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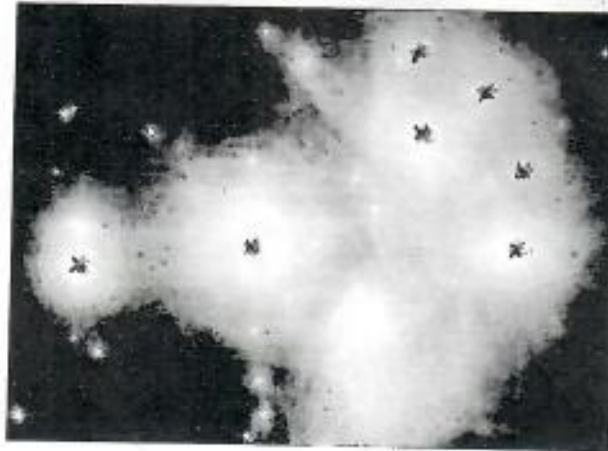
Pleiades: The Seven Sisters (Messier 45)

July 8, 2013 by admin

The Pleiades, also known as the Seven Sisters or Messier 45, is a famous open star cluster located in Taurus constellation.

The brightest stars in the cluster represent the Pleiades, the Seven Sisters in Greek mythology, and their parents, the nymph Pleione and the Titan Atlas.

IMAGES



https://www.constellation-guide.com/pleiades-the-seven-sisters-messier-45/

Messier 45 is one of the nearest star clusters to Earth. Its brightest stars lie at a distance between 390 and 460 light years. The cluster is mostly composed of hot, blue, highly luminous stars belonging to the spectral class B with an estimated age

The Pleiades (pronunciation: /'plai.ədi:z/ or /'pli:ədi:z/) star cluster is about 110 arcminutes in size and has an apparent magnitude of 1.6.



The Pleiades (Messier 45). Image: [Rawastrodata](#)

It is the easiest star cluster to find in the sky, mainly because of its brightness and size, and it is well known in many different cultures and mythologies. The earliest images of the Pleiades cluster date all the way back to the Bronze Age.

PLEIADES STAR CLUSTER

The Pleiades cluster contains more than 1,000 stars, not including unresolved spectroscopic binary stars. Up to 14 stars in the cluster are visible to the naked eye in good viewing conditions. The estimated mass of the cluster is equal to 800 solar masses.

M45 also contains a significant number of brown dwarfs; they are believed to constitute up to 25 percent of all the stars in the cluster, but as they generally have less than 8 percent of the Sun's mass, the brown dwarfs in M45 contribute less than 2 percent to the total mass of the cluster.

The cluster has a tidal radius of approximately 43 light years, and the core radius is about 8 light years.

The brightest stars in the Pleiades cluster are surrounded by a faint reflection nebula, sometimes known as the Maia Nebula (NGC 1432), after one of the Seven Sisters. The nebula is a cloud of dust illuminated by the hot, luminous stars in the cluster, which are currently passing through the nebulosity.

The estimated age of the cluster is between 75 and 150 million years. The stars are gravitationally bound and are moving in the direction of Orion's feet.

Messier 45 will exist for another 250 million years or so, after which the stars will disperse as a result of interaction with other stars, molecular clouds, and the spiral arms of the Milky Way Galaxy.

The Seven Sisters are most prominent between October and April. In early November, the cluster rises in the east after sunset. In February it lies overhead in the evening. In May, it sets at sunset, before Orion. As the cluster lies near the ecliptic (the Sun's path across the sky), it can't be seen in May and June, because it is located too close to the Sun. When M45 is directly overhead, it can be found by following the line from Orion's Belt.

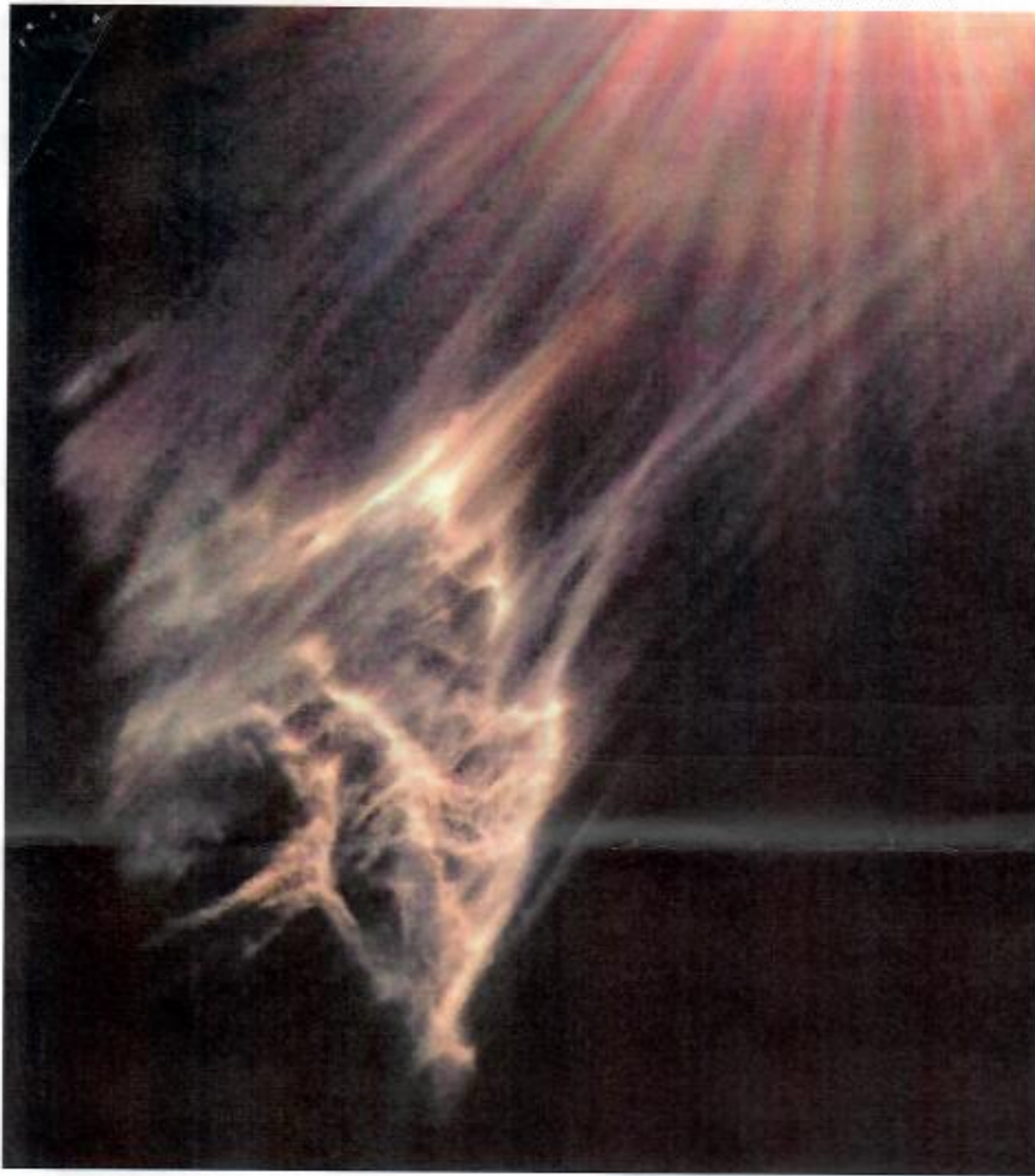
Merope Nebula

The Pleiades cluster also contains the Merope Nebula (NGC 1435), a diffuse reflection nebula 30' in size, suspected to be a supernova remnant. The nebula is also known as Tempel's Nebula, after Wilhelm Tempel, the German astronomer who discovered it on October 19, 1859. The Merope Nebula surrounds the star Merope and has a visual magnitude of 13.



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Reflection nebula IC 349 near Merope in the Pleiades. Image: NASA

The Merope Nebula contains IC 349, a small bright knot, 0.5' in diameter, which is an extension of the larger NGC 1435. IC 349 is sometimes also known as Barnard's Merope Nebula because it was discovered by Edward Emerson Barnard in November 1890. It is located 36 arcseconds (0.06 light years) to the southwest of the star Merope.

Mutsuraboshi, which means "six stars," in documents dating back to the 8th century. They also know it as Subaru, meaning "coming together" or "cluster." (An image of the cluster is used in the car company's logo.)

The cluster is mentioned in the Iliad, the Odyssey, the Bible and the Quran among other texts.

It was called MUL.MUL, meaning "the star of stars," in Babylonian star catalogues. The earliest depiction of the cluster appears on the Nebra sky disk, an artefact dating back to 1600 BC, the Bronze Age.

In Hindu mythology, the cluster is associated with Murugan, the war god, who was raised by six sisters and developed six faces, one of each of his mothers.

The Aztecs based their calendar on the cluster; the Pleiades' rising in the east before dawn marked the beginning of their year. The heliacal rising of the cluster in June also marked the beginning of the year for the Māori of New Zealand.

Pleiades (Messier 45)

Coordinates: 03h47m24s (right ascension), +24°07' (declination)

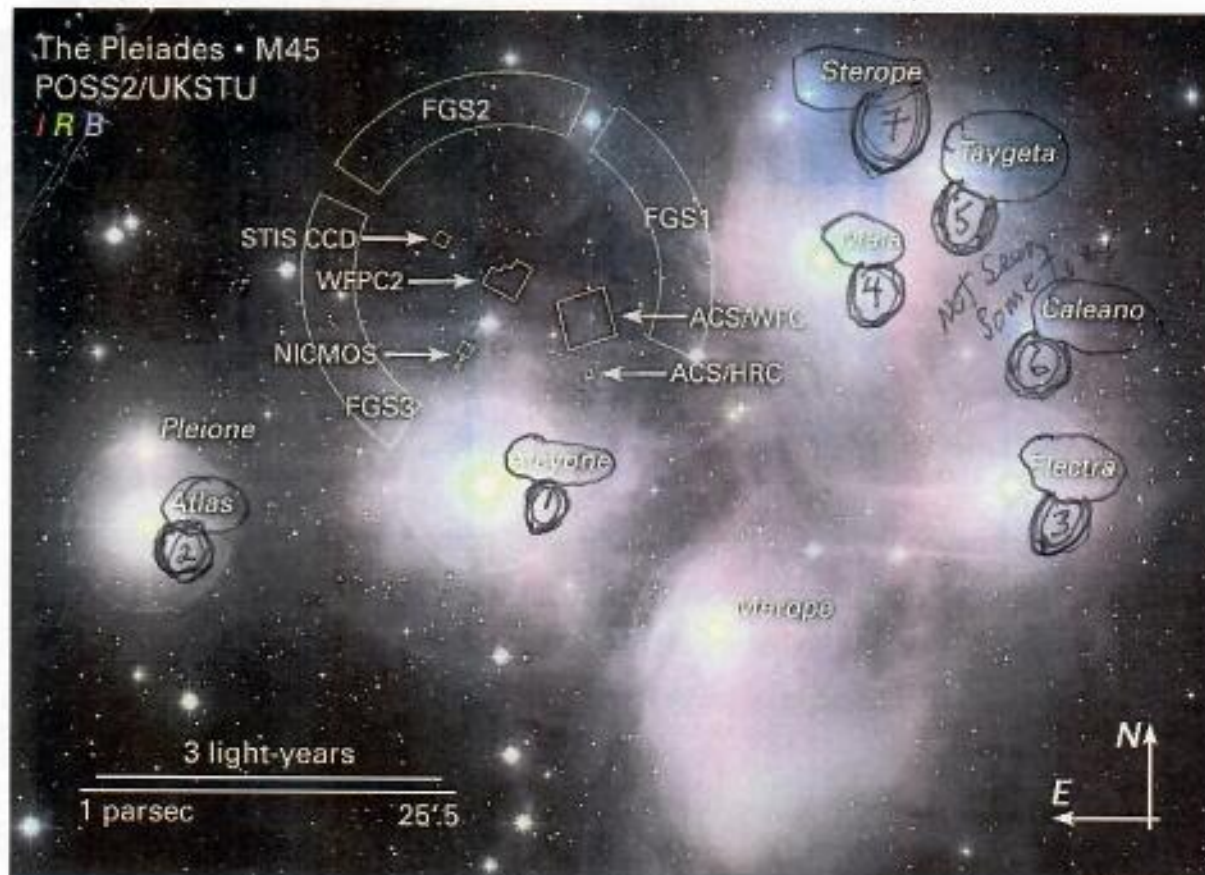
Distance: 390 – 460 light years

Apparent dimensions: 110 arcminutes

Visual magnitude: 1.6

Other designations: Messier 45 (M45), Melotte 22

STARS



Hubble's look through the Pleiades (M45). Image: NASA, ESA and AURA, Caltech

The brightest stars in the Pleiades cluster are Alcyone (Eta Tauri or 25 Tauri), Atlas (27 Tauri), Electra (17 Tauri), Maia (20 Tauri), Merope (23 Tauri), Taygeta (19 Tauri), Pleione (28 Tauri or BU Tauri), Celaeno (16 Tauri), Sterope (21 and 22 Tauri), and 18 Tauri.

① Alcyone

Alcyone (pronunciation: /æɪˈsaɪ.əniː/) has a visual magnitude of 2.873 and belongs to the stellar class B7IIIe. The star is about 370 light years distant from Earth. It is the brightest of the Seven Sisters and the third brightest star in Taurus constellation, after Aldebaran, Alpha Tauri, and Elnath, Beta Tauri.

Alcyone is classified as an eclipsing binary star. The primary component is a blue-white giant star (B7IIIe) 2,400 times more luminous than the Sun and with ten times the solar radius. The star has a projected rotational velocity of 215 km/s, which makes it a very fast spinner, and as a result it is surrounded by a gas disk at the

The eclipsing binary system has three companions: two 8th magnitude white main sequence stars belonging to the spectral class A, one of which is classified as a Delta Scuti variable, and a yellow-white, class F dwarf.

2 Atlas

Atlas, named after the Seven Sisters' father, is the second brightest star in the cluster. It is a triple star system with the stellar classification of B8III. It has a visual magnitude of 3.62 and is approximately 381 light years distant from Earth.

The Atlas system contains a spectroscopic binary star, with individual components too close to be resolved. The stars have apparent magnitudes of 4.1 and 5.6 and orbit each other with a period of 1,250 days. The binary star has another companion, a faint star with a visual magnitude of 6.8, separated by 0.4 seconds of arc.

3 Electra

Electra is another blue-white giant star in the Pleiades cluster. It belongs to the stellar class B6 IIIe. With an apparent magnitude of 3.705, it is the third brightest star in M45. It is about 600 light years distant from Earth.

Electra is another fast spinner. It has a projected rotational velocity of 181 km/s. As a consequence, it is stretched at the equator and flattened at the poles, and because of the mass loss caused by its rapid spinning, the star is surrounded by a disk of gas and emits excess infrared radiation.

Maia

Maia is also a blue-white giant star. It has the stellar classification of B8III. It has an apparent magnitude of 3.871 and is about 360 light years distant from Earth. It is one of the stars surrounded by the emission/reflection nebula NGC 1432, also known as the Maia Nebula.

Maia has a mass four times that of the Sun, 5.5 times the solar radius, and is about 660 times more luminous than the Sun. It is classified as a mercury-manganese star.

Meropè (pronunciation: /'mɛrəpi:/) is a blue-white subgiant with the stellar classification of B6IVev. It has an apparent visual magnitude of 4.113 and is approximately 360 light years distant from Earth.



Star Meropè (23 Tau) in Pleiades (M45). Image: Henryk Kowalewski

The star is 4.5 times more massive than the Sun and about 630 times more luminous. It has a radius four times that of the Sun.

Meropè is a Beta Cephei type variable. Its brightness varies by 0.01 magnitudes. It is the central star in the Meropè Nebula, a nebula through which the Pleiades cluster is currently passing. The nebula looks brightest around Meropè, which is why it was named after the star.

5 Taygeta

Taygeta (pronunciation: /teɪ'ɪdʒɪtə/) is a triple star in the cluster. It has the stellar classification of B6V, matching a blue-white main sequence dwarf. It has an apparent visual magnitude of 4.29 and is about 440 light years distant from Earth.

The primary component in the system is a spectroscopic binary star whose components have visual magnitudes of 4.6 and 6.1. The two stars are separated by 0.012 arcseconds and have an orbital period of 1,313 days. The binary star has an

Pleione (pronunciation: /'plai.əni:/) is a double star belonging to the stellar class B8IVpe. It has a visual magnitude of 5.048 and is about 392 light years distant from Earth. The star is not easy to see without binoculars because it lies close to Atlas, which is 3.7 times brighter. The two stars are separated by less than 5 minutes of arc.

Pleione is a hot blue star with a mass 3.4 times that of the Sun and a radius 3.2 times solar. It is significantly smaller than the other bright stars in the cluster. It is about 190 times more luminous than the Sun and it spins close to its breakup velocity, at 329 km/s.

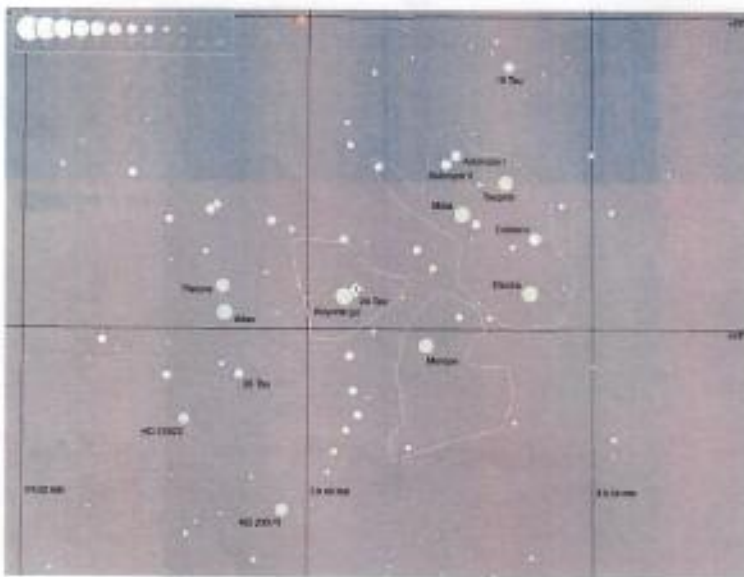
The star is classified as a Gamma Cassiopeiae variable and has the variable designation BU Tauri. Its brightness varies from magnitude 4.8 to 5.5. Gamma Cassiopeiae variables, also known as shell stars, are fast spinning stars surrounded by a disk of gas at the equator. They exhibit irregular changes in luminosity as a result of the outflow of matter.

Pleione is known to be a spectroscopic binary star, with components that cannot be resolved because they are separated by only 0.2 seconds of arc. The two stars in the system have an orbital period of 218 days.

6 Sometimes Missing
Celaeno

Celaeno (pronunciation: /si'li:nou/) is sometimes known as the Lost Pleiad because it often cannot be seen without binoculars. In less than ideal observing conditions, stargazers can only see six of the Seven Sisters and Celaeno is missing.

The star is a blue-white subgiant belonging to the stellar class B7IV. It has a visual magnitude of 5.45 and is about 430 light years distant from Earth. It has about 9-10 solar masses and a radius 4.4 times that of the Sun. It is another fast spinner in the cluster, with a projected rotational velocity of 185 km/s.



Pleiades stars. Image: Ville Koistinen at fi.wikipedia

7 Sterope (Asterope)

Sterope, or Asterope (pronunciation: /'stɛrəpi:/, or /ə'stɛrəpi:/), is a name shared by two stars, designated 21 and 22 Tauri, separated by 0.04° in the sky. 21 Tauri has the stellar classification of B8V, which makes it a blue main sequence dwarf. It has a visual magnitude of 5.76 and is about 440 light years distant from Earth.

22 Tauri belongs to the stellar class A0Vn. It is a white main sequence dwarf, also about 440 light years distant. It has an apparent visual magnitude of 6.43.

18 Tauri

18 Tauri, not associated with a mythical figure or given a proper name, is a blue-white main sequence dwarf belonging to the stellar class B8V. It has an apparent visual magnitude of 5.65 and is also one of the brightest stars in the cluster.

PLEIADES MYTH

In Greek mythology, the Pleiades were the seven daughters of Pleione, a sea nymph, and the Titan Atlas. The seven nymphs were sisters to the Hesperides and the Hyades, and they were companions of the goddess Artemis. Their name was derived either from their mother's name, Pleione, or from the Greek $\piλεῖν$, which

Belt of Orion - Photos + Wikipedia

honu world <itsahonuworldinhawaii@hotmail.com>

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https://en.wikipedia.org/wiki/Orion%27s_Belt

WIKIPEDIA

Orion's Belt

Orion's Belt or the **Belt of Orion**, also known as the **Three Kings** or **Three Sisters**,^[1] is an asterism in the constellation Orion. It consists of the three bright stars Alnitak, Alnilam and Mintaka.

Looking for Orion's Belt in the night sky is the easiest way to locate Orion in the sky. The stars are more or less evenly spaced in a straight line, and so can be visualized as the belt of the hunter's clothing. They are best visible in the early night sky during the Northern Winter/Southern Summer, in particular the month of January at around 9:00 pm.^[2]



Orion's Belt and nebulosity, including the Flame Nebula (left) and Horsehead Nebula (lower left) named after a relatively small dark cloud, rotated 90° somewhat resembling a seahorse

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Component stars

The names of the three stars come from Arabic. *Alnilam* (النظام) means "string of pearls" or is related to the word *nilam* ("sapphire"); spelling variants include *Alnihan* and *Alnitam*,^[3] with all three evidently being mistakes in transliteration or copy errors.^[4] As for the other two, *Mintaka* (منطقة) has the same root as *Alnitak* (النطاق).

Alnitak

Alnitak (ζ Orionis) is a triple star system at the eastern end of Orion's belt and is 1,260 light-years from the Earth. Alnitak B is a 4th-magnitude B-type star which orbits Alnitak A every 1,500 years. The primary (Alnitak A) is itself a close binary, comprising Alnitak Aa (a blue supergiant of spectral type O9.7 Ibe and an apparent magnitude of 2.0) and Alnitak Ab (a blue dwarf of spectral type O9V and an apparent magnitude of about 4). Alnitak Aa is estimated as being up to 28 times as massive as the Sun, and to have a diameter 20 times greater. It is the brightest star of class O in the night sky.

Alnilam

Alnilam (ϵ Orionis) is a supergiant, approximately 2,000 light-years away from Earth and magnitude 1.70. It is the 29th-brightest star in the sky and the fourth-brightest in Orion. It is 375,000 times more luminous than the Sun.^[5] Its spectrum serves as one of the stable anchor points by which other stars are classified.



In this broader view, the belt (the three stars in the center) is seen in relation to nearby features in the Orion constellation.

Mintaka

Mintaka (δ Orionis) is 1,200 light-years away and shines with magnitude 2.21. Mintaka is 90,000 times more luminous than the Sun. Mintaka is a double star. The two stars orbit around each other every 5.73 days.^[6]

References in history and culture



Dunhuang Star Atlas – Orion

Richard Hinckley Allen lists many folk names for the Belt of Orion. English ones include: Jacob's Rod or Jacob's Staff; Peter's Staff; the Golden Yard-arm; The L, or Ell; The Ell and Yard; the Yard-stick, and the Yard-wand; the Ellwand; Our Lady's Wand; the Magi / the Three Kings; the Three Marys; or simply the Three Stars.^[7]

The passage "Canst thou bind the sweet influences of Pleiades, or loose the bands of Orion?" is found in the Bible's Book of Job^[8] and Book of Amos.^[9] Tennyson's poem *The Princess* describes Orion's belt as:

...those three stars of the airy Giant's zone,
That glitter burnished by the frosty dark.^[10]

The three stars of the belt are known in Portugal and South America as *Las Tres Marías* in Spanish, and as "As Três Marias" in Portuguese.^[11] They also mark the northern night sky when the Sun is at its lowest point, and were a clear marker for ancient timekeeping. In the Philippines and Puerto Rico, they are called the *Los Tres Reyes Magos*.^[12] The stars start appearing in early January around the time of Epiphany, the Christian holiday commemorating the visit of the Magi to the Child Jesus.

In Finnish mythology, the Belt of Orion is called *Väinämöisen vyö* (Väinämöinen's Belt). The stars which appear to "hang" off the belt form an asterism called *Kalevanmiekkä* (Kaleva's sword). In pre-Christian Scandinavia, the belt was known as Frigg's Distaff (*Friggerock*) or Freyja's distaff.^[13] Similarly Jacob's Staff and Peter's Staff were European biblical derived terms, as were the Three Magi, or the Three Kings. Väinämöinen's Scythe (Kalevala) and Kalevan Sword are terms from Finnish mythology.^[14]

The Seri people of northwestern Mexico call the three belt stars *Hapj* (a name denoting a hunter) which consists of three stars: *Hap* (mule deer), *Haamoja* (pronghorn), and *Mojet* (bighorn sheep). *Hap* is in the middle and has been shot by the hunter; its blood has dripped onto Tiburón Island.^[15]

In the film *Men in Black* (1997) the protagonists look for "the galaxy", a massive energy source which according to an alien "is on Orion's Belt". The celestial Orion's Belt is searched but no galaxy is found there. Eventually they understand that the galaxy is hidden in a jewel on the neck of the alien's cat, named Orion.



Orion's belt at top left, Orion's sword at bottom right

Gallery



Map of Orion



Simulated image of Orion's Belt



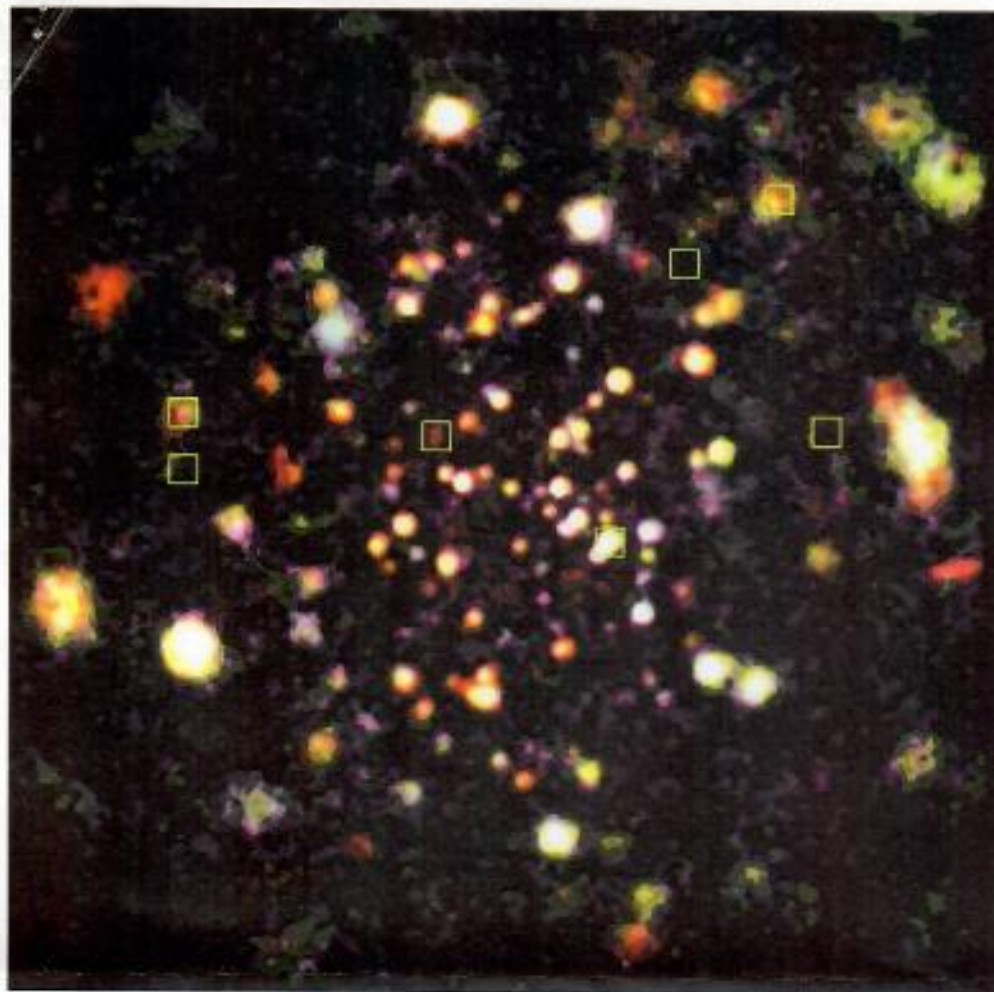
The region of Alnitak and Alnilam (upper right) and the Flame Nebula

See also

- Orion's Sword
- Thornborough Henges
- Orion Correlation Theory

References

1. "Orion's Belt: Stars, Facts, Location, Myths | Constellation Guide" (<http://www.constellation-guide.com/orions-belt/>). *www.constellation-guide.com*. Retrieved 2018-06-24.
2. Dolan, Chris. "Orion" (<https://web.archive.org/web/20111207101513/http://www.astro.wisc.edu/~dolan/constellations/constellations/Orion.html>). Archived from the original (<http://www.astro.wisc.edu/~dolan/constellations/constellations/Orion.html>) on 2011-12-07. Retrieved 2011-11-28.
3. Allen, Richard Hinckley (1936). *Star-names and their meanings*. pp. 314–15.
4. Knobel, E. B. (September 1909). "The name of epsilon Orionis". *The Observatory*. **32**: 357. Bibcode:1909Obs....32..357K (<https://ui.adsabs.harvard.edu/abs/1909Obs....32..357K>).
5. "Alnilam" (<https://web.archive.org/web/20111124061549/http://stars.astro.illinois.edu/sow/alnilam.html>). *Jim Kaler's Stars*. University of Illinois at Urbana-Champaign. 2009. Archived from the original (<http://stars.astro.illinois.edu/sow/alnilam.html>) on 2011-11-24. Retrieved 2011-11-28.
6. "Mintaka" (<https://web.archive.org/web/20111124061332/http://stars.astro.illinois.edu/sow/mintaka.html>). *Jim Kaler's Stars*. University of Illinois at Urbana-Champaign. 2009. Archived from the original (<http://stars.astro.illinois.edu/sow/mintaka.html>) on 2011-11-24. Retrieved 2011-11-28.
7. Allen, Richard Hinkley. "Star Names – Their Lore and Meaning" (http://penelope.uchicago.edu/Thayer/E/Gazetteer/Topics/astronomy/_Texts/secondary/ALLSTA/home.html).
8. Job 38:31
9. Amos 5:8
10. "Alfred Lord Tennyson's poem: The Princess" (<https://web.archive.org/web/20130527161943/http://www.readbookonline.net/readOnline/2313/>). Archived from the original (<http://www.readbookonline.net/readOnline/2313/>) on 2013-05-27. Retrieved 2013-03-11.
11. "Orion's Belt: Stars, Facts, Location, Myths | Constellation Guide" (<http://www.constellation-guide.com/orions-belt/>). *www.constellation-guide.com*. Retrieved 2018-06-24.
12. "Archived copy" (https://web.archive.org/web/20050215131931/http://sepiensa.org.mx/contenidos/s_reyes/reyes.htm). Archived from the original (http://sepiensa.org.mx/contenidos/s_reyes/reyes.htm) on 2005-02-15. Retrieved 2011-04-02.
13. Schön, Ebbe. (2004). *Asa-Tors hammare, Gudar och jättar i tro och tradition*. Fält & Hässler, Värnamo. p. 228.
14. Allen, Richard Hinckley (1936). *Star-names and their meanings*. pp. 314–315.
15. Moser, Mary B.; Stephen A. Marlett (2005). *Comcáac quih yaza quih hant ihiip hac: Diccionario seri-español-inglés* (http://lengamer.org/admin/language_folders/seri/user_uploaded_files/links/File/DiccionarioSeri2005.pdf) (PDF) (in Spanish and English). Hermosillo, Sonora and Mexico City: Universidad de Sonora and Plaza y Valdés Editores.

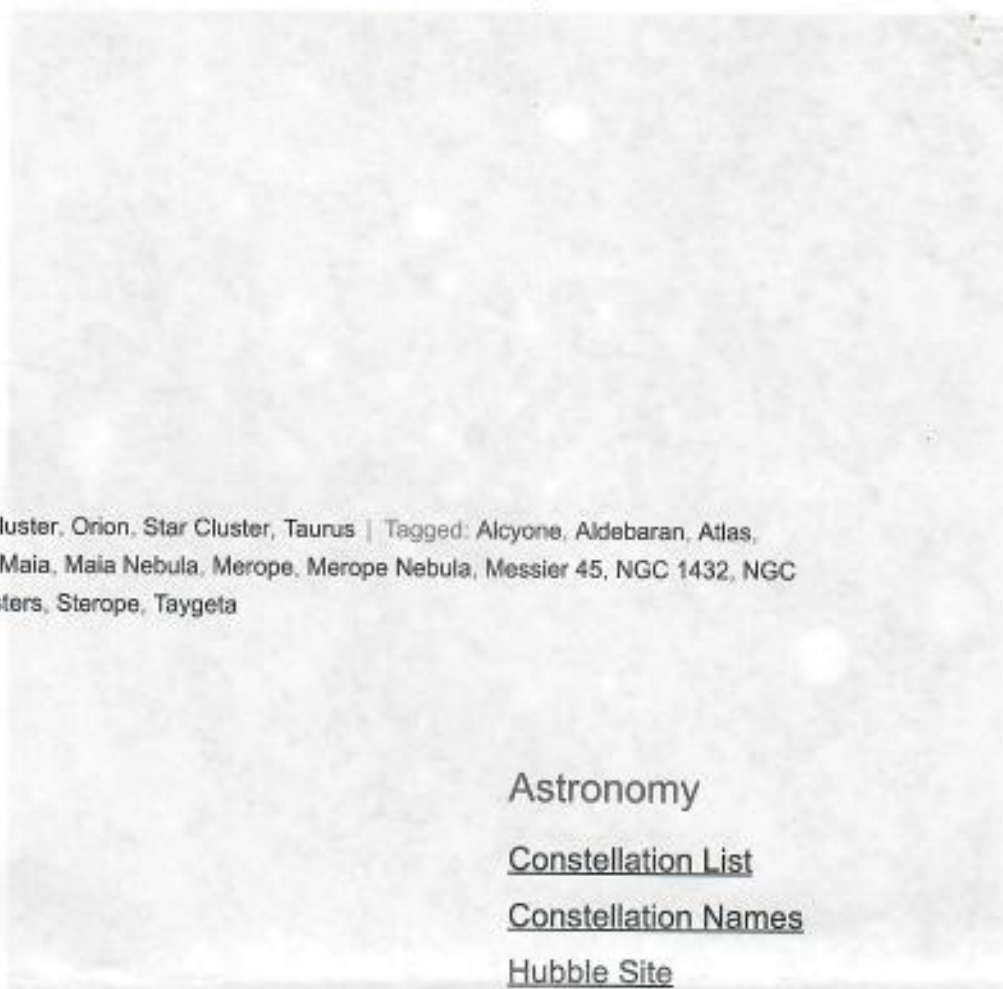


The Pleiades in X-rays, taken by ROSAT. The brightest objects in X-rays have the hottest coronas. The green squares mark the positions of the seven optically brightest stars. Image: NASA

VIDEO

M45 - Seven Sisters or Pleiades - Deep Sky Videos





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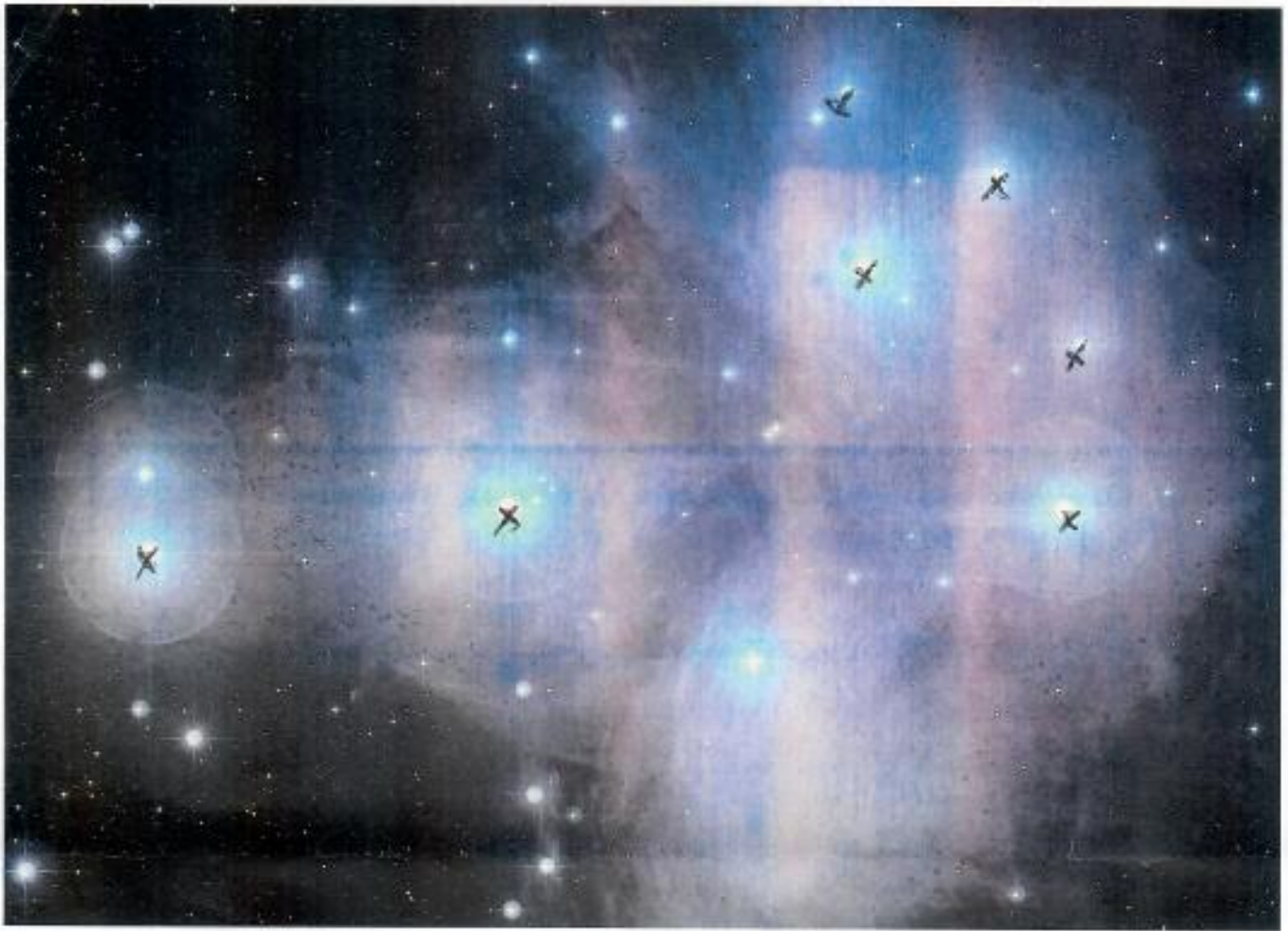
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affair. Lacedaemon ruled the country which he named after himself, also naming the capital after his wife, Sparta.

Alicyone and Celaeno both had children by Poseidon. Alicyone gave birth to Hyrieus (father of Orion according to some sources), Hyperenor (who co-founded the cities Hyponax and Anthea) and Asthusa (Apollo's lover, after whom the portico open to the sun was named), and Celaeno was mother to Lycus and Eurypylos.

Sterope had a child with Ares, Cenoraus, their son, was the king of Pisa and the father of Hippodamia. Fearful of a prophecy that said he would be killed by his son-in-law, Cenoraus killed a number of his daughter's suitors in a chariot race. Hippodamia eventually married Pelops, and their offspring included Agamemnon, Menelaus, Atreus, Thyestes, Aeglethos, and Orestes.

Nerope, the youngest Pleiad, married Sisyphus and bore him several sons.

IMAGES



