nightwatch
Newsletter of the Pomona Valley Amateur Astronomers

Being broken does not mean being worthless.
A.J Mendez Brooks

CHECK OUT PVAAs YOUTUBE CHANNEL

Volume 46 Number 07 ***nightwatch*** **July 2026**

President's Message

My name is Ron Hoekwater, and I have been a member of PVAA for more than 30 years. I am deeply grateful to PVAA for making so many wonderful experiences possible, and for the many friends and acquaintances I have made through amateur astronomy.

As no one ran for the office of president in last month's election, I will be assuming the role of acting PVAA president starting with our June 26 meeting. I owe a huge debt of gratitude to our previous president, Ken Elchert; his hard work resolved several critical issues, ensuring that PVAA continues to run smoothly. Thank you, Ken!

I am also pleased to announce that Laura Jaoui and Lauretta Davis have agreed to take on the duties of co-publicity directors. They are already hard at work getting PVAA's name out across the Inland Empire.

Finally, for those who love free things (and who doesn't?), PVAA will begin hosting a door prize drawing at each meeting starting June 26. The prize will be worth approximately $20. All current members in attendance will receive one free entry into the drawing, but please note that you must be present at the time of the drawing to win.

Be sure to attend our upcoming PVAA meetings for your chance to win!

Ron Hoekwater

PVAA Officers and Board

Officers

(acting)President …..... Ron Hoekwater
Vice President .. Ron Hoekwater
Secretary(acting) .....Ken Elchert 626-541-8679
Treasurer ..... Gary Thompson 909-935-5509

Board

Jim Bridgewater (2028)..... 909-599-7123
Claire Stover(2028) .....pvaanightwatch@gmail.com
Ken Elchert (2027)..... 626-541-8679
Laura Jaoui (2027)……. 909-706-7031

Directors

Membership / Publicity....Gary Thompson .909-935-5509
Outreach ..... Open position .....
Programs ..... Ron Hoekwater 909-445-9282
Publicity……. Laura Jaoui
Lauretta Davis

PVAA General Meeting May 2026

Our meeting started out with elections of officers. Currently we have openings for the President and Secretary positions. Then Ken Elch Ken Elchert started the meeting greeting everyone and apologized for the late start. We found that our meeting room was locked, and the college had to send security to unlock the door. Then Ken presented his monthly presentation of Aerospace and Astronomical Events. The LIGO (US), VIGO (Italy) and KAGRA (Japan) teams published a paper adding 161 gravitational wave detections, for a total of 390. The teams have aligned their instruments and are hitting their stride.

Ken then talked about the TESS (Transiting Exoplanet Survey Satellite). As of May 3, 2026, TESS had identified 7931 candidate exoplanets, with 885 being confirmed.

The Psyche spacecraft, which will reach the asteroid 16 Psyche in August 2029, passed by Mars and tested out its instruments on the planet.

In other news, the SpaceX Starship V3 successfully lifted off from its Texas launchpad on May 22nd. The flight was mostly successful, but the booster did not successfully return to the designated landing area, while the starship aced its landing. The FAA grounded the superheavy booster pending an investigation. SpaceX plans to launch its starship in July. (With FAA approval.)

NASA recently had an Artemis update, showing models of the Blue Origin Lander, the Astrolab Rover, and the Firefly Orbiter/ Lander – among other things.

This last May 9th PVAA got a tour of the Mount Wilson telescopes. Our tour Guide was Tim Thompson. We viewed the solar telescopes, the 60-inch and the 100-inch telescopes. Each telescope was the biggest in the world when they came online.

Ken also gave two presentations on the Milky Way and the Sun at the Glendora Library on May 12th and June 9th. The attendees also got to look at the sun through a solar telescope and eclipse glasses. They also got a "First Telescopic Observation" certificate from the Astronomical League. The next meeting at the library is July 14th at 6pm.

The Friends of the Claremont Library had an ice cream social where they showed off their new telescopes you can check out like a book. Mathew Wedel got the telescopes ready to be checked out for the library.

We have two openings on the PVAA Board. The President and the Secretary. We also need an Outreach Coordinator and a Star Party Director and are looking for a Website Designer.

The club's yearly dues are now due. Our dues: $40 for individuals, $60 for family, and $20 for individuals under 18. You can pay your dues using Zelle by sending it to: pvaanightwatch@gmail.com

The speaker for the night was Bob Stevens. This title of his presentation was 'Days of the Future Past – 2020s Total Solar Eclipses.' Bob has seen 21 solar eclipses, and 5 or 6 annular eclipses. In 2020 during COVID, he got permission to enter Chile and view the eclipse from there. The weather was forecast to be so bad that viewing the solar eclipse would be impossible. So, his group of 10 rented 2 Cessna Citation Business jets to see the eclipse from above the clouds. In 2021 his group of 100 rented 2 Boeing 787s to view a solar eclipse near Antarctica. That worked out better than 14 of the 15 solar cruise ships, which ran into overcast skies. He then went to Australia to catch the 2023 eclipse. The total solar eclipse lasted one minute. You don't just go to see the eclipse, but to see the world.

Bob's suggestions for viewing a solar eclipse: 1-Enjoy the experience. Where did you go, who did you meet, what did you see? (Not just the eclipse.) Taking pictures of the people and things around you are just as important as the eclipse pictures themselves. Take advantage of dark skies and take astronomical pictures if you are away from the city. The most important thing is to SEE the eclipse, not to photograph it. 2-Know your equipment and try it out before the event. If things go wrong with the equipment, just step away and view the eclipse with your own eyes.

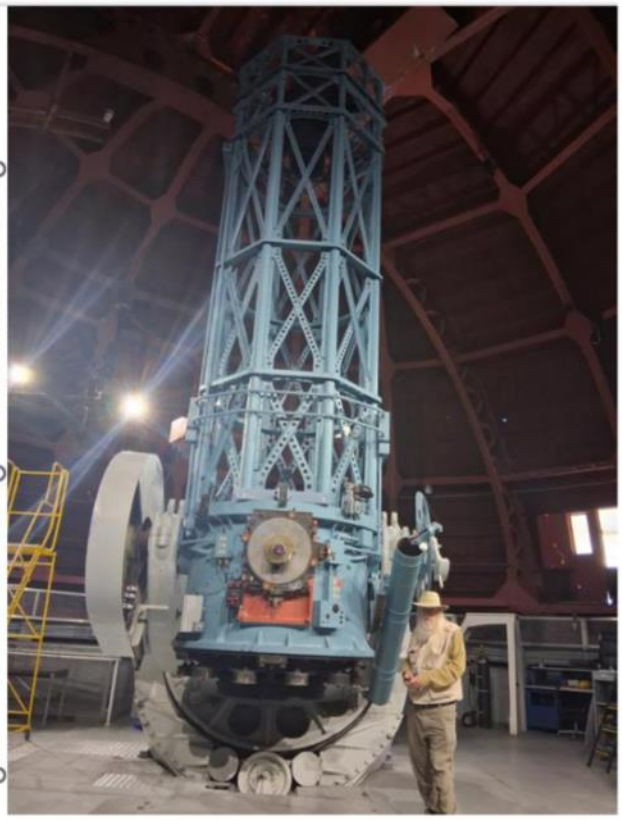
Gary Thompson

Pomona Valley Amateur Astronomers

Mount Wilson Tour with Tim Tompson

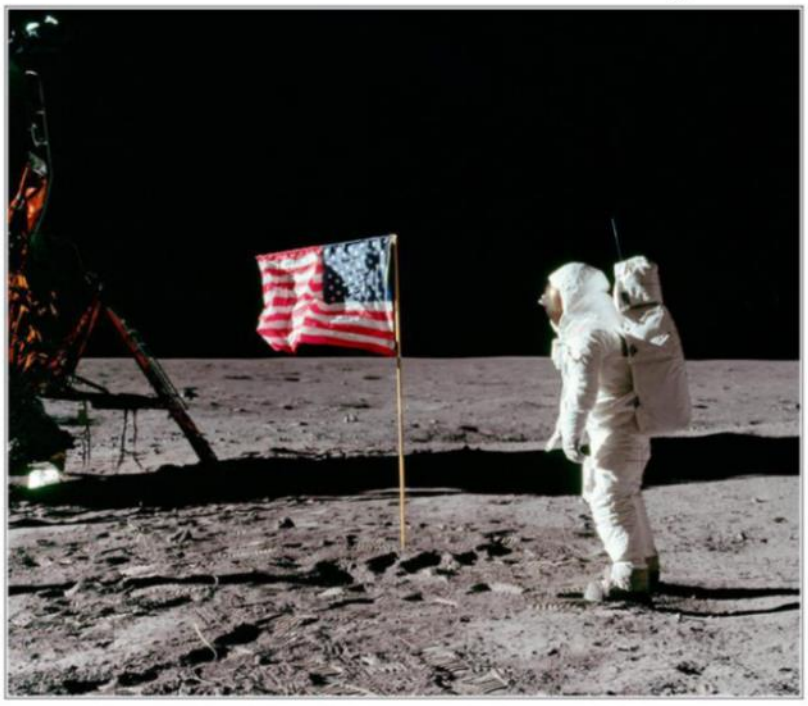
May 9, 2026

Credit: Laura Jaoui

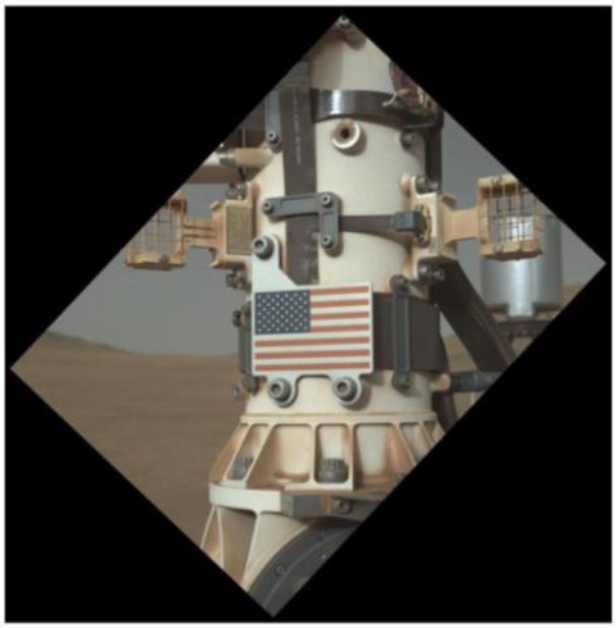


Credit: Marissa Elchert

The American Flag on the Moon and Mars

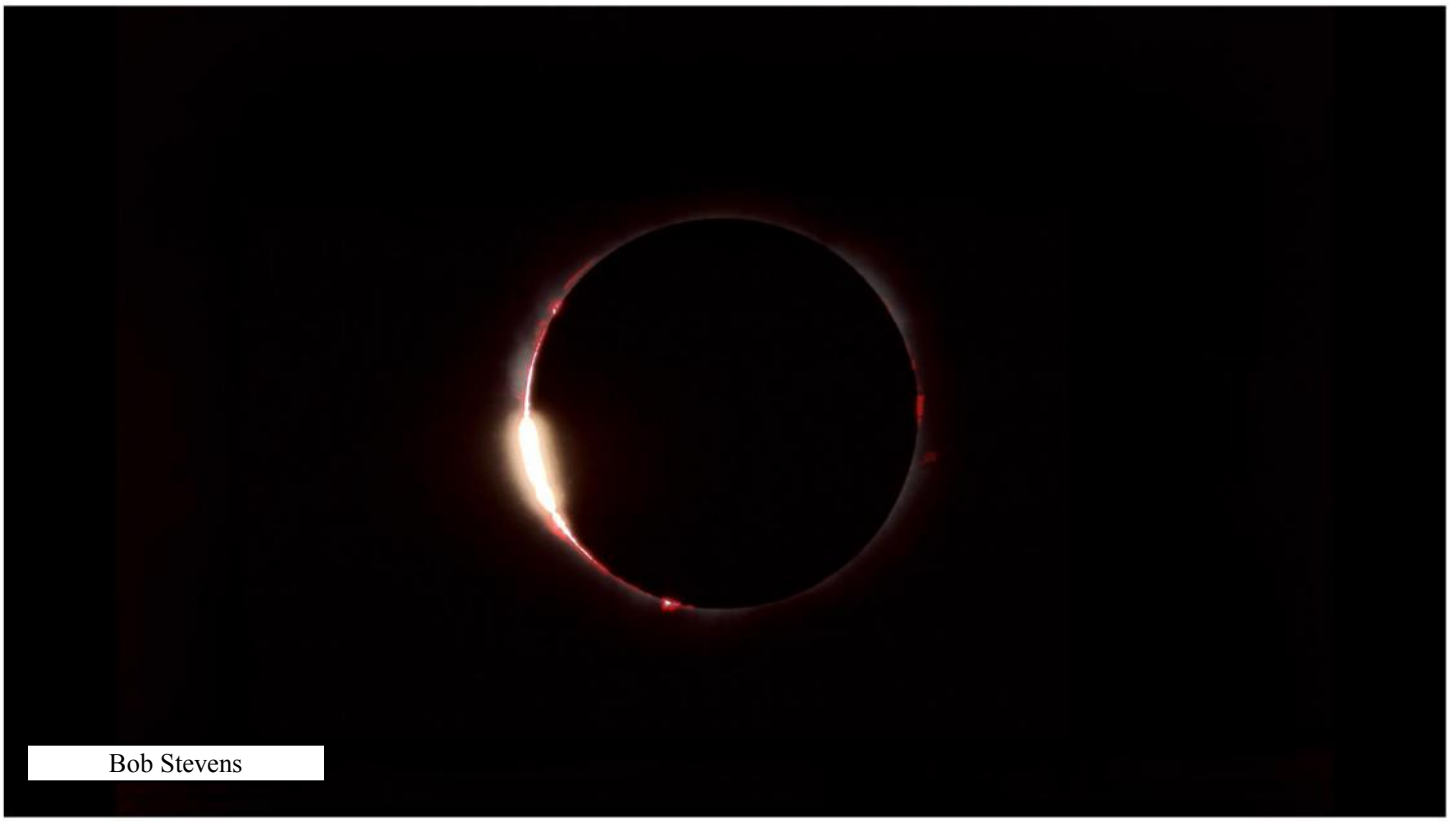


Buzz Aldrin saluting the flag on the Moon on July 20, 1969
Credit: NASA

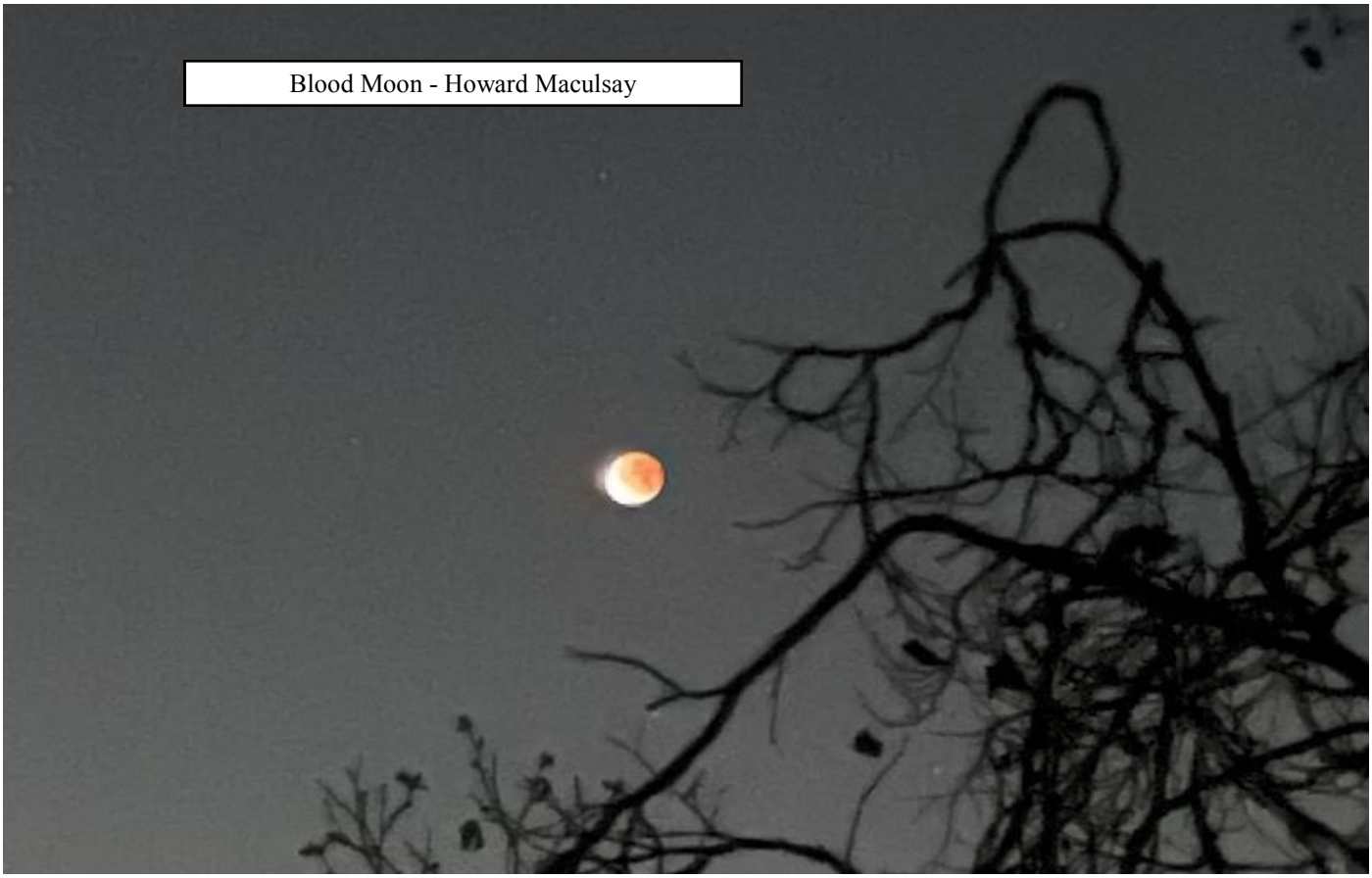


Perseverance acquired this image on Mars on June 28, 2025.
Credit: NASA/JPL-Caltech/MSSS

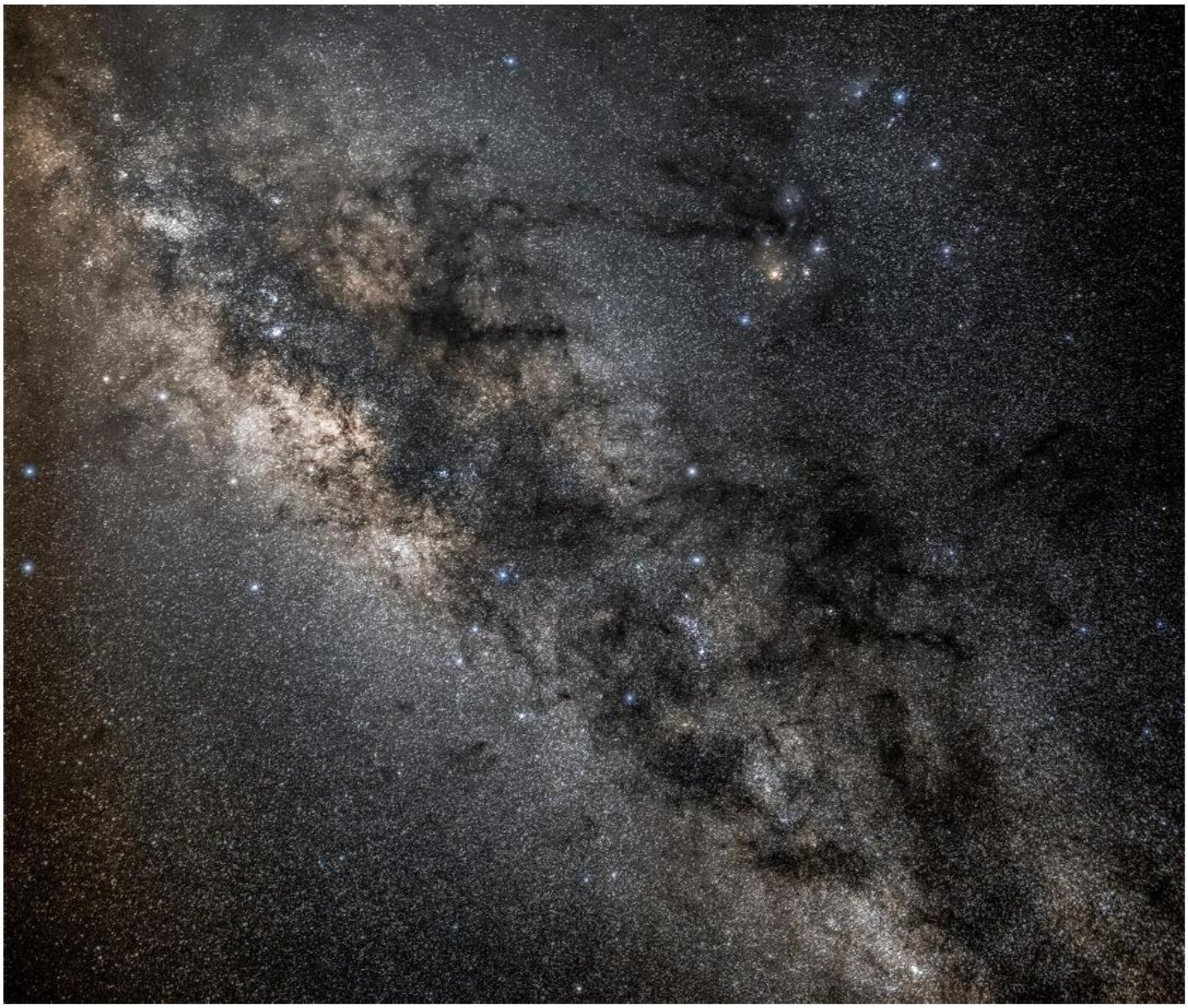
Jordan Sutton



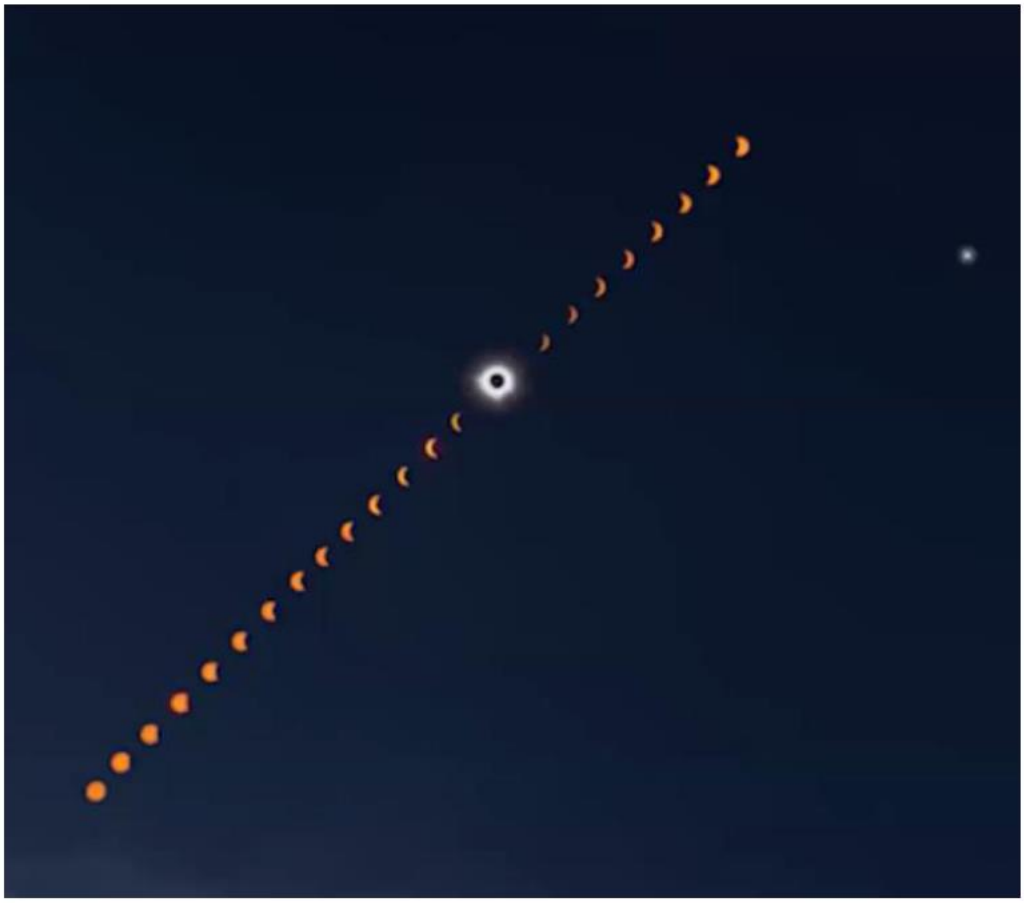
Bob Stevens



Blood Moon - Howard Maculsay



Bob Stevens



Bob Stevens

Beauty in the Summer Sky

We camped Thursday, June 11 to Sunday, June 14. Once again, the weather let us down, although this time I was able to get two nights of imaging on two set ups. Thursday night was too cloudy for collecting data, but I could at least get set up, aligned, and calibrated so I could be up and running as early as possible Friday and Saturday evenings. In addition to my usual mount where I change telescopes depending on the target, I set up my SkyWatcher tracker mount with a Canon 80D DSLR camera. The tracker was rather loose and sloppy, so I tuned it a few months ago. This was the first time I've used it in quite a while. In all my images this month, north is to the right of the image and east is up.

TARGETS

I'll start with the two images taken from the tracking mount. Right now, Scorpius is up in the south early in the evening, although it never rises more than about 30 degrees above the horizon. Antares is the red giant star in the center of Scorpius and is surrounded by very colorful nebulae called the Rho Ophiuchi cloud complex. This cloud complex borders Scorpius and Ophiuchus and is easy to find by simply pointing the camera at Antares. The clouds are relatively close at only 460 light years and very cold at 13-22 Kelvin. In my images, Antares is the yellowish star below and right of center in the close-up image and near the center in the wider image. The star Rho Ophiuchi is the bright star in the blue nebula to the right of Antares. The "starburst" feature around the bright stars comes from the lens' aperture iris being stopped down from being fully open. Further to the right in the wide view is the Blue Horsehead Nebula and below Antares in both images is the globular cluster NGC 6121 (also known as M4). In the wide field view, the bright region in the upper left is the Milky Way. In the Rho Ophiuchi complex, I particularly like the large dust pillars the extend upward. It really highlights just how dusty this region of space is. These were taken with a DSLR at relatively short focal lengths, compared to my telescopes, making the image scale larger than in photos I usually provide. Because of the large image scale, I would suggest not zooming in beyond 100% as the photos become very blotchy.

The third image celebrates the end of galaxy season. Shot in the constellation Draco, the "star" of the image is NGC 5907, the edge-on spiral galaxy on the right side of the frame. Also known as the Knife Edge or Splinter Galaxy, it is about 46 million light years away. In April this year, supernova 2026kid was detected in the galaxy and is visible in my image. Near the edge of the galaxy is a T-shaped set of 4 stars. I believe the bright star below this T near the galaxy's central dust cloud is the supernova. The galaxy also has a stellar ring that encircles it, but it is very faint. A part of the ring can be barely seen above galaxy. I had to stretch the image further than I prefer to show it. Next, on the left, are two smaller galaxies, NGC 5908 is the upper one and NGC 5905 is the lower one. NGC 5908 looks like a miniature version of the Sombrero Galaxy while NGC 5905 has wonderful, well-defined spiral arms. Both are about 150 million light years away from us and about 500,000 light years away from each other. Continuing along a line drawn from NGC 5908 to NGC 5905 is NGC 5866b, an intermediate-sized galaxy about 52 million light years away. And, in the lower left of the image is PGC 54154, a small, slightly edge-on spiral, about 154 million light years away. There are numerous other small galaxies scattered throughout the image, but I will caution against zooming in too far. As mentioned, I had to stretch the image more than I like to show the stellar ring around NGC 5907, so the background gets very ugly if you do pixel peep.

IMAGING AND PROCESSING

The Rho Ophiuchi images were taken with an unmodified Canon 80D mounted on a SkyWatcher StarAdventurer 2i. Either the polar alignment was slightly off or the mount isn't capable of tracking well for 2 minutes because nearly all frames had slight star trailing which was cleaned up in processing with *BlurXterminator* (*BlurX*). All frames were 2-minute-long exposures shot at f/8 and ISO 6400. There were 26 usable frames taken with a Canon EF-S 55-250mm zoom lens set to 127mm focal length for the close image and 31 frames taken at 57mm focal length for the wider version. Both images had the same workflow applied. After cleaning up the star shapes, the images were plate solved before *SpectrophotometricFluxCalibration* (*SFC*) and *MultiscaleGradientCorrection* (*MGC*) were used to correct the light gradient present. Color correction with *SpectroPhotometricColorCorrection* (*SPCC*) was next. Typically, I would remove the stars next and process the background and stars separately, but I had better results leaving the stars in the image. After color correction, NoiseXterminator (*NoiseX*) was used to reduce noise in the background. *GeneralizedHyperbolicStretch* (*GHS*) was then applied iteratively to carefully bring out the details without saturating the stars. *Curves* was then used in two ways. First, contrast and color saturation was enhanced. Afterward, a red mask was generated, applied to the image, and the color in the red channel was increased to account for the effects of using an unmodified camera, which is insensitive to the deep reds of astrophotos. For the wide field view, a blue mask was also generated and the blue color increased slightly.

The NGC 5907 image is an LRGB image created from 62, 24, 24, and 22 5-minute exposures in L, R, G, and B, respectively; and calibrated with 15 dark, 15 flat, and 15 dark flat frames. The exposures were all binned 2x2, but drizzled 2x during integration, to provide a resolution of 0.85 arcsec/pixel. The image was made using a Paramount MYT mount, StellarVue SVX90T with Optec focuser, SFFX1 flattener, Astrodon filters, and ASI294MM Pro camera. Guiding was done using a SkyWatcher EvoGuide 50DX guidescope and ASI174MM guide camera. After calibrating, stacking, and autocropping using PixInsight's *WeightedBatchPreprocessing* script, *BlurX* was used in correct-only mode to ensure the stars were round. The RGB frames were combined to form the color frame. *SFC* followed by *MGC* were next to remove the slight gradient that was present in both the RGB frame and the luminance frame. *SPCC* was used on the RGB frame to correct the color imbalance that is always present from the quantum efficiency of the camera to different colors.

My usual next step is to remove the stars, but doing so at this point with the RGB frame resulted in some of NGC 5907 being misidentified as stellar and separated from the rest of the galaxy. Instead, I found that noise reduction using *NoiseX* followed by *StarX* seemed to resolve the problem. To avoid issues with the luminance frame, I used the same sequence of steps. The luminance stars were discarded and the RGB stars were stretched using *GHS* with the arcsinh transform iteratively a few times until the stars were at the brightness that I preferred. Again, using the

arcsinh transform in *GHS*, the saturation was increased to enhance the star color. Turning then to the two starless images, *GHS* was used iteratively with the generalized hyperbolic transform to bring out the galaxies. The stellar stream was not visible in the RGB starless image but could be seen in the luminance starless image. I focused on the stellar stream around NGC 5907 and may have over stretched the luminance image trying to bring it out of the background. Color saturation in the RGB starless frame was enhanced with *GHS* in the same manner as with the stars. The *ImageBlend* script's high pass filter was used on the luminance frame to sharpen details in the galaxies before it was used again to combine the luminance and RGB frames into the starless LRGB frame. Finally, *ImageBlend* was used a third time to screen the RGB stars into the LRGB starless frame. The *Curves* process was employed to enhance the contrast in the final image.

It was enjoyable taking the photos and processing them, hopefully you enjoy them, too. Mid-July looks to be our last outing until November due to other plans. I'll try to get some images in from home between July and November when possible. Also, don't forget to go outside in the evening on August 12 to see the Perseid meteor shower. It will be a new moon that day, so the meteors should be easily seen, unless you live in a light-polluted area like me.

June Supplement

I can't believe I overlooked this image. A person I follow on Astrobin posted it and I didn't recall ever seeing it before. He mentioned it wasn't as dim as reported and when I asked about it, he suggested giving it a try. I think it came out nicely. It was shot from home during full moon from May 30 to June 3, so narrowband was the way to go. This is an HOO version of the target.

TARGET

Kohoutek 1-14 (PK 045+24.1) is a low brightness planetary nebula located in Hercules. It sits about 11,000 light years away from us and covers about 47 arcseconds of the sky. Discovered in 1963 by Luboš Kohoutek, who is probably better known for discovering the comet named after him. The nebula is primarily O-III given that this image was captured using only H-alpha and O-III narrowband filters. I find the faint traces of H-alpha inside the ring of O-III provide a very interesting contrast visually. I believe the star that gave rise to the nebula is the faint blue, off-center star next to the larger white one.

IMAGING AND PROCESSING

The image was shot from home during the full moon of late May, early June. The ASI294MM Pro camera was used with Astrodon 5 mm bandpass H-alpha and O-III filters mounted on my 8" TPO Ritchey-Chretien telescope with TS-Optics field flattener. Guiding was done with PHD2 using an off-axis guider and ASI174MM guide camera. The imaging train was mounted on a Paramount MYT mount.

Processing was done in PixInsight. Weighted batch preprocessing was used to stack 53 H-alpha and 65 O-III images of 10-minute exposure duration that were binned 2x2 and drizzled 2x. 15 dark, flat, and flat dark frames were used for calibration. 6 H-alpha and 8 O-III frames were discarded. A total of 19 hours, 40 minutes of data was used (8 hours, 50 minutes of H-alpha and 10 hours, 50 minutes of O-III).

After stacking, BlurXterminator in correct only mode was applied to the stacked H-alpha and O-III images. This was followed by SpectrophotometricFluxCalibration and MultiscaleGradientCorrection to remove gradients. At this point, a color image was produced mapping H-alpha into the red channel and O-III into the green and blue channels. A second application of BlurXterminator was used followed by SpectroPhotometricColorCalibration in narrowband mode to adjust the color balance. Once color calibrated, the stars were removed with StarXterminator and the resulting starless HOO image was denoised with NoiseXterminator. Normally, I'd use GeneralizedHyperbolicStretch next, however, I got better results by applying the screen stretch through the Histogram transformation. Histogram transformation was used a second time to lower the black point. This was followed by two iterations of Curves to adjust the contrast. For the stars, a simple screen stretch with Histogram transformation was used. The stars were screened back onto the starless version using ImageBlend and then cropped to yield the final image.

Wishing you all clear and dark skies,

Ron Ugolick

https://www.astrobin.com/users/ruccdu/

Calendar of Events

Date	Time	Event	Location
June 29	--------	Full Moon	----------
June 30	6:00 pm	World Asteroid Day Presentation	Glendora Public Library: Bidwell Forum
July 4	--------	United States Semiquincentennial	The United States of America
July 11	--------	Star Party	GMARS @ Landers
July 14	6:00 pm	Teen Astronomy Club Presentation (Meteors)	Glendora Public Library
July 22	6:00 pm	PVAA Board Meeting	IHOP @ 80 N. Euclid Ave. Upland
July 31	7:30 pm	PVAA General Meeting	Harvey Mudd College, Shanahan B-460
Aug 11	6:00 pm	Teen Astronomy Club Presentation (Perseids)	Glendora Public Library
Aug 12	--------	New Moon	----------
Aug 15	--------	Star Party	GMARS @ Landers
Aug 19	6:00 pm	PVAA Board Meeting	IHOP @ 80 N. Euclid Ave. Upland
Aug 27	--------	Full Moon	----------
Aug 28	6:30 pm	PVAA General Meeting	Harvey Mudd College, Shanahan B-460
Sep 8	6:00 pm	Teen Astronomy Club Present'n (Outer Planets)	Glendora Public Library
Sep 10	--------	New Moon	----------
Sep 12	--------	Star Party	GMARS @ Landers
Sep 16	6:00 pm	PVAA Board Meeting	IHOP @ 80 N. Euclid Ave. Upland
Sep 23	-------	Autumnal Equinox	Earth
Sep 25	6:30 pm	PVAA General Meeting	Harvey Mudd College, Shanahan B-460

Upcoming Celestial Events
June-July 2026

PST = UTC – 8 hrs
PST = PDT – 1 hr
PDT = UTC – 7 hrs
PDT = PST + 1 hr

events visible in southern CA highlighted in yellow

Date	Day	LA Time	Event	Direction	Altitude (deg)	Moon Phase/ Illumination
June 27	Sat	6:00 am – 10:16 am Not observable	Lunar occultation of Antares	------	------	Waxing Gibbous 96%
June 29	Mon	4:56 pm Visible all night	Full Moon (micro Moon) "Strawberry Moon"	E-S-W	5-28-5	FM 100%
July 4	Fri	9:12 pm Vis: 3:40 am – 5:00 am	Mars-Uranus appulse* sep = 6.3'	ENE - E	5-22	Waning Gibbous 79%
July 7	Tue	9:32 am Vis: 1:00 am – 5:10 am	Moon-Saturn close approach sep = 5.9°	E - SE	5-51	Waning Crescent 45%
July 10	Fri	4:17 pm Vis: 2:42 am – 5:03 am	Moon-M45 close approach sep = 1.1°	ENE - E	5-32	Waning Crescent 12%
July 11	Sat	6:24 am Vis: 3:30 am – 5:15 am	Moon-Mars close approach sep = 5.25°	ENE - E	5-26	Waning Crescent 2%
July 14	Tue	2:44 am Not observable	New Moon			NM 0%
July 17	Fri	7:47 am Vis: 8:00 pm – 10:00 pm	Moon-Venus close approach sep = 1.8°	W	28-5	Waning Crescent 17%
July 29	Wed	7:35 am Visible all night	Full Moon	E-S-W	5-38-5	FM 100%

Lunation No. 1280

Lunation No. 1281

*closest approach until 2053

July 4 Semiquincentennial of the United States

The Evening Sky Map

FREE* EACH MONTH FOR YOU TO EXPLORE, LEARN & ENJOY THE NIGHT SKY

NORTHERN HEMISPHERE JULY 2026

SKY MAP SHOWS HOW THE NIGHT SKY LOOKS

EARLY JUL 10 PM
LATE JUL 9 PM
(Add 1 Hour For Daylight Saving)

SKY MAP DRAWN FOR A LATITUDE OF 40° NORTH AND IS SUITABLE FOR LATITUDES UP TO 15° NORTH OR SOUTH OF THIS

Sky Calendar – July 2026

Follow us on Bluesky skymaps.com/bsky/

4 **Mars 0.1° SE of Uranus** at 7h UT (38° from Sun, morning sky). Mags. 1.3 and 5.8.

6 **Earth at Aphelion** (farthest from Sun) at 17h UT. The Sun-Earth distance is 1.016644 a.u. or about 152.1 million km.

7 **Moon near Saturn** at 17h UT (morning sky). Mag. 0.8.

7 **Last Quarter Moon** at 19:30 UT.

9 **Venus 0.97° NNE of Regulus** at 23h UT (42° from Sun, evening sky). Mags. –4.1 and 1.4.

11 **Moon near the Pleiades** at 0h UT (morning sky).

11 **Moon near Mars** at 14h UT (morning sky). Mag. 1.3.

13 **Mercury at inferior conjunction** with the Sun at 1h UT. The innermost and most elusive planet passes into the morning sky.

13 **Mars 5.3° N of Aldebaran** at 2h UT (41° from Sun, morning sky). Mags. 1.3 and 0.9.

13 **Moon at perigee** (closest to Earth) at 7:57 UT (distance 359,112km; angular size 33.3').

14 **New Moon** at 9:44 UT. Start of lunation 1281.

17 **Moon near Regulus** at 0h UT (evening sky).

17 **Moon near Venus** at 16h UT (evening sky). Mag. –4.1.

21 **Moon near Spica** at 3h UT (evening sky).

21 **First Quarter Moon** at 11:05 UT.

24 **Moon near Antares** at 21h UT (evening sky). Occultation visible from Antarctica and nearby islands and territories.

25 **Moon at apogee** (farthest from Earth) at 17h UT (distance 405,548km; angular size 29.5').

26 **Pluto at opposition** at 21h UT. Mag. 14.4.

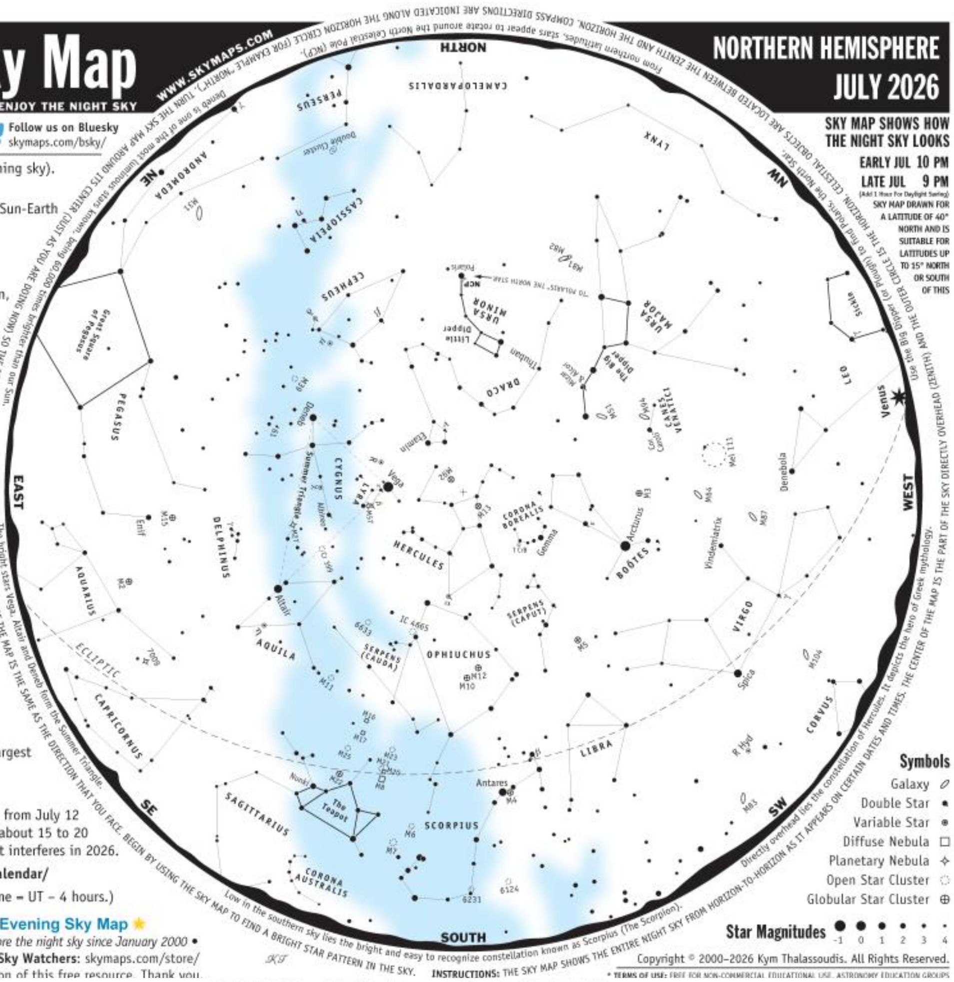
29 **Jupiter at conjunction** with the Sun at 12h UT. The largest planet passes into the morning sky.

29 **Full Moon** at 14:36 UT.

31 **Southern delta Aquarid meteor shower** peaks. Active from July 12 to August 23. Produces medium speed, faint meteors (about 15 to 20 per hour). Best seen from southern latitudes. Moonlight interferes in 2026.

More sky events and links at http://Skymaps.com/skycalendar/

All times in Universal Time (UT). (USA Eastern Daylight Time = UT – 4 hours.)



Symbols: Galaxy, Double Star, Variable Star, Diffuse Nebula, Planetary Nebula, Open Star Cluster, Globular Star Cluster

Star Magnitudes -1 0 1 2 3 4

About the Celestial Objects

Listed on this page are several of the brighter, more interesting celestial objects visible in the evening sky this month (refer to the monthly sky map). The objects are grouped into three categories. Those that can be easily seen with the naked eye (that is, without optical aid), those easily seen with binoculars, and those requiring a telescope to be appreciated. **Note, all of the objects (except single stars) will appear more impressive when viewed through a telescope or very large binoculars.** They are grouped in this way to highlight objects that can be seen using the optical equipment that may be available to the star gazer.

Tips for Observing the Night Sky

When observing the night sky, and in particular deep-sky objects such as star clusters, nebulae, and galaxies, it's always best to observe from a dark location. Avoid direct light from street lights and other sources. If possible observe from a dark location away from the light pollution that surrounds many of today's large cities.

You will see more stars after your eyes adapt to the darkness—usually about 10 to 20 minutes after you go outside. Also, if you need to use a torch to view the sky map, cover the light bulb with red cellophane. This will preserve your dark vision.

Finally, even though the Moon is one of the most stunning objects to view through a telescope, its light is so bright that it brightens the sky and makes many of the fainter objects very difficult to see. So try to observe the evening sky on moonless nights around either New Moon or Last Quarter.

Astronomical Glossary

Conjunction – An alignment of two celestial bodies such that they present the least angular separation as viewed from Earth.

Constellation – A defined area of the sky containing a star pattern.

Diffuse Nebula – A cloud of gas illuminated by nearby stars.

Double Star – Two stars that appear close to each other in the sky; either linked by gravity so that they orbit each other (binary star) or lying at different distances from Earth (optical double). Apparent separation of stars is given in seconds of arc (").

Ecliptic – The path of the Sun's center on the celestial sphere as seen from Earth.

Elongation – The angular separation of two celestial bodies. For Mercury and Venus the greatest elongation occurs when they are at their most angular distance from the Sun as viewed from Earth.

Galaxy – A mass of up to several billion stars held together by gravity.

Globular Star Cluster – A ball-shaped group of several thousand old stars.

Light Year (ly) – The distance a beam of light travels at 300,000 km/sec in one year.

Magnitude – The brightness of a celestial object as it appears in the sky.

Open Star Cluster – A group of tens or hundreds of relatively young stars.

Opposition – When a celestial body is opposite the Sun in the sky.

Planetary Nebula – The remnants of a shell of gas blown off by a star.

Universal Time (UT) – A time system used by astronomers. Also known as Greenwich Mean Time. USA Eastern Standard Time (for example, New York) is 5 hours behind UT.

Variable Star – A star that changes brightness over a period of time.

CELESTIAL OBJECTS NORTHERN HEMISPHERE JULY 2026

Easily Seen with the Naked Eye

Altair	Aql	•	Brightest star in Aquila. Name means "the flying eagle". Dist=16.7 ly.
Arcturus	Boo	•	Orange, giant K star. Name means "bear watcher". Dist=36.7 ly.
δ Cephei	Cep	•	Cepheid prototype. Mag varies between 3.5 & 4.4 over 5.366 days. Mag 6 companion.
Deneb	Cyg	•	Brightest star in Cygnus. One of the greatest known supergiants. Dist=1,400±200 ly.
α Herculis	Her	•	Semi-regular variable. Magnitude varies between 3.1 & 3.9 over 90 days. Mag 5.4 companion.
Vega	Lyr	•	The 5th brightest star in the sky. A blue-white star. Dist=25.0 ly.
Antares	Sco	•	Red, supergiant star. Name means "rival of Mars". Dist=135.9 ly.
Polaris	UMi	•	The North Pole Star. A telescope reveals an unrelated mag 8 companion star. Dist=433 ly.
Spica	Vir	•	Latin name means "ear of wheat" and shown held in Virgo's left hand. Dist=250 ly.

Easily Seen with Binoculars

η Aquilae	Aql	•	Bright Cepheid variable. Mag varies between 3.6 & 4.5 over 7.166 days. Dist=1,200 ly.
M3	CVn	⊕	Easy to find in binoculars. Might be glimpsed with the naked eye.
μ Cephei	Cep	•	Herschel's Garnet Star. One of the reddest stars. Mag 3.4 to 5.1 over 730 days.
Mel 111	Com	◌	Coma Berenices. 80 mag 5-6 stars in 5 deg. Dist=283 ly. Age=400 million years.
χ Cygni	Cyg	•	Long period pulsating red giant. Magnitude varies between 3.3 & 14.2 over 407 days.
M39	Cyg	◌	May be visible to the naked eye under good conditions. Dist=900 ly.
ν Draconis	Dra	•	Wide pair of white stars. One of the finest binocular pairs in the sky. Dist=100 ly.
M13	Her	⊕	Best globular in northern skies. Discovered by Halley in 1714. Dist=23,000 ly.
M92	Her	⊕	Fainter and smaller than M13. Use a telescope to resolve its stars.
ε Lyrae	Lyr	•	Famous Double Double. Binoculars show a double star. High power reveals each a double.
R Lyrae	Lyr	•	Semi-regular variable. Magnitude varies between 3.9 & 5.0 over 46.0 days.
M12	Oph	⊕	Close to the brighter M10. Dist=18,000 ly.
M10	Oph	⊕	3 degrees from the fainter M12. Both may be glimpsed in binoculars. Dist=14,000 ly.
IC 4665	Oph	◌	Large, scattered open cluster. Visible with binoculars.
6633	Oph	◌	Scattered open cluster. Visible with binoculars.
M15	Peg	⊕	Only globular known to contain a planetary nebula (Mag 14, d=1"). Dist=30,000 ly.
M8	Sgr	□	Lagoon Nebula. Bright nebula bisected by a dark lane. Dist=5,200 ly.
M25	Sgr	◌	Bright cluster located about 6 deg N of "teapot's" lid. Dist=1,900 ly.
M22	Sgr	⊕	A spectacular globular star cluster. Telescope will show stars. Dist=10,000 ly.
M4	Sco	⊕	A close globular. May just be visible without optical aid. Dist=7,000 ly.
M6	Sco	◌	Butterfly Cluster. 30+ stars in 7x binoculars. Dist=1,960 ly.
M7	Sco	◌	Superb open cluster. Visible to the naked eye. Age=260 million years. Dist=780 ly.
M5	Ser	⊕	Fine globular star cluster. Telescope will reveal individual stars. Dist=25,000 ly.
Mizar & Alcor	UMa	•	Good eyesight or binoculars reveals 2 stars. Not a binary. Mizar has a mag 4 companion.
Cr 399	Vul	◌	Coathanger asterism or "Brocchi's Cluster". Not a true star cluster. Dist=218 to 1,140 ly.

Telescopic Objects

ε Boötis	Boo	•	Red giant star (mag 2.5) with a blue-green mag 4.9 companion. Sep=2.8". Difficult to split.
M94	CVn	⊘	Compact nearly face-on spiral galaxy. Dist=15 million ly.
M51	CVn	⊘	Whirlpool Galaxy. First recognised to have spiral structure. Dist=25 million ly.
M64	Com	⊘	Black-Eye Galaxy. Discovered by J.E. Bode in 1775 - "a small, nebulous star".
Albireo	Cyg	•	Beautiful double star. Contrasting colours of orange and blue-green. Sep=34.4".
61 Cygni	Cyg	•	Attractive double star. Mags 5.2 & 6.1 orange dwarfs. Dist=11.4 ly. Sep=28.4".
γ Delphini	Del	•	Appear yellow & white. Mags 4.3 & 5.2. Dist=100 ly. Struve 2725 double in same field.
β Lyrae	Lyr	•	Eclipsing binary. Mag varies between 3.3 & 4.3 over 12.940 days. Fainter mag 7.2 blue star.
M57	Lyr	✧	Ring Nebula. Magnificent object. Smoke-ring shape. Dist=4,100 ly.
M23	Sgr	◌	Elongated star cluster. Telescope required to show stars. Dist=2,100 ly.
M20	Sgr	□	Trifid Nebula. A telescope shows 3 dust lanes trisecting nebula. Dist=5,200 ly.
M21	Sgr	◌	A fine and impressive cluster. Dist=4,200 ly.
M17	Sgr	□	Omega Nebula. Contains the star cluster NGC 6618. Dist=4,900 ly.
M11	Sct	◌	Wild Duck Cluster. Resembles a globular through binoculars. V-shaped. Dist=5,600 ly.
M16	Ser	□	Eagle Nebula. Requires a telescope of large aperture. Dist=8,150 ly.
M81	UMa	⊘	Beautiful spiral galaxy visible with binoculars. Easy to see in a telescope.
M82	UMa	⊘	Close to M81 but much fainter and smaller.
M87	Vir	⊘	Supergiant galaxy with supermassive black hole at its core. Dist=53.5 million ly.
M27	Vul	✧	Dumbbell Nebula. Large, twin-lobed shape. Most spectacular planetary. Dist=975 ly.