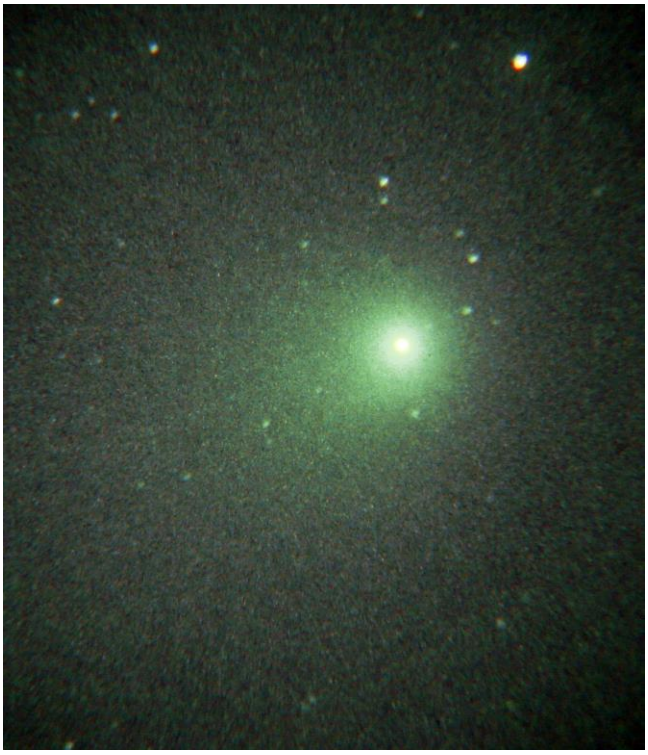
SkyWAAtch



Credit: John Paladini

Comet Lovejoy

Comet Lovejoy, C/2014 Q2 has recently offered binocular viewers and amateur photographers a rare pale-green treat. Below David Parmet imaged the Comet as it flew below the Pleiades in mid-January: a two-second exposure using a Nikon D7000 with a 35mm prime lens. To the left, John Paladini used a 10-inch scope, a Canon DSLR and the *BIPH*, an image intensifier, to capture the Comet.

Discovered by Australian amateur Terry Lovejoy (his fifth comet discovery), Comet Lovejoy is a long period comet, which will not revisit the inner solar system for 8,000 years. Comet Lovejoy will spend most of February in Andromeda and is expected to *remain no worse than 7th magnitude* during the month. It becomes a 10th magnitude object by April.

Credit: David Parmet

In This Issue . . .

Events for February 2015

WAA February Lecture

"The James Webb Space Telescope"
Friday February 6th, 7:30pm
Lienhard Lecture Hall, Pace University
Pleasantville, NY

The James Webb Space telescope is scheduled to be launched in 2018. It is a 6.5 meter telescope that consist of 18 hexagonal mirrors. It will be located at the L2 point of the Earth/Moon where it would orbit the Sun once a year. With a solar shield, it will be operated continuous. Four science instruments will be part of the telescope that will detect images and spectra at Near-and Mid-Infrared wavelengths. Br. Robert Novak is a member of a NASA committee that is developing a "white paper" to plan the use of the telescope to observe Mars. He will describe the nature of the telescope and its instruments, the orbit of the telescope (what do we mean by L1, L2, etc. points), and the plans for observing solar system objects.

Br. Robert Novak Ph.D. is a Professor of Physics and Chair of the Physics Department at Iona College. Br. Novak holds degrees in physics from Iona College (B.S., 1972), Stevens Institute of Technology (M.S., 1977), and Columbia University (M.Ph., Ph.D., 1980). Free and open to the public. Directions and Map.

Upcoming Lectures

Lienhard Lecture Hall,
Pace University Pleasantville, NY

The Milky Way has become the galaxy it is today partially through the consumption of smaller galaxies. New stars are only able to form in the Milky Way because of its continual consumption of gaseous fuel. On March 6th, in a lecture entitled "Galactic Cannibalism," Dr. Mary Putnam will give an overview of the Milky Way's methods of consuming other galaxies with a focus on star formation fuel. Free and open to the public.

Starway to Heaven

Ward Pound Ridge Reservation,
Cross River, NY

There will be no Starway to Heaven observing date for February. Our next Starway to Heaven is scheduled for March 14th.

Call: 1-877-456-5778 (toll free) for announcements, weather cancellations, or questions. Also, don't forget to periodically visit the WAA website.

New Members. . .

Pamela Papish - Pleasantville
Emily Dean - Pelham
Maggie Fitzgerald - Bedford Hills
Carlton Gebauer - Granite Springs
Richard Grosbard - New York

Renewing Members. . .

Christopher Freeburn - Yonkers
Gary Telfer - Scarborough
Robin Stuart - Valhalla
Larry and Elyse Faltz - Larchmont
Jay Friedman - Katonah
Anthony Sarro - Scarsdale

WAA Apparel

Charlie Gibson will be bringing WAA apparel for sale to WAA meetings. Items include:

- Caps and Tee Shirts ($10)
- Short Sleeve Polos ($12)
- Hoodies ($20)
- Outerwear ($30)

Courtesy of Bob Kelly is this image of Jupiter and its four brightest moons cropped from a Canon XS on a tripod (250mm lens at f/5.6, a 1/10th second exposure, ISO 1600 – the max ISO for the camera). Io is on the 'right' limb of Jupiter.

Almanac

For February 2015 by Bob Kelly

Feb 3 Feb 11 Feb 18 Feb 25

Jupiter looks largest this month, with something for everyone who owns or can beg or borrow an optical aid of any size. Track its four brightest moons in good binoculars or pump up the power in a telescope to stake out the jumbo planet for those moments of steady skies when you just know there's more details on Jupiter than belts, moons and a large reddish spot. (Although they are pretty good all by themselves.)

The new Moon on the 18th is the second closest perigee of the Moon for the year, but an invisible moon can't be a 'supermoon', can it? Just wait for the September 28th full moon very near the closest perigee of the year. On that date, the Moon will be totally eclipsed by the Earth's shadow. Conversely, the next full Moon, on March 5th, is the furthest away full Moon of the year. I guess we could call it 'mini-moon'.

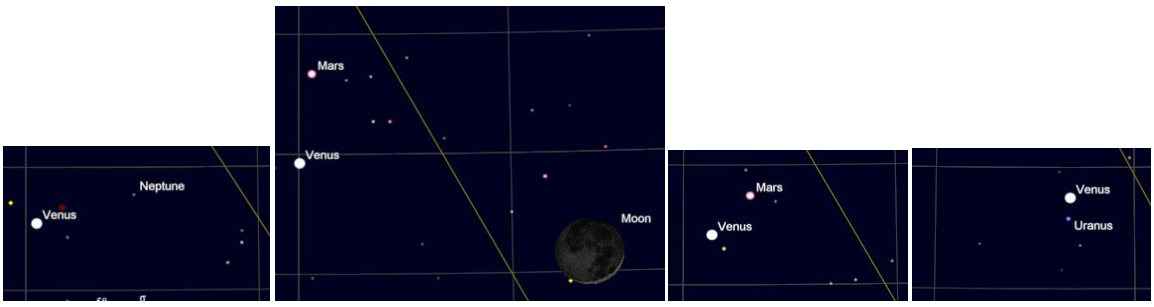
Comet Lovejoy did require the use of binoculars to find. The lack of bright stars nearby to guide us made the hunt a bit harder, but finding the fuzzy object in a part of the sky without fuzzy objects was easier then I would have thought. Then, again, once we found the comet, the Pleiades and Hyades star clusters provided a good frame for finding Lovejoy again. And how often do we get to see a comet in a dark sky, above the trees [that block my view of the southwestern horizon]? Try to find Lovejoy after the Moon leaves the evening sky as it travels north.

It's projected to dim down to magnitude +7 this month and look smaller than in January as it races back out of the inner solar system. Thanks to interactions with the planets, it has a new orbit; and it's shorter, only taking 8,000 years to orbit the Sun.

Mars continues to set each evening at 8pm right through March, but sunset moves later, threatening to swallow up Mars in the twilight. So Mars is setting in a brighter sky, but avoids being totally swallowed up until April.

Venus sets an hour after dark. Its climb out of the twilight leads to the best alignment of the month as Mars and Venus come within a degree of each other from the 19th through the 23rd. Does tremendously fainter Mars still look reddish in the glare of Venus or are they too deep in the glare of twilight for the color difference to be clear? They are so close on the evening of the 21st you'll need a telescope to separate them. Venus looks like a mostly round ball, small for Venus at 11 arc seconds, but still looks three times larger than Mars in a telescope. The Moon comes by for a group hug on the 20th.

Neptune will be close to Venus around February 1st, but we'll have trouble picking out faint Neptune so low in the sky and near incredibly bright Venus. Uranus will pass Venus on March 4th. Uranus is brighter than Neptune, but you'll still need at least a small scope to view this conjunction. Mars and Uranus get close on March 11th, but we're getting ahead of ourselves!



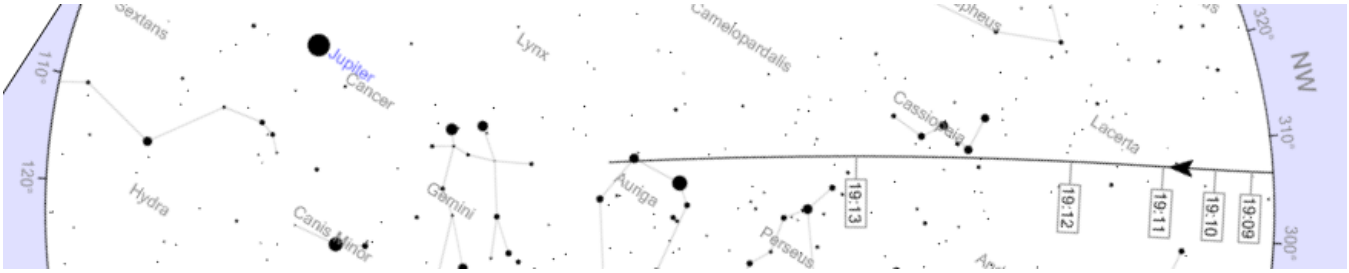
Our line-up of line-ups. All of these charts are on the same scale, so each white square on each chart is two degrees across in azimuth and one degree down in altitude.

Uranus gets run over by the crescent Moon on the 21st, but witnesses will be hard to come by as the astronomical accident happens just after sunset and will be hard to see in the bright twilight.

In the morning sky, Saturn gets as high as it gets just before sunrise, making an early morning rise worth it. Saturn's rings are tilted wide open, the only downside is drowning out the light from some of Saturn's fainter moons.

Fans of Mare Orientale, on the east edge of the Moon, have another chance for a peek at it just before mid-month, during the last quarter Moon, also in the morning sky.

The International Space Station makes bright passes during and just after evening twilight from the 3rd through the 24th. Here's a sky map of the overflight on the 20th –times are in EST:



Inside the ISS

Taken on January 4, this snapshot from inside the International Space Station's large, seven-window Cupola module also shows off a workstation for controlling Canadarm2. Used to grapple visiting cargo vehicles and assist astronauts during spacewalks, the robotic arm is just outside the window at the right. The Cupola itself is attached to the Earth-facing or nadir port of the station's Tranquility module, offering dynamic panoramas of the Earth. Seen from the station's 90 minute long, 400 kilometer high orbit, Earth's bright limb is in view above center.

Credit; APOD. Image Credit: NASA, Expedition 42.

Art & Astronomy: Starry Nights

Larry Faltz

Elyse and I discovered the Yale University Art Gallery in the summer of 2013, and we've been back twice since then. It's one of the Northeast's museum gems (with free entry, by the way), just 45 minutes from Westchester on the Merritt Parkway or I-95.

Jean-François Millet (1814–1875), *Starry Night*, Yale University Art Gallery

It's not a small museum, although it's miniscule by Metropolitan Museum of Art standards. It has a diverse collection of very fine paintings and decorative objects, much of which derives from the largesse of wealthy Yale alumni. Across the street is the Yale Center for British Art. The core collection was donated by Yale alumnus and renowned art collector Paul Mellon, who earned his money the old-fashioned way: he inherited the Mellon Bank fortune. It's worth a visit too, but there is much more variety and excitement in the Art Gallery's holdings. Of particular interest to me is a small but glorious collection of early 20th century art, with terrific works by Picasso, Braque, Leger, Kandinsky and others, including a spectacular 1912 painting by the Russian cubist Kasimir Malevich that was at the top of the list of works that I wished I could take home. It's full of motion and power, and I feel I have to show it to you, even though it has nothing to do with astronomy.

Kasimir Malevich (1878-1935), *The Knife Grinder*, Yale University Art Gallery

On our visit this summer, walking through the European galleries, I noticed a dark canvas by the French Barbizon school painter Jean-François Millet entitled *Starry Night*, painted in the 1850's. The work shows a field of stars and a couple of meteors, with the constellation Orion clearly visible. The foreground landscape is completely black and featureless. Studying this somewhat strange painting, it struck me how few canvasses are completely dedicated to the night sky, something we amateur astronomers hold up as the paradigm of beauty and inspiration.

When the Roman Empire was ascendant, figurative art was natural, representative and often secular. Following Rome's fall in the 5th century, painters primarily served the Catholic Church, creating stylized representations of important Christian figures. But the Renaissance brought change. The Met spent $50 million on a tiny *Madonna and Child* by Duccio di Buoninsegna painted around 1300, justifying the cost by saying that the work "inaugurates the grand tradition in Italian art of envisioning the sacred figures of the Madonna and Child in terms appropriated from real life." Geometrically correct perspective was incorporated around 1400, making scenes much more realistic. Although religious subjects were still important to adorn ever-larger houses of worship, portraits and epic scenes were created to decorate houses of the nobility or seats of government. Paintings told stories: of the history of Christ, of lives of the saints, of moral fables and epic battles. By the mid-16th century painters, particularly in areas of Northern Europe freed from the Catholic Church by the Reformation, began to show that art can reflect everyday life, a brilliant example of which is also at the Met, Peter Breughel the Elder's *The Harvesters*, from 1565. The depiction of landscapes and seascapes for their own sake began about that time, growing in artistic importance in the early 17th century in the Netherlands and Italy. These works were meant to decorate homes of members of the new middle class that arose in mercantile countries whose wealth was often fueled by maritime trade as the New World opened up.

Aert van der Neer (1603-1677) *Moonlit Landscape with Bridge*. National Gallery of Art, Washington, DC

It was rare to see the night sky in art because painting was about light and not darkness. If you wanted the stars, just go outside: light pollution is a creation of the 20th century. The Milky Way was an easy sight from the middle of any city. Landscape painters were interested in dramatic effects and rarely painted a clear sky. Clouds, even at night, were so much more interesting, as in the example by Dutch artist Aert van der Neer, who painted many of these scenes.

Night helped painters cloak their subjects in mystery. Many of the works of the notorious Italian artist Caravaggio are dark, likely set indoors at night, with dramatic lighting effects that magnify the impact of his story. Another good example is Giovanni Savoldo's *St. Matthew and the Angel*, a Met Museum treasure dating from 1534, and a work that I'm fond of because I had to write a paper on it in 1966 for my Art History class at Columbia (getting an acceptable, if not stellar, grade). Many of Rembrandt's works suggest the night, although they too seem to be mostly night-time interiors. Even as we move into the Baroque era, the night served to highlight and provide contrast to the world below, but not be the subject itself.

Caspar David Friedrichs (1774-1840), *Two Men Contemplating the Moon*, Metropolitan Museum of Art

By the second half of the 18th century, the moon began to make a frequent appearance, still often surrounded by dramatic clouds. I wonder whether the flowering of astronomy and its penetration into public consciousness after the invention of the telescope called attention to the power of the night sky. But still the main subject is what's below, on Earth. A good example is a 1779 painting in the Met, *Virgil's Tomb by Moonlight, with Silius Italicus Declaiming*, by the English artist Joseph Wright of Derby. By the 19th century, landscape artists throughout the Western world were frequently setting scenes by moonlight. Typical examples in the Met's holdings are Caspar David Friedrichs' *Two Men Contemplating the Moon*, from

1825, William Trost Richards' *Moonlight on Mount Lafayette, New Hampshire*, from 1873, and Winslow Homer's *Moonlight, Wood Island Light*, from 1894. In these paintings, the sky itself was often still full of clouds and the real subject was terrestrial.

Jean-François Millet was one of the founders of the Barbizon school of French landscape painting. Following the end of the Napoleonic era, a number of landscape artists moved to the formerly royal Fontainebleau forest, setting up studios in the town of Barbizon, 30 miles southeast of Paris. The Barbizon artists transformed landscape painting, freeing it from formality and severing rigid links to classical storytelling and academic composition. Their canvases presaged the Impressionist movement that was soon to follow.

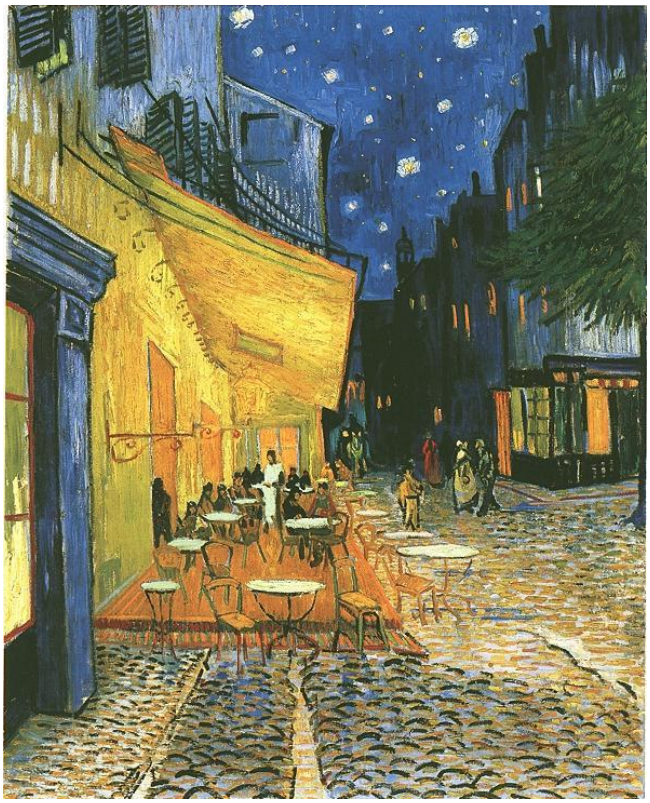
Jean-François Millet, *The Sheepfold*, Moonlight, Walters Art Museum, Baltimore

Millet himself produced moonlight paintings in this tradition, such as *The Sheepfold*. Millet's *Starry Night* is the first painting that I could find in which the night sky itself was the subject.

Frederic Church (1826-1900) *The Meteor of 1860*, Private collection

Meanwhile, in America another landscape movement, the Hudson River School, was founded by Catskill, NY native Thomas Cole. His student Frederic Edwin Church, whose dramatic home Olana, just south of Hudson, NY, is open to the public for tours, brought this genre of painting to its zenith with large canvases such as the 1859 *Heart of the Andes*, a 10-foot-wide tour de force that's one of my favorite works at the Met. The following year, Church painted *The Meteor of 1860*, showing a train of bolides that startled observers in the eastern United States on July 20, 1860, memorialized in Walt Whitman's, powerful poem *Year of Meteors*. This painting, in private hands, was shown at the 2013 Met show "The Civil War and American Art." It's a dramatic skyscape with just the barest terrestrial foreground kept in deep shadow.

Millet's *Starry Night* and Church's *Meteor of 1860* are the only two "classical" paintings I found that might be said to be "pure" night sky scenes, images that reduce the earthly realm essentially to a border. Thinking of a painting called *Starry Night*, however, inevitably brings to mind Vincent van Gogh's canvas of the same name, on permanent exhibit at the Museum of Modern Art and surely one of the most famous and recognizable images in the world.



Vincent Van Gogh (1853-1890), *Café Terrace at Night*, Kröller-Müller Museum, Otterlo

Van Gogh painted the night sky in two 1888 canvases made in the town of Arles in Provence. The first was a street scene showing a café (which is still there, now named Café van Gogh) with a sliver of night sky filled with shimmering, somewhat bloated stars.

A couple of weeks later, he dramatically expanded the sky in another nocturnal landscape, *Starry Night over the Rhone*. The stars, showing the Big Dipper, compete with earthly illumination in the form of streetlamps and houses reflected in the water.

Vincent Van Gogh, *Starry Night over the Rhone*, Musee D'Orsay, Paris

These canvases were among many fabulous and famous works that were created in his year in Arles, but they are the only two night scenes. In early 1889, following the bizarre self-amputation of his right ear, van Gogh was committed to the Saint-Paul-de-Mausole mental hospital in Saint-Rémy-de-Provence. He continued to turn out paintings and drawings daily, many showing the view from his 2nd floor room at the asylum. In a couple of months in the spring and summer of 1889, Van Gogh produced a whole series of paintings from this perspective (some with imaginary elements to vary the scene), of which *Starry Night* is the only one set at night. It was painted in mid-June 1889.

There are various interpretations of *Starry Night*, none of which are particularly well grounded in evidence. Van Gogh was a prolific letter writer, but said very little about this painting in his correspondence. He was apparently not all that symptomatic during the stretch of time in which he painted it, although he was prone to bursts of mental illness, the exact nature of which has never been established. Some form of epilepsy has been favored over a psychosis or lead poisoning by most commentators, but we'll never really know. Although a few critics suggest a religious theme, van Gogh was not a religious man. Nevertheless, he was spiritually moved by the night sky, writing that "I often think that the night is more alive and more richly colored than the day…. For my part I know nothing with any certainty, but the sight of the stars makes me dream."

One possibility is that van Gogh was aware of popular astronomy writing, lavishly illustrated, by the French astronomer Camille Flammarion, who was La Belle Époque's equivalent of Carl Sagan or Neil deGrasse Tyson. Images of M51 in Flammarion's books might have suggested the swirling figure in the center of *Starry Night*.

Vincent Van Gogh, *Starry Night*, Museum of Modern Art (NY)

The bright star just to the right of the cypress tree is Venus, and the crescent moon is clearly shown on the upper right. The scintillating quality of the background and celestial objects magnifies their intensity and other-worldliness. What is given up in realism is paid back many-fold in interest, impact and meaning.

There is a connection between Millet's *Starry Night* and van Gogh's. It was likely that van Gogh saw Millet's painting sometime between 1873 and 1875 in Paris. Van Gogh was known to admire Millet, even making copies of 21 of Millet's works during his time in the asylum, but by the time he painted *Starry Night* in 1889 his technique and conception of what a landscape should be had evolved far beyond that of the Barbizon painters just 25 years earlier.

Van Gogh's *Starry Night* is an icon of Western art and is almost as famous as Da Vinci's *Mona Lisa*, perhaps more so after Impressionism took massive hold of the art-consuming world's consciousness in the 1970's. I've looked at it all my life. It was the first work that

you would encounter when you went up the stairs at MOMA's classic 11 West 53rd Street building (occupied from 1939 to 2002). I was taken there frequently as a child, and often went by myself during my later school years. It is not difficult even for someone new to art to be awed by the magnificent intensity of Van Gogh's distorted perceptions. It's since been integrated into the museum's collection in the new, larger MOMA further down 53rd Street, where it never fails to draw a crowd.

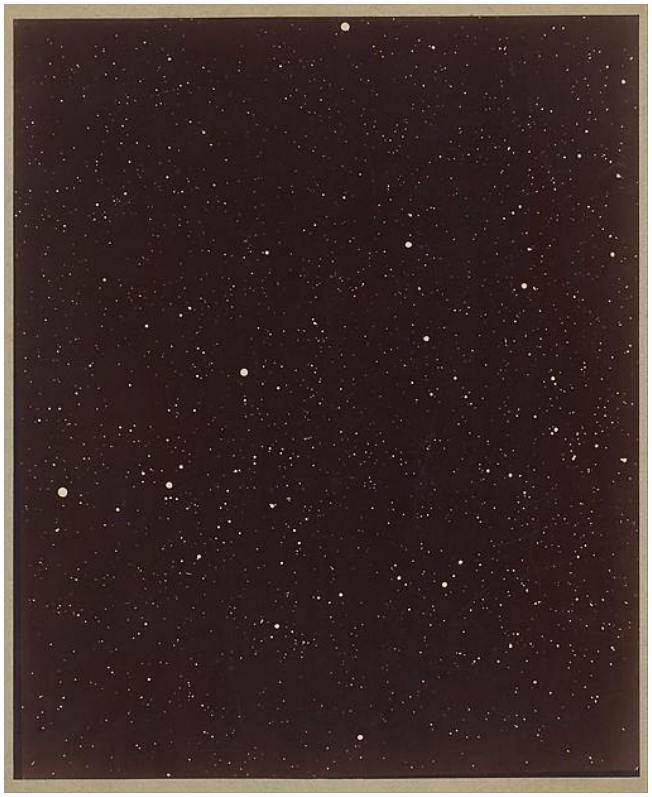
Edvard Munch (1864-1944), *Starry Night (1893)*, Getty Museum, Los Angeles

Another artist who painted a *Starry Night* was the prolific Norwegian Edvard Munch. Not known for landscapes, his main subject was human psychological stress, as exemplified in another of the most iconic images in art, *The Scream*, a work from 1893. In the same year, Munch painted a dreamy night-time seascape entitled *Starry Night*.

Edvard Munch, *Starry Night (1923)*, Munch Museum, Oslo

The foreground in this image is ambiguous, perhaps reflecting Munch's unsettled state of mind, since he painted this work after a love affair had ended. Some 30 years later, Munch returned to the night sky with another, happier, painting also called *Starry Night*, Munch wrote that "a landscape will alter according to the mood of the person who sees it." One senses he was a more settled and content individual at age 60 than at age 30.

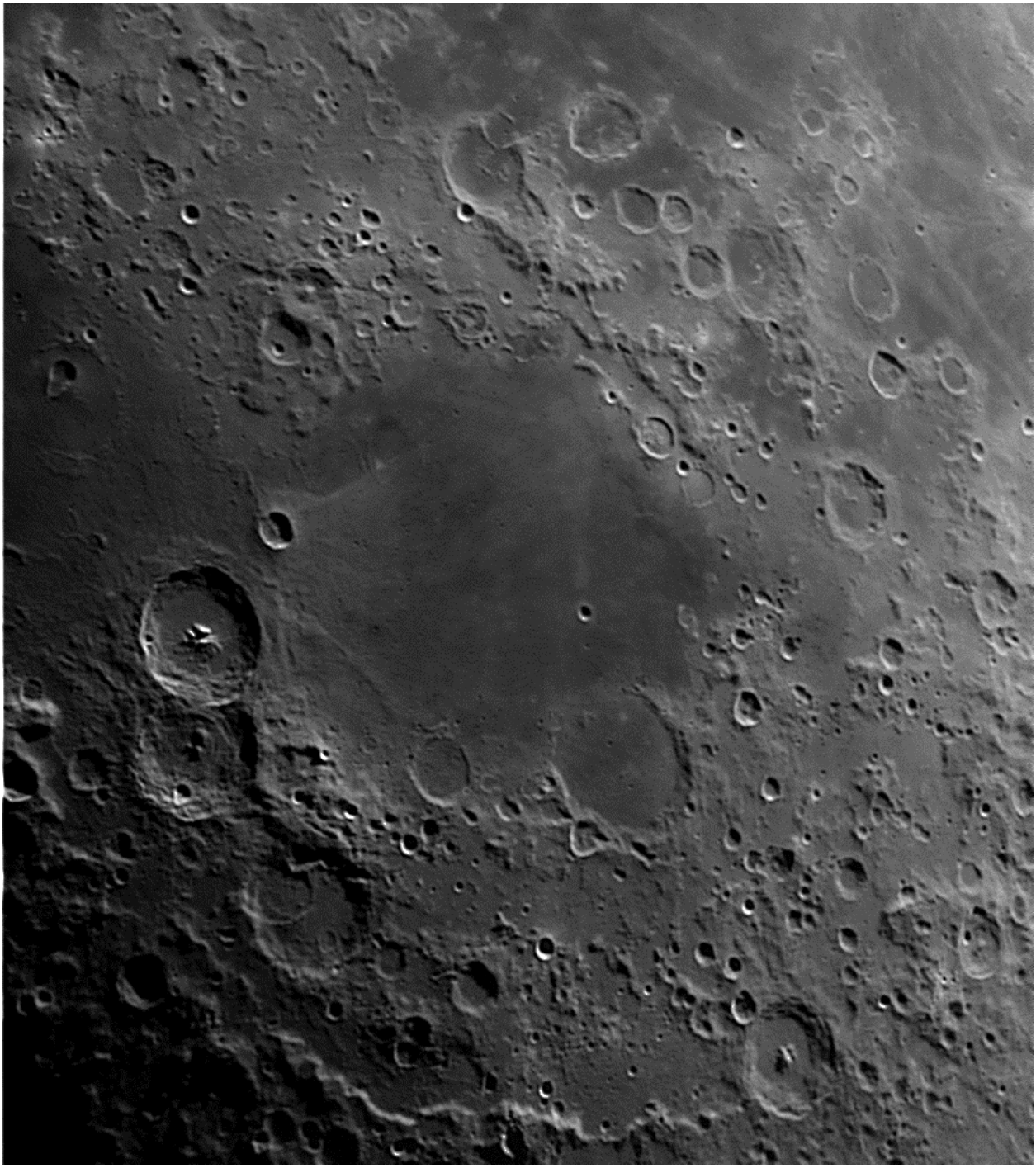
An actual starry night can be found in the Metropolitan Museum's photography collection. It's a print from a glass negative made on August 13, 1885 by the French brothers Paul and Prosper Henry.



Paul Henry (1948-1905) and Prosper Henry (1849-1903*), A Section of the Constellation Cygnus*, Metropolitan Museum of Art Gilman Photography Collection

This is one of the first astronomical "deep sky" photographs, taken at the Paris Observatory with a special imaging telescope of the Prospers' own invention. The relatively insensitive plate was exposed for an hour, with manual guiding. It was not intended as art, but as a way to allow the Prospers to complete a stellar mapping project begun in 1872. As a scientific work, it is ground-breaking; as a work of art it challenges our definitions, but it also works as a counterpoise to enhance our understanding and appreciation of the night sky in the works of other artists.

Mare Nectaris



The 212-mile diameter lava-filled Sea of Nectar is located just south of the Sea of Tranquility. The crater Theophilus, 60 miles in diameter with walls over 13,000 feet in height, is located on its western edge. This image was obtained on December 27, 2014 from Larchmont with a 4" Stellarvue SVR-105 triplet refractor, a 2x Barlow, and a Skyris 445 monochrome camera. Best 500 of 5,000 frames, stacked and wavelet processed with Registax 6.

--Larry Faltz