direction until you come to a pair of bright stars marked as *1* on the chart. Become familiar with that path.

Then locate star 51 in Andromeda, scan to just above Eta Persei, and continue until you find another pair of bright stars marked *2* on the chart. About halfway in between pairs *1* and *2* lies another star of equal magnitude, marked *3*. Drop below star *3* with your binoculars and you will be treated to a great view of over twenty stars in a line.

In binoculars, you might just note a hint of NGC 1502. Note the top three bright stars at the top and right of the beginning of the line. These are shown on both charts.

Put a low-power eyepiece in your telescope. You should be able to see where to point your finder to capture the three, based on their location on the charts and from learning their approximate location from your binocular viewing.

Once you have the three in your eyepiece, follow the line of stars downward as shown in Chart 2. Just off the edge of the bottom of the line will be NGC 1502. Put in a high power eyepiece and enjoy this rarely-seen small cluster.



The asterism was named after Canadian astronomer Lucien Kemple by another astronomer, Walter Scott Houston. It was named as a cascade because the stars look like a waterfall. The top three stars seem like the top of a cliff and the line of fainter stars appear to be a waterfall cascading over the cliff. One could say that NGC 1502 is a barrel that just fell down the waterfall.

...this mo featured is not known theref seldom s

To get another good look at this asterism, see Chart 18 in Uranometria 2000, which shows a truer number of stars in it. Once again, if you find this asterism and cluster, send me your comments for reprint in the *Starlite*.

OBJECT STATISTICS:

Name: Kemple's Cascade
Type: Asterism
Size: 3°

Name: NGC 1502
Type: Open Cluster
Magnitude: 5.7
Size: 7'
Coordinates: 04 hr. 07.7 min.; +62 deg. 20 min. y

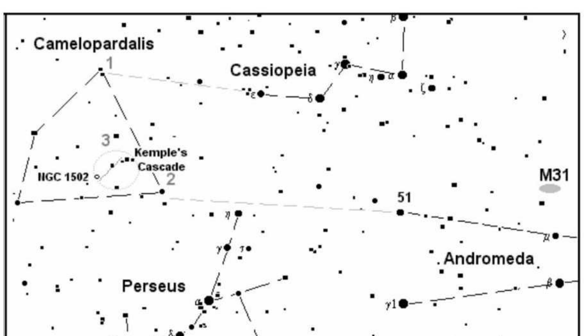


Chart 1: Naked-eye View

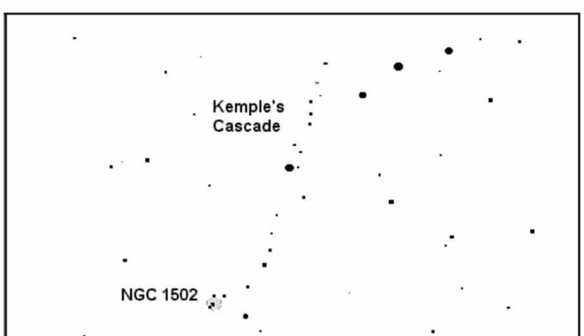


Chart 2: Binocular View

<u>50 Years ago:</u> ***missing this issue...does anyone have a copy? Spring 1976***

The Celestron Origin Telescope

By Prof. James R. Dire, PhD
Blinn College
Bryan, Texas, USA

In July of 2023, I gave a talk at ALCON 2023 (the annual convention of the Astronomical League) titled *The History of Innovations in Telescopes*. My talk started with the invention of lenses, which were first used for eyeglasses. Then, I discussed the invention of the telescope by lens makers in Holland in the late 16th century. My talked stepped through all the advances in telescope designs from Galileo's time to the current century. The last innovation I presented was the introduction of smart telescopes. Smart telescopes are optical devices that have an integrated camera, telescope and computer that can be controlled with a smart phone or tablet. At the time of my talk, most of the smart scopes on the marked were small aperture refractors (30-50 mm) on altitude-azimuth (alt-az) mounts. They go by names such as SeeStar, Dwarf, and Vaonis, to name a few. To me they all looked like a telephoto cameras integrated in a box with a CPU. Back then, Unistellar made the only smart reflector telescopes. They were Newtonian telescopes with a camera in place of the secondary mirror. Unistellar made the largest aperture (114 mm) smart telescope at the time. At the end of my talk, I predicted that more companies would start making smart telescopes and they would be made with larger apertures.

In the Spring 2024, my prediction came true as Celestron released the Origin Intelligent Home Observatory (**Image 1**). The Origin is a six-inch Rowe-Ackermann Schmidt Astrograph (RASA). The telescope is a catadioptric, meaning it uses lenses and mirrors. The primary mirror is a spherical figure. In place of the secondary mirror there is a camera (**Image 2**). The camera is held in place by the corrector lens, similar to the corrector lens on a Schmidt-Cassegrain telescope. The camera itself has a series of lenses to flatten the field and eliminate coma and other optical aberrations. The telescope has a wicked-fast focal ratio of 2.2. The aperture is 152 mm and the focal length is 335 mm. The camera presents a central obstruction 63 mm in diameter (41%). This obstruction is 17% by area, so the telescope has the same light gathering power as a 132 mm refractor!

Image 1 – The completely assembled Celestron Origin Home Observatory.

The Origin telescope arrived in a huge box (**Image 3**). Standing on its end, the box almost came up to my armpits. While I could lift the 45-pound box by myself, because of its size it is not easy to move around. So I used my hand truck. All of the components were individually packaged in smaller boxes inside of the huge shipping box **(Image 4)**. These included the tripod, the mount, the optical tube assemble (OTA), and accessories. The accessories included

Image 2 – The onboard camera presents a central obstruction 63 mm in diameter (41%).

the power cable, a cable to connect the mount to the OTA, and a Celestron nebula filter.

The OTA weighs 10.6 lb (4.8 kg) while the tripod weighs 4 lb (6.35 kg). The heaviest piece is the mount, 17 lb (7.7 kg). Everything was easy to set up by myself. Also with everything only totaling 41.6 lb (18.87 kg), I can easily move the assembled unit in and out of my house alone without having to take it apart.

The first assembly step is to set up the tripod and attached the legs spreader (Image 1). There is a built-in bubble level to level the tripod **(Image 5)**. The bubble level is easily visible with the mount attached to the tripod. Then the mount is placed on top of the tripod. There are wide grooves on the bottom of the mount that fit into grooves on top of the tripod platform to align the mount so the three hand-turned knobs under the tripod platform can be used to secure the three bolts that hold the mount to the tripod. The mount has three handles to grip it (**Image 6**). These handle are wonderful and perfectly placed to carry and lift the mount onto the tripod.

Image 3 – The Celestron Origin Home Observatory arrived in a large double-layered cardboard box weighing approximately 45 pounds.

Image 4 – Each component of the Origin Home Observatory was packaged in individual boxes with additional padding.

Image 5 – There is a built-in bubble level on the top plate of the tripod, which is visible with the mount attached. The telescope should be level during operation.

After securing the mount to the tripod, the OTA is attached to the mount by sliding the dovetail plate on the OTA and securing it to the mount's arm with the hand-turned clamp (**Image 7**). The final step in setting up the telescope is to attach the supplied cable to connect the mount to the OTA. There are two auxiliary ports on the mount's arm (Image 7). One end of the cable goes in one of those ports. The other end of the cable is connected to one of the two auxiliary ports on the OTA (see Image 6). The spare auxiliary ports can be connected to other Celestron accessories.

The telescope is powered by an onboard lithium battery, which I believe is located inside the mount. The battery is similar to a laptop lithium battery and can power the entire telescope system for six-plus hours. An AC adapter plugs into the telescope mount under the arm to charge the battery (**Image 8**). The battery should be charged fully prior to use. The telescope can be operated using AC power while it is charging.

The on/off button is on the right side of the panel pictured in Image 8. Also shown are two more auxiliary ports and a USB port. The mount's USB port's sole purpose is to provide power. If the phone or tabled used to control the telescope is low on charge, it can be plugged into the USB port on the mount. Besides powering the GOTO mount, the battery powers multiple devices inside the OTA, namely the onboard computer, the motorized focuser, the cooling fans and a dew heater for the corrector plate. All of these devises are controlled by the Celestron Origin software which has to be downloaded to an iPhone, iPad, Android phone or Android tablet from the App Store.

Image 6 – The mount has a handle on the arm and two on the base for gripping when carrying the mount and attaching it to the tripod top plate. The power switch and power cord receptacle are located below the arm. There is a power light on the arm below the word "origin". Note the cable that connects the OTA to the mount. The telescope will not operate without the cable in place.

Image 7 – A dovetail plate attached to the OTA is shown here clamped into the single arm of the mount. Note the auxiliary jacks on the mount and OTA.

The brains of the Origin Home Observatory are contained in the computer contained behind the primary mirror inside the OTA (**Image 13**). Theses electronics are kept cool using a filtered air system using the fan located on the bottom of the OTA (**Image 14**). The computer is a Raspberry Pi 4 Model B with what I believe to be 8GB of onboard RAM. There is also more than 50GB of solid-state memory for storing images. The telescope also broadcasts it's own WiFi signal to connect to it with a smart phone or tablet.

Once the telescope has been turned on, there is a power light located on the arm (Image 6 below the word "origin"). The power light shines solid red when the battery has sufficient charge. If the light is slowing blinking, plug in the charging cable. If the power light blinks rapidly, it could indicate a battery fault. Best to contact Celestron Customer Support if this happens.

There is an optional padded carrying case for the Origin OTA. The case comes in a flat box with two padded end caps (**Image 9**). **Image 10** shows the thick padding surrounding the telescope while stored in the case. The two case handles join together with VELCRO® strips (**Image 11**) and there is a shoulder strap to carry the case, too. I highly recommend the case for storage and transport of the OTA.

As you might have observed from the images of the telescope, the Origin Home Observatory cannot be used with an eyepiece. All viewing of celestial (or even terrestrial) objects must be done using the built in camera. The camera is a 14-bit Sony IMX178LQJ, color, back-illuminated camera used in many webcams. The quantum efficiencies for the red, green and blue pixels are shown in **Image 12**. The camera has 2.4 μm square pixels in a 3096 × 2080 array. This amounts to 6.44 megapixels in a rectangle with a diagonal of 8.9 mm. The field of view with the Origin telescope is 1.27° × 0.85°. The reason a bigger camera sensor is not used is discussed below.

Image 8 – Close-up view of the power panel. From left to right are the power cord receptacle, two additional auxiliary port, a USB port to power a phone or tablet, and the on/off switch.

Image 9 (above) – The optional Origin OTA padded carrying case.

Image 10 (right) – The Origin OTA fits snuggly in the case with ample padding to protect it.

When the Origin is turned on, the red LED lights on the bottom of the OTA light up indicating that the onboard computer is starting up. When the boot process has ended the red LED lights swirl counter clockwise. The telescope is now broadcasting its onboard WiFi signal. The WiFi is named something like "Celestron Origin". Once my iPad connects to the Celestron Origin WiFi network, the direction of the swirl reverses.

Image 11 – The Origin OTA case has handles and a shoulder strap for carrying it.

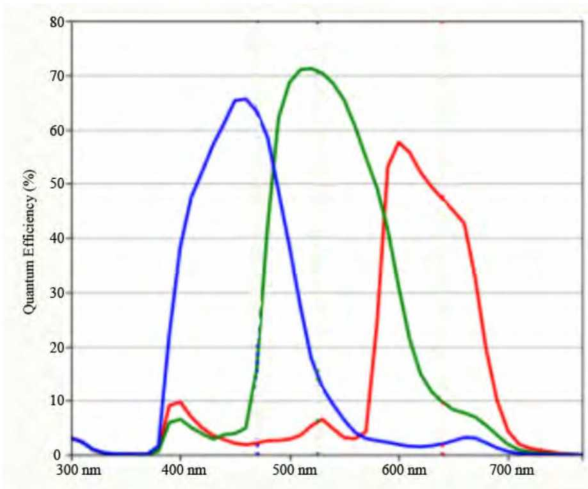


Image 12 – The quantum efficiencies in blue, green and red light for the Origin's imaging sensor.

After the WiFi connect is made, I opened the Celestron Origin App on the iPad. The home screen of the App shows the App is connecting to the telescope and an initialization process begins. During the initialization, the telescope slews to a high altitude, probably 70° or so and begins focusing the camera measuring star sizes to find the best focus. Once focused the telescope does a plate solve to determine where it is pointed. I assume it uses the date, time and location that are stored on the iPad to accomplish this. After about 90 seconds, the initialization process is complete and the home screen appears similar to that in **Image 15**. This screen is a planetarium powered by Simulation Curriculum's Sky Safari.

Tapping any object on the planetarium screen makes that the active object. In Image 15, the current object is NGC 7331 as annotated by "NGC 7331" contained in a bar on the screen below the sky chart. Clicking on bar with the current object will produce a menu with three choices. The first choice is for detailed object information. Selecting this leads to a screen similar to **Image 16**. The second choice is the center the object in the telescope. The final choice is to add the object to the night's schedule of object. Note the second and the third choice can be found at the bottom of the object information screen, too, along with a choice to locate the object and center it in the planetarium view.

Also note on the screen view shown in Image 15, there is a small live view window showing the view from the camera. Tapping this live view widow will enlarge it to the full screen. I should note, multiple people can connect to the telescope simultaneously using the Celestron Origin App. Each person can view the images the telescope displays on the App and save images to their phone or tablet. I am not sure how many users can connect simultaneously but the controlling user should ensure that other users do not attempt to control the telescope as the software does not block them from doing such.

Image 13 (above) – The primary mirror is located on the left side of the OTA in this image approximately near the orange stripe. The orange stripe wraps around a vent for cooling the primary mirror with an onboard mirror fan. There is a second vent 180° around the tube from the one shown here (see Image 6). To the left of the primary mirror is the onboard computer system.

Image 14 (below) – The bottom of the OTA. There is a cooling fan here for the onboard electronics. The white ring is a light that shines red. The light can be a solid ring or rotates around the circle indicating different modes for the remote wireless connection to the telescope.

Image 15 (above) – Once the telescope has been initialized by the software, the planetarium page can be used to select objects displayed on the screen to view.

Image 16 (right) – This is a sample info screen for NGC 7331 as seen on an iPhone with the Celestron Origin App.

When a command is give to center an object in the telescope, the telescope will use the optical encoders on the azimuth and altitude axes to slew to the location of the object. The telescope takes an image and does a plate solve to determine if it is on the object. The telescope will then slew further in an attempt to center the object. This may repeat. Eventually the object is centered in the camera. In all my nights with the Origin, it found and centered the object every time, even in the bright suburban skies in my backyard.

The bottom row on the planetarium view in Image 15 contains five choices: Menu, Galley, Camera (a camera icon),

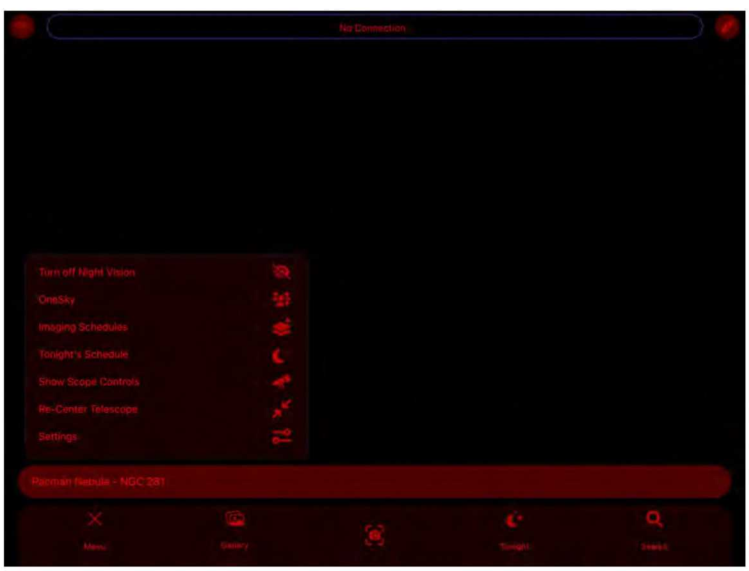


Image 17 – The Menu list is shown with the Celestron Origin App in Night Vision Mode.

Tonight and Search. I will talk about each individually. Tapping on menu brings up the choices in **Image 17**, where I have executed the first choice and turned on the night vision mode. Tapping on OneSky links to Simulation Curriculum's OneSky database. There you can see which astronomical objects other people are observing with Origin and how many observers are currently studying each object. The next two items are self-evident. Tapping on Show Scope Controls places two arrow on each side of the screen to slew the telescope in azimuth or altitude to frame objects on the camera. There are four slewing speed to choose from when the scope controls are visible. Finally, the Settings menu can be accessed from this screen.

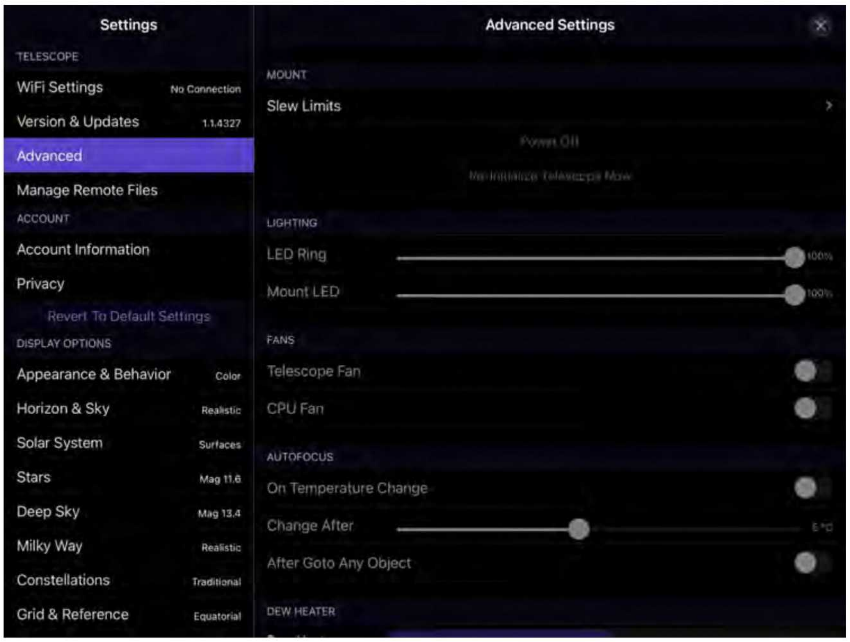


Image 18 – The Setting menu has myriad options for adjusting the planetarium view, adding WiFi networks, managing save images, and telescope settings.

The Settings menu is shown in **Image 18**. These settings include display options for the planetarium screen. If you have used Sky Safari, you will notice these are setting are similar.

The WiFi setting menu is an important one to master (**Image 19**). Here you can find a display of all WiFi networks in range of the telescope. You can select your home WiFi network and enter the password. This is useful because it allows connection of a phone or tablet to the Origin telescope through a home WiFi network instead of using the WiFi network broadcast by the telescope. Therefore you don't have to be outside next to your telescope to control it. This avoids mosquitoes in the summer or frostbite in the winter. You can sit anywhere in the comfort of your home while doing viewing and imaging with the Origin. At my house, I connect my iPad to my Apple TV device and display everything from the Origin software on my large flat screen TV!

The Advanced Settings menu allows adjustment of the telescopes lights, focus and fans. There is also a choice to power off the telescope, reinitialize it (which will refocus it), and to set auto-refocus for temperature changes. The Manage Remote Files menu provides choices to download and or delete images from the telescope. It also displays used and free memory.

There is a covered slot on the bottom of the OTA to plug in a USB thumb drive to transfer files off of the telescope (**Image 20**). Currently, thumb drives must be Windows FAT32 formatted, so you cannot use bigger than a 32GB thumb drive. When you download the images of an object to the thumb drive, you get a folder with the all of the raw images in FITS format and an unstretched TIFF image created from the raw files by applying dark, bias and flat frames to each, registering the raw files and combining (stacking) them. All of the TIFF and FITS images are about 12.5 MB in size. Even using the USB3.0 port, download times are long. I recommend downloading all raw images nightly rather than waiting until the telescope's memory is full (like I did the first time I used it).

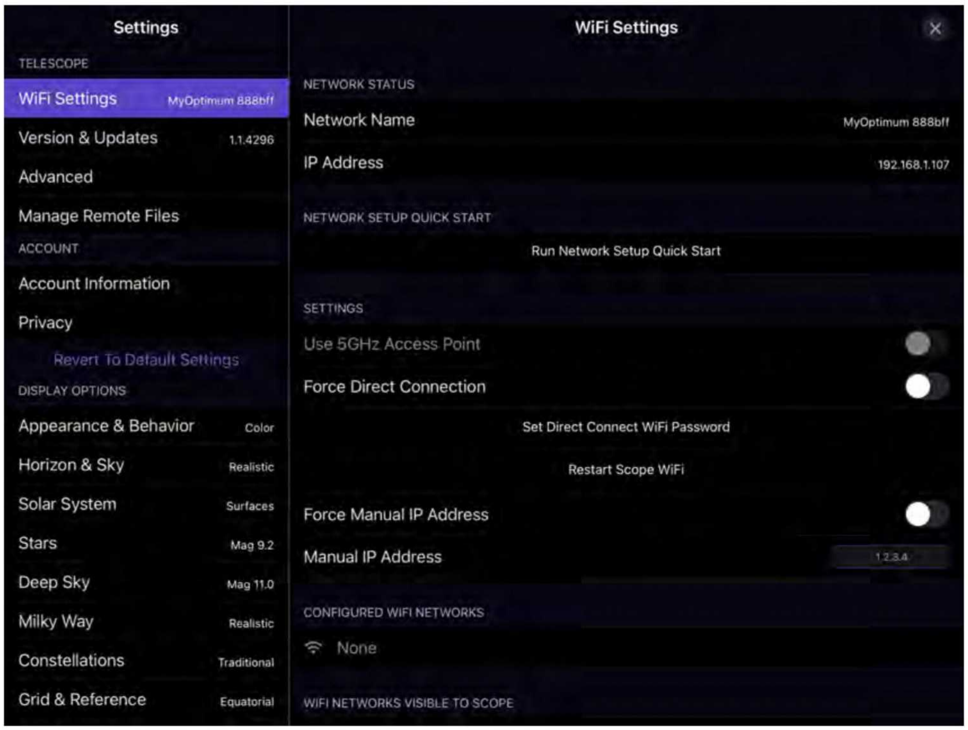


Image 19 – The WiFi settings menu.

When an Image is acquired with the Origin telescope, there is an option to download the image to the phone or tablet photo library. On my iPad, these images are saved as a high resolution JPEGs. They are also stored in the Galley inside the Celestron Origin App. The Gallery can be accessed by tapping Gallery at the bottom of the planetarium page (Image 15). **Image 21** displays the Gallery on my iPad. You can scroll up and down the Gallery to see images by name. I like the names with the images, because the images stored in my iPad's photo library do not have the object names. Sometimes I can't remember the object's names and have to go back and find the picture in the gallery.

When you select an image in the Galley, an enlarged copy of the image shows up. An example is M15 shown in **Image 22**. As you can see the object's name is shown. The date the image was acquired is displayed at the bottom. Below that are options to mark the image as a favorite, share the image (similar to sharing an image from a phone or tablet photo library), delete the image, edit the image, or display detailed information about the image (e.g. exposure, ISO, etc.) Selecting EDIT allows minor adjustments to be made to the image brightness, contrast, sharpness and saturation. The edited image can be saved to replace the original image.

Image 20 – USB 2.0 and 3.0 thumb drives can be plugged in on a panel near the bottom of the OTA for transferring files off of the telescope's onboard memory.

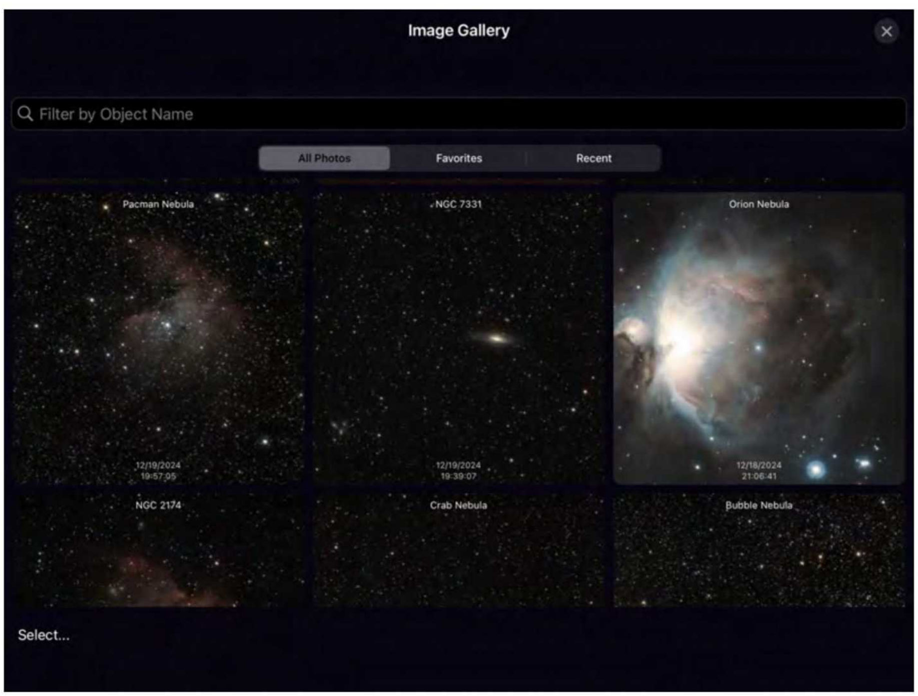


Image 21 – A view of the Image Gallery in the Celestron Origin App on the author's iPad.

The Tonight item on the planetarium page (Image 15) provides time information for sunrise, sunset, moonrise and moonset. Below that is a list of suggested object to look at that evening (**Image 23**). The Search menu looks identical to that in Sky Safari. I like to use the Search feature (Image 15) to find and center objects on the telescope's camera (**Image 24**). Tonight's Best is what it sounds like (**Image 25**). Items from this list can be added to the schedule for the evening. You have to scroll down to the bottom of the Search menu to find Messier, NGC and IC objects (**Image 26**).

Image 22 – When objects are selected in the image Gallery, a larger version of the image is displayed. Here is M15 from the Image Gallery.

The last menu on the Celestron Origin App I need to discuss is the camera menu (**Image 27**). Access the camera menu by touching the camera icon on the bottom of the planetarium screen (Image 15). The top row items in this menu are Auto, Exposure, ISO, Focus and Snapshot. Auto is used to acquire, register and stack images in real time. The default exposure is 10 s, but it can be set to longer exposures, up to 30 s. Since the telescope is on an Alt-Az mount, the field of view rotates as the telescope tracks on an object. This field of view rotation may cause star trails with longer exposures. That is why exposures are limited to 30 s. I have always used the default 10 s with the clear filter.

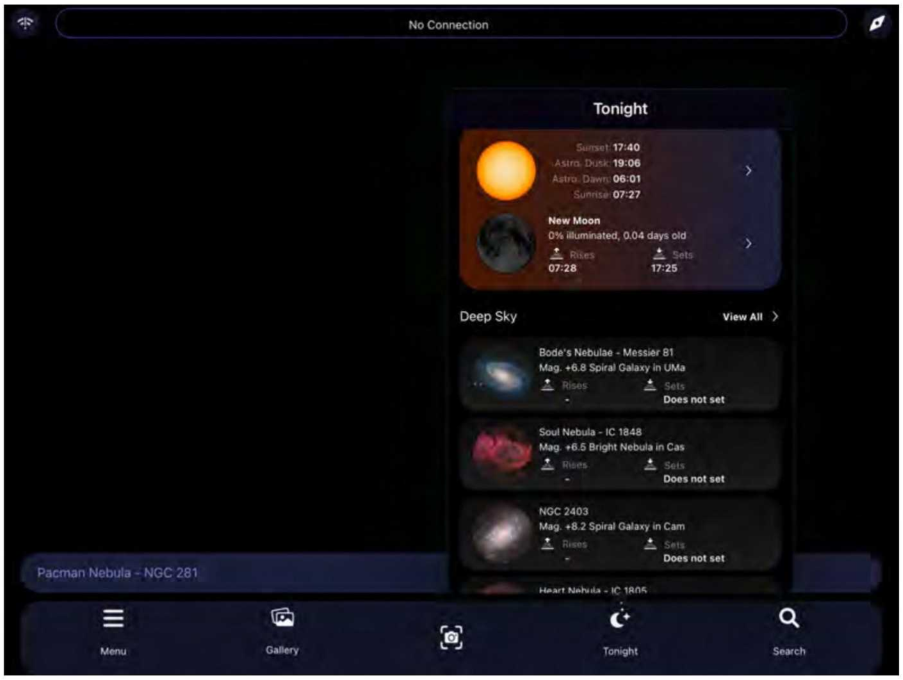
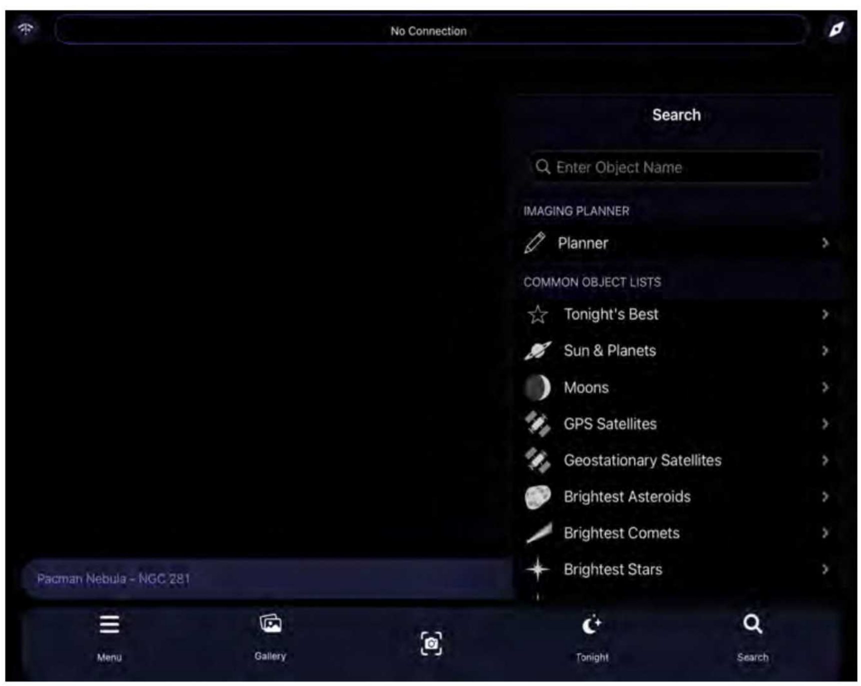


Image 23 – The Tonight menus contains useful data on the Sun and Moon, as well as recommend objects to view.

Image 24 – The top portion of the options listed in the Search menu.



The Exposure button is used to set the exposure time for single images. The ISO setting is similar to a gain setting. The default is ISO200, but it can be set from 100 to 2000. More noise may appear in an image with a higher ISO setting. The Focus control can be used to manually focus the telescope for terrestrial use. It also allows refocusing on stars if the temperature has changed since the telescope was initialized. Temperature changes cause the telescope tube to expand or contract changing the focus. The Snapshot mode is used for taking single images of say the Sun (with a proper solar filter), the Moon or a Planet. In Snapshot mode, the range of exposure choices is much greater. For instance, imaging a full moon may only require a millisecond or two.

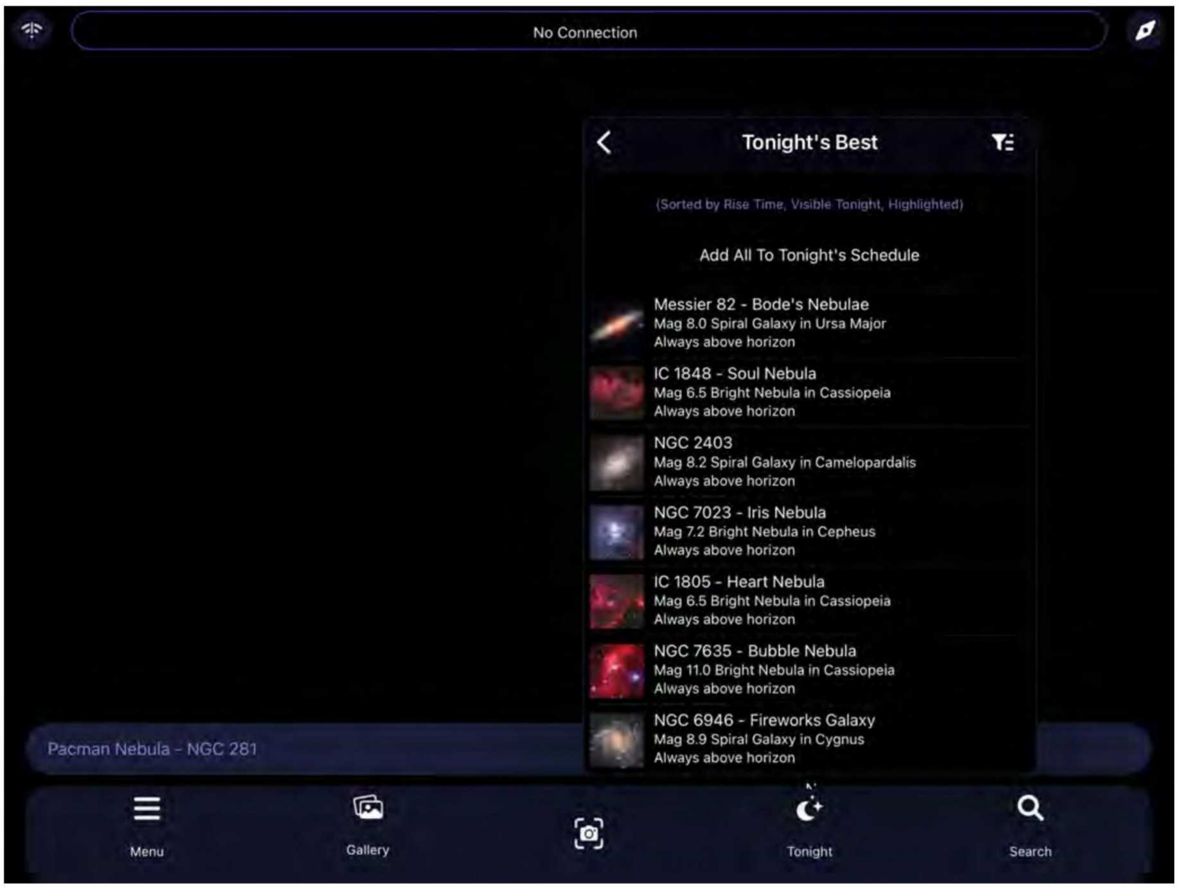


Image 25 – Tonight's best objects list is found under the Search menu.

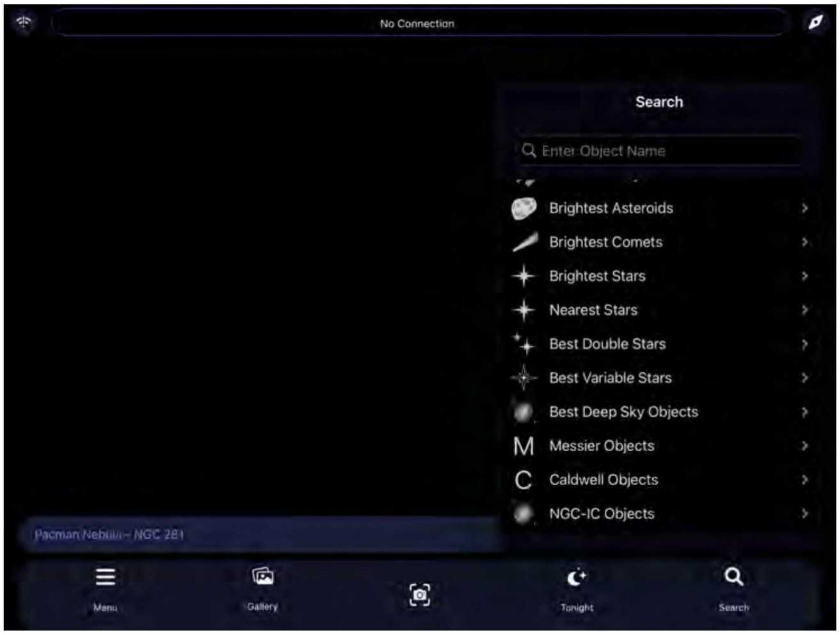


Image 26 – The bottom portion of the options listed in the Search menu.

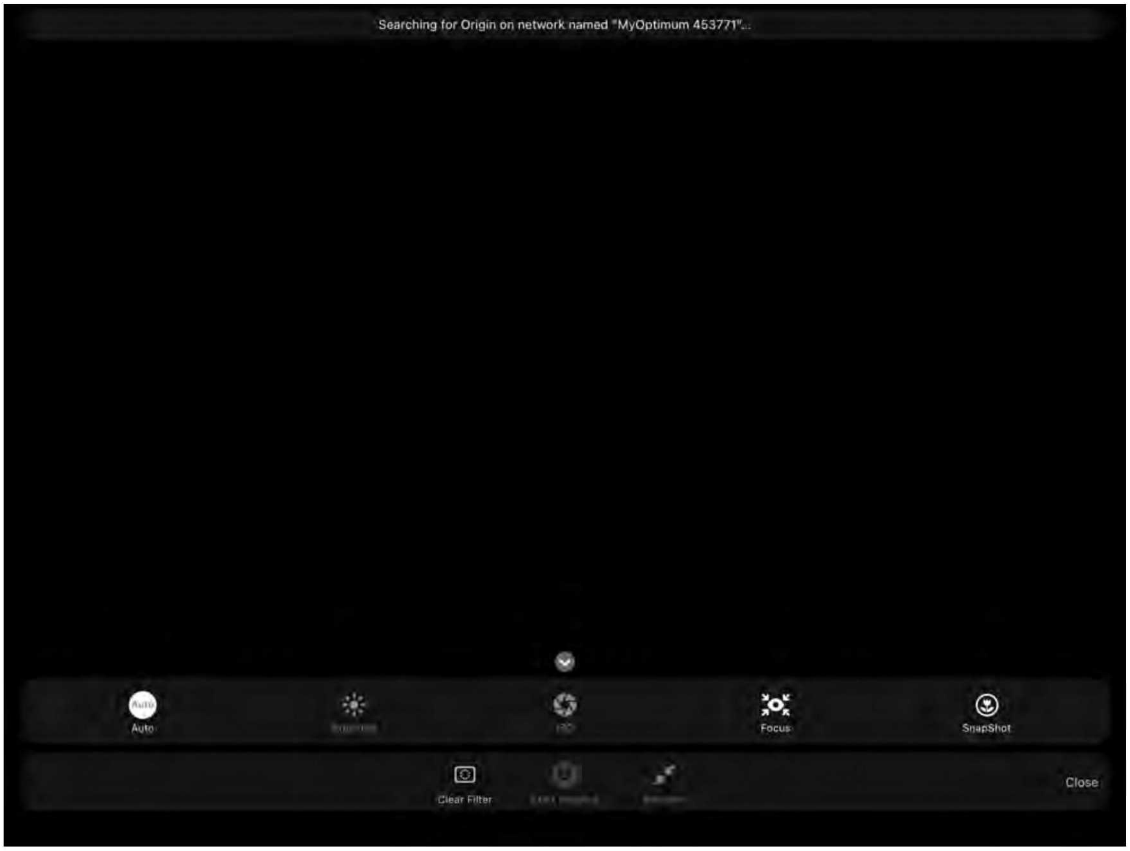


Image 27 – The Camera Menu contains all the options for controlling the Origin's camera.

You will notice a filter setting on the camera menu page. The Origin comes with a clear filter. There is an optional nebula filter. The filter cell is found between the camera and the corrector plate. The assembly is removed by gripping the handles (**Image 28**) and pulling it up. Care must be taken not to touch and smudge the corrector plate. **Image 29** shows the Celestron Origin nebula filter in its case and the clear filter that is unthreaded from the cell. Both filters are 1.25 inches in diameter. The assembly is also threaded to use 2-inch filters. The spectral characteristics of the Origin nebula filter are shown in **Image 30**. The filter passes wavelengths around H-alpha, H-beta and O-III. The default exposure setting is 15 s when the nebula filter is selected in the filter menu.

software images in Adobe Photoshop and am able to improve some of the images therein. This is much easier than starting with all the raw images!

The reason the Origin telescope has such a small imaging sensor compared to contemporary CCD and CMOS astronomical cameras is that this telescope is meant to be used visually (on a screen) as well as take longer exposure images. Each image that comes in is 12.5MB in size. For the software to be able to do all of the processing described above on the fly in a matter of seconds means that there must be a limit to the size of the data files, thus the number of pixels on the sensor. Using a sensor with more pixels would require a much faster computer inside the telescope. This could be done, but it would drive up the price of the telescope considerably. Celestron found the right middle ground between sensor size, computer capability and price!

Image 30 – This graph display the spectral transmissivity of the Celestron Origin Nebula Filter.

Image 31 – Raw Moon image shot with the Origin Telescope and saved as a JPEG file on the author's iPad.

Image 31 is a shot of the Moon taken with the Origin. This provides a good feel for the field of view of the telescope. Most users would be thrilled if this was their first astronomy image. I did sharpen it a little and made the color more realistic in Photoshop (**Image 32**). Another great beginning object to capture is the Dumbbell Nebula (M27). **Image 33** is a 10-min exposure (sixty 10 s subframes) taken through the clear filter from the city. Note the pinpoint stars from edge to edge! I tried the same total exposure from the same location using the Origin nebula filter. The result is in **Image 34**. More nebula detail is displayed and the stars are smaller. The Origin software stretched the image with the filter to make it as bright as the unfiltered image. For many other targets, I obtained better results with the nebula filter over the clear filter.

Image 32 – The author took the JPEG image of the Moon and processes in further in Adobe Photoshop.

One of the best combo of star clusters in the sky are neighboring NGC869 and NGC884. Both are framed nicely with the Celestron Origin (**Image 35**). The exposure was 5 minutes.

The Crab Nebula (M1) is shown in **Image 36** while the Orion Nebula (M42) is in **Image 37**. Both were 10-minute exposures with the filter. The only negative thing I can say about the Origin is the large star halos around bright stars as seen in Image 37. These are caused by the corrective optics in the camera's lenses. These halos are also commonly seen in images taken with multi-element refractors and zoom camera lenses.

I could not get all of the Pleaides (M45) in the field of view. I like that when you zoom in on an object in the planetarium view (**Image 38**) you can see a rectangle that simulates the field of view of the camera. I then could use the telescope control buttons to frame the part of M45 I wanted to Image (**Image 39**).

Galaxies are readily captured with the Origin telescope using very short exposures. You can't get all of M31 in the field of view (**Image 40**). This image did capture M32 and part of M110 (lower left edge). The telescope frames M33 nicely (**Image 41**). In **Image 42**, I was able to capture the Deerlick Galaxy Group (NGC7331, etc.) and Stephan's Quintet in the same image. I have only seen Stephan's Quintet in a 14-inch Dob from a dark site. But with the Origin, I could capture it in my backyard in just a few minutes! **Image 43** contains the equally elusive galaxy NGC891.

One of my favorite image taken to date with the Origin is a composition containing both the Bubble Nebula (NGC7635) and the star cluster M52 (**Image 44**). More difficult to capture than NGC7635 is NGC281, the Pacman Nebula. The Origin captured it with 32 minutes of imaging (**Image 45**), although I did perform some post processing in Photoshop to bring out more of the nebula.

Image 33 – The Dumbbell nebula shot with the Origin telescope with the clear filter. The total exposure was 10 minutes.

Image 34 – Same exposure as Image 33, except this time using the Origin Nebula Filter. Stars are dimmer using the nebula filter. The Origin software automatically stretched this image to bring out fainter detail than displayed in the image through the clear filter.

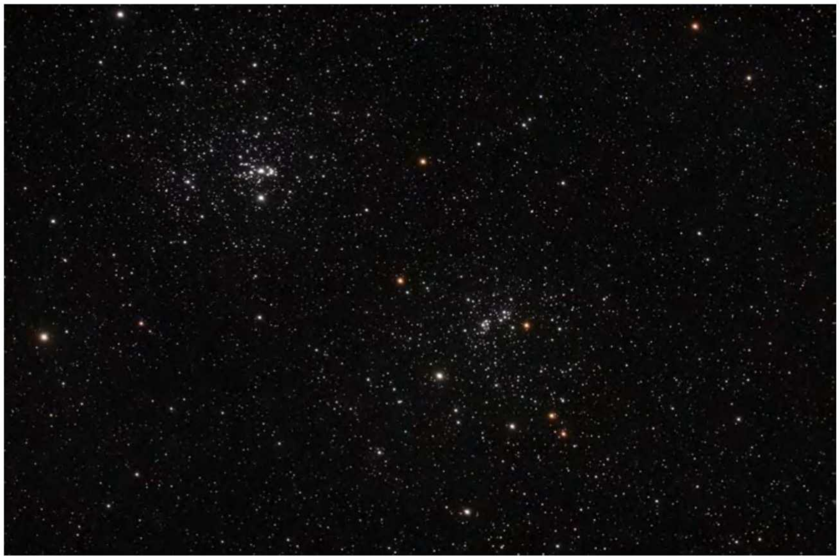


Image 35 – The Double Cluster in Perseus (NGCs 869 & 884). Note the great star colors in this 5-minute exposure.

Image 36 – Ten-minute exposure of M1, the Crab Nebula in Taurus.

Image 37 – The Orion Nebula (M42) captured with a 10-minute exposure.

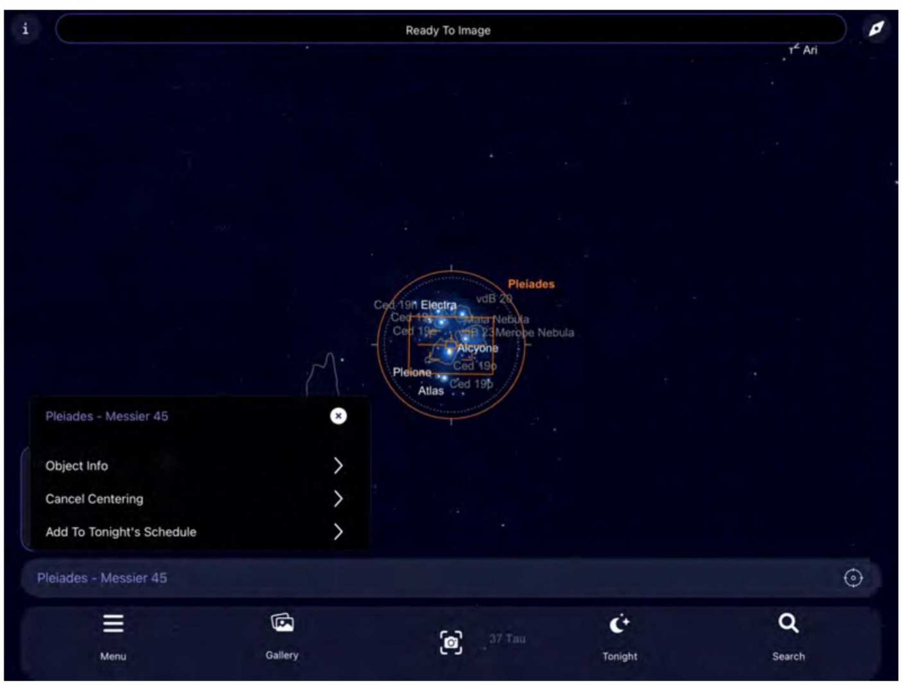


Image 38 – The orange circle in the planetarium window contains the current object the Origin telescope is pointing at. The orange rectangle shows the portion visible on the camera’s sensor.

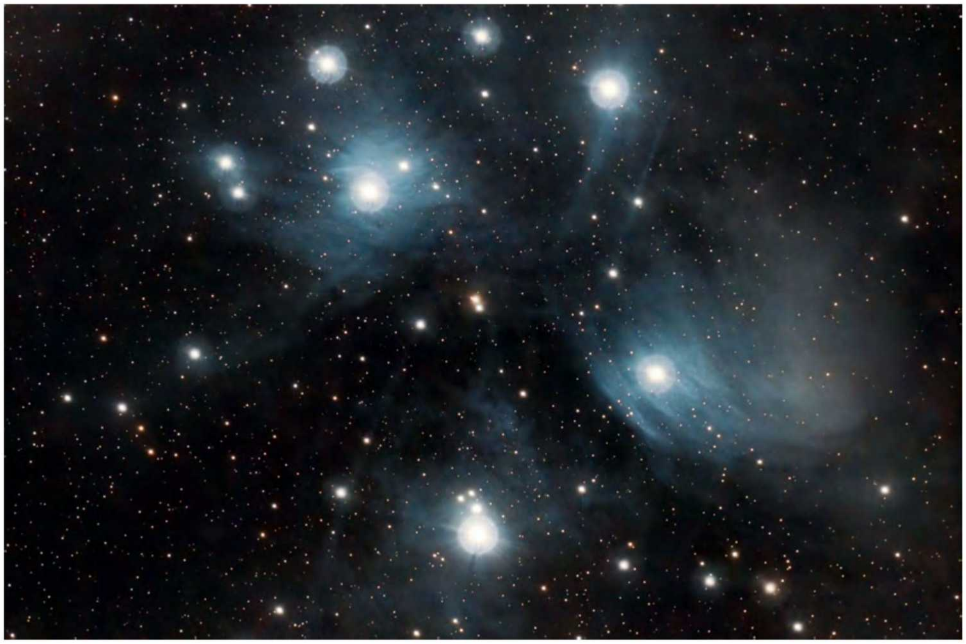


Image 39 – Most of the Pleaides (M45) are captured in this 10-minute exposure.

Image 40 – This image of M31 was captured with a 20-minute exposure using the nebula filter.

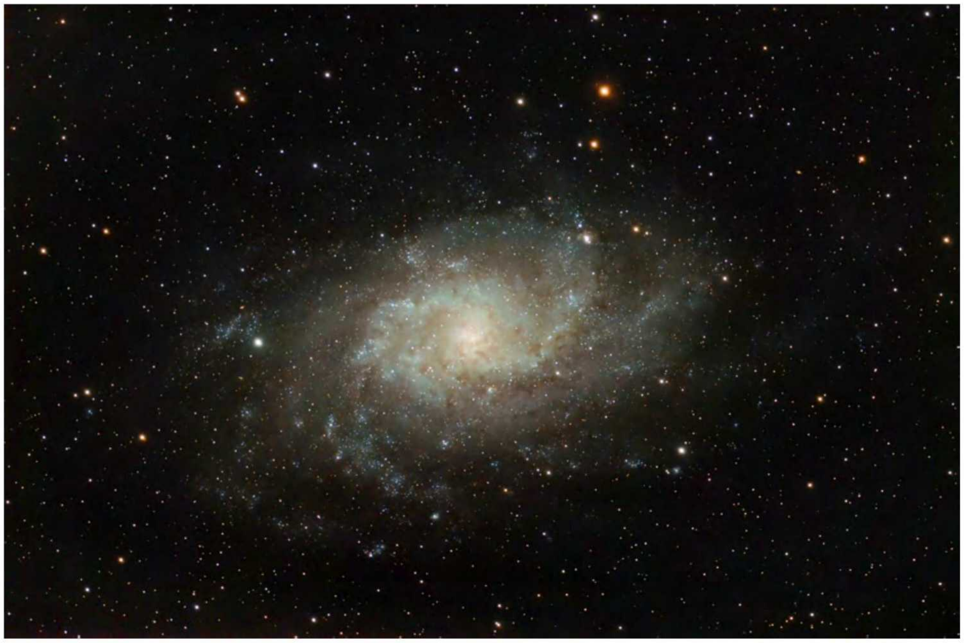


Image 41 – One of the longest exposures tried with the Origin telescope was this 33-minute exposure of the Pinwheel Galaxy (M33) taken with the nebula filter.

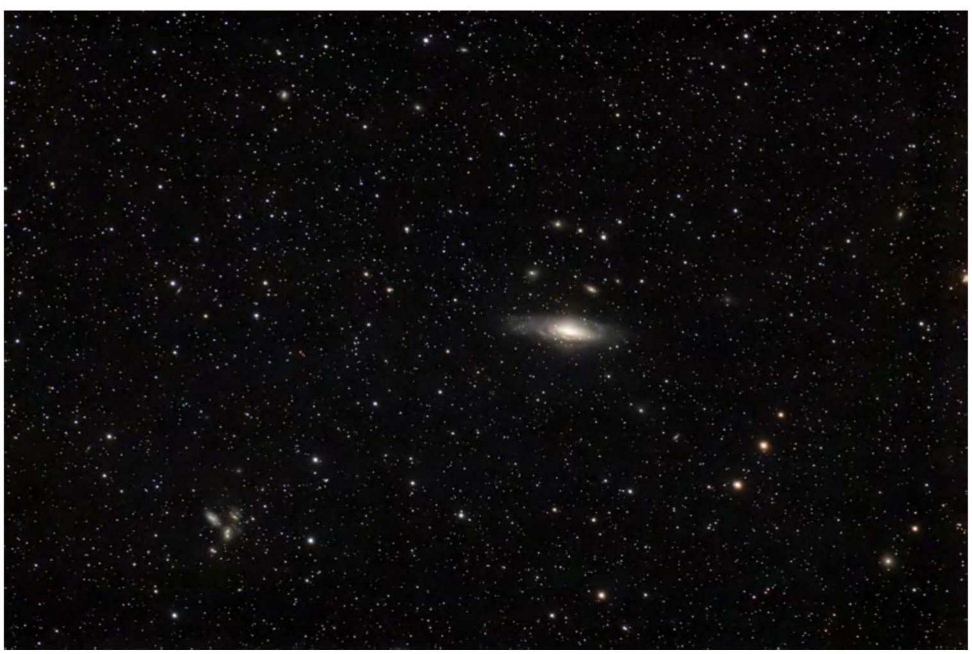


Image 42 –NGC7331 is the bright galaxy near the center of this image. To the lower left is Stephan's Quintet. This exposure was 15 minutes using the nebula filter.

Image 43 – NGC891 was captures in 15 minutes with the clear filter. This image was further processed using Adobe Photoshop to reduce the star size and bring out more detail in the galaxy.

Image 44 – This 20-minute exposure using the nebula filter captured both the Bubble Nebula

Image 45 – NGC281, the Pacman Nebula. The author took the 20-minute exposure JPEG image and stretched it further in

It is nice that you can get Origin to save an image with information such as object, exposure date, time and location stamped on the image. An example is this 10-minute exposure of M33 (**Image 46**).

Image 46 – Origin images can be stamped with the object name, exposure date and location from within the Origin software.

The Celestron Origin telescope is by far the best innovation in amateur astronomy this century. Any beginning astronomer can easily master the telescope right out of the box. No telescope is easier to set up and use. The telescope allows users to spy faint objects even in bright city skies using a smart phone or tablet. It can be controlled outside next to the unit or indoors out of the elements using a home WiFi network. Advanced astronomers can acquire deep space images that rival those taken with expensive CCD camera and equatorial-mounted telescope system. The only drawback the telescope has is its short focal length and its small sensor's narrow field of view. The short focal length is not good for planetary imaging or smaller, fainter deep sky objects. Despite this, the Origin is an excellent buy and would be my first choice if I were to only own one telescope for travel and imaging.

2026 Jubilee Maintenance Schedule		
(May 2nd 2026 to Sep 26th 2026)		
May 2nd	Jesse Hoover	Dan Son
May 9th	Silas Mattern	Vince Allen
May 16th	Steve Russell	Jon Crow
May 23rd	Dan Son	Jamal Shafii
May 30th	John Jordan	Gary Bussman
June 6th	Brian Bill	
June 13th	Steve Russell	John Jordan
June 20th	Jesse Hoover	Vince Allen
June 27th	Jon Crow	Jamal Shafii
July 4th	Jesse Hoover	
July 11th	Jon Crow	Steve Russell
July 18th	Jamal Shafii	Dan Son
July 25th	John Jordan	Silas Mattern
Aug 1st	Jesse Hoover	Gary Bussman
Aug 8th	Silas Mattern	Dan Son
Aug 15th	Brian Bill	
Aug 22nd	Gary Bussman	John Jordan
Aug 29th	Jon Crow	Silas Mattern
Sept 5th	John Jordan	Jamal Shafii
Sept 12th	Steve Russell	Dan Son
Sept 19th	Jesse Hoover	Gary Bussman
Sept 26th	Silas Mattern	Jon Crow

Responsibilities:

*** Check each building to ensure security of equipment.**
*** Mow lawn and trim around buildings**
*** Sweep floors, blow or sweep off grass clippings from walkways.**
*** Bring gas to top off mower tank.**
*** Please notify me of any schedule conflicts or problems with the equipment.**
Jesse Hoover: 309-258-0343

2026 Northmoor Hosting Schedule

Updated: 3/15/2026

2-May	9-May	16-May NM	23-May 1st Q	30-May FM
		Sheldon Schafer	***Dave Grebner***	***Dan Son***
		Chris Schmidt	Amy Raher	Barb Son
		S Mukherjee	Patrick Showalter	Vincent Allen

6-Jun 3rd Q	13-Jun NM	20-Jun 1st Q	27-Jun FM	
Sheldon Schafer	***Gerald Horst***	***John Lyle***	***Sheldon Schafer***	
Brian Bill	Brain Austin	Jon Crow	Carol Hootman	
Shannon Wiltz	Dan Son	Nick Rae	Dave Grebner	

4-Jul 3rd Q	11-Jul NM	18Jul 1st Q	25-Jul FM	
Jake Schultz	***Nick Rae***	***Joshua Wrigley***	***Sheldon Schafer***	
Jesse Hoover	Silas Mattern	Justin Wrigley	S Mukherjee	
Vincent Allen	Brian Austin	Amy Raher	Brian Bill	

1-Aug 3rd Q	8-Aug NM	15-Aug 1st Q	22-Aug FM	29-Aug
Dave Grebner	***John Lyle***	***Gerald Horst***	***Jake Schultz***	***Nick Rae***
Chris Schmidt	Patrick Showalter	Shannon Wiltz	Vincent Allen	Amy Raher
Jon Crow	Carol Hootman	Jesse Hoover	Silas Mattern	S Mukherjee

5-Sep NM	12-Sep 1st Q	19-Sep 1st Q	26-Sep FM	
Dan Son	***Joshua Wrigley***	***Dave Grebner***	***John Lyle***	
Barb Son	Justin Wrigley	Brian Austin	Jon Crow	
Patrick Showalter	Chris Schmidt	Shannon Wiltz	Gerald Horst	

3-Oct 3rd Q	10-Oct NM	17-Oct 1st Q	24-Oct	
Jake Schultz	***Nick Rae***	***Dan Son***		
Carol Hootman	Silas Mattern	Barb Son		
John Lyle	Joshua Wrigley	S Mukherjee		

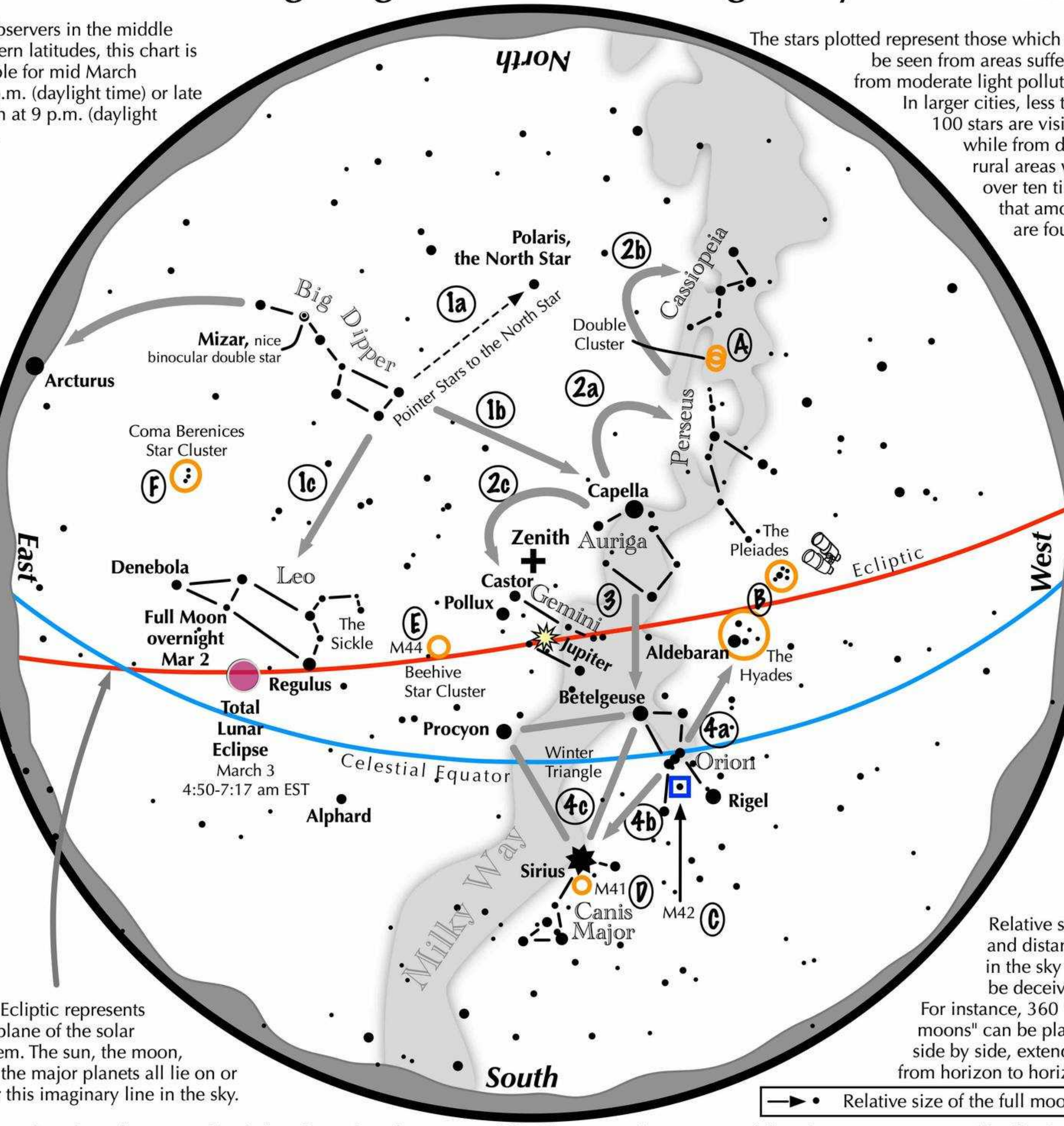
Lead host in ***Bold Italic***

Navigating the mid March Night Sky

2026

For observers in the middle northern latitudes, this chart is suitable for mid March at 8 p.m. (daylight time) or late March at 9 p.m. (daylight time).

The stars plotted represent those which can be seen from areas suffering from moderate light pollution. In larger cities, less than 100 stars are visible, while from dark, rural areas well over ten times that amount are found.



The Ecliptic represents the plane of the solar system. The sun, the moon, and the major planets all lie on or near this imaginary line in the sky.

Relative sizes and distances in the sky can be deceiving. For instance, 360 "full moons" can be placed side by side, extending from horizon to horizon.

Relative size of the full moon.

Navigating the March night sky: Simply start with what you know or with what you can easily find.

1. Above the northeast horizon rises the Big Dipper. Draw a line from its two end bowl stars upwards to the North Star. Its top bowl stars point west to Capella in Auriga, nearly overhead. Leo reclines below the Dipper's bowl.
2. From Capella jump northwestward along the Milky Way to Perseus, then to the "W" of Cassiopeia. Next jump southeastward from Capella to the twin stars of Castor and Pollux in Gemini.
3. Directly south of Capella stands the constellation of Orion with its three Belt Stars, its bright red star Betelgeuse, and its bright blue-white star Rigel.
4. Use Orion's three Belt stars to point northwest to the red star Aldebaran and the Hyades star cluster, then to the Pleiades star cluster. Travel southeast from the Belt stars to the brightest star in the night sky, Sirius. It is a member of the Winter Triangle.

Binocular Highlights

A: Between the "W" of Cassiopeia and Perseus lies the Double Cluster. **B:** Examine the stars of the Pleiades and Hyades, two naked eye star clusters. **C:** M42 in Orion is a star forming nebula. **D:** Look south of Sirius for the star cluster M41. **E:** M44, a star cluster barely visible to the naked eye, lies to the southeast of Pollux. **F:** Look high in the east for the loose star cluster of Coma Berenices.

Planetary Nebula Collage from Hubble