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Penobscot Valley Star Gazers

An Astronomical Society of Central Maine

I love my garden—dearly love
That little spot of ground.
-Caroline Bowles Southey



June 2024

June Meeting

The next meeting of the PVSG will be held at John Bapst Memorial High School on Monday, June 10th at 6:30 pm. We assume Zoom will be available also. (Zoom meeting ID 862 9984 6478 Password: PVSG.)

This month we will have the elections that should have been held in May. Up are the secretary, treasurer, and member-at-large.

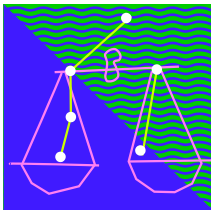
Thanks for last month's program go to Dwight for his presentation on solar astronomy.



PVSG Monthly Meeting Minutes May 13, 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 May minutes were unavailable.



Observe The Sky This Month Some Selected Objects June 2024

General sky comments – The summer season begins on the 20th of June at 20:51 Universal Time (UT1, simply UT) or 04:51PM Eastern Daylight Time (EDT) the longest sunlight day of the year. The earliest sunrise is June 14 and the latest sunset is June 27. The June full Moon is called the Strawberry Moon. This month continues the ordinarily large number of lunar occultations this year. The most memorable occultation being the solar eclipse where the Moon covered our star the Sun. Few occultations are visible in any one spot but all can be seen as very close passes of the Moon by the named object. Here are the major occultations after the June 10 meeting and the distance from the Moon. They can be seen visually or with a telescope. On the 13th asteroid Juno passes 0.5° N. On the 16th Spica is 1.2° S. On the 20th Antares is 0.3° S. On the 23rd asteroid Ceres is 1.0° S. It is also occulted for most of N America, the Caribbean, S tip of Greenland, and, NW Azores. On the 27th Saturn is 0.08° S. On the 28th Neptune is 0.3° S.

Planets this month – New Moon (lunation 1255) is on Thursday the 6th before the club meeting on the 10th. First Quarter Moon is on Friday the 14th, full Moon is on Friday the 21st and last quarter is on Friday the 28th. Mercury is close to the Sun most of the month but will

become visible in the evening sky late in the month. Venus is too close to the Sun to be observed. It was occulted by the Sun on the 4th. Mars continues to be in the morning sky in Aries. The Moon passes by on the evenings of the 2-3. Jupiter is coming out of conjunction with the Sun in the morning sky. It will be in the constellation Taurus, the Bull for the rest of the year. As Saturn approaches Earth it should become brighter. However, its rings are becoming smaller keeping its magnitude at 1.1. On the 27th the waning crescent Moon makes a very close pass. Saturn reaches its first stationary point on the 30th. Uranus (Οὐρανός) is emerging from the Sun in Taurus where it will remain until late December. Neptune is in Pisces and very slowly approaching its first stationary point in Aries. Pluto is still in western Sagittarius.

Constellations for the month – This time of the year the Zodiac constellations are located far south in the sky and consequently the tail of the constellation Scorpio scrapes the horizon and the bottom of the constellation is on the horizon as it is quite long and Maine is located almost halfway between the equator and the North Pole. Above and to the right of Scorpio is the constellation of Libra, the scales. Libra is the only inanimate object in the Zodiac. In ancient times Libra may have been connected to the scorpion by some but these claws almost universally were considered a separate constellation by most and represented justice. To me the most interesting thing in Libra are the two bright stars Zubenelgenubi (α Lib) [see below] and Zubeneshchamali (β Lib) and the way they sound. There are no Messier objects in Libra and only a few galaxies none worth observing except with larger telescopes. Above and to the east of Scorpio and Libra are the constellations of Serpens Caput, the Head of the Snake and Ophiuchus, the Serpent-Bearer. Further to the east is Serpens Cauda, the Tail of the Serpent. All three are portions of the myth of Aesculapius the founder of medicine represented by Ophiuchus wrestling with a serpent. When someone asks me what zodiac sign I am I always say Ophiuchus. That causes confusion but I respond by saying the Sun spends more time in Ophiuchus than Scorpio. Serpens Caput contains one Messier object M5 (NGC 5904) a very fine globular cluster located 11½° north of Zubeneshchamali (β Lib) and 7½° SW of Unukalhai alpha (α) Ser. Do not miss M5. Ser-

pens Caput is connected on the east to Ophiuchus, the Serpent Bearer. Ophiuchus contains 7 Messier objects all globular clusters. Globular clusters are prominent this year because most orbit around the center of our galaxy the Milky Way now making its way into the sky from being low around the horizon. Ophiuchus contains numerous double stars. One of the easiest to find is located 3° NNW of Antares. 5-rho (ρ) is an easy double but you will probably notice another star; therefore, you can consider it a triple system. 7° due west of Antares we find the first of the Messier globular clusters M19 (NGC 6273). M19 is bright but small. Immediately to the west of M19 is one of the easiest dark nebula to observe "The Pipe Nebula". Get out your favorite binocular and pick out this hole in the stars. It does look like a black pipe with smoke coming out. 4° south of M19 is M62 (NGC 6266) a globular cluster interesting because of its core of stars appears to be brighter on one side. You may want to explore this area as there are other globular clusters in this area but we will now go to M9 (NGC 6333) a globular cluster with many lanes of stars. It is found $3\frac{1}{2}^\circ$ SW of eta (η) the star at the bottom left of the body of Ophiuchus. Next is M107 (NGC 6171) a small globular cluster for a Messier object reflected in the high M number. It is found $2\frac{1}{2}^\circ$ SSW of zeta (ζ) the middle star at the bottom of the body. The next three globular clusters were more difficult for me to find as they are not near any prominent stars but they are all bright making finding them easier. A good star chart helps with all these globular clusters. M10 (NGC 6254) and M12 (NGC 6218) are both located within the body of Ophiuchus and visible with binoculars. From Marfik, lambda (λ) Oph the 4th mag. middle star on the west side of the tent shaped body of Ophiuchus go $5\frac{1}{2}^\circ$ SE to find M12 then go $1\frac{1}{2}^\circ$ past two 7th magnitude stars to M10. Both clusters are large, bright, and beautiful. The last Messier globular cluster in Ophiuchus we will cover is M14 (NGC 6402). There are no visually bright stars near it. From M10 go 10° slightly north of west to find M14. It is bright enough to find but it took my 12" telescope to hint at stars being resolved. Above Ophiuchus is Hercules, the Strongman a demigod born of the union between the god Zeus and the mortal Alcmene. Zeus's wife Hera was suspicious Hercules was the child of Zeus because the child was extraordinarily strong. The Greeks knew Hercules as Heracles. The constellation had been previously known simply as "The Kneeler". Hercules is best known because of the globular cluster M13 (NGC 6205) but there are two other globular clusters easily visible in most telescopes and one of them also has a Messier number M92 (NGC 6341). The other is NGC 6229 a smaller globular visible in most telescopes. To find M13 locate the irregular square of stars known as the "keystone." Go $\frac{3}{4}$ of the way up the west side to find M13. NGC 6229 is found by following the line of the west side of the keystone 19° northward. M92 is found $5\frac{1}{2}^\circ$ N and $\frac{1}{2}^\circ$ NE of pi (π) Hercules the star at the NE corner of the "keystone." To the west of Hercules above Serpens Caput is the constellation Corona Borealis, the Northern Crown. Corona Borealis represents the crown given to a victor. In Greek my-

thology it was the crown given to Ariadne by Theseus who had killed the Minotaur in the Labyrinth made by her father. The constellation only contains a number of dim galaxies we will not try to find. Last month I said we would look at the constellation Boötes, the Herdsman (see below). M13. At a dark site M13 is visible to the naked eye as a "fuzzy" star. It was discovered this way by Edmond Halley of comet fame in 1714. This is the best globular cluster you can see unless you travel to far southern Florida and observe Omega Centauri the largest globular cluster in our galaxy which may actually be the core of a dwarf galaxy which has had its outer stars stripped away. If you can pull yourself away from M13 look for NGC 6207 a spiral galaxy located in the same low power field as M13. A big binocular shows it but use more power for a better view. It is only $\frac{1}{2}^\circ$ NE of M13 and at mag 11.4 the brightest galaxy in Hercules. Give it a try. M92 (NGC 6341) is located 6° north of pi (π) the 3rd magnitude star at the NE corner of the keystone. Just because it is a bit out of the way do not miss it. M92 is a very nice globular cluster deserving of more attention, if it was not so close to M13. To me it looks a little flattened on one side. Is there a small dark nebula dimming that side? What do you think? The last globular cluster in Hercules is NGC 6229. It is observable with my 8" telescope but my 12" allows me to resolve a few stars with averted vision and it looks slightly granular. To find it go 7° NW of M92. It is slightly over 1° NNW of 52 Her the 4th magnitude star 6° NW of M92. Above Hercules and just slightly to the east there is another almost keystone like the one in Hercules forming the head of Draco, the Dragon. Do not confuse this keystone with the one in Hercules because you will not find M13 in this one. It is smaller and we have observed it earlier in the year. As long as you keep your directions straight this will not happen and the two do not really look alike. For us Draco is a circumpolar constellation and never sets. This time of the year is the best time to follow Draco as it winds around Ursa Minor, the Little Bear the constellation most everyone has heard of but are not very familiar. Probably the most famous star in the sky is in Ursa Minor, Polaris, alpha (α) the North Star. Polaris is also the end of the tail of Ursa Minor and helps form the asterism, the little Dipper. Ursa Minor is a convenient way to determine the brightness of the sky by comparing magnitudes of the stars. Polaris is mag 2, along with Kochab, beta (β) at the end of the "bowl" of the constellation. Pherkad, gamma (γ) the other star at the end of the bowl of the "Little Dipper" is mag 3, followed by delta (δ) and epsilon (ϵ) the other two stars in the handle of the "Little Dipper" at mag 4. The star joining the handle to the bowl is Zeta (ζ) also at mag 4. Finally if you can see eta (η) the other star forming the "bowl" at mag 5 you have a pretty dark sky. Draco contains few bright stars making it difficult to trace through the sky but since the head is conspicuous it is best to begin there. From the head of Draco (we located it earlier in the year) we go NNE toward the north celestial pole but before it gets there it turns back SW before curving around the body of the little bear where the alpha (α) star of Draco, Thuban alpha (α) Draco

forms a long triangle with the two end stars of the dipper. Thuban (mag 3.6) is not the brightest star in Draco but is the easiest star to find. Thuban is famous because of precession it was the Pole Star when the great pyramids were built around 2600 BC and they were aligned to its position at that time. Thuban as a pole star is not as bright as our Polaris but when you did not have electric lights to light the sky almost magnitude 2 is bright. Draco contains numerous dim galaxies and one notable planetary nebula, the Cat's Eye Nebula a green planetary with the central star visible in most telescopes.

Featured star – Zubenelgenubi, Alpha Librae is a wide double star consisting of two stars easily separated with a binocular. The dimmer star α^1 is mag. +5.1 and the brighter component α^2 is mag. +2.8. The name is from the Arabic meaning the southern claw of the scorpion. The name was given before it became part of a separate constellation representing justice (Libra). The two are a true double with an orbital period of 70.34 days. The star α^1 is larger and cooler appearing in a telescope as yellow while α^2 is smaller and brighter appearing white. According to the AAU the name only applies to α^2 . Both α^1 and α^2 are also spectrographic doubles making this at the least a four star system. The star KU Librae may also be a fifth component to the system. It is separated by 2.6° from the main system.

Featured Messier object – M6 known as “The Butterfly Cluster” is a naked eye open cluster found at this time of the year low in the sky in Scorpio. It was noted by Ptolemy in the 2nd century but it was not recognized as an open cluster until sometime before 1654 by the early astronomer Hodierna using a 20X telescope. To find it look 16° WSW of Antares. Do not confuse it with M7 a more open cluster 20° SW of Antares. If you do not note it visually use your finder scope. A small telescope at low power is the way to observe this open cluster. It is 10 times farther away than it is across and spans ½° in the sky so any telescope of more than about 40X is too much to observe the whole cluster. There is a grouping of 7 or 8 stars forming a “V” shape I like to call the butterfly's antenna. From there you can imagine other stars spreading out right and left to the rear from this grouping to form the body and wings of the butterfly. How do you see this open cluster?

Featured constellation – Last month I said we would look at the constellation Boötes, the Herdsman. Boötes is one of the oldest constellations but the name origin has been lost. The only definite mythology of Boötes comes from the Romans who called him the Herdsman of the Septemtriones, the seven oxen represented by the seven major stars of “the Big Dipper”. As a modern constellation Boötes holds the leash of Canis Venetici, the hunting dogs. The constellation has the shape of a kite trying to take off. To appeal to the youth at planetarium shows, Boötes is usually called “The Ice Cream Cone”. The Sumerians called him, the man who drives the great cart. The only real interesting Boötes object is the alpha (α) star, Arcturus, the 4th brightest star in the sky. Its main use is as a guide star to other stars in the sky as in the saying “arc from the handle of the big dipper to Arcturus and spike on to Spica”. An obscure object in Boötes of interest to me is NGC 5466. This is a globular cluster listed as a challenge object to meet one of the requirements to obtain the Astronomical League Globular Cluster Observing Club award. Located 4° west of M3 (NGC 5272) or follow a curve of stars NW of 9 Boötes to NGC 5466. It is not hard to identify if you realize at Shapley-Sawyer concentration class of XII it contains less stars than most other globular clusters.

Other objects of interest – NGC 6369 the “Little Ghost Nebula” is a planetary in Ophiuchus. To find it go to a line of 3rd and 4th magnitude stars a little over 10° east of Antares and follow these to this planetary. It is bright enough to see in a small telescope but a larger telescope is needed to see it as a ring. Its name fits it well, it is “ghostly”. NGC 6366 is a globular cluster in Ophiuchus. It is found 3° SW of M14 just east of a 4th mag star. It is actually larger than M14 but it is in the class of globular clusters with the lowest surface brightness thus more difficult to observe. It almost looks like a large dim open cluster. NGC 6207 is a lenticular galaxy located 28' NNE of M13. NGC 6217 is a barred spiral in Ursa Minor forming an equilateral triangle with eta (η) and zeta (ζ) outside the bowl portion of the constellation. It can be located with an 8” telescope but a much larger telescope is needed to see much detail.

Our city lights they steal the night away.
Bill Shackelford