



Temecula Valley Astronomer

The monthly newsletter of the Temecula Valley Astronomers January 2024

**Events: General Meeting,
Monday, January 8, 2024, at the
Ronald H. Roberts Temecula
Library, Room B, 30600 Pauba
Rd, and/or ZOOM, at 6:00 PM.**

- IFI & Gallery by Clark Williams
- From OSIRIS-REX to OSIRIS-APEX...
extending the life of missions by Mark
Baker
- Refreshments by TBA
- Star Parties at South Coast Winery
every Friday evening.
- For upcoming school Star Parties
check the Calendar on the [web
page](#).

WHAT'S INSIDE THIS MONTH:

Cosmic Comments
by President Emeritus Mark Baker
Looking Up Redux
compiled by Clark Williams
**Random Thought – I Once Was Blind
But Now I See**
by Chuck Dyson
Another Look
by Dave Phelps
NASA Night Sky Notes
by Kat Troche

Send newsletter submissions to Sharon
Smith <sas19502000@yahoo.com> by the
20th of the month for the next month's
issue.



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Bastian Werner

General information:

Subscription to the TVA is included in the annual \$25
membership (regular members) donation (\$9
student; \$35 family).

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Cosmic Comments – January 2024

By Mark Baker

Following is my very first Cosmic Comment from a decade ago... funny how Looking Up has always been a common thread through the years. And it is still just as relevant...

“Shortly after midnight of the New Year’s first morning, I took the opportunity to take in the exceptionally clear and dark skies that night had provided. As I gazed up and around, I soon noticed four bright red lights appearing to be moving out of the north. As they got closer, I noticed their spacing seemed to be equal and they were moving at the same speed and in a linear formation. They then started to rise up and curve off to the west and as they came in direct line of sight, they seemed to disappear, one at a time. Thinking “What the heck was that??”, I soon saw two of apparently the same objects coming out of the west and as they turned to the north, they also appeared to rise up in linear formation and curve off back to the west. I knew they weren’t airplanes and was positive that they weren’t helicopters as well as they made no sound – nada!!! I was pretty much intrigued by what I was witnessing, as well as without explanation. Then as those disappeared, I extended my perusal of the skies and caught another one moving off to the east... sheesh, I was surrounded, and me without any Reese’s Pieces!!!

Not quite convinced this was an episodic UFO experience, I again searched the heavens and quickly saw another appearing to rise up in the north, but this time I saw a small shower of sparks falling from the object. This was quickly followed by two more in succession, both exhibiting the same sparks...and that’s when I realized it was no longer a UFO experience, mainly because I now could identify them. I was now pretty sure they were CHINESE LANTERNS!!! I quickly got my car moving toward the launch point but was disappointed in that no more were launched... darn!!! But all in all, it was almost a half hour of excitement... and simply because I was looking up!!! I asked just about everyone else I know or came in contact with and no one else saw them...not because they weren’t out and about at that time, but simply because they don’t think to look up at the cosmos like we do!!! Sad, so very sad...

So here’s to the TVA and our mission to get our family, friends, and neighbors to take in the awesome celestial sights awaiting them if they just but look up... and who knows?? Maybe you and/or them will witness a real UFO someday...what fun it is!!!”

Clear, Dark Skies my Friends...and LOOK UP!!!



Looking Up Redux – January 2024

Compiled by Clark Williams

from these sources:

SeaSky.org

Wikipedia.com

in-the-sky.org

The American Meteor Society, Ltd.

cometwatch.co.uk

NASA.gov

TVA App (2.0.1296)

FullAndNewMoon App (2.0)

Starry Night Pro Plus 7 (7.6.3.1373)

SkySafari 6 Pro (6.1.1)

Stellarium (0.18.2)

timeanddate.com/astronomy

<https://www.fourmilab.ch/earthview/pacalc.html>



ALL TIMES ARE LOCAL PACIFIC TIME (PST / PDT) UNLESS NOTED OTHERWISE

Times are given in 24-hour time as: (hh is hours, mm minutes, ss seconds)

hh:mm:ss or hhmmss

hhmm+ (time of the next day)

hhmm- (time of the previous day)

hhmm (seconds not shown)

yyyymmddThhmmss (Full date as: year month day Time separator hours minutes seconds)

Moon Phases for the month by date:

Friday the 6th@1509 FULL in GEMINI

Saturday the 14th @1811 THIRD QTR in VIRGO

Saturday the 21st @1254 NEW in OPHIUCHUS

Saturday the 28th @0720 First QTR in ARIES

Apogee comes on 2024-01-01 @ 1529 – 404,910 km (251,600 mi)

Perigee comes on 2024-01-13 @ 1036 – 362,263 km (225,100 mi)

Apogee comes on 2024-01-29 @ 0815 – 406,458 km (252,095 mi)

2024 has: (13) new moons, (12) 1st Qtr moons, (12) Full moons, (13) 3rd Qtr moons

(0) Blue moon and (1) Black moons and is a Leap Year

Daylight Savings: Starts: 2024-Mar-10 : Ends: 2024-Nov-03 (traditional) CA keeps PDT year-round

Luna: Luna is waning gibbous on the first of the month, headed for Full on the 6th rising at **2218**, transiting at **0442+** and setting by **1101+**. Luna by mid-month is waxing crescent at 28% illumination. Rising at



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1003- and transiting at **1605** setting at **2209**. By the-end-of-the-month Luna is waning gibbous, rising at **2255** transiting at **0436+** and setting by **1018+**.

Highlights: (distilled from: SeaSky.org and Clark's planetary Orrey program[s])

January 3, 4 - Quadrantids Meteor Shower. The Quadrantids is an above average shower, with up to 40 meteors per hour at its peak. It is thought to be produced by dust grains left behind by an extinct comet known as 2003 EH1, which was discovered in 2003. The shower runs annually from January 1-5. It peaks this year on the night of the 3rd and morning of the 4th. The waning gibbous moon will block out some of the fainter meteors, but if you are patient this could still be a good show. Best viewing will be from a dark location after midnight. Meteors will radiate from the constellation Bootes, but can appear anywhere in the sky.

January 11 - New Moon. The Moon will be located on the same side of the Earth as the Sun and will not be visible in the night sky. This phase occurs at 11:59 UTC. This is the best time of the month to observe faint objects such as galaxies and star clusters because there is no moonlight to interfere.

January 12 - Mercury at Greatest Western Elongation. The planet Mercury reaches greatest western elongation of 23.5 degrees from the Sun. This is the best time to view Mercury since it will be at its highest point above the horizon in the morning sky. Look for the planet low in the eastern sky just before sunrise.

January 25 - Full Moon. The Moon will be located on the opposite side of the Earth as the Sun and its face will be fully illuminated. This phase occurs at 17:55 UTC. This full moon was known by early Native American tribes as the Wolf Moon because this was the time of year when hungry wolf packs howled outside their camps. This moon has also been known as the Old Moon and the Moon After Yule.



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Algol minima: (All times Pacific Time)

01/03/2024	2323
01/06/2024	1701
01/09/2024	1350
01/12/2024	1040
01/15/2024	0729
01/18/2024	0418
01/21/2024	0108
01/23/2024	2157
01/26/2024	1846
01/29/2024	1536



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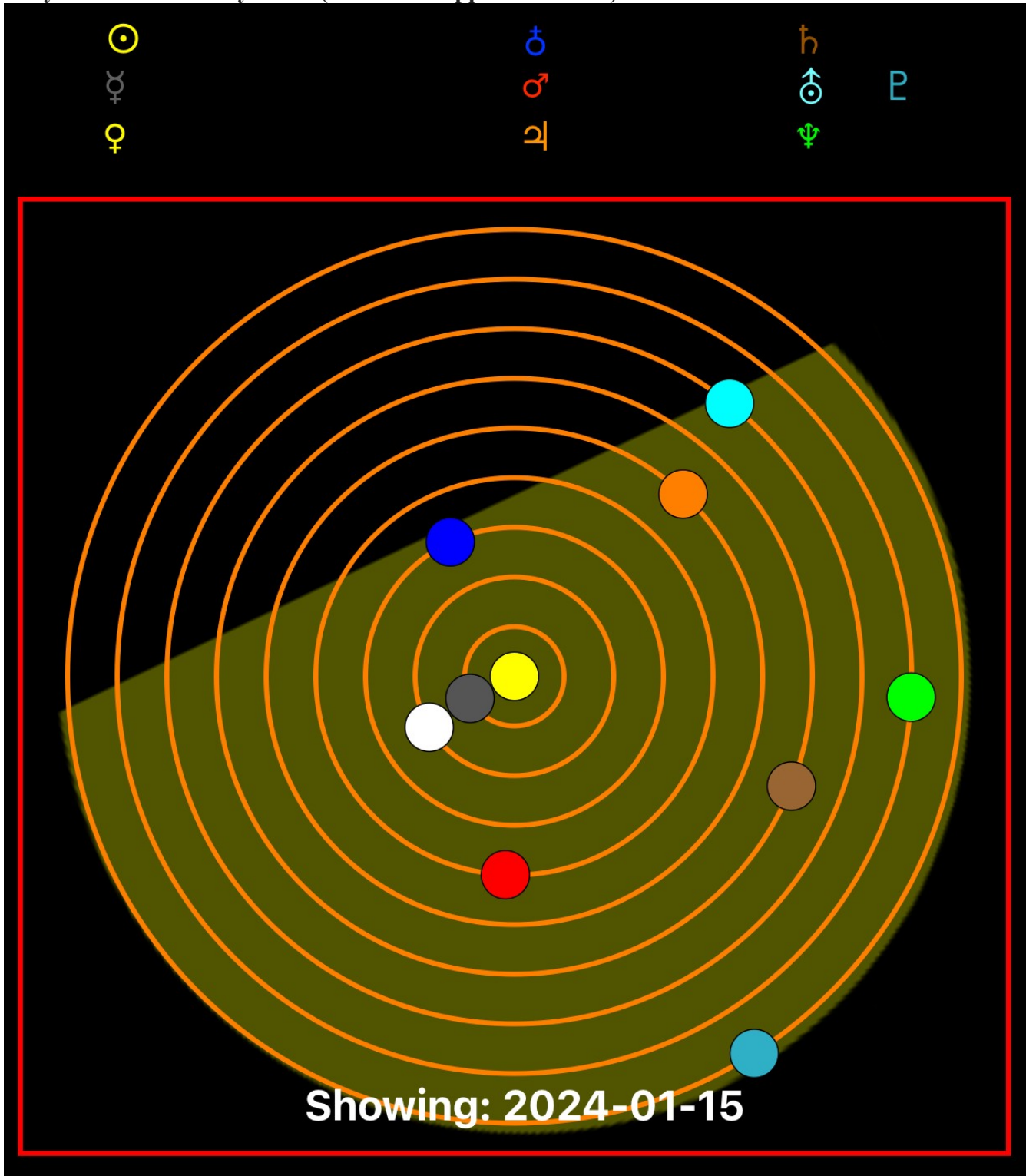


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Planets:

Planetary Positions January 2024: (from TVA App iOS version)



- **Mercury:** Mercury is a morning object in the beginning of the month. It is illuminated at 29% and 0.52



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apparent magnitude. Mercury rises at **0526** with the sun following at **0653**. Mercury by mid-month is in a much better position for viewing. Mercury is still a morning object rising at **0518** with the Sun rising at **0653**. By the 31st Mercury has “fallen” in toward the Sun again making it riskier to view. The Sun rises at **0646** and Mercury rises at **0548**. You're not going to see Mercury, naked eye, in the early morning glow. Wait until next month.

- **Venus:** Is the Morning Star on the first of the month, rising at **0402** followed by the sun at **0653**. Venus is 78% illuminated and has an apparent magnitude of -4.05. By mid-month Venus is rising at **0427** followed by the Sun at **0653**. By end of month Venus rises at **0452** followed by the Sun at **0646**.
- **Mars:** Mars is back in the sky and growing brighter as a morning object. On the first of the month Mars is rising at **0601** and the sun doesn't rise until **0653**. By mid-month Mars is rising at **0552**, followed by the Sun at **0653**. End-of-month finds the Warrior rising at **0537** with the Sun rising at **0646**.
- **Jupiter:** Jupiter is an evening object on the first of the month rising at **1247-**, transiting at **1922-** and setting at **0157**. By mid-month Jove is rising at **1159**, transiting at **1825** and setting at **0100+**. Come the end-of-month Jupiter is peaking above the horizon by **1049**, transiting at **1727** and sets at **0004+**.
- **Saturn:** Saturn is an evening object on the first of the month rising at **0958**, transits at **1528** and sets at **2150**. Saturn by mid month rises by **0906**, transits at **1438** and sets at **2009**. By the end-of-the-month Saturn rises by **0806**, transits at **1341** and sets at **1915**.
- **Uranus:** On the first of the month Uranus is an evening object rising at **1322**, transiting at **2011** and not setting until **0301+**. By the ides Uranus is rising at **1226**, transiting at **1915** and setting at **0205+**. End-of-month finds Uranus rising at **0858**, and transiting at **1452** and setting at **2047+**.
- **Neptune:** Neptune in the beginning of the month rises at **1054** transits at **1648** and sets at **2241**. By the 15th Neptune rises at **1000**, transits at **1554** and sets at **2148**. By the end of the month Neptune rises at **0850**, transits at **1443** and doesn't set until **2037**.
- **Pluto:** Pluto on the first of the month sets at **1810** a little over an hour after sunset at **1651**. By mid-month Pluto is virtually invisible. By the 31st Pluto has moved into being a morning object but is still lost in the glare of the Sun.

Asteroids:

- Still a dearth of asteroids. I searched for asteroids in 2024 with a reasonable magnitude; say less than or equal to +10 in January there is nothing except the regulars: Juno, Vesta, Hebe, Eros and Herculina. So consult your local planetarium software or try: <https://www.asteroids.near.com/year?year=2024>

Meteors:

- Geminids Meteor Shower. (see Highlights above)
- Ursids Meteor Shower. (see Highlights above)

Comets: come in various classifications:

- 1) Short Period comets – further broken down into:
 - Halley Type: The Halley Types are believed to come from the Kuiper Belt and have periods in excess of 20-years.
 - Jupiter Type: The Jupiter types have a period less than or equal to 20-years.
 - Short period comets January have a near circular orbit or an elliptical orbit. The latter being far more common.
- 2) Long Period comets – thought to originate from the Oort cloud these comets have periods of over 200 years and have random inclinations around the celestial sphere.



No comets of interest this month at time of writing.

Deep Sky:

Notes:

L/Z abbreviation for ALT/AZ

R/D abbreviation for Right Ascension/Declination

α is right ascension

δ is declination

In each case, unless otherwise noted, you should look for the following on or about the 15th Day of January 2024 at 2100 PDT and you will have about 20 minutes of viewing time total.

Lets take a look at some objects for your smart scopes you may have received for the Holidays:

In general if you have a EA scope (especially a Dwarf II, Seestar S 50 or an EVO scope you are going to be limited to objects brighter than Magnitude 85.. On the day of the meeting you should be able to locate (weather permitting) the following objects at **2100** PST:

- NGC 1432 – Maia Nebula: Mag 3.9 – Bright Nebula in the Pleiades
- M 42 – Orion Nebula: Mag 3.9 – Bright Nebula in Orion
- NGC 2264 – Christmas Tree Nebula: Mag 4.1 – Open Cluster in Monoceros
- NGC 1499 – California Nebula: Mag 5.0 – Bright Nebula in Perseus
- NGC 2238 – Rosette Nebula: Mag 5.5 – Bright Nebula in Monoceros
- Messier 33 - Pinwheel Galaxy: Mag 5.8 – Spiral Galaxy in Triangulum
- Messier 1 – Crab Nebula: Mag 8.4 – Bright Nebula in Taurus

January is great for both viewing and imaging. Spend some time outside with your scope. Winter is here.

For now – Keep looking up.



RANDOM THOUGHT January 2024

By Chuck Dyson

I ONCE WAS BLIND BUT NOW I SEE

This line from Amazing Grace is, in my opinion, the perfect way to introduce a paradigm shift in astronomy, or any other branch of science for that matter. When there is a finding or findings that fundamentally change our understanding of how the universe works we start to “see” the universe in a whole different way. There are, however, a couple of problems with paradigm shifts. The first is that there are always people or groups of people who have their careers or religious tenets heavily invested in the “old” way of seeing things and resist the change with arguments both cogent and irrational with all of their might. The second common problem is that wildly unexpected results in preliminary data sets or small sample size studies are often hailed as paradigm changing results, only to be retracted later when more and larger studies are done.

Before diving into one of today’s big issues I thought that we could look into one paradigm change from our past.

As early as 340 BC Aristotle makes arguments, based on observations, that the Earth is a sphere. Soon after Hicetas reasons that if the earth is a sphere the motions of the Sun, planets, and stars can be explained by the Earth rotating on its axis. Aristarchus of Samos followed this up with the thought that the Earth and planets revolve around the sun, this thought neatly explained why the orbital patterns of Mercury and Venus, which are closer to the Sun than Earth, were different than Mars, Jupiter, and Saturn. Finally in 240 BC Eratosthenes, through a brilliant experiment, actually measures the circumference of the Earth. Eratosthenes got 40,000 kilometers for the Earth’s circumference, today we make it to be 40,075 kilometers, not bad for a guy using the shadow lengths from two sticks. This is a nice and rational package but it makes Earth just a ho-hum planet in the solar system. Around 100 AD the Roman astronomer/mathematician Claudius Ptolemy came up with a new view of the solar system and universe. In his system not only was the Earth the center of the solar system but the entire universe as well and who doesn’t want to be the center of attention? Several religions, including the new Christian religion, liked this idea because it made people special despite the fact that Ptolemies system required a plethora of mathematical assumptions and manipulation to get it to work. By the year 1,000 AD the Catholic church really needed the Ptolemaic system to work because church dogma required that one perform the required services on the exact day or one’s soul could be banned from heaven forever. In the 1500’s the Church requested one Nicolaus Copernicus



to simplify the math associated with Ptolemies heliocentric universe. Copernicus takes on the challenge and in 1543, just after his death, his book “On the Revolutions of the Heavenly Spheres” is published. Copernicus has the book published after his death because he knows that his new heliocentric model of the solar system is not going to be a big hit with the Church. The Church performs a deft arabesque and sidesteps the issue by claiming the book uses the heliocentric model as an artificial mathematical device to make predictions easier to perform and is in no way reality.

This explanation works reasonably well until 1609-1610 when one Galileo Galilei hears of and then builds his own telescope. The telescope shows Galileo that the moon is not a perfect sphere but is littered with mountains. It then shows Galileo that the planet Jupiter has its own moons that circle it not Earth. The telescope then shows Galileo many more stars than he can see with his naked eye, if we cannot see the entire universe we cannot know the entire universe. Even though Galileo is censured and placed under house arrest, Galileo being Galileo, prints book after book on his discoveries and ideas this spreads his ideas far and wide in very short time when compared to how ideas spread before Guttenberg’s printing press was invented. A problem with the Copernican system is Copernicus has the planets in circular orbits and this still requires a significant amount of mathematical manipulation to get planets and calendars to work. Galileo’s contemporary Johannes Kepler, who has Tycho Brahe’s excellent planetary motion data, works out that the planets actually travel in ellipses and with Kepler’s laws of planetary motion the calculations for important calendar dates gets much easier. Finally mister nasty also known as Issiac Newton comes up with an equation for gravity that explains exactly why we and every other planet must orbit the Sun. In 1757 the Church declared that books on heliocentric solar systems could be printed and read without it being a sin. However, even several Protestant sects still claimed that heliocentric solar systems were not real and in order to prevent civil unrest many communities around the world taught in schools taught both systems were possible until the 1800’s, old paradigms die hard.

Today we have “THE CRISES IN COSMOLOGY” or to put in a less dramatic fashion there are two major ways to measure the Hubble Constant (the expansion rate of the universe). The first was proposed by Henrietta Swan Levitt in 1912 and is the Cepheid variable star measurement. Cepheid variable stars have different but regular periods of pulsation and the maximum brightness of a particular star is dependent on its period, the longer the period the brighter the star. The second method to measure the Hubble Constant is to measure the temperature differences in the Cosmic Background Radiation (CMB) and the size of the different temperature areas and use a formula to predict the age and size of our universe.



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Both the Cepheid and the CMB method have been used extensively and astronomers have faith in both techniques. The problem is the answers for the expansion rate of the universe that they give were not even close. Astronomers recently have come to realize that our galaxy is in the Laniakea (Hawaiian for “immense heaven”) super cluster. Laniakea is a group of 100,000 galaxies spread out over 520 million light years, however the galaxies do gravitationally interact and it was thought this could explain some of the differences between the expansion rates as the Cepheid expansion rate would be affected by the gravitational interaction of the galaxies. The study was done adjusting for the estimated gravitational effects and, and things got worse. With the new data astronomers calculate there is less than a 1 in 3,488,555 chance that the results of the two methods could be the same.

There are other known problems with the Cepheid variable technique and attempts are being made to correct for them but it may be time to look for a fresh way to measure the expansion rate of the universe. Wendy Freedman of the University of Chicago has reported her results on using the Tip of the Red Giant Branch (TRGB) stars as standard candles to measure the distances to other galaxies. Red Giant stars are stars that are exhausting the Hydrogen in their cores and are starting to burn (convert Hydrogen to Helium) Hydrogen in their outer shells and this causes the star to swell and become a giant. At some point the temperature and pressure in the star’s core permits the burning of Helium into Carbon and Oxygen and the star shrinks in size. The size and luminosity at which the star starts to shrink is very predictable. Because this event occurs when the star is billions of years old the star may have wandered to the outer reaches of the galactic disk or even in the galactic halo and this may place it in an area of few stars and little dust, the easier to get a clean signal my pretty. Freedman’s initial study of TRGB stars resulted in an expansion rate that is between the Cepheid and the CMB data and has a standard deviation size that overlaps both of their standard deviation areas as well. Because this is a first study it is not a definitive answer, however, it may well represent a promising start on a better understanding of the rate universe is expanding and how it really works.

Freedman’s work also means that we may need to take a hard look at all of the data derived from the Levitt/Hubble data and accept the fact that our Cepheid data is not good data and needs to be re-done using different methods.

The change from Ptolemy to Copernicus took about 250 years, how long do you think the Levitt/Hubble to CMB/TRGB transition will take?

CHEERS

CHUCK

January 2024 Another Look

Dave Phelps

The new moon in January is on the 11th at 0657. The Full Moon is on Thursday, January 25, at 1254. January's Full Moon is the Wolf Moon. Other Native American names are the Goose Moon, Center Moon, Cold Moon, Freeze Up Moon, Hard Mon and Spirit Moon. Anglo Saxon names are Moon after Yule and Snow Moon. In Spanish its Luna Nueva de Enero, in Greek its Νέα Σελήνη Ιανουαρίου – Néa Selíni Ianouariou, in French its Nouvelle Lune de Janvier, in Ukrainian its Січневий Молодик – Richness Molodyk.

The 8th, 9th and 10th of January are big days. Mercury is highest in the sky. There is a conjunction of the Moon and Venus and Antares will be occulted, on the 9th the moon and Mercury are conjoined and on the 10th, its the Moon and Mars. The Moon has a conjunction with Saturn on the 14th and Jupiter on the 18th. On January 20, the Moon will be less than a degree from the Pleiades.

Perseus - seek for by her feet Which ever at his shoulder are revolving.

Tallest of all his compeers at the North

He towers. His right hand stretches toward the chair Of his bride's mother.

Frothingham's Aratos

Perseus the champion, the French Persee, the Italian Perseo, and the German Perseus, formerly was cataloged as Perseus et Caput Medusae.



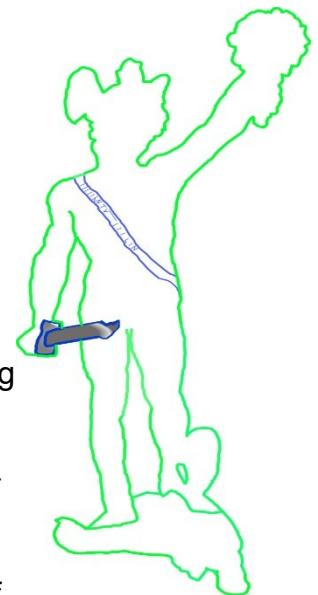
Berehyia

Perseus is, a member of the Cepheus/Cassiopeia family, whose members are Cepheus, Cassiopeia, Andromeda, Perseus, Pegasus and Cetus. Perseus is also a member of a different group of constellations, not often identified as such.

In prehistory, men and woman began to combine the stars into individual groupings and give those groupings identity and meaning. There is Sirius the Dog star rising at the beginning of summer heat. Water carriers and wheat carriers rising as the rivers begin to flood and bring back life. Many of these myths abound from the era of Gilgamesh and even earlier, from Homer and the later Greeks and finally to Ptolemy who codified the star shapes for the cartographers and globe makers that followed. If we go back even before the "modern" civilizations of the Nile, Jordan, Tigris, Ganges, Mekong, and Yangtze, there are mud walled civilizations growing around these river banks determined to understand their place in the world. These civilizations looked at the stars for meaning, help and



unc* anding.



Andromeda is one story in the chapter of human sacrifice, one saved by a hero who killed not only the Sea Monster but also a Gorgon



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whose gaze turned men to stone. The story of Andromeda and Perseus marked the end of an eon where the sacrifice of a child could abate the humor of a god.

Perseus is also member of a different community of constellations. Constellations that portrayed winning against the direst adversaries. Hercules against the fetid swamp, portrayed by Hydra, Ophiuchus fighting death, represented by a snake's bite, Sagittarius, a man and a horse, aiming his arrow at the Scorpion. There is Orion, fearless against the stampeding bull and Sagitta, the arrow that killed the Eagle tormenting Prometheus and maybe of most important is Centaurus, the Centaur Chiron, whose weapon was education – to kill ignorance.

Seven constellations that show a Man's and a Woman's indomitable spirit, alive in the unfathomable, though consigned to a short, brutal, sad and ugly life.

Perseus was the son of Jupiter and Danae. Danae was imprisoned by Jupiter who then turned himself into a shower of gold and landed in her lap. So he begot Perseus.

Then they were crammed into a box and thrown into the Aegean, rescued and raised as a fisherman's son. The stories vary at this point, ending when he agreed to kill Medusa. He got some help from the gods: wings, a diamond sword, an invisibility helmet and a copper shield that shown like a mirror. You know the story from here. He takes the head, turns a bunch of people, a giant who became a mountain range and a sea monster into stone, marries a girl named Andromeda, has many kids and lives happily ever after. There are several intriguing postscripts to the story, however. One is of their sons was named Perses, taken 4000 years ago by Persian astrologers and made there own. Another recalls Medusa's head as it rolled to the ground. From her blood the winged horse Pegasus was born fully formed as was the armed warrior Chrysaor. These children, born of a Gorgon, were fathered by none other than Poseidon. Since Medusa is a Gorgon, her hair are snakes, her hands brass, her body scaled and growing from her back, yellow wings. Imagine the tryst between those two?

Perseus next,

Brandishes high in heaven his sword of flame,
And holds triumphant the dire Gorgon's head,
Flashing with fiery snakes! the stars he counts
Are sixty-seven; and two of these he boasts,
Nobly refulgent in the second rank —
One in his vest, one in Medusa's head."



I have always seen a waterfall. Curving across from Cassiopeia to Capella is this beautiful waterfall of stars spilling across the night sky. That's been Perseus for me. That and the Double Cluster (Caldwell 14, NGC 869 & NGC 884, η & χ). Then the California Nebula. (NGC 1499) Back then it was faint and hard to see, easier with today's filters. Also in Perseus was the reason I went up to Lone Pine each August to watch my favorite meteor shower.





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No less a person than Serviss, in his “Astronomy with an Opera Glass” said: *“With a telescope of medium power, it is one of the most marvelously beautiful object in the sky – a double swarm of stars, bright enough to be clearly distinguishable from one another and yet so numerous as to dazzle the eye with their lively beams.”* Wow, there’s some writing for you.

Don Lynn double cluster https://ocastronomers.org/wp-content/uploads/2018/12/2.34557.1_00466-7-8_LRGB_90secPCrsm.jpg
<https://ocastronomers.org/wp-content/uploads/2019/01/calif01.jpg>

Perseus is packed. A significant portion of its 615 square degrees lies in the Milky Way. There are 20 exoplanets and Burnham lists 126 double and multiple stars, 73 variable stars, 10 star clusters, 6 diffuse nebula, 2 planetary nebula and 7 galaxies brighter than 14th magnitude; and this is just the easy stuff.

Out of 20 exoplanets in Perseus are two that are named. One HAT-P-15, called Berehynia, is a 12th magnitude star with a Jupiter sized planet named Tryzub.

Berehynia is the Ukrainian goddess of nature, representing the strength, resilience and wisdom of Ukrainian women. The painting at the top is by Pollypop92, trade name for Ukrainian artist [Polina Skurykhina](#). The planet Tryzub, is Ukrainian for Trident. It comes from the coat of arms of a Ukrainian royal house and its image is still prevalent across Ukraine today.

The other named exoplanet comes from Denmark. HAT-P-29, named Muspelheim, is 11th magnitude. Muspelheim is guarded by its hot Jupiter sized planet named Surt. Muspelheim is a land of fire, home to the giants and guarded by Surt, the fire giant.

In the midst of this clash and din the heavens are rent in twain,
and the sons of Muspell come riding through the opening.
Surt rides first, and before him and after him flames burning fire.
He as a very good sword, which shines brighter than the sun.
As they ride over Bifrost it breaks to pieces, as has before been stated.
The sons of Muspel direct their course to the plain which is called Vigrid...
The sons of Muspel have there effulgent bands alone by themselves.
Ragnarok “Edda”

Alpha α Persei is Mirfak, meaning elbow, Atik, \omicron Omicron – shoulder, Menkhib, ξ Xi – shoulder and Miram η eta, Misam κ kappa Persei – his wrist and Seif ϕ Phi Persei - sword.

Of some interest are the stars of Medusa’s head. ρ Rho Persei is Gorgonia Tertia, ω Omega Persei is Gorgonia Quarta and π Pi Persei is Gorgonia Secunda. Not named as such, also in the head is 2nd magnitude Algol, β Beta Persei, the demon star.

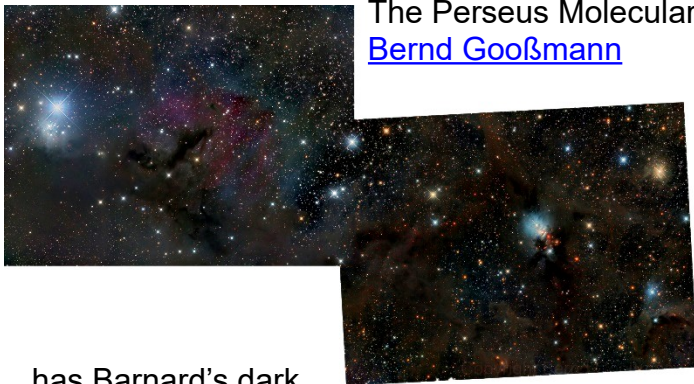
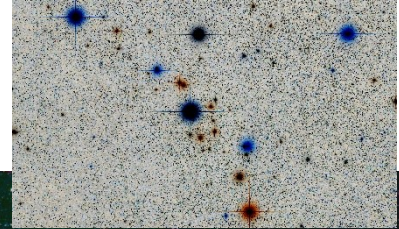
“Its horror and its beauty are divine.
Upon its lips and eyelids seem to lie
Loveliness like a shadow, from which shine,
Fiery and lurid, struggling underneath,
The agonies of anguish and of death..” Shelly

Other stars in Perseus with a Bayer designation are ζ Persei, γ Persei and δ Persei. An interesting star is X Persei, near ζ , at the foot. X Per is a 6th magnitude main-sequence(?) star

with a neutron star companion. X Per is slightly variable, probably because of the rise and fall of expelled material.

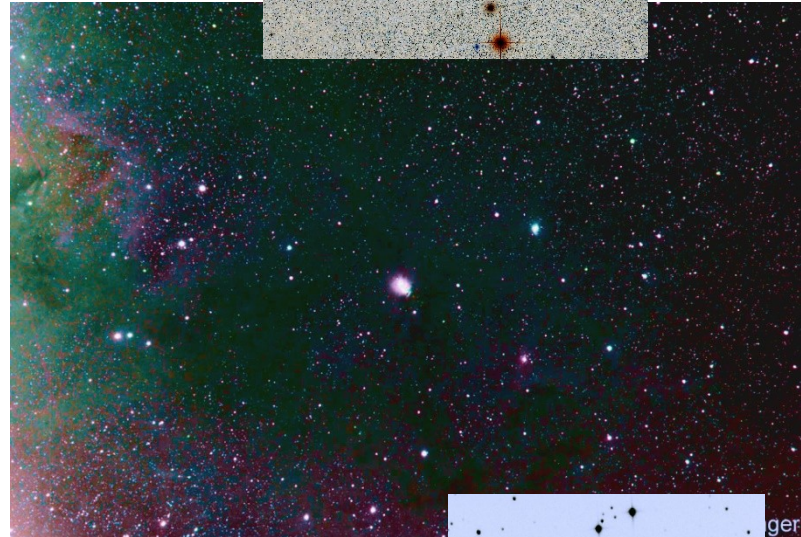
A Persei is a 1st magnitude star and noticeable as the brightest member of open cluster, Melotte 20. Melotte 20 has about a dozen members 6th magnitude and brighter and includes α , σ , ψ and δ . Melotte 20 also goes by the name “ α Perseus” cluster and Collinder 39.

[Volker Wiedhoff](https://www.astrobin.com/us7wq1/?q=melotte%20) [https://www.astrobin.com/us7wq1/?q=melotte 20](https://www.astrobin.com/us7wq1/?q=melotte%20)



The Perseus Molecular Cloud.

[Bernd Gooßmann](#)



has Barnard's dark nebula 1 thru 5, IC 333 and IC 348 and is home to our neutron star X Persei.

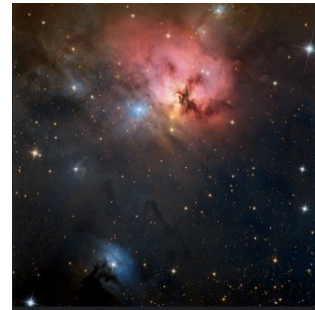
[https://www.astrobin.com/g6msx3/?q=ic 348](https://www.astrobin.com/g6msx3/?q=ic%20348) & **NGC1333**

It is an invisible M42, a stellar birthplace with a mass of 10,000 stars. The image to the right was taken by Jim Windlinger of the OCA. It is centered on NGC 1333 with with IC 348 off to the left.

Jim Windlinger.2006 <https://ocaastronomers.org/wp-content/uploads/2018/12/NGC1333-molecular-cloud-1000-2.jpg>



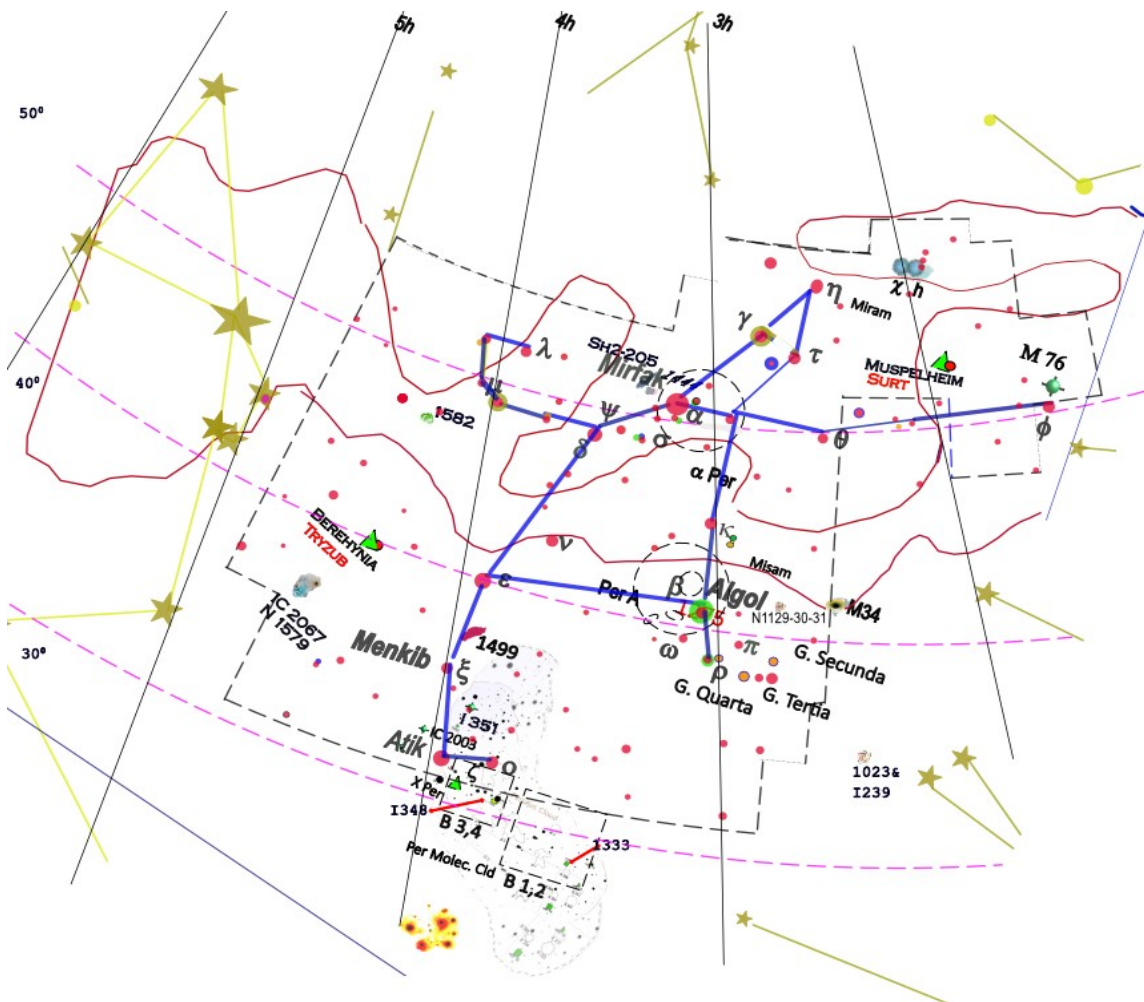
The two Messier's in Perseus are M76 and M34. M76 is 10th mag., a fuzzy spot in your binoculars. Of the two, M34 is the brighter at 5th magnitude. Once you look at M76 in your telescope, however, you will understand some of the issues with which early astronomers had to deal. M76 has two NGC #'s, 650 and 651. You will easily see the double lobe of the planetary that confused our earlier brethren.



Dave Radosevich & Don Lynn,

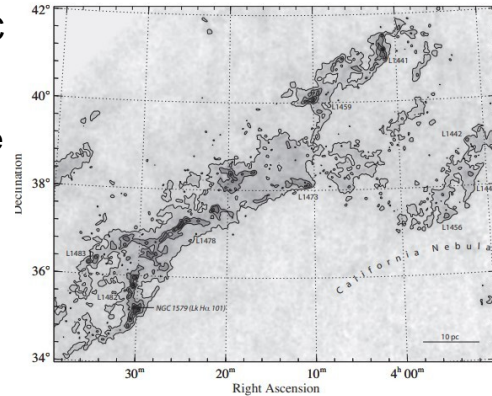
M76 <https://ocastronomers.org/wp-content/uploads/2018/12/M76.2-6LRGBP2sm.jpg>

<https://ocastronomers.org/wp-content/uploads/2019/01/m034>



A fun little nebula is over on the west side of Perseus near the Auriga border. NGC 1579 is a H II region and IC 2067 is a bright nebula nearby. They are a part of the California Molecular Cloud, the image is from a series of professional papers. You gotta figure, however, that if we can pick up the wisps in M57 and NGC 6960 et. al., we will be looking at it visually the next really dark, really clear night.

https://lweb.cfa.harvard.edu/~clada/pubs_html/pubs/california.pdf



There are eight planetary nebula potentially visible in Perseus, one Messier (M76), two IC objects, (IC's 351 and 2003, in the 12th magnitude range), two Abell planetaries, (A's 4 & 5, in the 16th magnitude range), two Minkowski planetaries, (M1 2 & 4), only one potentially findable in the 13th magnitude range, and one Böhm-Vitense, (BV 3) in the 14th magnitude. IC 351 is 12th magnitude and near ξ in the molecular cloud. IC 2003 is a little closer to the boot, on the edge of the cloud.

Another huge stellar association in Perseus is Abell 426, the Perseus Cluster and part of the Perseus-Pisces super-cluster. Abell 426 is one of the most massive objects we've found. It has millions of galaxies floating in a medium of superheated gas. Perseus A, a 12th magnitude spiral, is also Caldwell 24. Abell 426 is anchored by NGC 1275, Perseus A1. Not in the image is NGC 1265, an elliptical brilliant in the radio frequencies.

Perseus Cluster – Abell 426

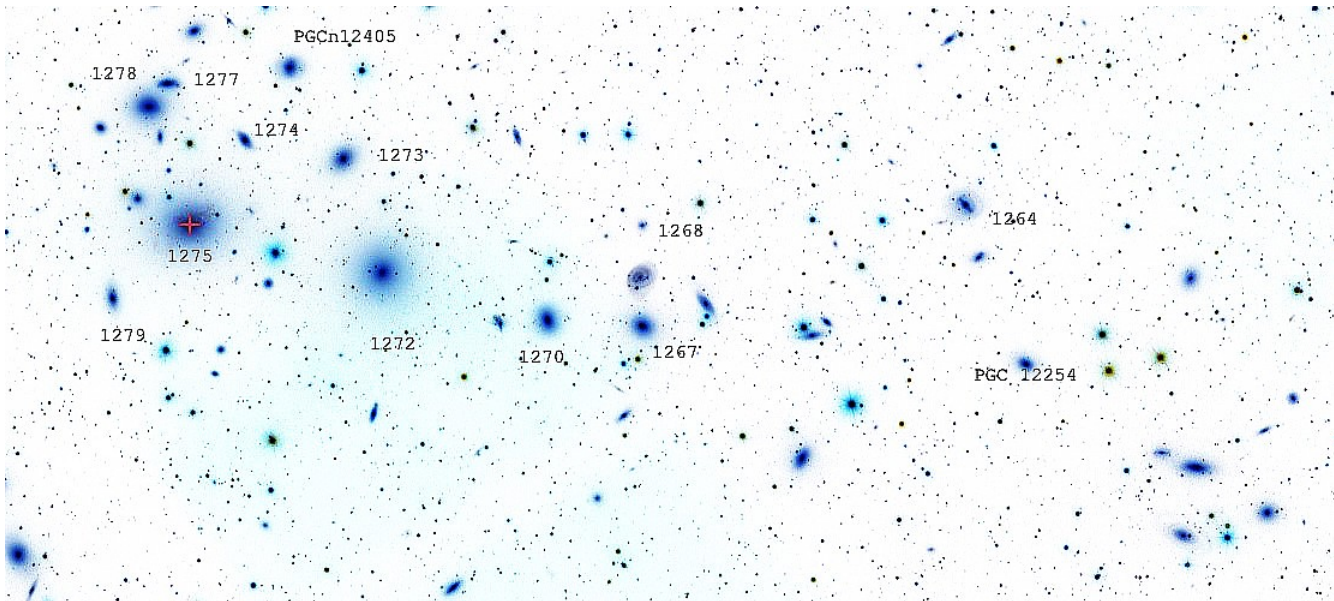
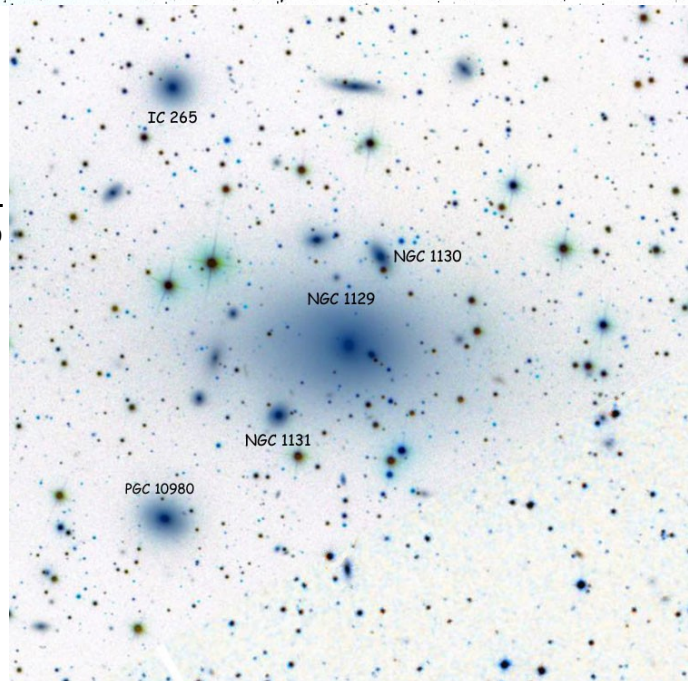


Image composite

A decent challenge would be the triple galaxy cluster NGC's 1129-30-31, between Algol and M34. 1129 is the brightest at 12th magnitude, the others a mag or two dimmer. You will notice the similarity in the images to the Andromeda triplet. I could not find any amateur work on these galaxies, the photo is from the NGC catalog.

NGC1129-30-31

Dark Skies Dave Phelps





This article is distributed by NASA's Night Sky Network (NSN). The NSN program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.gov to find local clubs, events, and more!

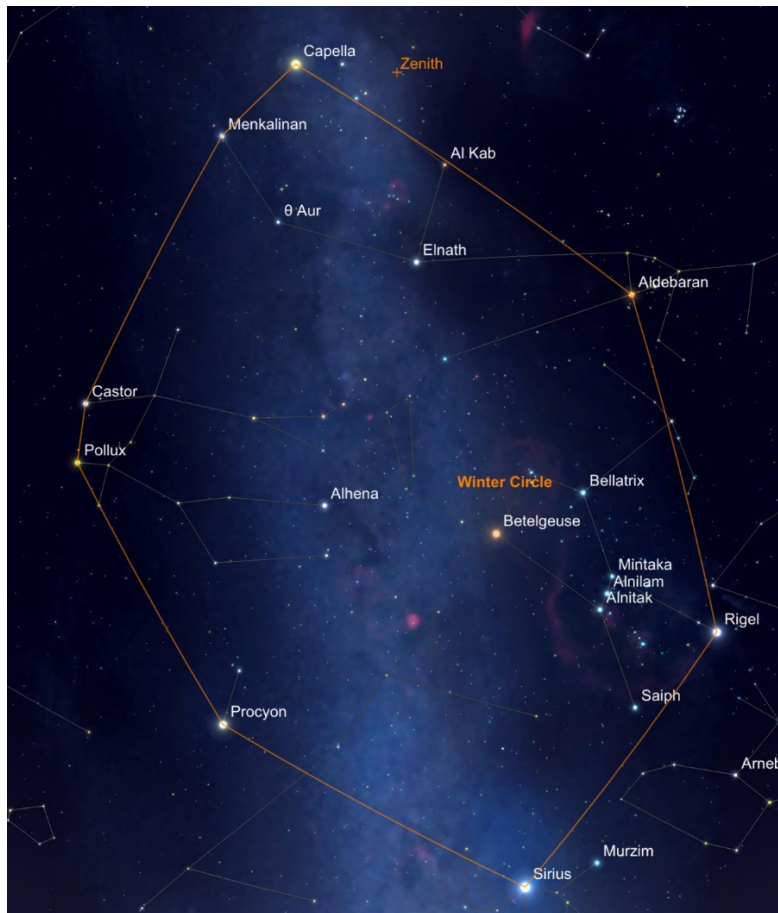
Connecting the 'Dots' with Asterisms

By Kat Troche

In our [December Night Sky Notes](#), we mentioned that the Orion constellation has a distinct hourglass shape that makes it easy to spot in the night sky. But what if we told you that this is not the complete constellation, but rather, an *asterism*?

An asterism is a pattern of stars in the night sky, forming shapes that make picking out constellations easy. Cultures throughout history have created these patterns as part of storytelling, honoring ancestors, and timekeeping. Orion's hourglass is just one of many examples of this, but did you know Orion's brightest knee is part of another asterism that spans six constellations, weaving together the Winter night sky? Many asterisms feature bright stars that are easily visible to the naked eye. Identify these key stars, and then connect the dots to reveal the shape.

Asterisms Through the Seasons

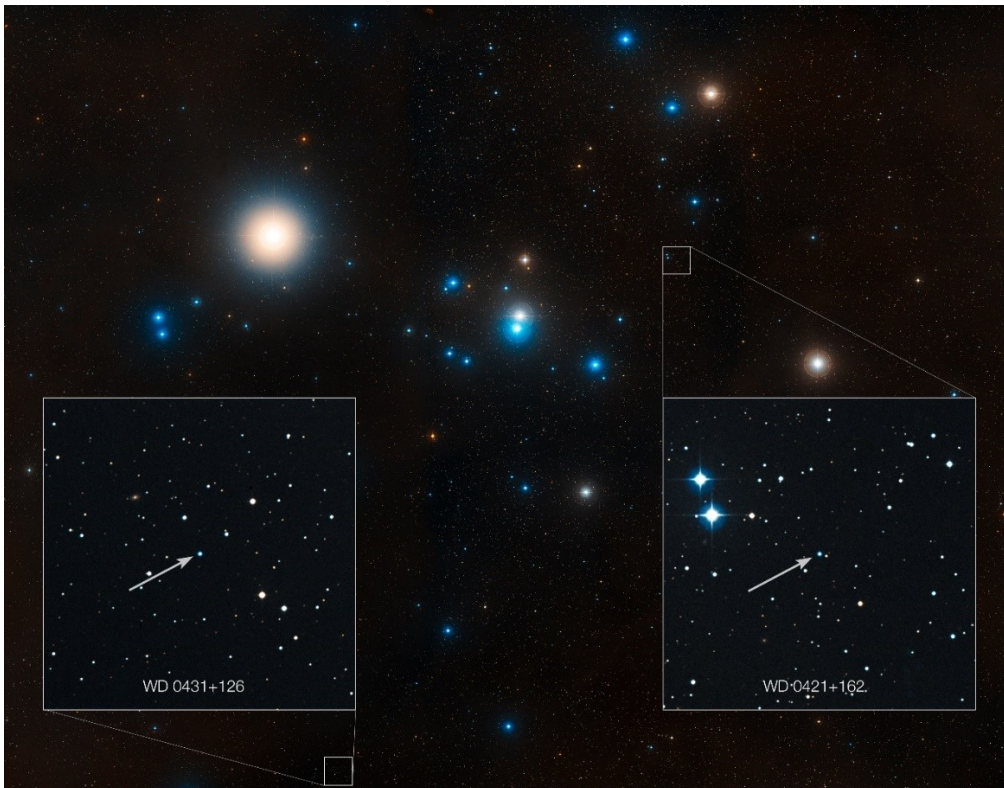


Stars that make up the Winter Circle, as seen on January 1, 2024

Sky Safari

Try looking for these asterisms this season and beyond:

- **Winter Circle** – this asterism, also known as the Winter Hexagon, makes up a large portion of the Winter sky using stars Rigel, Aldebaran, Capella, Pollux, Procyon, and Sirius as its points. Similarly, the **Winter Triangle** can be found using Procyon, Sirius, and Betelgeuse as points. **Orion's Belt** is also considered an asterism.
- **Diamond of Virgo** – this springtime asterism consists of the following stars: Arcturus, in the constellation Boötes; Cor Caroli, in Canes Venatici; Denebola in Leo, and Spica in Virgo. Sparkling at the center of this diamond is the bright cluster **Coma Berenices**, or Bernice's Hair – an ancient asterism turned constellation!
- **Summer Triangle** – as the nights warm up, the Summer Triangle dominates the heavens. Comprising the bright stars Vega in Lyra, Deneb in Cygnus, and Altair in Aquila, this prominent asterism is the inspiration behind the cultural festival [Tanabata](#). Also found is Cygnus the Swan, which makes up the **Northern Cross** asterism.
- **Great Square of Pegasus** – by Autumn, the Great Square of Pegasus can be seen. This square-shaped asterism takes up a large portion of the sky, and consists of the stars: Scheat, Alpheratz, Markab and Algenib.



This image shows the region around the Hyades star cluster, the nearest open cluster to us. The Hyades cluster is very well-studied due to its location, but previous searches for planets have produced only one. A new study led by Jay Farihi of the University of Cambridge, UK, has now found the atmospheres of two burnt-out stars in this cluster — known as white dwarfs — to be “polluted” by rocky debris circling the star. Inset, the locations of these white dwarf stars are indicated — stars known as WD 0421+162, and WD 0431+126. NASA, ESA, STScI, and Z. Levay (STScI)

Tracing these outlines can guide you to objects like galaxies and star clusters. The Hyades, for example, is an open star cluster in the Taurus constellation with [evidence of rocky planetary debris](#). In 2013, Hubble Space Telescope’s [Cosmic Origins Spectrograph](#) was responsible for breaking down light into individual components. This observation detected low levels of carbon and silicon – a major chemical for planetary bodies. The Hyades can be found just outside the Winter Circle and is a favorite of both amateur and professional astronomers alike.



Temecula Valley Astronomer

The monthly newsletter of the Temecula Valley Astronomers January 2024

How to Spot Asterisms

- **Use Star Maps and Star Apps** – Using star maps or stargazing apps can help familiarize yourself with the constellations and asterisms of the night sky.
- **Get Familiar with Constellations** – Learning the major constellations and their broader shapes visible each season will make spotting asterisms easier.
- **Use Celestial Landmarks** – Orient yourself by using bright stars, or recognizable constellations. This will help you navigate the night sky and pinpoint specific asterisms. Vega in the Lyra constellation is a great example of this.

Learn more about how to stay warm while observing this Winter with our upcoming mid-month article on the [Night Sky Network page](#) through NASA's website!



The TVA is a member club of [The Astronomical League](#)