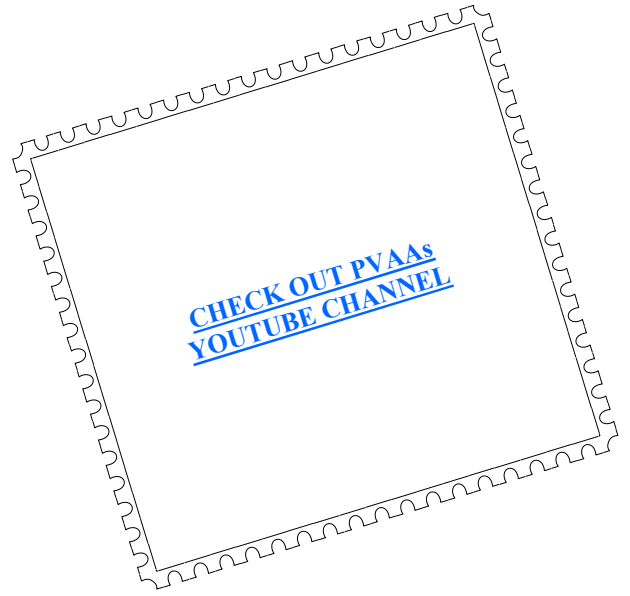




Newsletter of the Pomona Valley Amateur Astronomers

Anybody can do anything he wants to
if he wants to do it badly enough.
Theodore Sturgeon



Volume 43 Number 6

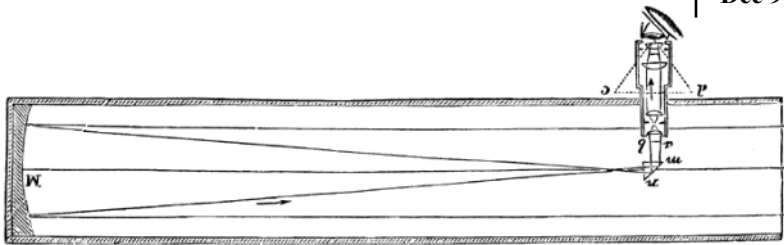
nightwatch

June 2023

Club Events Calendar

- Jun 2** **Virtual General Meeting**
Dr. Douglas Leonard, associate professor at SDSU
"When Will Betelgeuse Explode?" 7:30 PM
- Jun 17** **Star Party – GMARS**
- Jun 28** **Board Meeting 6:15 PM**
- July 7** **Virtual General Meeting 7:30 PM**
- July 15** **Star Party – GMARS**
- July 26** **Board Meeting 6:15 PM**
- Aug 4** **Virtual General Meeting 7:30 PM**
- Aug 12** **Big Bear – BBVAS Astronomical Star Party**
- Aug 19** **Star Party – GMARS**

- Sep 16** **Star Party – GMARS**
- Sept 20** **Board Meeting**
- Sep 29** **Virtual General Meeting 7:30 PM**
- Oct 14** **Star Party – Joshua Tree Night Sky Festival**
- Oct 18** **Board Meeting 6:15 PM**
- Oct 27** **Virtual General Meeting 7:30 PM**
- Nov 8** **Board Meeting 6:15 PM**
- Nov 9-12** **Nightfall www.NightfallStarParty.com**
- Nov 17** **Virtual General Meeting 7:30 PM**
- Nov 18** **Star Party – GMARS**
- Nov 29** **Board Meeting 6:15 PM**
- Dec 9** **Holiday Party**



PVAA Officers and Board

Officers

- President Mathew Wedel 909-767-9851
- Vice President .. Joe Hillberg 909-949-3650
- Secretary position is currently open
- Treasurer Gary Thompson 909-935-5509

Board

- Jim Bridgewater (2024)..... 909-599-7123
- Richard Wismer(2024)
- Ron Hoekwater (2023)..... 909-706-7453
- Howard Maculsay (2023).....909-913-1195

Directors

- Membership / Publicity...Gary Thompson . 909-935-5509
- Outreach Jeff Schroeder 909-758-1840
- Programs Ron Hoekwater 909-391-1943

PVAA General Meeting 05-05-2023

For our May meeting we had two presentations. Our first speaker was our PVAA president Matt Wedel. He went on a cruise to view the eclipse just off the Australian coast. This ended up being a spur-of-the-moment decision by Princess Cruises to have an 'Astronomer in Residence' on their cruise that would intercept the path of the eclipse. Our club was contacted in mid-March to see if anyone was qualified and interested in providing talks about the eclipse during the cruise. Matt responded to the request, and they did an interview over Zoom in late March. They paid for his flight from LA to

Singapore to Perth Australia. A few days before his flight Princess Cruises e-mails him asking where they can get 3,000 pairs of eclipse glasses. Matt e-mails them back with several places that sell glasses. They then contacted him and said they bought the glasses. Could he please pick them up and bring them with him? They will pay for the extra baggage charge for the flight. The ship was the Coral Princess with a passenger capacity of 2,000 and a crew of 895. At 91,627 tons with a length of 965 feet and a beam of 106, it is a big ship.



Matt with the Coral Princess



Lido Deck on eclipse day

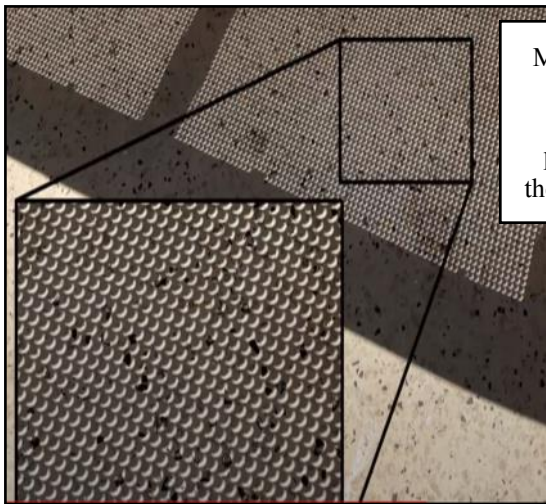
This was a 17-day cruise from Perth, Australia to Sydney, going along the West-North-East coasts of Australia. On the day of the eclipse the ship was south of the eclipse totality path. They had about 90% of an eclipse of the sun.

One of his presentations was on meteorites. He brought his meteorite collection along for the passengers to examine. He let the passengers know that he will be carrying a meteorite with him, so they can see and hold it in their hand. This became quite a popular thing to do, as he has always being stopped and asked for the meteorite. When he went ashore in Darwin, he picked up a copy of the Australian Sky & Telescope, where he discovered that he is also in their magazine, as he writes the Binocular Highlight column for Sky & Telescope. While in Darwin Matt also picked up a set of Solar Eclipse Stamps that the Australian postal service published commemorating the event. You can watch his presentation at:

<https://www.youtube.com/watch?v=as46r6qbNB4&t=1093s>



Through eclipse glasses using a DSLR.



Massive array of pin hole projections provided by the deck chairs.



Australian Solar Eclipse Stamps



Pinhole projections of the eclipse

The main speaker of the night was Dr. David Vartanyan of the Carnegie Observatories. He is a NASA Einstein Fellow. The title of his presentation is “Stellar Autopsies: The Deaths of Massive Stars: Theory and Observations.” These stars are more than 10 times the mass of our sun. These stars allow us to explore the physics of gravity, electromagnetic radiation, and the strong and weak nuclear forces. They also provide a variety of observational tendrils like neutrinos, gravitational waves, cosmic waves, and light. They also create things like neutron stars, black holes, and create the elements like carbon and calcium that make life as we know it possible.

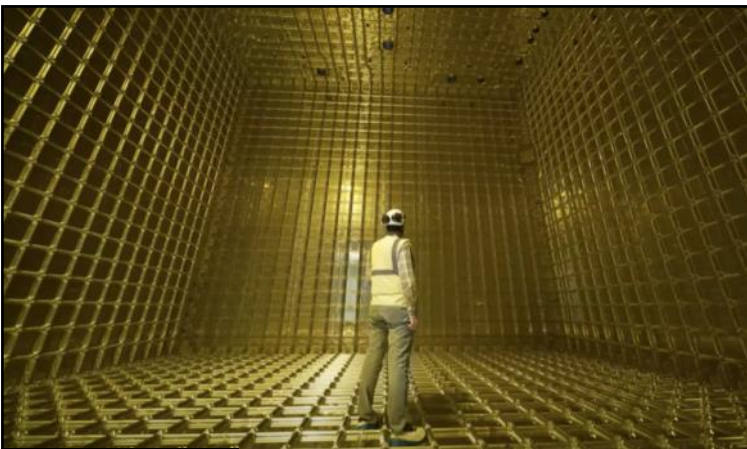
The word “super-novae” was first used back in 1934 by Baade & Zwicky as a source of cosmic rays and produced neutron stars. In the 1940s emissions of a large number of neutrinos were associated with nova and supernovas as a by-product of their formation. In the 1950s supernovas were associated with the synthesizing and distribution of heavy elements. In the 1980s it was put forth that neutrinos are indeed the cause of nova and supernova explosions. Neutrinos, being neutral, can pass through objects, and very rarely interact with them. At any given time, we have billions of neutrinos flowing through us from the sun and background radiation. During our lifetime we only have about 100 or so neutrinos interact with our body.

Dr. Vartanyan then talked about what stars explode? Why do they explode? Then why do they explode. When asking these questions, the silicon-oxygen bonds of atoms have a crucial role to play, according to computer models. These bonds, if sufficiently compacted together can stop some neutrinos from escaping, transferring their energy to heat, causing the star to explode. To learn more about the exploding stars, we have created the next generation of detectors: DUNE and LISA. DUNE is: Deep Underground Neutrino Experiment. This is a 1,300-kilometer-long tunnel from the Fermilab in Batavia, Illinois to the Sanford Underground Research Facility in Lead, S. Dakota. This will create the world’s most intense neutrino beam, with the world’s largest neutrino detector. LISA is the Laser Interferometer Space Antenna. Scheduled to launch in the 2030s, LISA is 3 spacecraft separated by millions of miles, but connected by laser beams. It will detect gravitational waves and is a vastly more accurate version of the current LIGO (Laser Interferometer Gravitational-Wave Observatory). He then showed short videos of computer models of stars exploding.

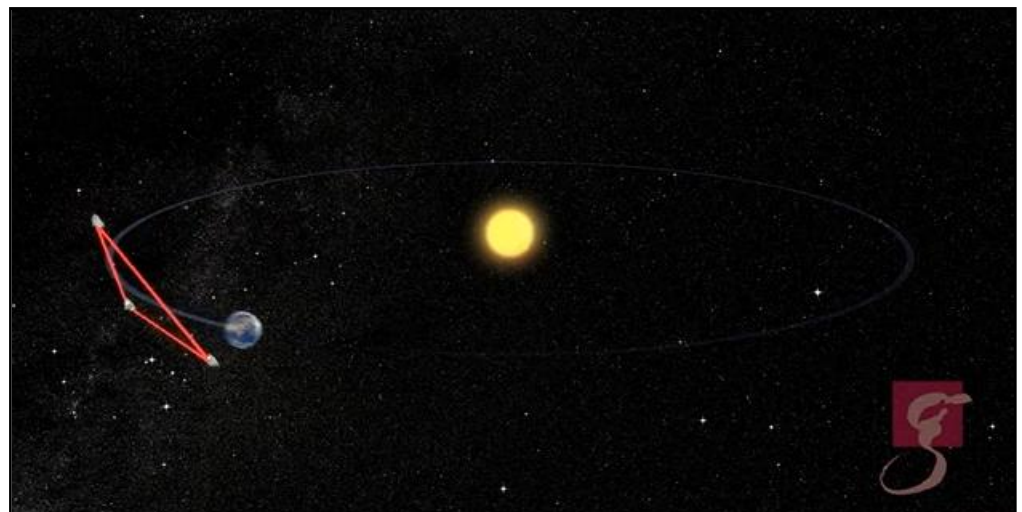
The current open questions we have are: Will we detect local supernovae in the next 2 decades? Do exploding supernovae form black holes? Do they form magnetars? Do they form heavier, exotic elements? How can we better resolve nuclear and neutrino physics? You can see his presentation at:

<https://www.youtube.com/watch?v=7VvIMbNfIBk&t=2218s>

Gary Thompson



DUNE detector



LISA's enormous detector size and orbit, trailing behind the Earth as it orbits the Sun, are illustrated here. Credit: AEI/Milde Marketing

Another Look - June 2023

The Full Moon for this month will occur early in the month on Sunday, June 4th. The New Moon will happen later in June on Sunday, June 18th.

In North America, the harvesting of strawberries in June gives that month's full moon its name, Strawberry Moon. Europeans have dubbed it the rose moon, while other cultures named it the hot moon for the beginning of the summer heat.

In June it's the Strawberry Moon as the little red berries ripen at this time and could be gathered by the Native American tribes. Other native names are Berries Ripen Moon, Green Corn Moon, and Hot Moon.

The Celtic names are Mead Moon, Horse Moon, Dyan Moon, Rose Moon and Honey-Moon. Other English names are Flower Moon and Planting Moon.

The Summer solstice is on Wed, Jun 21, 2023 7:57 AM PDT

In the Northern Hemisphere, the Summer Solstice occurs when the sun is directly above the Tropic of Cancer, usually June 21.

<https://publicdomainreview.org/collection/urania-mirror-or-a-view-of-the-heavens>

When we look back at the history behind the constellations we find a remarkable divergence from old, very old, very very old, recently new and kinda new.

Hevelius, Mercator, Bayer and all the astronomers and cartographers from mid-millennium forward relied on Ptolemy and the giants of the classical era for the basic model of the heavens they used for their maps and globes. The first millennium BCE saw the rise of tribes of the middle east and their myths, legends and stories. These are the cultures created around the confluence of the Tigris and Euphrates plus nation forming on the Arabian peninsula and the Indian sub-continent. As it was, the Greeks were relative late bloomers and the Romans almost certainly copycats.



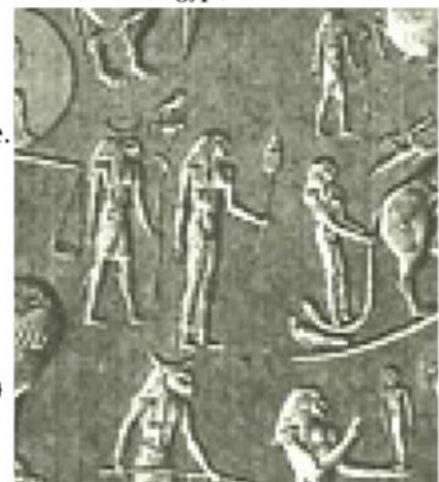
When did it start? Just how old is astronomy? It almost certainly began with the naturalistic representations of star locations and formations as named clocks, calendars, timetables and humanistic deities and the sympathetic magic they associated with everyday life.

Where does it start? There is evidence of the Egyptians, Euphratians and other cultures rising as early as the stone age using the certain stars as harbingers of seasonal changes and the relationship during the seasons when particular asterisms and stars shone during planting, shearing and lambing.

Is astronomy the oldest science? It has been claimed that we recognized star formation and seasonal relationships as early as 5000 BCE. One of those formations, of a young woman, with and without wings or with and without wheat or corn has been a part of astronomical lore worldwide for at least the last 5000 years. We can

<https://collections.louvre.fr/en/ark:/53355/cl010028871>

From the Dendurah Zodiac, Egypt, now in the Louve.



identify her during the Bronze age including early Egyptian old kingdom, Mesopotamian early dynasties, Akkadian, and the Indus Valley.

In Egypt she was Isis who formed the Milky Way from corn. Isis did not carry a sheaf of wheat in her right hand, she carried a tool called a distaff that women used in the spinning of wool and in Egypt, flax.

At that same time in the Euphrates she was named Ishtar, goddess and proclaimer of rain and Astarte, Bel's wife.

In India she was known as "the Maiden". We even have evidence of a zodiac created in Ceylon where Virgo is a woman on a ship with a stalk of wheat. An interesting story comes from the Scottish-English merge where the constellation marks the time of the "Kern" i.e. Corn baby.

The Arabs, who did not draw the human body called her Ears, the Chinese the Frigid Maiden. We even found evidence in Peru (Incas) where the asterism was called the Magic Mother.

So it is clear that Virgo is world wide throughout history and is almost certainly one of the oldest star formations identified and named.

Below Bootes thou seest the Virgin,
An ear of corn held sparkling in her hand.
Whether the daughter of Astraeus, who
First grouped the stars, they say, in days of old.
Or whencesoever,—peaceful may she roll.

Her lovely tresses glow with starry light,
Stars ornament the bracelet on her hand;
Her vest in ample fold glitters with stars;
Beneath her snowy feet they shine, her eyes
Lighten all glorious, with heavenly rays,
But first the star which crowns the golden sheaf.

Virgo has eight named stars. Herschel counted 383 galaxies and one globular cluster. Burnham has 213 galaxies, 1 globular cluster, 68 variable stars, 109 double and multiple star systems and one quasi-stellar object. Eleven of the galaxies are Messier's and one is a Caldwell.

By themselves, the star's names draw a history of Virgo. As mentioned, the Arabs do not draw images of humans. So to them, this area was a dog kennel. The stars ϵ , δ , γ , η , and β form a bowl that was a kennel as well as the finder for the Virgo Cluster. β "Zavijava" comes from the meaning for the word kennel, as does γ Porrina from "corner of the barker". Porrina by the way is also the name of one of the goddess's of prophecy and peace. It was she who held, in some stories, the scales, Libra, who follows her in the night.

A whole new tradition is formed around ϵ Virginis, named Vindemiatrix, the grape gatherer, another clock in the sky signaling the time to pick the grapes and make the wine. Vindemiatrix is also, at 2nd mag. The third brightest star in Virgo. But, where's the girl? We do have stellar references to the maiden: ι , Iota Virginis, named Syrma, means skirt and ζ Zeta Virginis, Heze, points to "under the girdle". Rolling all around the tradition we come to α , Alpha Virginis, Spica, signifying an ear of wheat.

telescopes and great fun galaxy hopping. As an example, I remember using M87 and the galaxies around it as finders when I found Pluto at RTMC years ago.

M89 is another featureless ball in your 8" It is a perfectly symmetrical elliptical. You may see a brighter nucleus.

A little over a moon diameter in your field of view is M90.

<https://ocastronomers.org/wp-content/uploads/2019/01/m089.jpg>



<https://ocastronomers.org/wp-content/uploads/2019/01/m090.jpg>

M90 is big, so you will see it easily in your 8" Dob. Still you will need your C14 and decent seeing to pick out spiral arms.

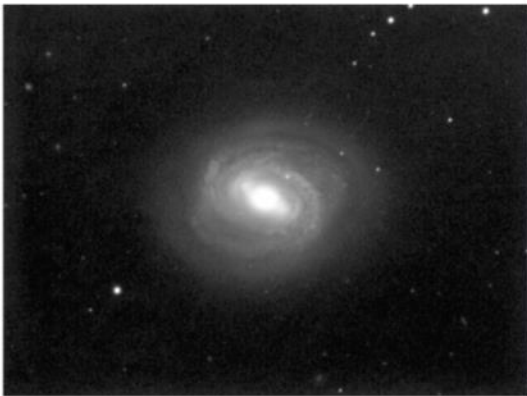
Now we're getting somewhere. M104, the Sombrero is findable



in your binoculars and easy in your 8". In my 17.5 the dust lane is well defined and the whole galaxy a beautiful oval.

This is a beautiful image of M 61. I don't know what it is about my eyes, but I have a hard time seeing the bar in some galaxies. You'll need your

C14 for a hint of the spiral arms. M 61 Jerry Floyd TVA & M 104 by Jerry Floyd TVA <https://www.temeculavalleyastronomers.com/photo-gallery.html>



Tom Wildoner Flickr.com M84, NGC 4387 (small) and NGC 4388

M 84 is a tightly wound spiral. It is in a very rich field. M 87 and M87 are right next door.

M49 is the brightest

member of the Virgo Cluster at 8th magnitude but

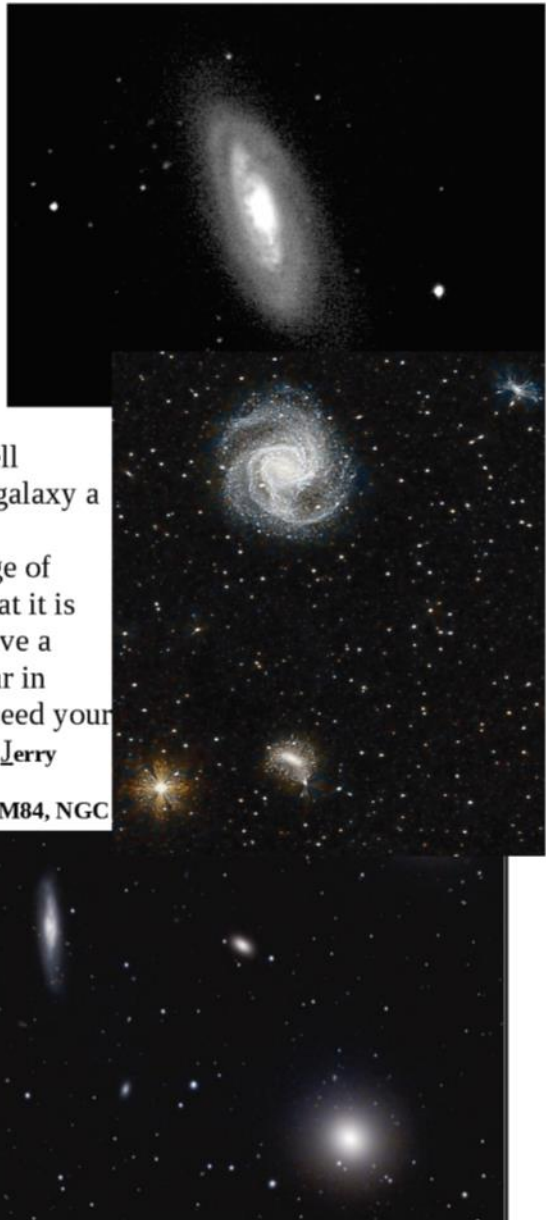


visually you will see little of no differentiation. M 49 is kind of a secondary center to the cluster, so searching for and identifying nearby galaxies would be a treat.

Marteen V Flickr.com M49 & NGC4526 is the bright blue spiral

Caldwell 52

<https://prescottastronomyclub.org/wp-content/uploads/2016/03/Caldwell-Objects.pdf>



M59, M60 & Friends Antione and Dalia Grelin at: <https://www.galactic-hunter.com/post/m59-m60>
Both M59 and M60 are smooth ellipticals that are featureless except for the possibility of see a bright or stellar nucleus.

M87 is the center of the Virgo Cluster, a giant smooth elliptical galaxy. The jet was first seen in 1918, but not visible in my 17.5.

https://ocastronomers.org/wp-content/uploads/2018/12/Kuhn_m87_cropped_2x.jpg Pat Knoll



[Remidone NGC 5364 - NGC 5363 & Co, Flickr.com](#)

The Virgo III Cloud encompasses eight groups of galaxies and large number if independent galaxies. Virgo III stretches between Virgo, Serpens Caput and Libra. Virgo III is composed of at least 75 clusters stretching between the three constellations. It would be a work of art just to identify visually the individual member clusters. The area I have hatched off on my chart is the location of the NGC 5364 group. The group consists of eight galaxies and is anchored by 11th magnitude NGC 5364.



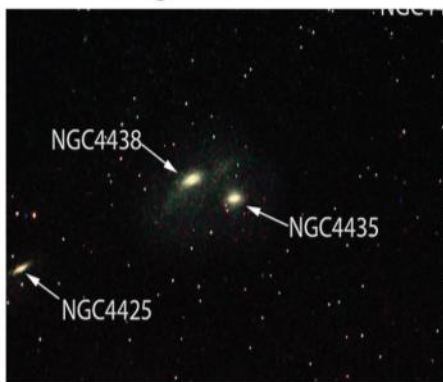
Virgo is not limited to just Messier's and clusters, however, there are dozens more interesting objects. A few in particular are NGC 4216, NGC 4526, NGC's 4435 & 38 the Eye galaxies, NGC's 4567 & 68 the Butterfly or Siamese Twins and 3C 273 the only quasar I have seen visually.

There has been so much written about quasars since I first heard about them that it would be a semesters study to learn the math and the rudiments. It took a while for the information to drift down from the aether to us mere mortals, but by the mid 80's we had right ascension and declination and charts to help us star hop, so a buddy and I decided to look. Well I was just whelmed. It looked like a 13th magnitude star. Still, its 2.5 billion light years away, which is a significant percentage of the age of our solar system. So, if you want to go, go take a look. The quasar is in the middle of the image. The three galaxies are, from top to bottom, NGC 4527, 11th



mag., NGC 4533 14th mag & NGC 4536 11th. 4536 has some interesting structure, it would be worth your while to drill down on it. (Insert) Flickr.com Michel Arzoumanian wide field courtesy of Flickr.com Steve Knight Up around the middle of the M's is a bright threesome anchored by 9th magnitude NGC 4216. Its long and thin with a bright nucleus. Its two companions are NGC's 4222 and 4206. Image was taken by Stephen Armen on the SDAA's astrobin link. <https://www.astrobin.com/wkenud/B/?nc=&ncc=>

If you look on my chart near the center of the bowls where the Arabs identified the "Kennel Corner of the Barking Dogs" you will find a smallish grouping of galaxies anchored by NGC 4526. In the image by Camille Colombo, 4526 is the lenticular galaxy to the left between the two stars. If you search for a professional image Camille COLOMB Flickr.com it will show a spectacular haloed galaxy with an enormous dark lane. The colorful face on spiral is NGC 4535. It looks slightly barred and it also looks like it will take some magnification. The two galaxies are within range of our telescopes at 10th and 11th magnitude.



NGC 4438 "The Eyes" Ray Stann
TVA Why is it called
Markanian's Chain?
The feature has been
at least partially
known since
Herschel's time and
all the individual
galaxies are included

in Dryer's catalog. Markanian was the one to show that the whole curved arc

of galaxies had the same proper motion. Near the center of the chain are NGC 4435 and 4438, a pair of 10th magnitude interacting galaxies called "The Eyes". NGC 4438 shows some interesting structure under magnification.

One of the more interesting examples of interacting galaxies in the Virgo Cluster is the Butterfly- NGC's 4567 & 4568. They also have detail under magnification but you will need some mirror size, they were beautiful in my 17. Their combined magnitude of the pair is 12 and they are less than 3 arc-minutes in size. The companion galaxy on the lower right of the image is NGC 4564. Jerry L. Floyd TVA

<https://www.temeculavalleyastronomers.com/photo-gallery.html>

Have a great time enjoying Virgo, and I wish you
Dark Skys
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!

Look Up in the Sky - It's a Bird

Theresa Summer

Bird constellations abound in the night sky, including **Cygnus**, the majestic swan. Easy to find with its dazzling stars, it is one of the few constellations that look like its namesake and it is full of treasures. Visible in the Northern Hemisphere all summer long, there's so much to see and even some things that can't be seen. To locate Cygnus, start with the brightest star, **Deneb**, also the northeastern most and dimmest star of the Summer Triangle. The Summer Triangle is made up of three bright stars from three different constellations – read more about it in the September 2022 issue of Night Sky Notes. "Deneb" is an Arabic word meaning the tail. Then travel into the triangle until you see the star **Albireo**, sometimes called the "beak star" in the center of the summer triangle. Stretching out perpendicular from this line are two stars that mark the crossbar, or the wings, and there are also faint stars that extend the swan's wings.

From light-polluted skies, you may only see the brightest stars, sometimes called the Northern Cross. In a darker sky, the line of stars marking the neck of the swan travels along the band of the **Milky Way**. A pair of binoculars will resolve many stars along that path, including a sparkling open cluster of stars designated **Messier 29**, found just south of the swan's torso star. This grouping of young stars may appear to have a reddish hue due to nearby excited gas.

Let's go deeper. While the bright beak star Albireo is easy to pick out, a telescope will let its true beauty shine! Like a jewel box in the sky, magnification shows a beautiful visual double star, with a vivid gold star and a brilliant blue star in the same field of view. There's another marvel to be seen with a telescope or strong binoculars – the Cygnus Loop. Sometimes known as the **Veil Nebula**, you can find this supernova remnant (the gassy leftovers blown off of a large dying star) directly above the final two stars of the swan's eastern wing. It will look like a faint ring of illuminated gas about three degrees across (six times the diameter of the Moon).

Speaking of long-dead stars, astronomers have detected a high-energy X-ray source in Cygnus that we can't see with our eyes or backyard telescopes, but that is detectable by NASA's Chandra X-ray Observatory. Discovered in 1971 during a rocket flight, Cygnus x-1 is the first X-ray source to be widely accepted as a black hole. This black hole is the final stage of a giant star's life, with a mass of about 20 Suns. Cygnus x-1 is spinning at a phenomenal rate – more than 800 times a second – while devouring a nearby star. Astronomically speaking, this black hole is in our neighborhood, 6,070 light years away. But it poses no threat to us, just offers a new way to study the universe.

Check out the beautiful bird in your sky this evening, and you will be delighted to add Cygnus to your go-to summer viewing list. Find out NASA's latest methods for studying black holes at www.nasa.gov/black-holes.



Look up after sunset during summer months to find Cygnus! Along the swan's neck find the band of our Milky Way Galaxy. Use a telescope to resolve the colorful stars of Albireo or search out the open cluster of stars in Messier 29. Image created with assistance from Stellarium: stellarium.org



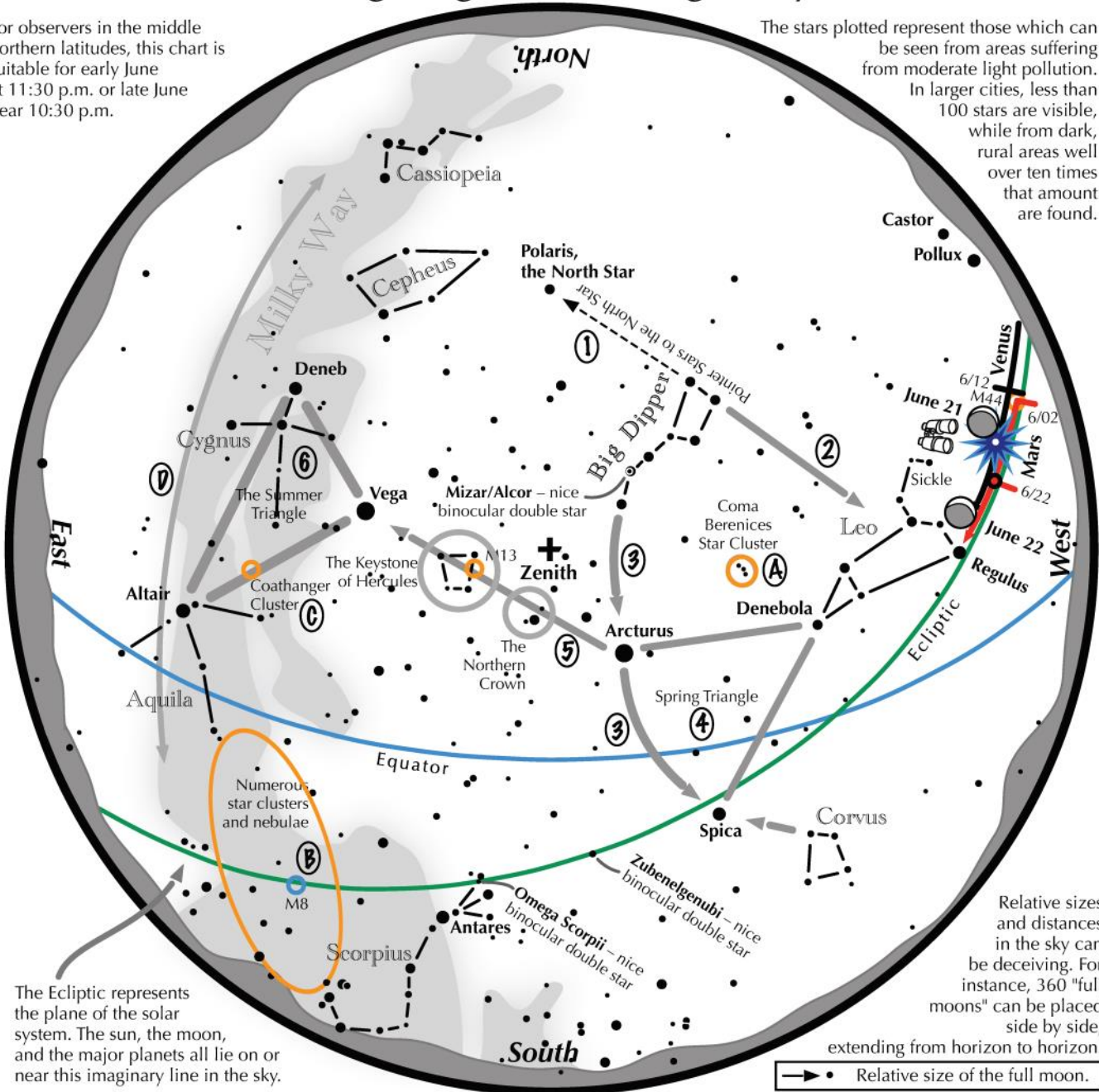
While the black hole Cygnus x-1 is invisible with even the most powerful Optical telescope, in X-ray, it shines brightly. On the left is the optical view of that region with the location of Cygnus x-1 shown in the red box as taken by the Digitized Sky Survey. On the right is an artist's conception of the black hole pulling material from its massive blue companion star.

(Credit: NASA/CXC chandra.harvard.edu/photo/2011/cygx1/)

Navigating the June Night Sky

For observers in the middle northern latitudes, this chart is suitable for early June at 11:30 p.m. or late June near 10:30 p.m.

The stars plotted represent those which can be seen from areas suffering from moderate light pollution. In larger cities, less than 100 stars are visible, while from dark, rural areas well over ten times that amount are found.



The Ecliptic represents the plane of the solar system. The sun, the moon, and the major planets all lie on or near this imaginary line in the sky.

Relative sizes and distances in the sky can be deceiving. For instance, 360 "full moons" can be placed side by side, extending from horizon to horizon.

→ • Relative size of the full moon.

Navigating the June night sky: Simply start with what you know or with what you can easily find.

- 1 Extend a line north from the two stars at the tip of the Big Dipper's bowl. It passes by Polaris, the North Star.
- 2 Draw another line in the opposite direction. It strikes the constellation Leo high in the west.
- 3 Follow the arc of the Dipper's handle. It first intersects Arcturus, the brightest star in the June evening sky, then Spica.
- 4 Arcturus, Spica, and Denebola form the Spring Triangle, a large equilateral triangle.
- 5 To the northeast of Arcturus shines another star of the same brightness, Vega. Draw a line from Arcturus to Vega. It first meets "The Northern Crown," then the "Keystone of Hercules." A dark sky is needed to see these two dim stellar configurations.
- 6 High in the east are the three bright stars of the Summer Triangle: Vega, Altair, and Deneb.

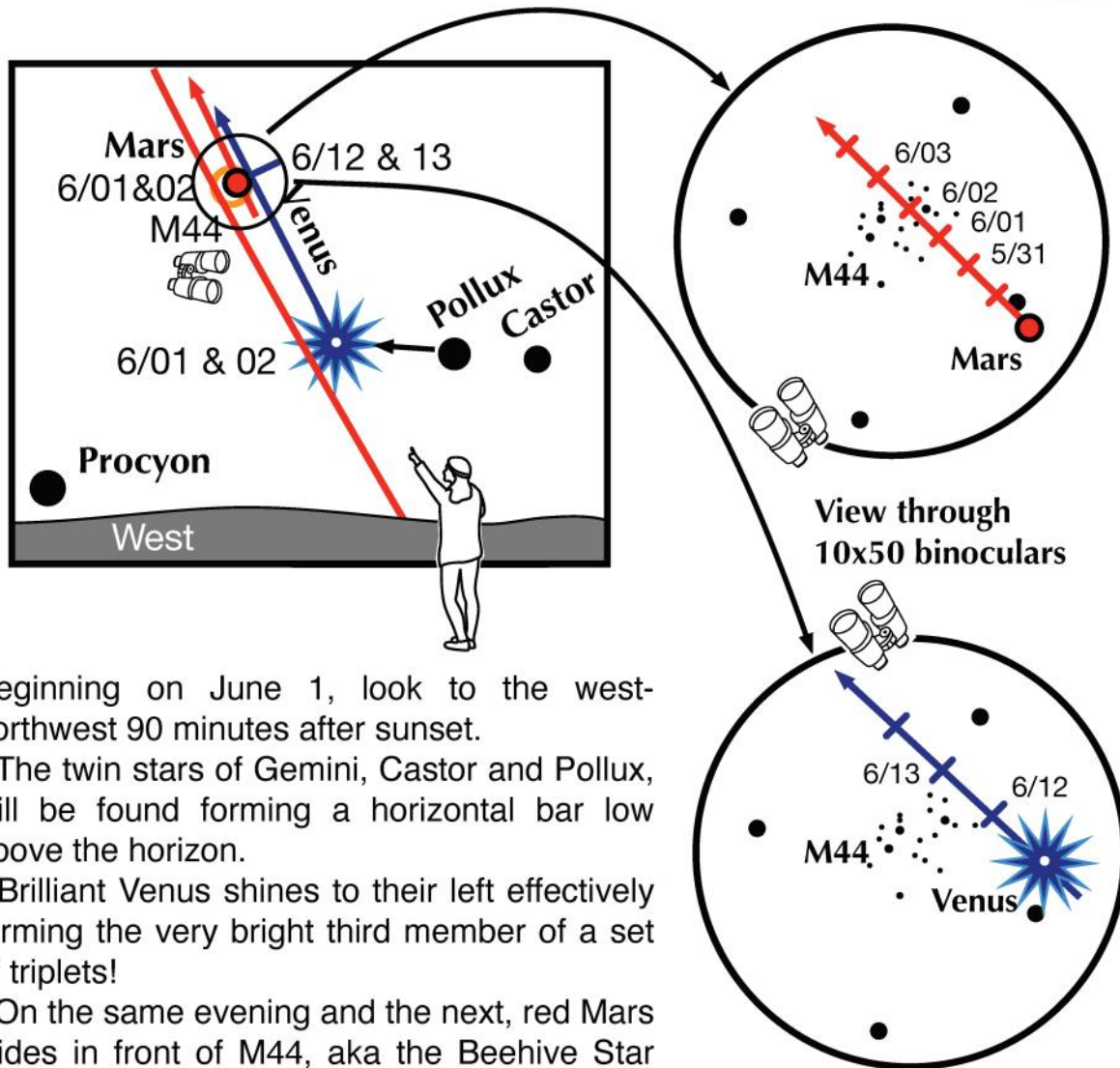
Binocular Highlights

- A: Between Denebola and the tip of the Big Dipper's handle, lie the stars of the Coma Berenices Star Cluster.
- B: Between the bright stars of Antares and Altair, hides an area containing many star clusters and nebulae.
- C: 40% of the way between Altair and Vega, twinkles the "Coathanger," a group of stars outlining a coathanger.
- D: Sweep along the Milky Way for an astounding number of faint glows and dark bays.





A must see celestial planetary play: Two planets visit the Beehive



Beginning on June 1, look to the west-northwest 90 minutes after sunset.

- The twin stars of Gemini, Castor and Pollux, will be found forming a horizontal bar low above the horizon.
- Brilliant Venus shines to their left effectively forming the very bright third member of a set of triplets!
- On the same evening and the next, red Mars slides in front of M44, aka the Beehive Star cluster, positioned above Venus. Use

binoculars to find Mars sitting amid the many stellar bees.

- Ten nights later, it is Venus' turn to stay at the Beehive for two consecutive nights. The planet travels along the outskirts, farther from Beehive central than Mars moved. Again, bring out the binoculars. How does the glare of brilliant Venus affect the scene?



BIENVENUE EN LOUISIANE! (WELCOME TO LOUISIANA!)

Join us for this unique and exciting amateur astronomy gathering!



ALCON 2023



July 26–29, 2023

Hilton Baton Rouge
Capitol Center Hotel
201 Lafayette Street
Baton Rouge, LA 70801

KEYNOTE SPEAKERS

- ★ David Eicher—writer, editor-in-chief of *Astronomy Magazine*
- ★ Fred Espenak—co-author of *Totality: The Great American Eclipses of 2017 and 2024*
- ★ David Levy—author, comet hunter

FIELD TRIPS

- ★ Irene Pennington Planetarium
 - ★ LIGO (Laser Interferometer Gravitational-Wave Observatory) Livingston*
 - ★ Louisiana State University Physics & Astronomy
 - ★ Highland Road Park Observatory
- *Spaces are limited for this trip!

SPEAKERS ★ Pranvera Hyseni ★ Guy Consolmagno ★ Dan Davis ★ And many more!

Brought to Baton Rouge by the **Baton Rouge Astronomical Society**

★★ Registration is now open! Check alcon2023.org ★★



Dark Stars

(Villanelle)

As night's stars sew a fabric I can never know,
threading the Milky Way, I spy it with my eye
weaving dark galactic clouds into my life's flow.

Its stitches are crystal pinpoints that forever glow,
but can never pin down this spinning sky
as night's stars sew a fabric I can never know.

Orion's belt cannot support this shifting show,
a tapestry of schemes and dreams swirl by,
weaving dark galactic clouds into my life's flow.

A wicked stinger on the tail of Scorpio
pricks my beliefs. They might survive or die
as night's stars sew a fabric I can never know.

Flickering needle sharp claws of feline Leo
bind and hem me in, even as I try to fly,
weaving dark galactic clouds into my life's flow.

Now, no longer as star struck as naive Virgo,
I search for permanence and wonder why
as night's stars sew a fabric I can never know,
weaving dark galactic clouds into my life's flow.

Lee Collins

PVAA Modernizes Payments!

In addition to using checks and cash, PVAA Members can now pay their dues using Zelle. Send your payment to mathew.wedel@gmail.com using Zelle and it will go into the PVAA bank account.

You can also use this QR code.

Thanks to Matt for setting this up and to John Elliott for the suggestion.

PVAA Membership Renewal for April 30, 2023

- \$30 - Individual Membership
- \$40 - Family Membership
- \$18 Student Under age 18 Membership

Name: _____

Email address for Newsletter delivery: _____

Address: _____

City: _____ State: ____ Zip: _____

Please send check payable to PVAA to:

PVAA
Attention: Treasurer
P.O. Box 162
Upland, CA 91785

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