

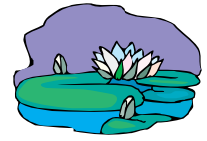


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Penobscot Valley Star Gazers

An Astronomical Society of Central Maine

Buttercups nodded and said "Goodbye!"
Clover and daisy went off together,
But the fragrant water lilies lie
Yet moored in the golden August weather.
-Celia Thaxter



August 2024

August Meeting

The August meeting of the PVSG will be on Monday the 12th at 6:30 pm. Due to the hot weather, it will be held by Zoom only. (Zoom meeting ID 862 9984 6478 Password: PVSG.)
And this reminder: the September meeting will be held at the Versant Astronomy Center.



PVSG Monthly Meeting Minutes July 8, 2024

Note: Some of the information provided in these minutes are recorded out of order to allow for organizing them according to their normal meeting section.

The July minutes were unavailable.



Observe The Sky This Month

Some Selected Objects
August 2024

General sky comments – The Perseid meteor shower peaks on the night of the 12-13. Since the club meeting is also on that night will anyone host a viewing party? The Moon is at first quarter but sets shortly after midnight and will not interfere with prime viewing time. The full Moon this month is known as the Sturgeon Moon from the Algonquin tradition of Great Lake Sturgeon being more easily caught this time of the year. It is also a seasonal "Blue Moon" as it is the third full Moon of this summer season when there are four full Moons. On Wednesday the 14th the Moon passes 0.004° S of Antares at 1 A.M. EDT and is occulted in many islands of the South Pacific. That same day Mars passes 0.3° north of Jupiter but the close pass is not visible for us. On Tuesday the 20th the Moon passes 0.7° north of Saturn at 11 P.M. EDT and is occulted in the Galapagos Islands, the N half of S America, the S half of C America, NW Africa, and most of Europe. On the 21st Neptune is 0.7° S of the Moon and is occulted in much of the Eastern Hemisphere.

The Moon and Planets this month – New Moon (Lunation 1257) was on Sunday the 4th at 4 A.M. before the meeting on Monday the 12th along with first Quarter Moon. Full Moon is on Monday the 19th and last quarter is on Monday the 26th. Mercury was visible in the evening sky early in the month. It is at superior conjunction with the Sun on the 19th. In the last few days

of July it appears in the morning sky. Venus is low to the evening sky and best seen by Northern Hemisphere observers the last of the month. Mars is in the morning sky in the constellation Taurus. It passed 5° from the star Aldebaran on the 5th. The planet and star look very similar. Once again this year Mars and Jupiter pass each other. This time passing 0.3° south on the 14th. Jupiter rises close to midnight this month. Saturn is in the morning sky in Aquarius. The waning gibbous Moon passes 0.5° S on the 21st and is occulted in the N half of S America, the S half of C America, the Galapagos, islands of the Atlantic, and most of Europe. Uranus (Οὐρανός) rises near midnight local daylight time. Neptune is in Aquarius, rises in mid-evening and is visible with a telescope the remainder of the night. Pluto is in western Sagittarius.

Constellations for the month – In August we start our journey on the southern horizon east of the Milky Way in a portion of the sky less populated with stars and deep space objects. As we progress northward the Milky Way is again crossed and a number of interesting object are seen. Our journey begins on the southern horizon with an invented constellation Microscopium, the Microscope. It is one of fourteen small constellations invented by Nicholas Louis Lacaille to fill gaps between larger constellations. Most of the constellations commemorate scientific instruments invented during the European Enlightenment. Microscopium does not remotely resemble a microscope and the brightest star is magnitude 4.5. It is one constellation you will not mind missing. Above Microscopium is the zodiac constellation Capricornus, the Horned Sea Goat a moderately large but not very interesting constellation. It appears the Greeks made up a story for this constellation they inherited from the Babylonians. To them this constellation represented their god of fresh waters, Enki. It does resemble a two prow boat such as may be found to this day in the Near East. The Greek story was the goat hooved god Pan was being chased by the wind monster Typhon. Pan leaped into the Nile to escape and was turned into a goat headed fish. The two stars Algedi (α) and Dabih (β) at the NW corner of Capricorn represent the horns of the goat. Both stars are class G stars that have ceased fusing hydrogen in their cores and have begun moving off the main sequence. Algedi is a naked eye double but not

a true double rather than an optical pair the two stars being 460 light years distance from each other. Dabih is also double and both components can be seen with a binocular. Both stars are complicated systems but these companions need to be separated with a telescope. Capricorn contains a fair number of galaxies but most are not very bright. The only showcase is the globular cluster M30 (NGC 7099) see below. A trio of stars $3\frac{1}{2}^\circ$ SSW of beta (β) Cap are interesting to observe. The top star in the group rho (ρ) cap is a complicated system of four stars of various colors visible in binoculars and small telescopes. The western star Pi (π) is a triple star best seen in a larger telescope. The other star omicron (\omicron) in the group is also double and seen better in small telescopes. Above Capricorn is the western portion of the constellation Aquarius. This constellation is a fall constellation and will be observed with more detail next month. For now we will observe a few interesting objects in Aquarius directly above Capricorn. Start at Algedi (α) Cap, then go $8\frac{1}{2}^\circ$ west to M72 a globular cluster in Aquarius. This globular is not very bright but should be observed as it is a Messier object. Slightly more than one degree east of M72 is one of the unusual Messier objects along with M40 and M24 Messier put in his list. This object is M73 a group of 4 stars in a grouping resembling an arrowhead. This group is listed as a star cluster but one of the smallest you will ever see. Messier said there were 4 or 5 10^{th} magnitude stars nearby but there appear to be none he would have been able to observe. M73 is listed as NGC 6994. Nearby is NGC 7009 the Saturn Nebula $1\frac{1}{2}^\circ$ NE of M73 or $2\frac{1}{2}^\circ$ ENE of M72. A planetary nebula about the size of Jupiter in a telescope and resembling the planet Saturn. North of Capricorn through the small western section of Aquarius we come to the small constellation of Equuleus, the Colt. Equuleus is the second smallest of the constellations. Only Crux the Southern Cross is smaller. It is the newest of the ancient constellations and was invented by Hipparchos the Greek astronomer and discoverer of the precession of the equinoxes. Hipparchos called it the Fore Part of a Horse. The four main stars of Equuleus form a trapezoid of faint stars. There are no myths associated with it and no bright interesting deep space objects. Continuing on north we finally come to a bright constellation Cygnus, the Swan and the 1^{st} magnitude star Deneb the last star in the summer triangle. Cygnus will be our featured constellation. Continuing past Deneb we come to the constellation Cepheus, the King. I imagine Cepheus as a giant head with a big nose and a pointed crown. Others see it as a house. Cepheus is also a fall constellation and will be covered later.

Featured star – Deneb Algedi, delta (δ) Capricorn, “the kid’s tail” is similar to Vega but has been classified as A6 because of ionized calcium II lines, F2 dwarf because of hydrogen lines, F5 giant because of metal lines, and Am because of absorption lines of most metals. Metallic-line A-type stars (Am) have close companions slowing down the rotation rate of the primary star but delta had a rapid rotation. In 1905 it was suspected to have a companion and in 1936 it was discovered

with a period of 1.023 days. Then in 1956 it was pronounced to be an eclipsing variable. Upon later observation the companion was suspected of being an active star causing some of the observed variations in the system but this has not been confirmed. Other observations have added more mystery to the system. To date the nature of the secondary is not known for certain adding even more mystery to the nature of Deneb Algedi, delta Capricorn.

Featured Messier object – At magnitude 7.3 M30 (NGC 7099) in the constellation Capricornus is easy to find 3° east southeast of the middle star zeta (ζ) on the eastern side of the constellation. It was discovered by Charles Messier in 1764, “below the tail of Capricorn. One sees it with difficulty with an ordinary telescope of 2.5 feet. It is round and contains no star.” William Herschel (1783) determined it to be a “brilliant cluster.” In small telescopes M30 has a central core of unresolved stars and a surrounding edge of almost resolved stars. There is a 7^{th} magnitude star not far to the east of the core. In larger telescopes stars in the core can be seen twinkling in and out of resolution depending upon sky conditions. Under ideal conditions a large telescope shows lines of stars radiating from the center making it resemble a horseshoe crab. This globular cluster is unique and should be viewed by everyone. I think you will put on your list of favorite objects especially in larger telescopes.

Featured constellation – One of the most memorable nights I have spent at the telescope was observing this constellation. Cygnus, the Swan. It represents the swan Jupiter turned himself into to seduce Leda the wife of Tyndareus King of Sparta while she was bathing in a pool. Leda had twins Pollux and Helen from this affair. Tyndareus conceived Castor and Clytemnestra later on the same night so Castor was not immortal. Leda must have had non identical quadruplets. What a dysfunctional family. Helen found fame as Helen of Troy and Clytemnestra married Agamemnon all involved in the Trojan War. Castor and Pollux joined Jason and the Argonauts. Cygnus is in the most beautiful part of the Milky Way and consequently contains many objects of interest. We will look at the objects I have observed and hopefully you will find interesting. We have already discussed the two Messier objects M29 and M39. One of my favorite objects is the Veil Nebula an old supernova remnant. It is commonly divided into three segments because it is so large. The entire nebula may be observed with a large binocular such as an 8X50 but if you have a wide field telescope or a 25X100 binocular each segment can be observed individually. An OIII filter or a UHC filter will bring out the details. It must be observed at a dark site because it is rather dim. It is found 3° SSE of epsilon (ϵ) Cyg. 3° SW of the Veil is open cluster NGC 6940 a large impressive open cluster with a mixture of 125 bright and dimmer stars. Do not use high power or you may have trouble finding it. Messier missed this one GREAT cluster. Immediately SE of Deneb (α) Cyg is NGC 7000 the North American Nebula an emission nebula

best observed the same way as the Veil. To the east of this nebula is the Pelican Nebula IC 5070. This emission nebula appears as a separate nebula but is likely the same nebula separated by a dust band. From xi (ξ) Cyg the 4th mag. star on the west side of the North American Nebula go 4° WNW to NGC 7062. This nice little cluster consists of a dozen brighter stars and maybe 50 dimmer background stars. From NGC 7062 go 2° NE to M39 which we have talked about earlier. From there go 3° north to NGC 7086 an open cluster of 6 or 7 bright stars over a background of maybe 40 more stars. From NGC 7086 go 5½° NW to NGC 7008 a planetary nebula called "The Fetus Nebula". It does not take much magnification to see why it is so named. NGC 6910 is an open cluster next to Sadr gamma (γ) Cyg the star at the heart of the swan. It is ½° north. NGC 6910 is known as the "Stick Man" cluster although I could never find the "Stick Man" figure, maybe you can. It contains a total of about 50 stars. There is nebulosity in this cluster best seen at low power. From Deneb go down the west "wing" of the swan

past two 4th mag. stars omicron (\omicron) 1 and 2 to iota (ι) the first of two stars at the end of the wing. On the way you passed NGC 6826 a planetary nebula. Did you notice NGC 6826? If not go 3° SE of iota to this "blinking planetary". I have not observed the blinking phenomena but I have been told you look away from the planetary with averted vision and the background nebula can be seen. Then you look at the planetary and the background nebula disappears. Most observers have observed Albireo beta (β) Cyg the star at the nose of the swan with its contrasting stars of yellow and blue. Observe Alberio again and then go 5° WNW to find NGC 6834 an open cluster of about 60 stars surrounding a 9th magnitude star. Use low power to find a line of 5 or 6 stars in a row and then use higher power to better resolve the dimmer cluster of 50+ more stars. This is probably the most difficult to find of all the objects this month.

Bill Shackelford
August is hot and long but it will soon be gone.