



Penobscot Valley Star Gazers

An Astronomical Society of Central Maine

<http://www.gazers.org>

...January is here,
With eyes that keenly glow –
A frost-mailed warrior striding
A shadowy steed of snow.
-Edgar Fawcett



January 2021

Happy New Year!

Celebrate 2021 (when everything gets better, right?) by attending the January meeting of the PVSG on Monday the 11th at 6:30 pm via Zoom. The doors will open a little after 6:00 if you want to arrive early for some socializing. No program is planned, though Dwight may have a short video to show. Perhaps one of you might have an astro-bit you would like to present?

Thanks for last month's program go to Bill for his talk about bronze, brass, and speculum metal mirrors, and to Dwight for the videos about the collapse of the the Arcibo Telescope and the challenges of producing the image of the black hole in M87. And also to those who shared astronomy stories.



Metal Mirrors

PVSG Monthly Meeting Minutes
December 14, 2020
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.

Summary: Bill discussed four types of metals: Pure Copper; Bronze; Brass; and Speculum. Pure Copper was found to help heal wounds by ancient warriors who used copper swords. Bronze was used by ancient Egyptians to make hand held mirrors. Bill showed an Etruscan bronze mirror that was approximately 4000 years old. Bill then showed a picture of the Leviathan of Parsonstown telescope with a 72 inch bronze mirror, that William Parsons built. His first telescope had a 36 inch mirror but blew over in the wind. Bill then talked about the use of Brass and showed an acetylene miner's lamp that incorporated a polished brass mirror. Bill showed the group a miner's lamp that he got from a Colorado gold mine location.

Meeting:

Call to Order and Welcome to Visitors

The meeting was held by Zoom video-conference and called to order by Dwight Lanpher at approximately 6:30 PM. Dwight informally started the conference call at 6:00 to give time for folks to chat as this meeting would have been our annual Christmas party.

Attendance:

Dwight Lanpher – President
David Clark - Treasurer
Phil Normand – Secretary
Mike Harrington
Alan Davenport
Audrey Brown
Julie & Dale Brownie
Bill Shackelford
Ralph Mallett
Don Krause
Don Ferrell
Wade & Donna Smith
Andy Brown
Shawn Laatsch

Astro Short: Dwight Shared a video about the Arcibo Telescope collapse on December 1st. Dwight also showed how the radio telescope was constructed and how it could be adjusted to cover a larger area of the sky. Dwight mentioned that Puerto Rico may consider rebuilding the telescope since the telescope had more than a million visitors a year. The telescope was constructed in 1963 and survived several hurricanes.

Astro Short: Dwight Shared a video of Dr. Katie Bouman who was a mathematician at MIT, and is now at Cal Tech and Dr. Colin Lonsdale. Dr. Bouman, who has a PhD in Electrical Engineering, wrote the algorithm to merge all the data that gave us the image of the event horizon of the M87 black hole. The video was a question and answer session about the challenges involved with producing that image. It was stated that the next image the event horizon telescope will try for is the black hole at the center of the Milky Way. It was said in the video

Programs and Astro Shorts

Program: Bill Shackelford presented a program on antique mirrors called Mirror Mythology and Speculum Metal Mirrors.

that if future telescopes are put in space and smaller wavelengths used, then more detail will be able to be gathered and displayed.

Dave added that in 1969 when he started college, he attended talks where astrophysicists debated the existence of black holes. He said it was fascinating how things have changed in 50 years.

Secretary's Report and Acceptance of Minutes

Minutes were unanimously accepted.

Treasurer's Report

Dave reported that our club has \$713.87 in cash and in our bank account. The Treasurer's report was unanimously accepted.

Annual Christmas Party Door Prize raffle: Dwight held the virtual raffle with the following results:

Lunar Calendar for 2021 – Dr. Don Krause
The Illustrated Longitude Book – Alan Davenport

Observing Reports:

Wade & Donna Smith observed Jupiter and Saturn getting closer and then mostly clouds. **Dave Clark** has been observing the Orion Nebula. **Phil Normand** said that when the clouds finally go away, he hopes to use his new Orion Paragon binocular mount to keep the image steady instead of holding his binoculars by hand. **Bill Shackelford** said he had a parallelogram mount for his 25 X 100 binoculars with 2-5lb weights for balance. **Audrey Brown** said she had seen the ISS a few times as well as Jupiter and Saturn. The nights have been clear in Florida. **Dwight Lanpher** used his Stellina telescope by setting it in his driveway and controlling it from his living room. He viewed Orion before it got cloudy. Dwight also mentioned the solar eclipse in South America and **Shawn Laatsch** mentioned that Slooh covered it online. Shawn also said that Slooh will be covering the conjunction of Jupiter and Saturn on December 21st. **Andy Brown** mentioned that he saw on the AP news that Dr. David Clark from PVSG had been interviewed about the Northern Lights.

Astronomy Stories:

Wade Smith talked about a time at Stellafane when a gentleman had a laser pointer mounted on his Dobsonian and he was aiming at an object near the horizon and his laser was pointing into other observers' backs. When he noticed, he quickly turned it off. **Dwight Lanpher** talked about aligning his Meade SCT scope once and found that as the scope was trying to find magnetic north, he found that the scope was follow-

ing him as he moved to get out of the way. It turned out that magnets in Dwight's gloves were strong enough to interfere with the telescope's alignment. **Dave Clark** talked about a time when he was at Bar Harbor watching fireworks and heard people complaining that the fireworks weren't very good because of the time delay between when they were seeing the flashes and hearing the explosions.

Old Business

None

New Business

There was an informal discussion of how the COVID pandemic was being addressed at the University of Maine.

Adjournment

The meeting adjourned at approximately 7:49 PM.

Phil

A Special Note

Dwight would like to recognize and thank Bill for staying involved from Oklahoma with his presentations and the work that he puts into his Observe the Sky columns.

Observe The Sky This Month Some Selected Objects January 2021

General sky comments – An unidentified radio signal has been found while studying solar flares from Proxima Centauri. It is likely from a natural source but is the first candidate for an extraterrestrial signal in over 42 years. The 982.002 megahertz signal was found by a student at Hillsdale College while reviewing the data. The signal is confined to an area near to the star and is a frequency not often used by humans. It disappears when the Parkes radio telescope turns away from Proxima. Expect an article in an upcoming issue of Scientific American. Has anyone heard any late news about this signal? Orion Telescopes & Binoculars each month downloads a free newsletter called "What's in the Sky?" It includes a one page sky chart and top picks for stargazers. In addition there is a Featured Article, Image, and Selected Objects of Interest. This newsletter is available by adding news@oriontelescope.com to your email address book. Use it at the first of each month for its objects and then use my newsletter for more detailed information.

Planets this month –The last quarter moon is on Wednesday the 6th before the meeting on Monday the 11th, new moon is on Wednesday the 13th, first quarter is on Wednesday the 20th and full moon is on Thursday the 28th. The February last quarter moon is on the 6th before the meeting on Monday the 8th. Mercury is

emerging into the evening sky this month and reaches greatest eastern elongation on the 23rd at 18.6°. Venus is only 20° from the sun in the morning sky on the 1st. By the 31st it is 13° from the sun. Mars is fading in both size and magnitude from its opposition of 2020. It is located in Pisces early in the month moving into Aries shortly thereafter. Jupiter begins the year in Capricornus 2° from Saturn and 20° from the sun. It passes 1.5° from Mercury on the 10th and is in conjunction with the sun on the 29th. Saturn is only 20° from the sun at the beginning of the year and reaches conjunction with the sun on the 24th. Uranus (Οὐρανός) is in the constellation Aries and well placed for telescope viewing in the southwest. Neptune is in Aquarius and sets just before midnight. Pluto is too close to the Sun to be observed.

Constellations for the month – Low in our sky at this time of the year and easily observed is the small constellation of Lepus, the Hare. (See below.) To the left of Lepus is the constellation of Canis Major. We will concentrate more on this constellation and its bright star Sirius next month. Notice Sirius was directly south at midnight on New Year's Eve. Immediately above Lepus is one of the best known constellations Orion, the Hunter. Orion, the Hunter, was to the Greeks and Romans a giant of a man who could walk through any depth of water and not get his head wet. He had no fear of any animal and threatened to kill all the animals on the Earth. When Gaia, the goddess of the Earth, heard this she became angry and sent a scorpion to kill Orion. He was gravely poisoned but Aeschulapius/Ophiuchus, the founder of medicine, saved him by administering an antidote. All three are memorialized in the sky and this is why Orion and Scorpius are in opposite parts of the sky with Ophiuchus standing above the scorpion with it under his foot. Many cultures had various names for the giant, usually referring the pattern of stars to someone of importance. Orion contains three Messier objects, M42 (NGC 1976), M43 (NGC 1982), and M78 (NGC 2068). M42 is the Great Orion Nebula, perhaps the finest diffuse nebula in the sky. If you have observed this diffuse nebula before observe it again because there is always something you missed before. M43 is located next to M42 and probably part of M42 being only separated by an intervening dust lane. Taken together and viewed with a wide field view the two resemble some giant bird soaring through the sky with its wings outspread. M78 is an emission and reflection nebula located 2½° NNE of Alnitak, zeta (ζ) Orion the eastern star in the belt of Orion. Not as spectacular as M42 or M43 it is unique in its own way and should be observed. Orion contains numerous multiple star systems. Most of them are blue-white stars because they have been recently born in the Orion Complex. I will let you discover these on your own. Higher in the sky directly above Orion is the constellation of Auriga, the Charioteer. Auriga has numerous mythological stories connected to it. Capella, the alpha (α) star of Auriga, is the sixth brightest star in the sky and the third brightest in the northern hemisphere. Only Vega in Lyra and Arcturus in Boötes are brighter. Auriga is usually shown as a man in a kneeling position

sitting on a bench (the Milky Way?) holding a female goat with two kids under his right arm and he is holding reins and a whip in his left hand. This is the view seen on a typical celestial globe but Auriga is also shown other ways. Depending on the civilization, Auriga is a charioteer, a rein holder or other type of driver, goat herder, or driver of some vehicle (wagon, cart, etc.). Auriga contains three Messier objects M36 (NGC 1960), M37 (NGC 2099), and M38 (NGC 1912) all open clusters. We must note the easiest way to find and observe the first object M1, (NGC 1952) on the not comet list of Messier. The star which one might think to be the bottom star of Auriga is not. Rather it is the northern of the two stars forming the tips of the horns of Taurus, the bull, a constellation we observed last month. The brighter star has a name Elnath and is the beta (β) star of that constellation. The other star zeta (ζ) Taurus is the guide star to M1. Once you have found this star, M1 is just over 1° NW. Until 1930 when the constellation boundaries were fixed the star Elnath was also the beta (β) star of the constellation Auriga, the Charioteer.

Featured star – Hind's Crimson Star is the variable carbon star R Leporis found 3½° WNW of mu (μ) Lepus. It was discovered in October of 1845 by John R. Hind of London. It is one of the most vivid red stars in the sky and varies between magnitudes 6 and 11.5 over a period of about 430 days. This magnitude difference corresponds to an actual difference in brightness of 300 times. Like other carbon stars R Leporis is most red when it is at minimum brightness. Its spectrum has very strong bands of carbon which makes it a strong absorber of blue light. It is also very cool with a surface temperature of 2600° Kelvin or less.

Featured constellation – Lepus, the hare. Lepus contains one of the few winter globular clusters M79. To find M79 go 4° SSW of the 3rd magnitude star Nihal, Beta (β) Leporis. Note Lepus is a hare not a rabbit. Lepus was changed, according to myth, by Ostara the goddess of spring from a bird into a hare that can run as fast as the bird could formerly fly. Hares are noted for their rapid running, being born with eyes open, and a coat of fur. Ostara did allow Lepus to once again lay eggs one day a year. The word Easter is derived from the word Ostara and the pagan custom of decorating eggs at the vernal equinox dedicated to Ostara the goddess of spring. As this small constellation has such a southern declination it is best seen in Maine when it is directly south.

Featured Messier object – M78, NGC 2068 is a fan shaped bright bit of nebulosity found 2½° NNE of Alnitak, Zeta (ζ) Orionis. Embedded within are two 10th magnitude stars. It has a sharp northern border fading southwest into a fan shape. The two stars resemble a Halloween costume of a sheet draped over a child with two eyes staring out. To some it also resembles a double headed comet. No wonder Messier added it to his catalog as number 78.

Other objects of interest – In Orion, NGC 1788 a mixture of emission and dark nebulae similar to M78 located 5° NNW of Rigel, NGC 2024 the flame nebula, NGC 2022 a planetary located 2° SE of lambda (λ) the

center star of the naked eye open cluster forming the head of Orion. (Not as good as the Pleiades but worth observing.) In Auriga, NGC 1907 a little jewel of an open cluster $\frac{1}{2}^\circ$ SSW of M38, NGC 1931 a diffuse nebula 1° slightly north of east from M36, NGC 1857 an open cluster with three bright stars, less than 10 dimmer stars, and up to 40 even dimmer stars depending on the size of your telescope found less than 1° south of lambda (λ). Also in Auriga NGC 1664 2° east of epsilon (ϵ) an open cluster with strings of stars resembling a flying kite, NGC 2126 an open cluster halfway between Menkalinan, beta (β) and delta (δ) the top star of

Auriga an open cluster of about 30 stars including one bright star. NGC 2281 an open cluster of perhaps 30 stars with around a dozen brighter located 1° SW of psi (ψ^7) one of the stars in the "reins" of Auriga. If you are game look for the "Horsehead Nebula" Barnard 33 located $\frac{1}{2}^\circ$ SSE of Alnitak. You will need excellent sky transparency, a telescope of at least 12", and an O-III filter which will greatly help. I have tried several times and have yet to detect it.

Bill