

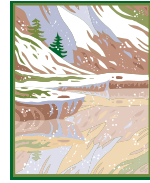


<http://www.gazers.org>

# Penobscot Valley Star Gazers

An Astronomical Society of Central Maine

The Frost Spirit comes! and the quiet lake shall feel  
The torpid touch of his glazing breath.  
-John Greenleaf Whittier



November 2023

## November Meeting

The next meeting of the PVSG will be held by Zoom on Monday, November 13<sup>th</sup> at 6:30 pm. (Zoom meeting ID 862 9984 6478 Password: PVSG.) This month Jeff will give a presentation on astrophotography. Thanks for last month's program go to Dave for his presentation about seeing and transparency.



### PVSG Monthly Meeting Minutes October 9, 2023

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 brought to order by Don Ferrell at approximately 6:38 PM.

Attendance:

##### Online:

**Don Ferrell – President**  
**Dave Clark – Treasurer**  
**Phil Normand – Secretary**  
**Don Krause**  
**Ralph Mallett**  
**Bill Shackelford**

#### Presentation

Dave presented a program on Seeing and Transparency titled "Am I planning to observe tonight? No clouds, but are conditions good for observing?" Dave started his presentation talking about some of the arguments he sees on the Cloudy Nights forums where people argue about what equipment is better for viewing than other equipment. Dave stated that our observations of the night sky are done through the thick soup of the atmosphere. People argue over equipment without discussing what the atmospheric conditions were when they were viewing.

At times, dependent on atmospheric conditions a large dobsonian telescope may perform no better than a small refractor. Although one's ability to observe objects in the night sky are affected by age (eyesight) and experience, atmospheric conditions are most important.

Dave showed some online resources for checking stargazing forecasts and atmospheric conditions. Clear Sky Charts:

[www.cleardarksky.com/csk/](http://www.cleardarksky.com/csk/);  
Astrospheric:  
[www.astrospheric.com/](http://www.astrospheric.com/);  
and Scope Night (Needs a paid subscription):  
[eggmoonstudio.com/astronomy-weather-forecast/](http://eggmoonstudio.com/astronomy-weather-forecast/). These online tools can be used to get the atmospheric details for the location where you are planning to observe.

#### Dues Were Due October 1



Regular \$18.00  
Family \$27.00  
Junior \$9.00

send to:  
Treasurer, PVSG  
609 Cape Jellison Road  
Stockton Springs, ME 04981

Seeing and Transparency: Seeing refers to how steady the atmosphere is. An analogy is looking through calm water at a rocky bottom. When the water is disturbed, you lose the clear sight of the rocks at the bottom. William H. Pickering developed the Pickering scale for classifying the seeing. The scale runs 1-10 with 1-3 being most common. The Astronomical League has a simpler 5 point scale: E (Excellent): The brighter stars are not twinkling; VG (Very Good): The stars are twinkling slightly, but the brighter planets are not twinkling; G (Good): The brighter planets are twinkling slightly; F (Fair): The brighter planets are obviously twinkling; and P (Poor): The atmosphere is turbulent. All objects are twinkling to the point where observation is not practical. Light from stars near the horizon have more atmosphere to travel through. Early morning observing is often best due to the atmosphere having time to settle down.

Transparency is a measure of what you can see in the nighttime sky in spite of adverse conditions like smoke, haze, humidity, or light pollution. Transparency can be estimated by determining the lowest magnitude star that you can see without averted vision. The Astronomical League recommends using the Little Dipper (Ursa Minor) because it has a range of stellar magnitudes. With a range of 1-7, if you see 6 of the 7 stars making up the constellation, you

have a transparency number of 5. Astronomer Don Pensack thinks of transparency as two parts: Darkness and Clarity. Low light pollution and a lack of smog, aerosols, dust and humidity.

#### **Secretary's Report and Acceptance of Minutes**

The minutes for the September meeting were accepted unanimously.

#### **Treasurer's Report**

Dave stated that \$395.97 was in the treasury currently. Dues are now due.

#### **Club Liaison Report:**

No report this meeting.

#### **Observing Reports:**

Bill said he is planning on driving to Albuquerque, NM to view the Annular Eclipse.

#### **Old Business**

None

#### **New Business**

There was a quick discussion on what folks were doing for the April 8, 2024 full solar eclipse.

#### **Upcoming Calendar of Events**

- CMAS - Saturday, October 14<sup>th</sup>: Solar viewing at Sea Lion farm in Alna, ME also evening viewing for those on the train ride.
- October 13<sup>th</sup>-14<sup>th</sup>: Stars Over Katahdin at Stacyville Campground (Evening of Oct 13<sup>th</sup> for Astronomers Only – Star Party is on 14<sup>th</sup>)
- Friday, October 20<sup>th</sup> for Bucksport Middle school (Grades 1-3); Constellation identification and some viewing of Saturn and other objects.

#### **Adjournment**

The meeting was adjourned at approximately 7:20 PM.

Phil



## **Observe The Sky This Month Some Selected Objects November 2023**

**General sky comments** – Daylight Savings Time ended on Sunday November 5<sup>th</sup>. The full Moon this month is the beaver moon. Beaver are making their final preparations for the winter. The two gas planets Jupiter and Saturn are at their best during this time of the year and dominate the sky. Observe the double cluster NGC 869 and NGC 884 in the constellation Perseus this month along with the nearest galaxies M31, its satellite galaxies M32, M110 and galaxy M33. All you need is your best binocular. The Leonid meteor shower will peak on the night of the 17<sup>th</sup> and morning of the 18<sup>th</sup>. Always observe this shower. You never know when it will be spectacular. There will be minimal interference from the Moon.

**Planets this month** –The last quarter Moon is on Sunday the 5<sup>th</sup>, new Moon (lunation 1248) is on Monday the 13<sup>th</sup>, first quarter Moon is on Monday the 20<sup>th</sup>, and full Moon is on Monday the 27<sup>th</sup>. Mercury returns to the evening sky about the time of our monthly meeting on the 13<sup>th</sup>. It will be in the evening twilight at mag -0.5 for the rest of the month. It reaches as much as 20° elongation on the 27<sup>th</sup> but is so far south it will be difficult to observe.

Venus still dominates the morning sky. It had a close conjunction with the Moon on the 9<sup>th</sup>. Mars is too close to the Sun to observe. Solar conjunction occurs on the 18<sup>th</sup>. Jupiter achieved opposition on the 3<sup>rd</sup> in Aries. This would be a good time to observe both Jupiter and its moons as they all are at their largest this month. The waxing gibbous Moon passes Jupiter on the 25<sup>th</sup>. Saturn is in Aquarius and is not quite as bright as last month although still in great position to observe. The waxing crescent Moon passes Saturn 2° south on the 20<sup>th</sup>. The planet Uranus (Οὐρανός), the only planet based on a Greek name, achieved opposition on the 13<sup>th</sup>. Neptune is in the evening sky in Pisces crossing into Aquarius late in the month and sits well placed for viewing. Pluto is still in Sagittarius too close to the sun to observe.

**Constellations for the month** – At the far southern range of our sky is located the constellations Fornax, the Furnace. Fornax contains many galaxies but they are even less conspicuous than those in Sculptor which we observed last month. Above Fornax is the large constellation Cetus, the Whale. As I noted last month we will concentrate on the east side of this constellation. It is known as a whale in the modern sky but in reality it is the sea monster of Andromeda fame turned to stone by Perseus with the severed head of Medusa. Cetus spans over 3 hours in right ascension but is easily seen at this time of the year. Cetus contains mostly galaxies many of them bright including M77. Now is

the time to observe M77 as it is easier to find now than next year when you might want to find it low in the west during a Messier marathon. The hexagonal star pattern including the alpha ( $\alpha$ ) star Menkar forming the head (tail?) of Cetus makes a convenient star pattern to locate M77. It is found just to the SE of the star gamma ( $\gamma$ ) connecting the body of Cetus to the tail pattern.

While you were on your way to observe M77 you might have noticed another dimmer galaxy forming a triangle with gamma and M77. This is NGC 1055 an edge-on spiral galaxy with a central bulge. There are two stars one slightly brighter than the other above this galaxy making it look like a winking smiley face or grinning black cat except in some telescopes it is upside down.

In the area is a barred spiral NGC 1073. The bar here is much easier to observe and larger than the bar in the Milky Way galaxy. To find it go back to M77 and go slightly over a degree NE.  $6^\circ$  SW of gamma ( $\gamma$ ) is the variable star Mira, omicron ( $\omicron$ ). Mira is the featured star this November.

Above Cetus is the eastern "fish" of Pisces, the Fishes. The alpha ( $\alpha$ ) star Alrescha indicates the "knot" between the cords joining the two fish. The western fish is located way back below the square of Pegasus. It is represented by a hexagon of mostly fourth magnitude stars. Pisces also contains one Messier object M74 (noted last month) a face on spiral galaxy found  $1^\circ$  WNW of eta ( $\eta$ ) Pisces.

To the East of the Eastern fish of Pisces is the constellation Aries, the Golden Ram a Zodiac constellation. See featured constellation below. North of Aries is the constellation of Triangulum, the Triangle. Triangulum is a convenient way to locate the galaxy M33 located  $4^\circ$  WNW of alpha ( $\alpha$ ) Triangulum. Triangulum in ancient times was a larger equilateral triangle but was reduced to the present size by Hevelius. M33 is the third largest galaxy in the local galaxy group but is difficult to view because of its low surface brightness. It can be located  $4^\circ$  WNW of alpha ( $\alpha$ ) Tri without any visual aids in a dark sky and can be used as a gauge to judge sky darkness. To observe M33 use a wide field telescope at the lowest power or a large binocular.

Above the east fish of Pisces and connected to Pegasus is the constellation Andromeda. Andromeda is best known as the constellation of the Andromeda Galaxy, M31. It is usually found by starting at 2<sup>nd</sup> mag. Mirach, beta ( $\beta$ ) Andromeda and following 3<sup>rd</sup> mag. mu Andromeda to the galaxy. I employ a simple method by using the eastern three stars of Cassiopeia as an arrowhead shaped pointer to the galaxy  $15^\circ$  away. It points slightly south of the galaxy but the galaxy is sufficiently bright to be easily seen. I will not cover M31 here because there are extensive articles already written about this galaxy, the largest galaxy in our local group.

Two other galaxies easily found in Andromeda are NGC 278 and NGC 185. NGC 278 is  $6^\circ$  slightly E of N from the center of M31. NGC 185 is  $2^\circ$  NW. The story of Andromeda in Greek mythology (my new section) and related characters can be read below. Above the constellation Andromeda is Cassiopeia easily recog-

nized by most people from its "W" shape. This constellation was extensively covered last month.

**Mythology** – The mythology of Andromeda starts with her parents Cepheus, the king of Ethiopia and his vain queen Cassiopeia. Cassiopeia thought she was more beautiful than the Sea Nymphs. As a punishment Poseidon, the god of the sea sent the sea monster Cetus to wreak havoc on the coast of the kingdom. The desperate king Cepheus sought the advice of the oracle Ammon where he is advised to chain his beautiful daughter Andromeda to a rock on the coast as a sacrifice to Cetus. [Nothing is ever said condemning the vanity of Cassiopeia that started the whole mess.] Fortunately the hero Perseus comes by to save the day. Perseus in a previous encounter was tricked into promising to obtain the head of Medusa the only mortal of the Gorgons, monsters of the underworld. Medusa had snakes for hair and could turn any mortal living creature to stone. The goddess Athena had given Perseus a mirror of polished bronze and a cap of invisibility. The god Hermes had given him a sword and winged sandals. Perseus used the mirror to not look at Medusa directly and cut off her head. He put the head into the cap of invisibility and captured the winged horse Pegasus who had appeared from the blood of Medusa mixed with sea foam. Perseus rode off on Pegasus and came by the princess Andromeda chained to the rock with Cetus threatening. He took the head of Medusa out of the cap of invisibility, turned Cetus to stone, rescued Andromeda, and rode off with her. They were married later but that is another story.

**Featured star** – Mira, Omicron ( $\omicron$ ) Ceti is the first known long term periodic variable star. Mira is a Latin word meaning "The Amazing one." Some people interpret it as "The Wonderful." Mira is credited to be discovered by David Fabricius an amateur astronomer and clergyman (1564-1617). He observed the star from August 3, 1596 to August 21, 1596 when it brightened from magnitude 3 to 2. He could not find it plotted on any chart he could locate. It faded in September and disappeared completely in October. He suspected it was a nova but it reappeared in February of 1609. It is very likely Hipparchus and many Chinese and Korean astronomers observed the star and called it a nova. The star was nearly forgotten until being rediscovered in 1638 by Johann Fokkens Holwarda who had determined its period as 11 months (modern value of 332 days). On November 7, 1639 it was observed by Johannes Hevelius and he called it Mira (Historiola Mirae Stellae) in his catalog Prodomus Astronomiae of 1690 along with his atlas of the stars published by his wife Elisabetha after his death in 1687. Mira is a pulsating red giant variable star with a white dwarf companion.

**Featured Messier object** – M77 in the constellation Cetus, the Whale is the archetype for Seyfert 2 galaxies. In Maine many people think of and try to observe M77 when participating in a Spring Messier marathon. At this time M77 is low in the southwest sky and is only viewable for a short time before disappearing below the

horizon. This is the best time of year to observe M77 as it is well placed for viewing, easy to find, and able to be observed in almost any size telescope including scopes as small as 100 millimeters (4 inches). The larger the scope the better the galaxy appears. With my 25x100 binocular M77 appeared as an oval galaxy with a bright center and a hint of mottling. This was at a very dark site. Using a 10 inch telescope at the same site the mottling appeared on one side only. It was an obvious spiral galaxy one arm separating a detached central area brighter than the rest of the galaxy. Most observers will need a scope of 12 inches or larger to see this much detail. M77 was discovered by Pierre Méchain in October of 1780. Messier observed it in December of the same year describing it as a cluster of small stars which contains some nebulosity. Observing M77 in 1848 Lord Rosse using the Leviathan referred to it as "a blue spiral." In total Lord Rosse observed it at least 12 times. Seyfert galaxies have a spectra of an active nucleus as described by Carl Seyfert. Type 1 and 2 Seyfert galaxies are similar but have different viewing perspectives.

**Featured constellation** – Back when Aries contained the sun on the spring equinox it had a lot of importance and represented several things for many cultures. For the Egyptians it represented the god Ammon Ra, the god of Fertility and Creative Life and briefly the actual Sun. Most of the time the god was depicted as a man with a rams head. Aries rescued the children of the king of Thessaly from their cruel stepmother. Later one of the children Phryxus sacrificed the ram and placed its fleece in a sacred grove where it turned to gold. Later it was sought and found by Jason and his Argonauts. As it contained the Sun the Greeks and Romans called the vernal equinox the "first point of Aries." This name still persists although precession has moved the sun from Aries to Pisces. From west to East the stars of Aries are called Mesarthim, gamma ( $\gamma$ ), Sheratan, beta ( $\beta$ ), and Hamal, alpha ( $\alpha$ ). These stars easi-

ly fit in a 10x50 binocular field. Mesarthim is the official name for this star although you will see it spelled Mesartim (including spell check). It is a pair of equal bluish-white stars resolved at 125x. 2° west of Hamal is gamma ( $\gamma$ ) Aries a pair of yellowish-white and pale blue stars resolved at only 75x. The only galaxy worth observing in Aries is NGC 772. It has a bright central area with one side curved and brighter than the other. Look a little over 1° slightly south of east from Mesarthim to find this galaxy.

**Other objects of interest** – Try this galaxy if you are successful finding NGC 247. NGC 253 is located another 4½° south in Sculptor. In the southern USA this galaxy can be observed easily and is one of the very best galaxies. NGC 1055 a slanted edge on spiral is very interesting in a large telescope and located ½° NW of M77 in Cetus. There are two bright stars one slightly brighter than the other above this galaxy making it look like a winking smiley face or grinning black cat except in reflector telescopes it is upside down. NGC 936 is located 3° SW of delta ( $\delta$ ) Cetus or 1° west and slightly south of 6<sup>th</sup> mag 75 Cetus. NGC 936 is a barred spiral I noted looked longer than wide but not much else. The European Space Agency (ESO) has posted a photo of this galaxy and it has a strong resemblance to a Star Wars TIE fighter giving this galaxy the name "The Darth Vader Galaxy." While using the star Mirach, beta ( $\beta$ ) And. to find M31, use a power of about 100x to 150x and observe NGC 404 in the same field as Mirach. This irregular galaxy is surprisingly easy to observe. It is round with a brighter center. If you have trouble seeing this galaxy put Mirach just outside your field of view. NGC 404 is also known as "The Ghost of Mirach."

Dark sky, returns the night that we have lost

Bill Shackelford