Penobscot Valley Star Gazers

An Astronomical Society of Central Maine

http://www.gazers.org

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

June 2020

I See Slooh

The Moon will be in conjunction with Jupiter, Saturn, and Pluto when the PVSG meets via Zoom for its June 2020 meeting on Monday the 8th at 6:30 pm:

You are invited to a scheduled Zoom meeting. Topic: Penobscot Valley Star Gazers monthly meeting
Join Zoom Meeting: https://us02web.zoom.us/j/84913453328 Meeting ID: 849 1345 3328
One tap mobile +13126266799,,84913453328# US (Chicago) +16465588656,,84913453328# US (New York)

Thanks for last month's program go to Jon Wallace for his talk about hunting for micrometeorites.

Hello PVSG,
This month's meeting will be held tomorrow, Monday evening, at 6:30 pm sharp!
We're not going to let Covid-19 get us down and, as our main speaker, Shawn Laatsch will be describing a new Emera Astronomy Center Slooh Group. Shawn will also have a special guest from Slooh. The guest needs to appear early so we'll immediately start with Shawn's presentation at 6:30 with our business meeting to follow afterwards.
"Slooh is a robotic telescope service that can be viewed live through a web browser. It was not the first robotic telescope, but it was the first that offered "live" viewing through a telescope via the web. Other online telescopes traditionally email a picture to the recipient." — Wikipedia.
Because of the exceptional telescopes in the program and the remote telemetry access, there will be a fee structure for those wishing to join the Emera Astronomy Center Slooh Group. — Dwight

Specks From Space

PVSG Monthly Meeting Minutes
May 11, 2020
Zoom

Meeting:
Call to Order and Welcome
The meeting was held by video-conference and called to order at approximately 6:30PM.

Attendance:

Dwight Lanpher – President
Scott Burgess - Vice-President
David Clark - Treasurer
Phil Normand – Secretary
Jon Wallace - Presenter
Shawn Laatsch
Ralph Foss
Bill Shackelford
Alan Davenport
Ralph Mallett
Don Krause
Don Ferrell
Andy Brown
Visitors:
Brian Murphy (CMAS)
Jon Silverman (CMAS)
Jeffrey Messikian (CMAS)
Dave Oertel
Alex & Lana Friess
Pete Coughlin

Program

The program, Stardust in Maine – Finding Micrometeorites on a rooftop was presented by Jon Wallace from Southern Maine.

Summary: Micrometeorites are microscopic objects from space that fall to Earth and survive the trip through the atmosphere. About 60 tons of micrometeorites hit the Earth each day. They are difficult to find as they are typically only a few times the width of a human hair. Micrometeorites enter the atmosphere at 25,000 to 150,000 miles per hour and can produce heat from approximately 750 to 5000 degrees Fahrenheit. Micrometeorites are identified under a microscope at magnifications of 100-400X. Jon discussed how he focus-stacks images to produce images that are in focus over the entirety of the micrometeorite.

Secretary's Report and Acceptance of Minutes
Minutes were accepted unanimously.

Treasurer's Report

On the Schedule

(Items Subject to Change)

PROGRAMS

STAR PARTIES

? Tentative; (rs) rain or shine; (co) clear only; (rd) rain date

Dave Clark reported that the club had $306.87 as of the end of April.

Observing Reports

Several members and visitors mentioned their observing over the last month as they introduced themselves at the start of the ZOOM video-conference.

Old Business discussion

It was mentioned that Katahdin Woods and Waters National Monument was recently designated an International Dark Sky Site.

New Business

- Shawn gave a report on activities at the Emera Center.
- Dave and Phil were nominated for the positions of Treasurer and Secretary respectively. Voting will take place later this summer.
- The June meeting will also be held by video conference using ZOOM.

Adjournment

The meeting adjourned at approximately 8:00PM.

Phil

Observe The Sky This Month

Selected Objects

June 2020

General sky comments – The summer season begins on the 20th of June at 21:44 Universal Time (UT1, simply UT) or 17:44 Eastern Daylight Time (EDT). This is the time the Sun reaches its most northerly declination. The sky in June does not get fully dark until after 10 PM and there are only about 4+ hours to observe. Some of the members may remember observing at the Aurora site at this time of the year. This was quite a few years ago but I remember leaving the site at 3 AM and the sky had brightened. Make the most of the late evening and early morning this month. Venus will have a close encounter with the waning crescent Moon on the 19th just missing being occulted. Our friends in Atlantic and northern Canada will be able to observe this twilight occultation although it will be brief.

Planets this month – Full Moon was on Friday the 5th, last quarter is on Saturday the 13th, New Moon is on Sunday the 21nd, and first quarter is on Sunday the 28th. Before the July meeting the Moon will be full on Sunday July the 5th. On the 4th of June Mercury achieved greatest eastern elongation (GEE) 24° east of the Sun at mag +0.4. Mercury is well placed in the evening sky at this time but fading until coming too close to the sun mid-month. Venus moved past the Sun on the 3rd only 0.2° away barely missing being a transit. It re-appears in the morning sky by mid-month. Mars is in the constellation Aquarius at the beginning of the month and moves into Pisces late-month. During the month Mars brightens from mag. 0.0 to -0.5. Jupiter is retrograding in northwestern Sagittarius all month. Saturn is retrograding in western Capricornus having past opposition. The waning full Moon passes south of Saturn on the nights of the 8th and 9th. Uranus is slowly emerging in the morning sky. Neptune is in central Aquarius. 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 we are located almost halfway between the equator and the North Pole. More about Scorpius is below in the featured constellation section. 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 time Libra may have been connected to the scorpion by some but these claws almost universally were considered a separate constellation by most representing justice. To me the most interesting thing in Libra are the two bright stars Zubenelgenubi (α Lib) [see below] and Zubeneschamali (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. Below and to the west of the tail of Scorpio we at this latitude can see some of the stars of the constellation Lupus, the Wolf but it is not worth our time trying to observe. 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. Serpens Caput contains one Messier object M5 (NGC 5904) a very fine globular cluster located 11½° north of Zubeneschamali (β Lib) and 7½° SW of Unukalhai alpha (α) Ser. Do not miss M5. Serpens 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 there also so 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 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 uneven core of stars. 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 3½° 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 2½° 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 5½° SE to find M12 then go 1½° past two 7th magnitude stars to M10. Both clusters are large, bright, and beautiful. The last Messier globular cluster in Ophiuchus 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 the constellation Hercules, the Strongman and to the west above Serpens Caput is the constellation Corona Borealis, the Northern Crown. Corona Borealis represents the crown given to a victor. In Greek mythology it was the crown given to Ariande 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). Back to Hercules a demigod born of the union between the god Jupiter and the mortal Alcmene. Jupiter's wife Hera was suspicious Hercules was the child of Jupiter because the child was extraordinarily strong. (The Greek name of Hercules is Heracles.) The constellation had been previously known simply as "The Kneeler." The constellation 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 squashed square of stars known as the keystone just to the left and slightly above Corona Borealis. Then go ¾ of the way up the west side to find 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 ½° NE of M13 and at mag 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 as I have occasionally because you will not find M13 in this one. 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 Draco goes 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 are 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 was 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 an interesting wide yellow and white double star separated with binoculars. The Arabic name loosely translated means south claw referring to the time it was considered to be a part of the constellation Scorpio. Because of the two contrasting colors yellow and white to some

naked eye observers Alpha Librae appears to be a green color. The two components travel in space with a common motion; therefore, they are apparently gravitationally bound about 77 light-years (24 parsecs) from our Sun. The brighter of the two (a^2) is also a spectroscopic binary. The second member, α^1 Librae, is separated from the primary system by around 5400 AU. It too is a spectroscopic binary with an orbital period of 5,870 days and an angular separation of 0.383 arcseconds; equal to about 10 AU. The system may have a fifth component, the star KU Librae at a separation of 2.6°, thus forming a quintuple star system. The two systems are probably members of the Castor Moving Group of stars that have a similar motion through space and share a common origin some 200 million years ago.

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 you 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 magnification 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 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 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 need to see much detail.

Bill Shackelford