

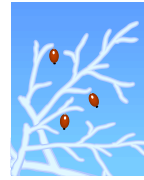


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# Penobscot Valley Star Gazers

An Astronomical Society of Central Maine

Look! the massy trunks are cased in the pure crystal;  
Each light spray nodding and tinkling in the breath of heaven.  
-William Cullen Bryant, of trees glazed with ice



December 2024

## December Meeting

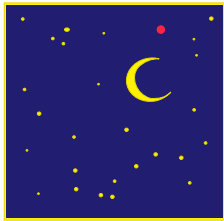
As far as we know, the December 2024 meeting of the PVSG will be held at John Bapst Memorial High School on Monday the 9<sup>th</sup> at 6:30 pm. Zoom will likely be available. (Zoom meeting ID 862 9984 6478 Password: PVSG.) Thanks for last month's program go to whoever presented something.



### PVSG Monthly Meeting Minutes November 11, 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 November minutes were unavailable.



### Observe The Sky This Month

Some Selected Objects  
December 2024

**General sky comments** – The winter solstice is on Saturday December the 21<sup>st</sup> at 04:21 am EST. The Geminids meteor shower peaks on Wednesday the 14<sup>th</sup>. Observe them early in the evening both before and after the 14<sup>th</sup>. The Moon is at last quarter and will somewhat interfere late. The Ursid meteors peak on Saturday the 23<sup>rd</sup>. The Moon will be a problem as full moon is four days later. After the meeting on the 9<sup>th</sup> use your best binocular or a telescope and look for the planet Neptune less than a degree south of the first quarter Moon. North of Maine in Alaska and Greenland Neptune is occulted. On the night of Friday the 13<sup>th</sup> the Moon travels through the Pleiades. On Wednesday the 18<sup>th</sup> Mars is less than a degree south of the Moon and is occulted in much of the same area Neptune was occulted earlier in the month. On Saturday the 28<sup>th</sup> the Star Antares is grazed to the south by a very small crescent Moon. It was occulted earlier in much of the Eastern Hemisphere. The same night also observe the inner planet Mercury 8° to the left of Antares. Merry Christmas and Happy Holidays.

**Planets this month** – New Moon (Lunation 1261) was Sunday the 1<sup>st</sup>, first quarter was on Sunday the 8<sup>th</sup>, and full Moon is on Sunday the 15<sup>th</sup>, last quarter is on Sunday the 22<sup>nd</sup>, and the second new Moon (Lunation 1262) is on Monday the 30<sup>th</sup>. Mercury is too close to the Sun to observe the first two weeks of the month. The last half it becomes brighter until achieved maximum eastern elongation of 22° on the 25<sup>th</sup>. Venus is

the evening sky moving more North than East. Mars is in Cancer. It is in retrograde making its way toward the encounter with Earth on January 16, 2025. The Moon makes a close pass of less than 1° on the 18<sup>th</sup> at 4am EST. Jupiter was at opposition on the 7<sup>th</sup> and is in rapid retrograde in Taurus. The nearly full Moon passes 5° North on the 15<sup>th</sup>. Now is the time to observe the Galilean moons of Jupiter at their brightest with greatest separation, Look for surface details. Saturn is now in Aquarius. It was occulted near Australia with the first quarter Moon on the 8<sup>th</sup>. The planet Uranus (OYPANOS in classic Greek) is in the evening sky in Taurus going into Aries. Neptune is in the SW evening sky in Pisces. Pluto is in Capricornus too close to the sun to observe.

**Constellations for the month** – Once again starting at the southern reaches of the Maine sky we begin with the constellation Caelum, the Engraving Tool. This is one of the constellations invented by Nicholas Louis de Lacaille. This constellation lies at the same latitude as Canis Major which we will note next month. If you live at a location where the Big Dog is visible you may be able to observe some northern members of this constellation. Another constellation also invented by Nicholas Louis de Lacaille is Fornax the Furnace visible about 15° above the horizon. He called it Fornax Chemica, the Chemical Furnace. Fornax is obscure and not very bright. The alpha star is only Mag. 3.9 but worth observing. It is a double star with two yellow stars. If you are a deep sky galaxy observer The Fornax I Galaxy Cluster is for you. Use the next constellation Eridanus, the River, the longest constellation in the sky to find Fornax. It is found in the second bend of Eridanus about 40° below the head of Cetus which we observed last month. Eridanus is so long it starts with its beta (β) star Cursa only 5° south of the celestial equator and winds through the sky as a path of stars ending with its

### Dues Were Due October 1



Regular \$18.00  
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alpha ( $\alpha$ ) star Achernar at  $-63^\circ$  S. Cursa is  $3^\circ$  NNW above Rigel, ( $\beta$ ) Orion (covered next month) and offers a contrast between beta stars of different constellations. Achernar is well below our horizon. Above the first straightaway of Eridanus is the constellation of Taurus, the Bull with the open cluster Hyades. Don't miss the open clusters NGC 1647 and NGC 1746 between the horns of Taurus. NGC 1746 is one of my most favorite open clusters because it is actually 3 open clusters in one and somewhat of a challenge. I first noticed it with a large binocular (25 x 100). Start with your lowest power to view NGC 1746 and then try to pick out the small concentrations of stars listed as NGC 1750 and NGC 1758 within NGC 1746. NGC 1746 is the grouping of around 20 bright stars. NGC 1750 is the concentration of dimmer stars within NGC 1746. NGC 1758 is the grouping of even dimmer stars partly outside of NGC 1758. Some observers call the whole cluster of stars NGC 1746. Observe this grouping and see if you think it should be one large cluster of stars from very bright to very dim or separate open clusters. The total of all the stars in the three groups is in excess of 75 stars. Included in Taurus is probably the most famous open cluster in the sky M45 aka Pleiades. Also in Taurus is M1 the "Crab Nebula". It is found  $1^\circ$  NE of zeta ( $\zeta$ ) Tauri. Perseus, the Hero is above Taurus (see below). Above Perseus is the dim constellation Camelopardalis, the Giraffe with its brightest star only at mag. 4.5. This is the beta ( $\beta$ ) star. The most interesting Camelopardalis view is the asterism "Kemble's Cascade" a string of 8<sup>th</sup> mag. stars starting with open cluster NGC 1502 forming an equilateral triangle with beta ( $\beta$ ) and alpha ( $\alpha$ ) Camelopardalis then proceeding to the NW. Get out a binocular for this one. While in this area of the northern sky note Polaris and how Ursa Minor, the Little Bear hangs down toward the North horizon at this time of year.

**Featured star** – Algol, beta ( $\beta$ ) Perseus is the most famous eclipsing variable star in the sky. It consists of a primary star and a secondary star in a close orbit only 6 million miles apart. The primary is a white star 100 times brighter than our sun and the secondary is only two or three times as bright as our sun. Because they are eclipsing stars their period and time of eclipse can be measured and predicted very accurately. The eclipse is 10 hours long (5 hours in and 5 hours out) and can sometimes be completely observed in one night. It has a period of 2 days, 20 hours, 48 minutes, and 56 seconds. There is a slight secondary dip in brightness midway through the period phase when the primary star eclipses the secondary but it is only evi-

dent with photometry. The two stars shine at a combined magnitude of 2.1 most of the time but dip to 3.4 during the eclipse phase. There is also a third and possibly fourth star in the system but they are far enough away from the other members to not participate in the eclipse. There are numerous opportunities to catch Algol each month.

**Featured Messier object** – M76, The Little Dumbbell was discovered by Pierre Mechain in September of 1780 and then six weeks later re-discovered by Messier. It is usually called the "Little Dumbbell or Barbell Nebula" because of its resemblance to the larger Dumbbell Nebula (M27) in Vulpecula. William Herschel gave it two numbers then Dreyer changed the Herschel numbers to NGC 650 and 651. In small telescopes M76 looks like a small oblong object and using averted vision it can be seen to have two distinct lobes. In larger scopes more detail can be seen. The following is my perception using my 12" telescope. "A pretty blue planetary. It is elongated with a bar on each side. One end is brighter than the other and slightly angled to the other bar". M76 in even larger telescopes can be seen to have an outer shell. The interior shows two distinct lobes connected by a less bright bridge.

**Featured constellation** – Perseus, the Hero. Last month it was mentioned Perseus saved the maiden Andromeda by turning Cetus, the Sea Monster to stone with the Gorgon, Medusa's head covered with serpents. Perseus was able to cut off Medusa's head by looking at her head in his brass shield and not being turned to stone himself. Perseus the constellation is in the winter Milky Way and thus contains numerous open clusters, diffuse nebula, and surprisingly numerous galaxies. It also contains two Messier objects, the open cluster M34 and the planetary nebula M76. M34 is located  $5^\circ$  ENE of the variable star Algol, beta ( $\beta$ ) Persei. M76 the little dumbbell (see above) is located  $1^\circ$  above phi ( $\phi$ ) Persei. Also located in Perseus is the famous double cluster of NGC 869 and NGC 884. Known to ancient Greeks and Babylonians as the scimitar handle Perseus used to decapitate the Gorgon, Medusa. For some reason Messier did not include the Double Cluster in his catalog. Maybe because they would not be confused with any comet. We can imagine these two cluster are decorations on a tree since the Christmas Tree Cluster and bright nebula are not viewable this time of year.

Stars should be seen without a light in view.  
Bill Shackelford