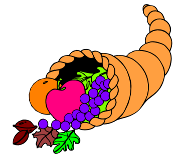
Penobscot Valley Star Gazers

An Astronomical Society of Central Maine

For the year of peace and plenty / And for blessings without end,
Let the voices of the people / In Thanksgiving praises blend.
-George Carlton Rhoderick Jr.

http://www.gazers.org



November 2025

November Meeting

The November 2025 meeting of the PVSG will be held at John Bapst Memorial High School on Monday the 10th at 6:30 pm. Zoom will be available with the regular ID. (Zoom meeting ID 862 9984 6478 Password: PVSG.)

Thanks for last month's program go to Dave for his discussion of astronomical seeing.

Observe the Sky This Month

Some Selected Objects
November 2025

General sky comments – Daylight Savings Time ended on Sunday November 2. The full Moon this month was on Wednesday the 5th and was the largest in 2025. It is known as the Beaver moon. Beaver are making their final preparations for the winter this time of the year. The two gas planets Jupiter and Saturn remain at their best and dominate the night 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. For M33 use a wide field telescope or a large binocular as I use. Find as dark a site as possible to view this dim galaxy. The waning full Moon is only 1.7° north of the Beehive open cluster (M44) on Tuesday the 11th. Last quarter Moon is also on this date. On Wednesday the 12th Mercury is 1.3° south of Mars. The Leonid meteor shower will peak on the night of the 17th and morning of the 18th. Always observe this shower. You never know when it will be spectacular. The waning gibbous Moon will be only a few days from new and will not interfere with viewing. Before the December meeting on the 8th the Moon will be full on Thursday the 4th. This will be a super Moon but not as large as the November full Moon. The Moon will pass only 0.8° north of the star cluster Pleiades (M44) on that same night.

Moon and planets this month – Full Moon was on Wednesday the 5th (the largest of the year), last quarter is on Wednesday the 12th, new Moon (lunation 1273) is on Thursday the 20st, and the first quarter Moon is on Friday the 28th. Mercury is in the evening sky and in conjunction with Mars on the 12th at 15° east of the Sun. The two planets are separated by 1.3° and shine at magnitudes 1.2 and 1.5. Mercury then drops from visibility over the next few days and is at inferior conjunction on the 20th. Venus is difficult to see in morning twilight. Mars is generally too close to the Sun to observe. Jupiter is in Gemini beginning retrograde. The waning gibbous Moon passes 4° to the north on the 10th. Saturn is in great position to observe. The waning gibbous last quarter Moon passes Saturn on the evening of the 10th. The rings are as close to edge-on as you can expect to see them. If you have a large telescope now is the time to look for shepherding satellites. Except for Iapetus most of the moons close to Saturn were discovered during ring crossings. The planet Uranus (Οὐρανός), the only planet based on a Greek god, is at opposition on the 17th the closest it has been since the 1950s. It will be 2.6 light hours from Earth. Neptune is at opposition on the 21st and sits well placed for telescope viewing. Note its blue color. It sits 19.8° above the equator at magnitude 5.6. 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 constellation 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 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 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 (α) 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 (γ) 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

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

smiley face or grinning black cat except in reflector telescopes it is upside down. In the same area is a barred spiral NGC 1073. The bar here is much easier to observe and larger than most. To find it go back to M77 and then slightly over a degree NE to NGC 1073. 6° SW of gamma (γ) Ceti is the variable star Mira, omicron (ο). Mira is the featured star this November. Above Cetus is the eastern "fish" of Pisces, the Fishes. The alpha (α) star Alrescha indicates the "knot" between the cords joining the two fish. The western fish is located 2.5° west of Alrescha 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° WNW of eta (η) 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° WNW of alpha (α) 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 3° WNW of alpha (α) 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 west 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 2nd mag. Mirach, beta (β) Andromeda and following 3rd 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° 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° slightly E of N from the center of M32. NGC 185 is 2° NW. Above the constellation Andromeda is Cassiopeia easily recognized by most people from its "W" shape. This constellation was extensively covered last month. Don't forget to observe the double cluster NGC 869 and NGC 884 in the constellation Perseus this month along with M76 the Little Dumbbell. Use your favorite star chart or search engine to find these objects. The story of Andromeda in Greek mythology and related characters can be read below.

Mythology – The mythology of Andromeda (briefly) 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 (ο) 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 (Historically 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. If you have an Observer's Handbook the days and times of the minimums of Mira are listed each month.

Featured Messier object – M77 in the constellation Cetus, the Whale is the archetype for Seyfert 2 galaxies. Many Maine observers 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. Fall 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 – Aries the Ram. 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 [Then known as Aten] and only God by the Pharaoh Akenaten. 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 the “Golden Fleece” 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 with precession the sun has moved from Aries to Pisces. From west to East the stars of Aries are called Mesarthim, gamma (γ), Sheratan, beta (β), and Hamal, alpha (α). These stars easily 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 (γ) 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 − NGC 936 is located 3° SW of delta (δ) Cetus or 1° west and slightly south of 6th mag 75 Cetus. NGC 936 is a lenticular barred spiral I noted looked longer than wide but not much else. In a large telescope 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 (β) 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