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Penobscot Valley Star Gazers

An Astronomical Society of Central Maine

Awake, ye mortals, raise your eyes / To yon eternal starry spheres.
Look on these glories of the skies!
-Louis de Leon

October 2025

October Meeting

The October 2025 meeting of the PVSG will be held at John Bapst High School on Monday the 13th at 6:30 pm. Zoom will be available with the regular ID. (Zoom meeting ID 862 9984 6478 Password: PVSG.)

Thanks for last month's program go to Shawn for the tour of the Milky Way planetarium show.

Observe The Sky This Month

Some Selected Objects

October 2025

General sky comments – The Orionid meteor shower will peak between October 21 and 22 and will remain active until November 7th. The waning last quarter Moon this year will allow the normal zenith rate of 20 per hour to be observable and not interfere. New Moon is early in the morning of the 22nd. The Orionids are caused by the debris of comet Halley. Do not forget to observe the Moon and Jupiter as they are in conjunction on the 21st. Saturn is also in the southeastern sky. The October full Moon is the Hunter's Moon. It is the first of a series of three "super" Moons. The November full Moon being the largest of 2025. When we leave the meeting held on the 13th note how close the star Regulus is to the Moon. For the next few months the moons of Jupiter transit the surface of Jupiter and project their shadows on the surface of the planet. Both October magazines Astronomy (pg. 35) and Sky and Telescope (pgs. 48 & 49) discus these shadow transits extensively and should be followed for detailed time information. Observer's Handbook 2025 also covers the times of transits on pp. 230-231. The moons may also be observed at the same time as the shadow transits although they are more difficult to observe while crossings the surface of Jupiter. In November before the meeting on the 10th Daylight Saving Time ends on Sunday the 2nd. The full Beaver moon is on the 5th and is the largest of 2025. The Moon is 0.8° N of Beehive (M44).

The Moon and Planets this month – Before the October meeting on the 13th the full Moon was on Monday the 6th, last quarter Moon is on Monday the 13th, new Moon (lunation 1272 is on Tuesday the 21st and first quarter Moon is on Wednesday the 29th. Mercury is slowly distancing itself from the Sun reaching greatest eastern elongation of 24° on the 29th. It is brighter than magnitude -0.0° all month. Mercury is within 2° of Mars on the 20th and 21st and the same to the new Moon on the 23rd. Venus is in the morning sky very bright and low in the morning twilight. Mars is becoming more difficult to observe in the evening sky as Mercury passes by on the 20th and 21st. Jupiter is now prominent throughout the night. It is at 90° elongation mid-month as the last quarter Moon passes by 5° to the north on the 13th. Saturn is well above the eastern horizon starting at evening twilight and continuing through the night setting before sunrise. The planet's rings are closing and once again becoming nearly edge on. The planet Uranus (Οὐρανός) is in the constellation Taurus and at opposition next month on the 21st. Neptune is just past opposition and is in the sky in Pisces. With a binocular its greenish blue color and retrograde motion can be observed contrasted with the similar magnitude stars of Taurus. Neptune is in Pisces and its blue color can be appreciated with a telescopic view. Pluto is in Capricorn shining at around magnitude 15. October is the end of the summer viewing season for Pluto.

Constellations for the month – To the east of Fomalhaut and Pisces Austrinus, the Southern Fish we noted last month is the dim constellation Sculptor. This constellation was named by the French cleric and southern sky observer Lacaille around 1760. He originally called it "The Sculptors Workshop". Later it was shortened to Sculptor. It contains a handful of stars magnitude 4 or less. However, Sculptor contains two objects of note NGC 253 a galaxy and NGC 288 a globular cluster. Above Sculptor is the constellation of Cetus. Start at mag 2.0 Deneb Kaitos, Beta (β) Ceti [See below] the brightest star in the constellation and go almost 3° SSE to NGC 247 a bared spiral with a field star at one end and an oval lighter area at the other end. NGC 247 is the second brightest galaxy in the Sculptor group of galaxies. To find the brightest galaxy in this group NGC 253 go 4.4° S of NGC 247. NGC 253 is a galaxy claimed by numerous people as the third most notable galaxy in our sky. Only M31 the Andromeda Galaxy (NGC 224) and M33 (NGC 598) in Triangulum are better. NGC 253 (Caldwell 65), known as the "Silver Coin" or more properly the Sculptor Galaxy, was discovered by Caroline Herschel in 1789. It is the largest member of the Sculptor Group of Galaxies and truly spectacular. Do not miss this

Dues Were Due October 1

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galaxy! You will be truly impressed and for most people it is easier to observe than M33. Both of the above galaxies are easily seen in almost any telescope or binocular. The other object NGC 288 is a globular cluster located 1.8° SSW of the "Silver Coin Galaxy". It is class X (10) being less populated than most globular clusters. Cetus, the Sea Monster (Whale) is so large we will cover the western half this month and the eastern half next month. Also in this part of Cetus is a planetary nebula NGC 246. It was discovered by William Herschel on November 27, 1785. This planetary nebula is sometimes called the skull nebula because of the internal dark spots. To find it go 6.2° N from Deneb Kaitos. NGC 246 is a bit faint but can be found with a 4" telescope. Above Cetus some 25° is an asterism known as the "Great Square" of Pegasus. It consists of a very distinctive square of stars one of which is in the constellation Andromeda, the Princess to be covered next month. This square of stars represents the wings of the great flying horse with the front portion we covered last month. Within this square of stars is a galaxy only 2½° WNW of the star Algenib, gamma (γ) Pegasus at the SE corner. This galaxy is "The Little Sombrero Galaxy", NGC 7814 (Caldwell 43) a brighter galaxy than I expected to see when I first located it. In Greek myth Perseus was able to cut off the Head of Medusa, the Gorgon monster whose look turned mortals into stone, by looking at her reflection in a shiny metal shield given to him by Athena. As the blood of Medusa fell onto the sand of the beach out of the ocean foam appeared Pegasus. Perseus mounted Pegasus and rode off to rescue Andromeda from her fate. Pisces, the Fishes will be covered next month [along with Perseus] although it is spread through several constellations we have previous noted. Moving north we pass through the western portion of Andromeda to arrive at two northern constellations now very prominent in the overhead sky and in prime position for viewing. These are the Cepheus, the King covered last month and Cassiopeia, the Queen. [See below] The best way to observe northern constellations is to lie back on a lounge chair and use a binocular which allows you to observe the rich star fields of this region of the sky. Use a telescope for fine details.

Featured star – Tau (τ) Ceti is a Sun type star in the constellation of Cetus, The Sea Monster (Whale). It is the closest Sun type star (G8.5) at 12 light years distant. It has about 78% of the mass of the Sun. It would appear slightly dimmer than Sol at the same distance. In April of 1960 Frank Drake listened to radio signals from Tau Ceti using the radio telescope in Green Bank, West Virginia. He called it "Project Ozma" hoping to receive messages from an advanced civilization. This was the first step in the search for extraterrestrial intelligence, SETI. All he received was noise. Tau Ceti has lately been found to possibly have a retinue of at least four or five planets with two of the planets located in the habitability zone. The largest detriment to habitability is the absence of large outer planets to shield the inner planets from bombardment with asteroids and comets. Tau Ceti has been used as a location in many works of science fiction. Star Trek and Barbarella come to mind. Some are also familiar with the novel *Aurora* by Kim Stanley Robinson where Tau Ceti is the destination for 2,000 Earth colonists. Tau Ceti is a frequent star mentioned in UFO discussions and online blogs.

Featured Messier object – M103 (NGC 581) an open star cluster located 1° NE of Ruchbah in Cassiopeia. It was discovered in 1781 by Pierre Méchain and was included by Messier as one of the last entries in his catalog. Harley Shapley considered M103 a loose and poor cluster and went as far as to call it not even a cluster but an accidental grouping of unrelated stars. I observed M103 as a handful of bright stars over 30 to 40 dimmer stars. Some observers see a fan or wedge shape formation of stars within the cluster. Of the bright stars all but one are moving in the same direction. The brightest star is variable and a triple star system. It can be resolved using a little power and their separations have changed little from their observations in 1827 and 1901. Upward of 172 stars are believed to be members of this open but scattered cluster. This cluster is estimated to be between 7,150 and 9,800 light years distant. One of the most distant of the Messier catalog.

Featured constellation – Cassiopeia, the Queen of Ethiopia. The distinct shape of the constellation is recognized by most people as the letter "W" or "M" and if they are familiar with the mythology as the throne of the queen Cassiopeia. Next month we will attempt to make sense of the mythology of the vain Cassiopeia, her family, and the Greek gods. To orient ourselves we will first locate and name the stars starting with the western star Caph, Beta (β). The most southern is Schedar, Alpha (α). The next star east is Gamma (γ), [the brightest star in the northern hemisphere without a formal name] followed by Ruchbah, Delta (δ) and finally Segin, Epsilon (ε). The selected objects in by NGC only Cassiopeia this month start with M103. [See above] 1.2° E of M103 is NGC 659, NGC 663 is ½°NNE, then NGC 654 is ½° NW. These open galaxies were all observes by me with the Clark 8" telescope at the old observatory on the University of Maine campus. 2° N slightly W is NGC 637 and 1½° SE is NGC 559. The easiest way to observe the next open clusters is to begin at the unnamed middle star of Cassiopeia. From this star go 1½° NW to NGC 381, then 1¾° NW to NGC 225 followed 1¼° ESE to NGC 136 then 1°S to NGC 129. For the next open clusters we will observe this time go to the western star Caph, Beta (β) then 2¼° NNE to NGC 7790. For the last two open clusters in this area we will observe return to Ruchbah, Delta (δ) and go 2°SW to NGC 436 followed by ½° SW to NGC 457. All these open clusters of Cassiopeia can easily observed in one night. May I urge you (if you do not already do so) to record the observations you make. Personally I take a notebook with me when observing and record what I see at the eyepiece for the date and the time of each observation. Later I transcribe the field notes into a more permanent record both in written form and electronic.

Other objects of interest – NGC 7789 is visible as a hazy spot to the unaided eye and was discovered by Caroline Lucretia Herschel in 1783 after being missed by Messier several years earlier. It is known as the Magnificent Cluster, the White Rose Cluster, and Caroline's Cluster. NGC 7789 is larger and has more stars than either M52 or M103. It is one of the finer objects to observe with moderate size telescopes. It contains upward of 300 stars and in my 12" telescope I could easily count at least 150 stars. To find this cluster go 2½° SW of Caph, beta (β) Cassiopeia. NGC 7662, the Blue Snowball is a planetary nebula. Its name describes it quite well. It is a blue-green color, not quite round, lighter in the middle, and the central star is visible at 14th Mag. in my 12" telescope. Find it in the far western side of Andromeda not far from the group of stars ψ, λ, κ, ι, 2½° WSW of ι.

Bill Shackelford
Come view with me and we will rule the skies