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Penobscot Valley Star Gazers

An Astronomical Society of Central Maine

O suns and skies and flowers of June,
Count all of your boasts together,
Love loveth best of all the year
October's bright blue weather.
- Helen Hunt Jackson



October 2021

October Meeting

The PVSG will meet remotely via Zoom on Monday, October 11, 2021 at 6:30 pm (Meeting ID 862 9984 6478 Password: PVSG). Doors will open around 6:00 for some socializing before the meeting. We are unaware of any program or agenda for this month.

There was no formal program last month, but we could thank all who participated in the meeting. Also, remember that dues were due on October 1st.



September Meeting

PVSG Monthly Meeting Minutes
September 13, 2021
Live & Zoom

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.

Meeting:

Call to Order and Welcome to Visitors

The meeting was held by Zoom videoconference. The meeting was called to order by Don Ferrell at approximately 6:35 PM.

Attendance:

Members Online:

Don Ferrell – President
Andy Brown – Vice-President
Dwight Lanpher – Club Liaison & Member-At-Large
David Clark – Treasurer
Phil Normand – Secretary
Pete Coughlin
Scott Burgess
Ralph Mallett
Wade and Donna Smith
Ralph Foss
Alan Davenport
Don Krause

Program

There was no program this month.

Secretary's Report and Acceptance of Minutes

The July Meeting Minutes were discussed but no vote was taken to accept the minutes.

Treasurer's Report

Dave reported our account has a total of \$414.37. The Treasurer's report was unanimously accepted.

Observing Reports:

Don Ferrell reported that he had observed Saturn. (Other reports from the Maine State Star Party discussed below.) Dwight said he has been hosting small observing parties using his Stellina and his laser pointer to point out constellations at the Terramor campground on MDI.

Old Business

Dwight reported that the Maine State Star Party enjoyed fairly good weather. Friday night clouded up earlier than expected but Saturday was clearer than expected. PVSG members attending included: Dwight Lanpher, Wade and Donna Smith, John Schuster, and Phil Normand. Dwight used his Stellina to display several Deep Space Objects to more than a dozen attendees and campers. Phil set up his C8 and observed several Globular clusters, galaxies and Jupiter and Saturn before being clouded out on Friday night.

New Business

Don announced that the Challenger Center is happy to accept the donated Meade SCT. Don also said that we may be able to have future meetings at the Challenger Center. Don also said that there is a location in Bucksport where we could meet. The Bucksport Church is located in the former HR building of Champion Paper in Bucksport. It is available any Monday.

Scott informed us that John Bapst has closed their building to outside groups due to the ongoing COVID outbreaks.

It was announced that The Reflector magazine had a good article about the Katahdin Woods and Waters dark sky location. This led to a discussion of the total eclipse that will pass over the Katahdin area on April 8, 2024.

The group discussed possible presentations for the October meeting. A presentation from John Meader was discussed. Phil said he had begun

work on a future presentation on messages and items we have sent to space attached to spacecraft.

Dave noted that a recent entry for the Astronomy Picture of the Day showed pictures of the moon orbiting the earth from space.

Upcoming events were discussed and included the following.

Acadia Night Sky Festival – September 29 to October 3: (More kid oriented now)
Stars over Katahdin has been cancelled
The James Webb Telescope scheduled for a December launch

It was noted that there is a calendar of virtual events on the NSN website for those who have signed in on NSN. Dave also mentioned that he forwards emails from NSN on events, but they often show up the day of the event.

Lastly, Phil showed a 14" Dob being sold on Craigslist and Dwight showed a 10" Meade SCT being sold by a member of the Downeast Astronomers group.

Adjournment

The meeting was adjourned at approximately 7:45 PM

Phil



Observe The Sky This Month

Some Selected Objects

October 2021

General sky comments – Now that it is the fall season the peak of the foliage season is upon us at the time of the meeting. This sonnet describes the seasons.

New England Seasons

The seasons in New England seem to glow.
Color is found within the land and sky.
The days each year reflect the ebb and flow
Through spring, summer, fall, winter the days fly.
Faster it seems as everyone grows old,
We find beauty in sights through the land,
Trees, sky, and sea. Fall sights and colors bold
Remind us of past days near sea and sand.
The fall colors compared to spring are bright.
It is as if they realize in time

Winter will bring a monotone of white
To land, the sea, and plants coated with rime.
The fall season is one of blue and gold,
Plus yellow, red, and green of pines so bold.

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If you enjoyed this sonnet I have others more about astronomy and observing.

The NASA deep space atomic clock has finished its mission after a one year extension making a two year test of the feasibility of an atomic clock in space. It is now known atomic clocks can be stable in space and allow spacecraft to update their position almost immediately and with a navigation system calculate the spacecraft position and know where it is going. Now that we know atomic clocks work accurately in space an improved version can be utilized. The first mission to use such a clock will travel to Venus in 2028. The NASA mission will be the Venus Emissivity, Radio Science, InSAR, Topography & Spectroscopy (VERITAS) spacecraft.

The peak of the Orionid meteor shower is on the 21st but it is active from the 2nd until November 7th.

Planets this month – Before the October meeting on the 11th the new moon (Lunation 1222) was on Wednesday the 6th, first quarter moon is on Tuesday the 12th. Full moon is on Wednesday the 20th and the last quarter is on Thursday the 28th. Before the November meeting on the 8th the new moon will be on Thursday the 4th. Mercury reached inferior conjunction with the Sun on the 9th and is too close to the Sun to observe until later in the month. By the 25th Mercury will be near perihelion but only 18.4° from the Sun and at its closest elongation of the year. It is at its brightest at mag. -0.7. The rising Sun will make it difficult to observe visually for very long although this is the best morning view of the year. Venus reaches greatest elongation from the Sun (49°) on the 29th. Its southern declination makes it rather low in the sky. I have had no problem observing Venus. Just not for very long before it sets. It is 1.5° north of Antares on the 16th. Mars is too close to the Sun to observe having achieved solar conjunction on the 8th. Jupiter is prominent in the evening sky at mag. -2.6 in the constellation Aquarius. The waxing gibbous Moon passes 4° to its south on the 15th. Saturn is in the evening sky in west-central Capricornus. The first quarter Moon passes 4° south on the 13th – 14th. The planet Uranus (Οὐρανός) is in the constellation Aries and at opposition next month on the 5th. Uranus can be seen as a 5.7 mag star with no optical aid at a dark site. Currently it is surrounded by a number of field stars of similar magnitude. With a telescope it has a 3.7" disk. Neptune is just past opposition and is in the sky in Aquarius. It is viewable most of the night. Pluto is in Sagittarius in the southwest sky.

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 Sculptor’s Workshop.” Later it was shortened to Sculptor. It contains a handful of stars magnitude 4 or less. However, Sculptor contains two objects of note a galaxy and a globular cluster. Star hop from Deneb Kaitos, Beta (β) Ceti by using a sky atlas to find NGC 253 an object claimed by numerous people as the third most notable galaxy in our sky. (Note NGC 247 on the way by. You might think this is NGC 253 it is almost as good.) 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 galaxy! You will be truly impressed. The other object NGC 288 is a globular cluster located 1.8° SSW of the Silver Coin Galaxy. It is class X thus contains less stars than most globular clusters. The South Galactic Pole is located less than one degree SSE of NGC 288. Above Sculptor is the western section of Cetus, the Sea Monster (Whale). We will cover the eastern part of Cetus next month. The brightest star in Cetus is mag 2.0 Deneb Kaitos, beta (β) Ceti. (See below) Finding this star is easy as it is the brightest star in this part of the sky. 3° SSE of Deneb Kaitos is the galaxy NGC 247. I observed this galaxy before the Silver Coin. This galaxy is easily seen with any telescope and large binoculars. It is a large edge on spiral with a field star on one end. 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° NNE of Deneb Kaitos. It makes a triangle with two 5th mag stars. NGC 246 is a bit faint but can be found with a 4” telescope. Above 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 $2\frac{1}{2}^\circ$ WNW of the star at the SE corner of the square, the star Algenib, gamma (γ) Pegasus. 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. When the blood of Medusa fell onto the sand of the beach, out of the ocean foam appeared Pegasus. Perseus jumped on Pegasus and rode off to rescue Andromeda from her fate. From the previously observed Algenib go about 25° east to eta (η) Pisces a 3rd mag star. Less than 1° ENE is M74 (See below). Pisces, the Fishes will be covered next month, although

it is spread through several constellations we have previously noted. Moving north we pass through the eastern portion of Andromeda to arrive at two northern constellations now very prominent in the overhead sky and in prime position for viewing. These are Cepheus, the King and Cassiopeia, the Queen. What I do not like is the high overhead placement of these constellations making them difficult to view with most telescopes. Of course you can just wait until later in the evening when these constellations have moved from such an overhead position. Best of all 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. Cepheus (see below) is not a bright constellation with the Alpha (α) star at magnitude 2.5 but the house shape or head with a pointed hat constellation can be found at moderately dark sites. Cassiopeia is easily recognized by most people from its “W” shape and its’ 2nd and 3rd mag stars. Both of these constellations have been extensively covered before and will be reviewed again next month.

Featured star – Deneb Kaitos, Beta (β) Ceti is the brightest star in the constellation Cetus, the Sea Monster (Whale). It is almost one-half magnitude brighter than the alpha (α) star Menkar located on the opposite end of the constellation. Diphda is an alternate name for this star from the Arabic name meaning “second frog.” Arab astronomers originally called Fomalhaut “first frog” before adopting the Greek name. Deneb Kaitos is a type KO bright giant similar to Arcturus but slightly hotter. This is not overly unusual except for the high X-ray emissions not normally found in a star of this type. X-ray emissions are generally considered to be produced by a rapidly rotating magnetic field heating an extended chromosphere. There is a problem. Deneb Kaitos is a slow rotator with a rotation period of about 115 days. The magnetism could have come from the time it was a main-sequence star with an unusual magnetic field. However, the chemical composition shows Deneb Kaitos is well into the helium burning phase, ascending the red giant phase of its evolution and not recently leaving the main-sequence. More study is needed.

Featured Messier object – M74 (NGC 628) is also known as the Phantom Galaxy. It is the most difficult Messier object for most amateur astronomers to observe. M74 was first observed by Pierre Méchain in 1780. He told Messier who added it to his catalog. Personally I find it slightly easier to observe than M101. Both galaxies have low surface brightness. M74 is smaller and fits in most telescope viewing fields while M101 has a higher surface brightness it only fits completely in wide field views. Ease of viewing depends on what instrument you are using. Viewing conditions also come into play. Because of the low surface brightness any loss of visibility affects viewing. If you have trouble viewing try averted vision, have dark adapted eyes, or find another place or another day. Both of these galaxies are open face spiral galaxies making them popular for study. M74 has a history of numerous supernova.

Featured constellation – Cepheus, the King is one of the lesser known and not often observed constellations but it does contain many interesting objects starting with Herschel's Garnet Star discussed earlier. The beautiful double star Alfirk, beta (β) Cepheus with the primary star a bright white and the blue secondary 13" apart. It is even more impressive in a larger telescope. Also found in Cepheus are numerous open clusters, nebula, one galaxy, and one planetary nebula that both need to be better known. The first is NGC 7160 an open cluster 4° due west of Alderamin alpha (α) Cepheus. NGC 7142 is also located 4° from Alderamin but NE and contains 3 times more stars than NGC 7160. NGC 7510 is an open cluster located 2° SW of M52 in Cassiopeia but in Cepheus. It is an interesting small cluster of about 20 brighter stars and numerous dimmer stars in an oval grouping which makes this cluster unique. While in this area look 2° west and slightly south of delta (δ) Cepheus the star at the bottom left of Cepheus to find NGC 7380 the Wizard Nebula. I saw about 20 stars scattered throughout the field of view with a hint of nebulosity. An O-III filter helps with observing this nebula. The cluster and nebula really come to life with long exposure photography and does resemble a man wearing a big pointed hat especially when the image is not overly processed. Now we will go to the other side of Cepheus to eta (η) Cep the star 4° W of Alderamin. Two° SW is NGC 6939 an open cluster of about 75 to 100 stars in crossing lanes of stars in a "V" pattern on one side. Immediately SE is the galaxy I mentioned at the top of this section. It is NGC 6946 the Fireworks Galaxy or ARP 29. At 135x with my 12" scope I could detect arms in this galaxy. I do not expect many observers will see much more than the central portion of this galaxy but if you get to see it

through a large telescope it looks spectacular. It is known as the Fireworks Galaxy because in the last 100 years there have been 10 supernovae observed in this galaxy compared to our galaxy with an average of one per century. The last supernova observed in NGC 6946 was in May of 2017. This was a type IIP supernova, a supergiant collapsed star. Finally NGC 40 is a planetary nebula located 5½° SE of gamma (γ) Cep. It is known as the "Bowtie Nebula" and has a bright central star at magnitude 11.5. In larger telescopes this planetary is quite spectacular with two bright ends. A 12th magnitude field star lies just outside to the SW.

Other objects of interest – In Cepheus is NGC 7142 a magnitude 9 open cluster located 4° NW of Alderamin. It contains upwards of 100 9th to 14th magnitude stars. You may have some difficulty finding this one as its stars tend to blend with the background stars. NGC 7789 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 contains upward of 300 stars and in my 12" telescope I could easily count at least 150 stars. To find this cluster go 3° 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