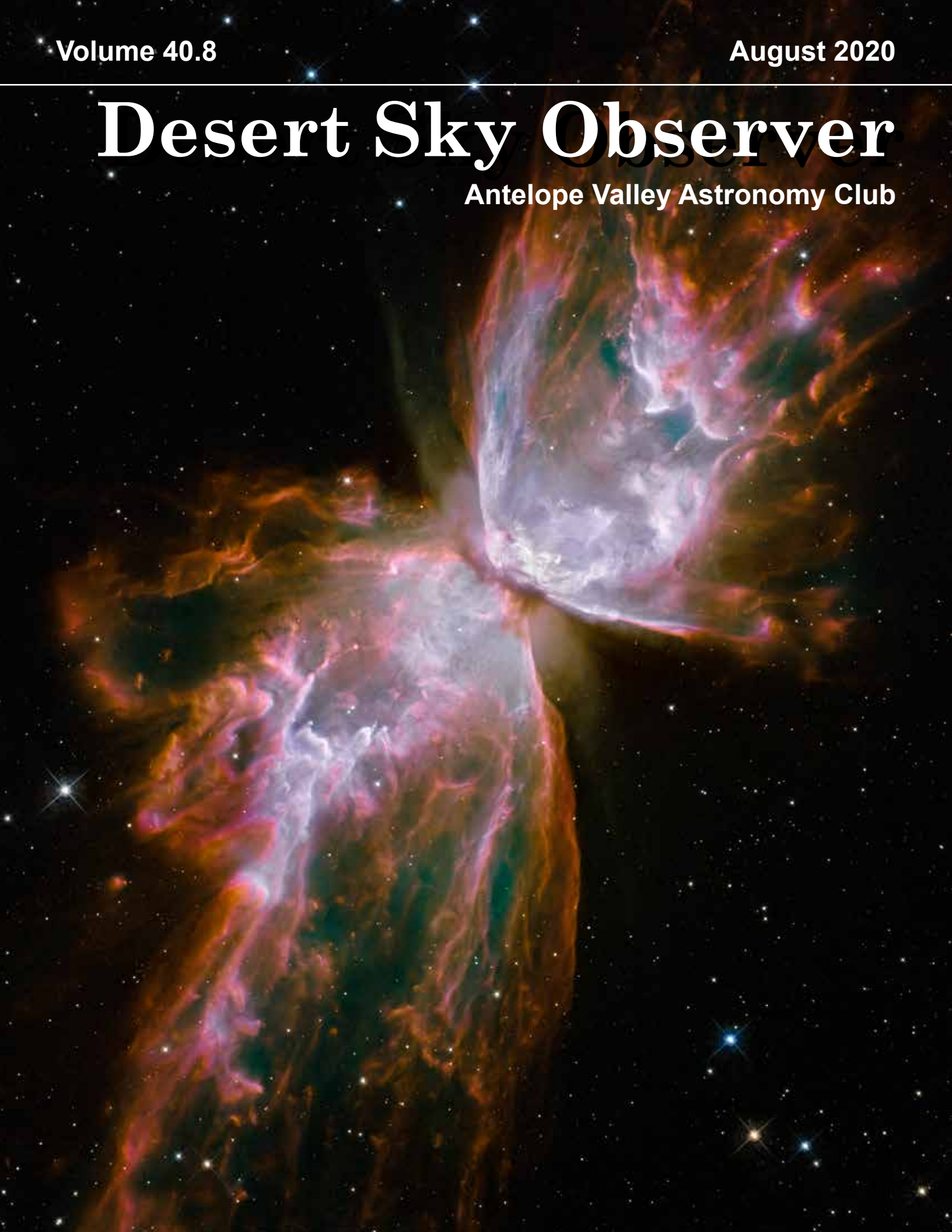


Volume 40.8

August 2020

Desert Sky Observer

Antelope Valley Astronomy Club



Desert Sky Observer

www.avastronomyclub.org

August 2020

Upcoming Events

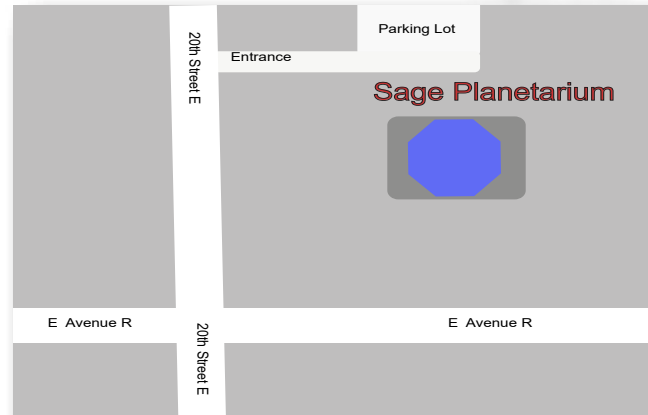
August 8: PDW Moonwalk . . . Nope
August 14: Club Meeting. . . Nope
August 15: DSSP at . . . Mt Pinos
August 22: Mt Wilson Trip. . . CANCELED
August 22: Lunar Club

Any clear night: Personal Star Party

September 11: Club Meeting . . . Probably Not
September 19: DSSP at . . . Chuchupate



AVAC Calendar



Board Members

President: Darrel Bennet (661) 220-0122
president@avastronomyclub.org

Vice-President: Matt Leone (661) 713-1894
vice-president@avastronomyclub.org

Secretary: Rose Moore (661) 972-1953
secretary@avastronomyclub.org

Treasurer: Rod Girard (661) 803-7838
treasurer@avastronomyclub.org

Appointed Positions

Newsletter Editor: Phil Wriedt (661) 917-4874
dso@avastronomyclub.org

Equipment & Library:
John Van Evera 661-754-1819
library@avastronomyclub.org

Club Historian: vacant
history@avastronomyclub.org

Webmaster: Steve Trotta (661) 269-5428
webmaster@avastronomyclub.org

Astronomical League Coordinator:
Frank Moore (661) 972-4775
al@avastronomyclub.org



Monthly Meetings

Monthly meetings are held at the **S.A.G.E. Planetarium** in Palmdale, the second Friday of each month except December. The meeting location is at the northeast corner of Avenue R and 20th Street East. Meetings start at 7 p.m. and are open to the public. *Please note that food and drink are not allowed in the planetarium.*

Membership

Membership in the Antelope Valley Astronomy Club is open to any individual or family.

The Club has three categories of membership.

- Family membership at \$30.00 per year.
- Individual membership at \$25.00 per year.
- Junior membership at \$15.00 per year.

Membership entitles you to ...

- The Desert Sky Observer -- monthly newsletter
- The Reflector -- the publication of the Astronomical League.
- The AVAC Membership Manual.
- To borrow club equipment, books, videos, and other items.

AVAC

PO Box 8545

Lancaster, CA 93539-8545

Visit the Antelope Valley Astronomy Club website at www.avastronomyclub.org/.



www.avastronomyclub.org

The Antelope Valley Astronomy Club, Inc. is a §503(c)(3) Non-Profit Corporation.

The AVAC is a Sustaining Member of The Astronomical League and the International Dark-Sky Association

President's Message

By Darrel Bennet

Hello everyone, I hope you and your families are doing well with the virus out there.

Not much has been going on because of the Coronavirus. I am still waiting to hear from Jeremy when we can start having the meetings again.

Our trip to Mt. Wilson on August 22, 2020 has been canceled. We will have to plan for next year .

On July 18th we had our monthly star party at Chuchupate parking lot to see the comet Neowise. You could see it with your naked eyes, but it was much better in the binoculars. I put my 12" telescope on it with my lowest power, but it was way too much power to see all of it. Rod and I estimated about 200 people were there from other astronomy clubs and the general public. Everyone had their masks on and kept their distance. I hope everyone got a chance to go out and look at the comet.

Our next star party will be on August 15th at Mt. Pinos. If the venue site gets changed we will let you know. Hope to see you there.

Until then stay well and keep looking up.

On The Cover

This celestial object looks like a delicate butterfly. But it is far from serene.

What resemble dainty butterfly wings are actually roiling cauldrons of gas heated to nearly 20 000 degrees Celsius. The gas is tearing across space at more than 950 000 kilometres per hour — fast enough to travel from Earth to the Moon in 24 minutes!

A dying star that was once about five times the mass of the Sun is at the centre of this fury. It has ejected its envelope of gases and is now unleashing a stream of ultraviolet radiation that is making the cast-off material glow. This object is an example of a planetary nebula, so-named because many of them have a round appearance resembling that of a planet when viewed through a small telescope.

The Wide Field Camera 3 (WFC3), a new camera aboard the NASA/ESA Hubble Space Telescope, snapped this image of the planetary nebula, catalogued as NGC 6302, but more popularly called the Bug Nebula or the Butterfly Nebula. WFC3 was installed by NASA astronauts in May 2009, during the Servicing Mission to upgrade and repair the 19-year-old Hubble.

NGC 6302 lies within our Milky Way galaxy, roughly 3800 light-years away in the constellation of Scorpius. The glowing gas is the star's outer layers, expelled over about 2200 years. The "butterfly" stretches for more than two light-years, which is about half the distance from the Sun to the nearest star, Proxima Centauri.

The central star itself cannot be seen, because it is hidden within a doughnut-shaped ring of dust, which appears as a dark band pinching the nebula

[Continued on Page 4](#)

From the Secretary

By Rose Moore

While we've been unable to have any meetings or outreach events, some of our members had attended our dark sky party for July, and went looking for the comet. Our last dark sky star party was at Chuchupate, see Darrell's note above.

As of now we have some events for August, but they will be canceled. Check the website's calendar and your emails occasionally to see if anything will be happening. We do have a DSSP planned for August 15th and will keep you all informed. Of course our trip to Mt. Wilson was canceled, as they have nothing open to the public on the mountain except the trails.

Jupiter and Saturn are just past opposition, so are up and bright in the evening sky! Go out and take a look! Frank and I went in front of our house with our 11 inch scope to catch the comet and also took in some deep sky objects. We weren't able to catch Jupiter as it was on the other side of our home. Scorpio and Sagittarius are also up!

Everyone keep healthy! Hopefully we'll be able to meet soon! Clear skies!

On The Cover

Continued

in the centre. The thick dust belt constricts the star's outflow, creating the classic "bipolar" or hourglass shape displayed by some planetary nebulae.

The star's surface temperature is estimated to be over 220 000 degrees Celsius, making it one of the hottest known stars in our galaxy. Spectroscopic observations made with ground-based telescopes show that the gas is roughly 20 000 degrees Celsius, which is unusually hot compared to a typical planetary nebula.

The WFC3 image reveals a complex history of ejections from the star. The star first evolved into a huge red giant, with a diameter of about 1000 times that of our Sun. It then lost its extended outer layers. Some of this gas was cast off from its equator at a relatively slow speed, perhaps as low as 32 000 kilometres per hour, creating the doughnut-shaped ring. Other gas was ejected perpendicular to the ring at higher speeds, producing the elongated "wings" of the butterfly-shaped structure. Later, as the central star heated up, a much faster stellar wind, a stream of charged particles travelling at more than 3.2 million kilometres per hour, ploughed through the existing wing-shaped structure, further modifying its shape.

The image also shows numerous finger-like projections pointing back to the star, which may mark denser blobs in the outflow that have resisted the pressure from the stellar wind.

The nebula's reddish outer edges are largely due to light emitted by nitrogen, which marks the coolest gas visible in the picture. WFC3 is equipped with a wide variety of filters that isolate light emitted by various chemical elements, allowing astronomers to infer properties of the nebular gas, such as its temperature, density and composition.

The white-coloured regions are areas where light is emitted by sulphur. These are regions where fast-moving gas overtakes and collides with slow-moving gas that left the star at an earlier time, producing shock waves in the gas (the bright white edges on the sides facing the central star). The white blob with the crisp edge at upper right is an example of one of those shock waves.

NGC 6302 was imaged on 27 July 2009 with Hubble's Wide Field Camera 3 in ultraviolet and visible light. Filters that isolate emissions from oxygen, helium, hydrogen, nitrogen and sulphur from the planetary nebula were used to create this composite image.

These Hubble observations of the planetary nebula NGC 6302 are part of the Hubble Servicing Mission 4 Early Release Observations.

Credit:

NASA, ESA and the Hubble SM4 ERO Team

Summer Triangle Corner: Deneb

David Prosper, NASA Night Sky Network

The Summer Triangle is high in the sky after sunset this month for observers in the Northern Hemisphere, its component stars seemingly brighter than before, as they have risen out of the thick, murky air low on the horizon and into the crisper skies overhead. Deneb, while still bright when lower in the sky, now positively sparkles overhead as night begins. What makes Deneb special, in addition to being one of the three points of the Summer Triangle? Its brilliance has stirred the imaginations of people for thousands of years!

Deneb is the brightest star in Cygnus the Swan and is positioned next to a striking region of the Milky Way, almost as a guidepost. The ancient Chinese tale of the Cowherd (Niulang) and the Weaver Girl (Zhinü) - represented by the stars Altair and Vega - also features Deneb. In this tale the two lovers are cast apart to either side of the Milky Way, but once a year a magical bridge made of helpful magpies – marked by Deneb – allows the lovers to meet. Deneb has inspired many tales since and is a staple setting of many science fiction stories, including several notable episodes of Star Trek.

Astronomers have learned quite a bit about this star in recent years, though much is still not fully understood – in part because of its intense brightness. The distance to Deneb from our Sun was measured by the ESA's Hipparcos mission and estimated to be about 2,600 light years. Later analysis of the same data suggested Deneb may be much closer: about 1,500 light years away. However, the follow-up mission to Hipparcos, Gaia, is unable to make distance measurements to this star! Deneb, along with a handful of other especially brilliant stars, is too bright to be accurately measured by the satellite's ultra-sensitive instruments.

Deneb is unusually vivid, especially given its distance. Generally, most of the brightest stars seen from Earth are within a few dozen to a few hundred light years away, but Deneb stands out by being thousands of light years distant! In fact, Deneb ranks among the top twenty brightest night time stars (at #19) and is easily the most distant star in that list. Its luminosity is fantastic but uncertain, since its exact distance is also unclear. What is known about Deneb is that it's a blue-white supergiant star that is furiously fusing its massive stocks of thermonuclear fuel and producing enough energy to make this star somewhere between 50,000 and 190,000 times brighter than our Sun if they were viewed at the same distance! The party won't last much longer; in a few million years, Deneb will exhaust its fuel and end its stellar life in a massive supernova, but the exact details of how this will occur, as with other vital details about this star, remain unclear.

Desert Sky Observer

www.avastronomyclub.org

August 2020



Long exposure shot of Deneb (brightest star, near center) in its richly populated Milky Way neighborhood. Photo credit: Flickr user jpstanley. Source: <https://www.flickr.com/photos/jpstanley/1562619922> License: <https://creativecommons.org/licenses/by-nc-sa/2.0/>



Spot Vega and the other stars of the Summer Triangle by looking straight up after sunset in August!

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

Comet C/2020 F3 NEOWISE



Chuchupate 7/18/2020

Rod Girard with help from Matt Leone



Rose Moore 7/18/2020 iPhone 3 sec



Searles 7/18/2020 9:50pm Nikon D500

150 mm F/5.0 14 sec. ISO 6400 Phil Wriedt



LittleRock 7/10/2020 4:28am Nikon D3s

200mm f/4 6 sec ISO 800 Jim Kerr



Lockwood Valley 7/18/2020 50mm David Gedalia



Lockwood Valley 7/15/2020 135mm f/2 David Gedalia

Member Scope for Sale

Member Duane Lewis is selling his 9.25 inch Celestron CGEM OTA with the tripod, CGE mount, counterweights, one 1.25" 20mm Plossl eyepiece, a 1.25" diagonal and a 2" diagonal, telrad mount, and a Denkmeir (unknown model) binocular viewer. The OTA was tuned up by member Don Bryden before he moved. It has not been used since. Price is \$1200. Duane is unable to have this set up for viewing because of lack of space. So arrangements will have to be made for viewing the scope and accessories. For more info please contact Duane by email only: gurba1826@gmail.com -- or contact Rose by email: rmorion@bak.rr.com

Space News

News from around the Net

Scientists may have discovered whole new class of black holes

Black holes are an important part of how astrophysicists make sense of the universe -- so important that scientists have been trying to build a census of all the black holes in the Milky Way galaxy. But new research shows that their search might have been missing an entire class of black holes that they didn't know existed. . . .(continued at <https://www.sciencedaily.com/releases/2019/10/191031154923.htm>)



Stunning Space Butterfly Captured by ESO Telescope

Resembling a butterfly with its symmetrical structure, beautiful colours, and intricate patterns, this striking bubble of gas — known as NGC 2899 — appears to float and flutter across the sky in this new picture from ESO's Very Large Telescope (VLT). This object has never before been imaged in such striking detail, with even the faint outer edges of the planetary nebula glowing over the background stars. (continued at <https://www.eso.org/public/news/eso2012/>).



Nasa Launches Perseverance Rover For Mars

NASA's latest rover Perseverance heads to the Red Planet. Now there are three. A United Launch Alliance Atlas V rocket roared to life at Cape Canaveral Air Force Station in Florida today at 7:50 a.m. EDT / 11:50 UT, with NASA's latest Mars mission, the Perseverance rover, aboard. . . . (continued at <https://skyandtelescope.org/astronomy-news/nasa-launches-perseverance-rover-mars/>)



Remains Of An Ancient Star Cluster Revealed

A torn-apart globular cluster provides a window into the Milky Way's past. Globular clusters were among the first structures to form in the early universe. Some of these ancient stellar cities are still with us today, circulating in the outer regions of galaxies. Astronomers have spotted some 150 of them around the Milky Way, not constrained to the spiral-shape disk but orbiting far out in the galactic halo. (continued at <https://skyandtelescope.org/astronomy-news/remains-of-an-ancient-star-cluster-revealed/>)



ALMA finds possible sign of neutron star in supernova 1987A

Two teams of astronomers have made a compelling case in the 33-year-old mystery surrounding Supernova 1987A. Based on observations of the Atacama Large Millimeter/submillimeter Array (ALMA) and a theoretical follow-up study, the scientists provide new insight for the argument that a neutron star is hiding deep inside the remains of the exploded star. This would be the youngest neutron star known to date. ... (continued at <https://phys.org/news/2020-07-alma-neutron-star-supernova-1987a.html>)



Astrophysicists observe long-theorized quantum phenomena

At the heart of every white dwarf star—the dense stellar object that remains after a star has burned away its fuel reserve of gases as it nears the end of its life cycle—lies a quantum conundrum: as white dwarfs add mass, they shrink in size, until they become so small and tightly compacted that they cannot sustain themselves, collapsing into a neutron star. . . . (continued at <https://phys.org/news/2020-07-astronomers-observe-long-theorized-quantum-phenomena.html>)



Space News

News from around the Net. . .continued

Perseid meteors 2020: All you need to know

In 2020, the peak mornings for the Perseid meteor shower – August 11, 12 and 13 – will feature meteors under moonlight. The Perseids tend to be bright, so we expect a good percentage to overcome the moonlit glare. The annual Perseid meteor shower is one of the most beloved meteor showers of the year, especially in the Northern Hemisphere, . . . (continued at <https://earthsky.org/?p=165416>)



Multiplanet system around sunlike star photographed for 1st time ever

The two newly imaged planets are huge — 14 and 6 times more massive than Jupiter. For the first time ever, astronomers have directly imaged multiple planets orbiting a sunlike star. The European Southern Observatory's Very Large Telescope (VLT) in Chile photographed two giant planets circling TYC 8998-760-1, a very young analogue of our own sun that lies about 300 light-years from Earth, a new study reports. . . . (continued at <https://www.space.com/multiplanet-system-sun-like-star-first-photo.html>)



See 4 bright planets in August

The five bright solar system planets, in their outward order from the sun, are Mercury, Venus, (Earth), Mars, Jupiter and Saturn. Four of these five planets are in display in August 2020. Mercury, the lone exception, is nominally a morning planet until mid-August, at which juncture it'll transition over to the evening sky. Two gas giant planets come out first thing at dusk/nightfall: Jupiter and Saturn. Jupiter, the brighter of these two worlds, ranks as the 4th-brightest celestial body in all the heavens, after the sun, moon and the planet Venus. . . . (continued at <https://earthsky.org/?p=335262>)



Astronomers Nab The Farthest Visible Explosion From A Neutron Star Collision Ever Seen

Some quick work by astronomers nabbed the optical flash from a huge explosion caused by two neutron stars colliding nearly three-quarters of the way across the observable Universe. This is the second farthest short gamma-ray burst ever seen, the very farthest visible flash of light from one ever seen, and a rare beast indeed. Gamma-ray bursts (or GRBs) are some of the most powerful and violent explosions in the cosmos. . . . (continued at <https://www.syfy.com/syfywire/astronomers-nab-the-farthest-visible-explosion-from-a-neutron-star-collision-ever-seen>)



Comet Neowise Goes From Red To Green And Has Spiral Arms

The comet C/2020 F3 (NEOWISE) is brightening up the northern sky right now, a once-in-a-decade (or longer) sight. I've been out after sunset to see it and found it easily without any optical aid, and in fact the tail is visible to the naked eye as well. It helps to have a dark site with no lights around, but even if you're in a place where light pollution isn't great it's still worth grabbing a pair of binoculars and taking a look. . . . (continued at <https://www.syfy.com/syfywire/comet-neowise-goes-from-red-to-green-and-has-spiral-arms>)



Hubble sees summertime on Saturn

Saturn is truly the lord of the rings in this latest snapshot from NASA's Hubble Space Telescope, taken on July 4, 2020, when the opulent giant world was 839 million miles from Earth. This new Saturn image was taken during summer in the planet's northern hemisphere. . . (continued at <https://www.sciencedaily.com/releases/2020/07/200723143759.htm>)



Dark Sky Observing Sites

The Chuchupate parking lot is a half a mile beyond the Mt Pinos ranger station (on some maps The Chuchupate Ranger Sta., the parking lot is also called Frazier Mountain trailhead).

To get there, take the Frazier Mountain Park RD east about 7 miles from I-5, to Lake Of The Woods, Turn left on Lockwood Valley Rd. (If you see Mike's Pizza on your left you missed the turn) In less than a mile there is a road to the left, go past the ranger station, the parking lot is on the right. The Club gathers in the upper end of the lot. The Elevation is 5430 feet. There is a vault toilet.



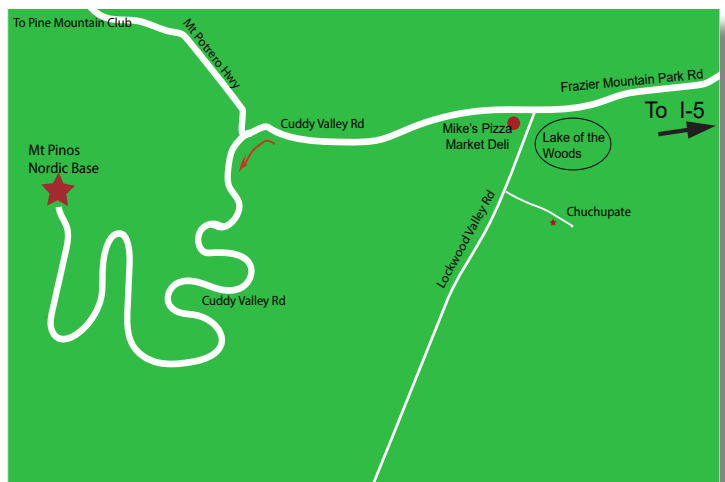
The Red Cliffs Natural Area is part of **Red Rock Canyon State Park** is a day use area and is not for use by the public after dark. The Club gets a special permit for a star party and pays a fee.

To get there: Take the CA-14 north 25 miles past Mojave. You will see giant red cliffs on the right side and a small sign that says "Red Cliffs Natural Area" and a dirt road. (If you see the large sign for the Ricardo campground, you drove a mile too far). Follow the road to the large parking lot (that hasn't been graded in a long time). Elevation is 2410 feet. There is a vault toilet.

Mt Pinos is a parking lot at 8350 feet for the "Mt Pinos Nordic Base." There is a vault toilet 300 yds to the east in the Chula Vista campground.

To get there: From I-5, get off at Frazier Mountain Park Rd and drive west about 7 miles to Mike's Pizza/Market Deli at Lockwood Valley Rd. Keep on the main roadway (don't turn left to go to Chuchupate). Continue past Mike's Pizza on Cuddy Valley Rd (the road's new name) about 5 miles. Continue straight (do not turn right on to Mil Potrero Hwy) for another 8 1/2 miles to the parking area.

Note: The entire drive is uphill



Desert Sky Observer

www.avastronomyclub.org

August 2020

Planet Summary

The **Sun** starts August in Cancer and crosses into Leo on the 10th of the month

Mercury can be seen in the morning twilight early in the month but soon gets too close to the Sun to be seen. On the 17th superior conjunction is achieved, after which it slowly rises in the evening twilight becoming visible late in the month.

Venus is brilliant in the morning twilight and reaches greatest elongation west (GEW), 46° from the Sun, on the 13th. The waning crescent Moon passes 4° to its north on the 15th. Venus passes through the stars of Gemini in the second half of the month.

Mars becomes increasingly prominent in the late evening as Earth continues to overtake it. Mars will nearly double in brightness from mag. -1.1 on the 1st to -1.8 on the 31st while the disk grows from $15''$ to $19''$. Mars is at perihelion on the 3rd. The waning gibbous Moon makes a close pass by to the south on the 9th.

Jupiter now past opposition, dominates the evening sky at about -2.7. It remains about 8° west of Saturn throughout the month. The waxing gibbous Moon passes 2° to the south on the afternoon on the 1st and the evening of the 28th.

Saturn also past opposition spends the month following Jupiter by 8° . The waxing gibbous Moon passes 2° to its south on both the morning of the 2nd and 29th.

Uranus will spend 2020 in southern Aries at magnitude 5+. The 56% waning Moon will pass 3° south on the early evening of the 10th.

Neptune will spend the month stationary in northeast Aquarius at mag. 7.8. The Moon will pass 4° south on the morning of the 6th.

Pluto spends the month in Sagittarius at mag 14 between Jupiter and Saturn.

Sun and Moon Rise and Set



First Qtr
Aug 25

Full
Aug 3

Third Qtr
Aug 11

New
Aug 18

Sun and Moon Rise and Set*

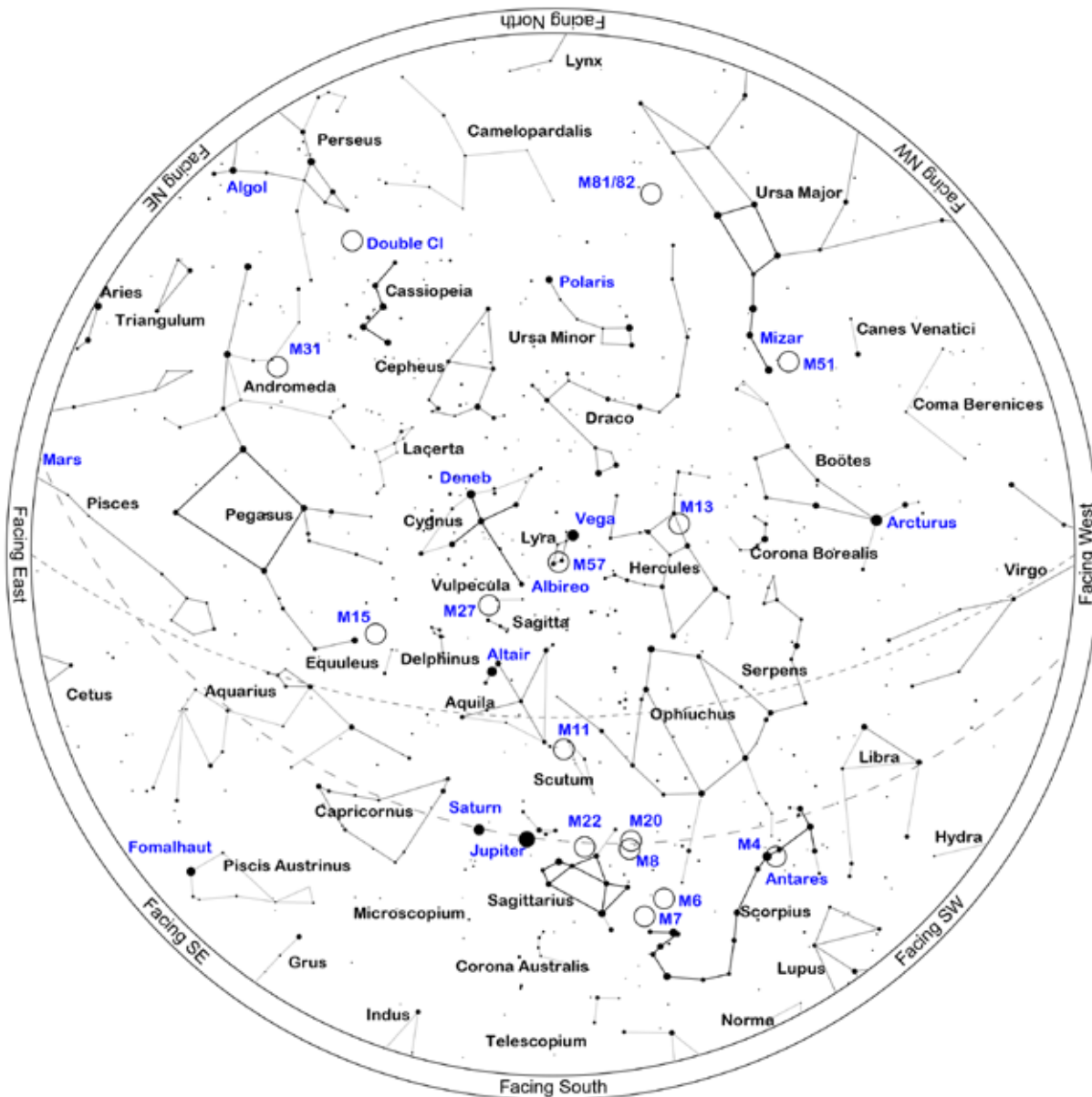
Date	Moonrise	Moonset	Sunrise	Sunset
8/1/2020	18:52	03:54	06:03	19:54
8/5/2020	21:31	07:55	06:06	19:50
8/10/2020	23:49	12:35	06:10	19:45
8/15/2020	02:28	17:24	06:14	19:40
8/20/2020	07:57	21:05	06:18	19:34
8/25/2020	13:43	23:08	06:21	19:28
8/30/2020	18:21	03:45	06:25	19:21

Planet Data*

Aug 1					
	Rise	Transit	Set	Mag	Phase%
Mercury	04:46	11:53	18:59	-0.92	73.94
Venus	02:49	09:48	16:47	-4.37	43.81
Mars	23:09	05:24	11:37	-1.11	86.52
Jupiter	18:38	23:34	04:35	-2.73	99.88
Saturn	19:06	00:07	05:12	0.16	99.99
Aug 15					
	Rise	Transit	Set	Mag	Phase%
Mercury	06:02	12:52	19:41	-1.89	99.65
Venus	02:45	09:47	16:49	-4.29	51.83
Mars	22:30	04:50	11:07	-1.43	88.58
Jupiter	17:38	22:33	03:33	-2.68	99.68
Saturn	18:07	23:08	04:12	0.23	99.95
Aug 30					
	Rise	Transit	Set	Mag	Phase%
Mercury	07:22	13:40	19:56	-0.62	92.72
Venus	02:53	09:53	16:53	-4.20	59.20
Mars	21:40	04:04	10:24	-1.79	91.71
Jupiter	16:35	21:30	02:29	-2.60	99.42
Saturn	17:06	22:06	03:09	0.31	99.88

*Sun, Moon and Planetary date based on Quartz Hill, CA

Sky Chart



Location: Set from geolocation service
Latitude: 34° 43' N, longitude: 118° 09' W
Time: 2020 August 18, 22:00 (UTC -07:00)

Powered by: Heavens-Above.com

Suggested Observing List

The list below contains objects that will be visible on the night of the AVAC Deep Sky Star Party or the Saturday nearest the New Moon, in this case July 25, 2020. The list is sorted by the transit time of the object.

ID	Type	Const	RA	Dec	Mag	Rise	Transit	Set
M67	Open	Cnc	08h 51m 18s	+11° 48.0'	7.5	05:33	12:09	18:45
M81	Galaxy	UMa	09h 55m 33s	+69° 03.9'	7.8	Circum	13:13	Circum
M82	Galaxy	UMa	09h 55m 53s	+69° 40.8'	9.2	Circum	13:13	Circum
M95	Galaxy	Leo	10h 43m 58s	+11° 42.2'	10.6	07:26	14:01	20:37
M96	Galaxy	Leo	10h 46m 46s	+11° 49.2'	10.1	07:28	14:04	20:40
M105	Galaxy	Leo	10h 47m 50s	+12° 34.9'	10.5	07:27	14:05	20:44
M108	Galaxy	UMa	11h 11m 31s	+55° 40.4'	10.6	Circum	14:29	Circum
M97	P Neb	UMa	11h 14m 48s	+55° 01.1'	12.0	Circum	14:32	Circum
M65	Galaxy	Leo	11h 18m 56s	+13° 05.5'	10.1	07:56	14:36	21:16
M66	Galaxy	Leo	11h 20m 15s	+12° 59.4'	9.7	07:58	14:38	21:17
M109	Galaxy	UMa	11h 57m 36s	+53° 22.4'	10.6	04:28	15:15	02:02
M98	Galaxy	Com	12h 13m 48s	+14° 54.0'	10.9	08:46	15:31	22:17
M99	Galaxy	Com	12h 18m 50s	+14° 25.0'	10.4	08:52	15:36	22:20
M106	Galaxy	CVn	12h 18m 58s	+47° 18.2'	9.1	06:16	15:36	00:57
M61	Galaxy	Vir	12h 21m 55s	+04° 28.3'	10.1	09:24	15:39	21:54
M40	DbI+Asterism	UMa	12h 22m 12s	+58° 05.0'	8.7	Circum	15:40	Circum
M100	Galaxy	Com	12h 22m 55s	+15° 49.3'	10.1	08:52	15:40	22:28
M84	Galaxy	Vir	12h 25m 04s	+12° 53.2'	10.2	09:03	15:42	22:22
M85	Galaxy	Com	12h 25m 24s	+18° 11.4'	10.0	08:47	15:43	22:38
M86	Galaxy	Vir	12h 26m 12s	+12° 56.7'	9.9	09:04	15:44	22:23
M49	Galaxy	Vir	12h 29m 47s	+08° 00.0'	9.3	09:22	15:47	22:12
M87	Galaxy	Vir	12h 30m 49s	+12° 23.4'	9.6	09:10	15:48	22:26
M88	Galaxy	Com	12h 31m 59s	+14° 25.2'	10.2	09:06	15:49	22:33
M91	Galaxy	Com	12h 35m 27s	+14° 29.7'	10.9	09:09	15:53	22:37
M89	Galaxy	Vir	12h 35m 40s	+12° 33.3'	10.9	09:15	15:53	22:31
M90	Galaxy	Vir	12h 36m 50s	+13° 09.7'	10.2	09:14	15:54	22:34
M58	Galaxy	Vir	12h 37m 44s	+11° 49.1'	10.4	09:19	15:55	22:31
M68	Globular	Hya	12h 39m 28s	-26° 44.5'	9.0	11:15	15:57	20:39
M104	Galaxy	Vir	12h 39m 59s	-11° 37.3'	9.2	10:27	15:57	21:28
M59	Galaxy	Vir	12h 42m 02s	+11° 38.7'	10.7	09:24	15:59	22:35
M60	Galaxy	Vir	12h 43m 40s	+11° 33.1'	9.8	09:26	16:01	22:36
M94	Galaxy	CVn	12h 50m 53s	+41° 07.1'	8.9	07:35	16:08	00:41
M64	Galaxy	Com	12h 56m 44s	+21° 41.0'	9.3	09:07	16:14	23:21
M53	Globular	Com	13h 12m 55s	+18° 10.1'	8.5	09:35	16:30	23:26
M63	Galaxy	CVn	13h 15m 49s	+42° 01.7'	9.3	07:54	16:33	01:12
NGC5139	Globular	Cen	13h 26m 48s	-47° 29.0'	3.6	13:54	16:44	19:35

Desert Sky Observer

www.avastronomyclub.org

August 2020

ID	Type	Const	RA	Dec	Mag	Rise	Transit	Set
NGC5169	Galaxy	CVn	13h 28m 10s	+46° 40.3'	14.0	07:31	16:46	02:00
NGC5204	Galaxy	UMa	13h 29m 36s	+58° 25.1'	11.3	Circum	16:47	Circum
M51	Galaxy	CVn	13h 29m 52s	+47° 11.7'	8.9	07:28	16:47	02:07
Arp85	Galaxy	CVn	13h 29m 58s	+47° 16.0'	9.6	07:27	16:47	02:07
NGC5182	Galaxy	Hya	13h 30m 41s	-28° 09.0'	13.0	12:12	16:48	21:25
NGC5214	Galaxy	CVn	13h 32m 49s	+41° 52.3'	14.0	08:12	16:50	01:28
M83	Galaxy	Hya	13h 37m 00s	-29° 51.8'	8.0	12:24	16:54	21:24
HR5144	Triple	Boo	13h 40m 40s	+19° 57.3'	5.8	09:57	16:58	23:59
NGC5283	Galaxy	Dra	13h 41m 06s	+67° 40.3'	14.0	Circum	16:59	Circum
M3	Globular	CVn	13h 42m 11s	+28° 22.5'	7.0	09:29	17:00	00:31
NGC5286	Globular	Cen	13h 46m 24s	-51° 22.0'	7.6	14:55	17:04	19:13
NGC5292	Galaxy	Cen	13h 47m 40s	-30° 56.4'	14.0	12:39	17:05	21:31
NGC5356	Galaxy	Vir	13h 54m 59s	+05° 20.0'	14.0	10:55	17:12	23:30
NGC5363	Galaxy	Vir	13h 56m 07s	+05° 15.2'	10.2	10:56	17:14	23:31
NGC5447	Neb	UMa	14h 02m 29s	+54° 16.3'		06:04	17:20	04:36
M101	Galaxy	UMa	14h 03m 13s	+54° 20.9'	8.2	06:01	17:21	04:40
NGC5461	Neb	UMa	14h 03m 42s	+54° 19.0'		06:03	17:21	04:39
NGC5485	Galaxy	UMa	14h 07m 11s	+55° 00.0'	11.5	Circum	17:25	Circum
NGC5460	Open	Cen	14h 07m 27s	-48° 20.6'	5.6	14:42	17:25	20:07
NGC5500	Galaxy	Boo	14h 10m 15s	+48° 32.7'	14.0	07:55	17:28	03:00
IC991	Galaxy	Vir	14h 17m 48s	-13° 52.3'	13.0	12:12	17:35	22:59
HR5362	Dbl	Lup	14h 20m 10s	-43° 03.5'	5.6	14:14	17:38	21:02
IC4406	P Neb	Lup	14h 22m 26s	-44° 09.0'	11.0	14:23	17:40	20:56
HR5409	Triple	Vir	14h 28m 12s	-02° 13.6'	4.8	11:49	17:46	23:42
NGC5669	Galaxy	Boo	14h 32m 44s	+09° 53.4'	12.0	11:20	17:50	00:21
NGC5689	Galaxy	Boo	14h 35m 30s	+48° 44.5'	11.9	08:18	17:53	03:28
M102	Galaxy	Dra	15h 06m 30s	+55° 45.7'	10.8	Circum	18:24	Circum
NGC5875	Galaxy	Boo	15h 09m 13s	+52° 31.6'	13.0	07:58	18:27	04:55
NGC5907	Galaxy	Dra	15h 15m 54s	+56° 19.7'	11.4	Circum	18:33	Circum
NGC5882	P Neb	Lup	15h 16m 50s	-45° 38.9'	11.0	15:29	18:34	21:40
NGC5897	Globular	Lib	15h 17m 24s	-21° 00.6'	8.6	13:33	18:35	23:36
M5	Globular	Ser	15h 18m 33s	+02° 04.9'	7.0	12:27	18:36	00:44
Barnard228	DkNeb	Lup	15h 44m 00s	-34° 30.0'		14:51	19:01	23:12
IC4593	P Neb	Her	16h 11m 44s	+12° 04.3'	11.0	12:52	19:29	02:06
IC4592	Neb	Sco	16h 11m 59s	-19° 27.4'		14:23	19:29	00:36
M80	Globular	Sco	16h 17m 03s	-22° 58.5'	8.5	14:39	19:34	00:29
IC4601	Neb	Sco	16h 20m 18s	-20° 04.9'		14:33	19:38	00:42
Abell38	P Neb	Sco	16h 23m 17s	-31° 44.9'	11.7	15:18	19:41	00:03
M4	Globular	Sco	16h 23m 35s	-26° 31.5'	7.5	14:58	19:41	00:24
IC4603	Neb	Oph	16h 25m 24s	-24° 28.0'		14:53	19:43	00:33
IC4604	Neb	Oph	16h 25m 33s	-23° 26.5'		14:50	19:43	00:36

Desert Sky Observer

www.avastronomyclub.org

August 2020

ID	Type	Const	RA	Dec	Mag	Rise	Transit	Set
NGC6124	Open	Sco	16h 25m 36s	-40° 40.0'	5.8	16:04	19:43	23:22
Abell39	P Neb	Her	16h 27m 33s	+27° 54.5'	12.9	12:16	19:45	03:14
IC4605	Neb	Sco	16h 30m 12s	-25° 06.8'		15:00	19:48	00:35
NGC6153	P Neb	Sco	16h 31m 31s	-40° 15.2'	12.0	16:08	19:49	23:30
NGC6181	Galaxy	Her	16h 32m 21s	+19° 49.5'	11.9	12:49	19:50	02:51
NGC6171	Globular	Oph	16h 32m 32s	-13° 03.1'	8.1	14:24	19:50	01:16
NGC6178	Open	Sco	16h 35m 47s	-45° 38.6'	7.2	16:48	19:53	22:59
NGC6193	Open	Ara	16h 41m 18s	-48° 46.0'	5.2	17:20	19:59	22:37
M13	Globular	Her	16h 41m 41s	+36° 27.5'	7.0	11:52	19:59	04:06
NGC6210	P Neb	Her	16h 44m 30s	+23° 48.0'	9.0	12:48	20:02	03:16
Barnard44a	DkNeb	Sco	16h 44m 45s	-40° 20.0'		16:21	20:02	23:43
NGC6204	Open	Ara	16h 46m 09s	-47° 01.0'	8.2	17:09	20:04	22:58
M12	Globular	Oph	16h 47m 14s	-01° 56.8'	8.0	14:07	20:05	02:02
NGC6231	Open	Sco	16h 54m 00s	-41° 48.0'	2.6	16:39	20:11	23:43
IC4628	Neb	Sco	16h 56m 58s	-40° 27.3'		16:34	20:14	23:54
NGC6254	Globular	Oph	16h 57m 09s	-04° 05.9'	6.6	14:23	20:15	02:06
Barnard47	DkNeb	Oph	16h 59m 42s	-22° 38.0'		15:21	20:17	01:13
M62	Globular	Oph	17h 01m 13s	-30° 06.7'	8.0	15:50	20:19	00:48
M19	Globular	Oph	17h 02m 38s	-26° 16.0'	8.5	15:37	20:20	01:04
Barnard51	DkNeb	Oph	17h 04m 44s	-22° 15.0'		15:25	20:22	01:20
IC4637	P Neb	Sco	17h 05m 10s	-40° 53.1'	14.0	16:45	20:23	00:00
Barnard56	DkNeb	Sco	17h 08m 48s	-32° 05.0'		16:05	20:26	00:47
Barnard59	DkNeb	Oph	17h 11m 23s	-27° 29.0'		15:50	20:29	01:08
NGC6302	P Neb	Sco	17h 13m 42s	-37° 06.0'	9.6	16:33	20:31	00:29
Barnard251	DkNeb	Oph	17h 13m 48s	-20° 09.0'		15:27	20:31	01:35
Barnard63	DkNeb	Oph	17h 16m 00s	-21° 28.0'		15:33	20:33	01:33
M92	Globular	Her	17h 17m 07s	+43° 08.1'	7.5	11:48	20:35	05:21
M9	Globular	Oph	17h 19m 12s	-18° 31.0'	9.0	15:27	20:37	01:46
NGC6326	P Neb	Ara	17h 20m 46s	-51° 45.2'	12.0	18:34	20:38	22:42
Barnard256	DkNeb	Oph	17h 22m 12s	-28° 49.0'		16:06	20:40	01:14
Barnard67a	DkNeb	Oph	17h 22m 30s	-21° 53.0'		15:41	20:40	01:39
Barnard71	DkNeb	Oph	17h 23m 02s	-24° 00.0'		15:49	20:40	01:32
NGC6357	Neb	Sco	17h 24m 43s	-34° 12.1'		16:30	20:42	00:54
IC4651	Open	Ara	17h 24m 52s	-49° 56.5'	6.9	18:16	20:42	23:08
Abell41	P Neb	Ser	17h 29m 04s	-15° 13.3'	13.9	15:27	20:46	02:06
Abell42	P Neb	Oph	17h 31m 31s	-08° 19.1'	14.6	15:09	20:49	02:29
Barnard78	DkNeb	Oph	17h 32m 00s	-25° 35.0'		16:03	20:49	01:35
NGC6388	Globular	Sco	17h 36m 17s	-44° 44.1'	6.9	17:41	20:54	00:06
M14	Globular	Oph	17h 37m 36s	-03° 14.7'	9.5	15:01	20:55	02:49
Barnard276	DkNeb	Oph	17h 39m 39s	-19° 49.0'		15:52	20:57	02:02

Desert Sky Observer

www.avastronomyclub.org

August 2020

ID	Type	Const	RA	Dec	Mag	Rise	Transit	Set
M6	Open	Sco	17h 40m 20s	-32° 15.2'	4.5	16:38	20:58	01:18
NGC6397	Globular	Ara	17h 40m 42s	-53° 40.0'	5.6	19:25	20:58	22:31
NGC6426	Globular	Oph	17h 44m 55s	+03° 10.1'	11.2	14:51	21:02	03:14
Barnard83a	DkNeb	Sgr	17h 45m 18s	-20° 00.0'		15:58	21:03	02:07
IC4665	Open	Oph	17h 46m 30s	+05° 39.0'	4.2	14:45	21:04	03:22
NGC6445	P Neb	Sgr	17h 49m 15s	-20° 00.6'	13.0	16:02	21:07	02:11
NGC6503	Galaxy	Dra	17h 49m 27s	+70° 08.6'	10.2	Circum	21:07	Circum
NGC6441	Globular	Sco	17h 50m 13s	-37° 03.0'	7.4	17:09	21:08	01:06
Barnard283	DkNeb	Sco	17h 51m 00s	-33° 52.0'		16:55	21:08	01:22
Barnard285	DkNeb	Ser	17h 51m 32s	-12° 52.0'		15:42	21:09	02:35
M7	Open	Sco	17h 53m 51s	-34° 47.6'	3.5	17:02	21:11	01:20
IC4670	Neb	Sgr	17h 55m 07s	-21° 44.6'		16:13	21:13	02:12
NGC6501	Galaxy	Her	17h 56m 04s	+18° 22.3'	12.3	14:17	21:13	04:10
M23	Open	Sgr	17h 57m 04s	-18° 59.1'	6.0	16:07	21:14	02:22
NGC6543	P Neb	Dra	17h 58m 36s	+66° 38.0'	8.1	Circum	21:16	Circum
NGC6496	Globular	Sco	17h 59m 04s	-44° 16.0'	9.2	18:01	21:16	00:32
Barnard291	DkNeb	Sgr	17h 59m 43s	-33° 53.0'		17:04	21:17	01:30
Barnard292	DkNeb	Sgr	18h 00m 34s	-33° 20.0'		17:02	21:18	01:34
Barnard293	DkNeb	Sgr	18h 01m 12s	-35° 20.0'		17:12	21:19	01:25
M20	Opn+D Neb	Sgr	18h 02m 42s	-22° 58.2'	5.0	16:25	21:20	02:15
M8	Opn+D Neb	Sgr	18h 03m 41s	-24° 22.7'	5.0	16:31	21:21	02:11
Barnard295	DkNeb	Sgr	18h 04m 05s	-31° 09.0'		16:57	21:21	01:46
M21	Open	Sgr	18h 04m 13s	-22° 29.3'	7.0	16:25	21:22	02:18
NGC6530	Open	Sgr	18h 04m 31s	-24° 21.5'	4.6	16:32	21:22	02:12
NGC6528	Globular	Sgr	18h 04m 50s	-30° 03.3'	9.5	16:53	21:22	01:51
IC4684	Neb	Sgr	18h 09m 08s	-23° 26.1'		16:33	21:27	02:20
IC4685	Neb	Sgr	18h 09m 18s	-23° 59.2'		16:35	21:27	02:18
Barnard303	DkNeb	Sgr	18h 09m 28s	-23° 59.0'		16:35	21:27	02:18
IC1274	Neb	Sgr	18h 09m 51s	-23° 38.8'		16:35	21:27	02:20
IC1275	Neb	Sgr	18h 10m 07s	-23° 45.7'		16:35	21:28	02:20
NGC6572	P Neb	Oph	18h 12m 06s	+06° 51.2'	9.0	15:08	21:30	03:51
NGC6567	P Neb	Sgr	18h 13m 45s	-19° 04.5'	12.0	16:23	21:31	02:39
IC4701	Neb	Sgr	18h 16m 36s	-16° 38.0'		16:19	21:34	02:49
Barnard93	DkNeb	Sgr	18h 16m 53s	-18° 03.0'		16:23	21:34	02:45
IC1284	Neb	Sgr	18h 17m 39s	-19° 40.3'		16:29	21:35	02:41
M24	Open	Sgr	18h 18m 26s	-18° 24.3'	4.5	16:26	21:36	02:46
M16	Open+D Neb	Ser	18h 18m 48s	-13° 48.3'	6.5	16:12	21:36	03:00
Barnard308	DkNeb	Sgr	18h 19m 08s	-22° 14.0'		16:39	21:37	02:34

Desert Sky Observer

www.avastronomyclub.org

August 2020

ID	Type	Const	RA	Dec	Mag	Rise	Transit	Set
M18	Open	Sgr	18h 19m 58s	-17° 06.1'	8.0	16:24	21:37	02:51
M17	Open+D Neb	Sgr	18h 20m 47s	-16° 10.3'	7.0	16:22	21:38	02:55
HR6923	Mult	Dra	18h 23m 54s	+58° 48.0'	5.0	Circum	21:41	Circum
M28	Globular	Sgr	18h 24m 33s	-24° 52.1'	8.5	16:53	21:42	02:30
Barnard95	DkNeb	Sct	18h 25m 35s	-11° 44.0'		16:13	21:43	03:13
Barnard97	DkNeb	Sct	18h 29m 05s	-09° 55.0'		16:11	21:46	03:22
Abell44	P Neb	Sgr	18h 30m 11s	-16° 45.4'	12.6	16:33	21:48	03:02
NGC6637	Globular	Sgr	18h 31m 23s	-32° 20.8'	7.7	17:29	21:49	02:09
IC1287	Neb	Sct	18h 31m 26s	-10° 47.7'		16:16	21:49	03:21
M25	Open	Sgr	18h 31m 42s	-19° 07.0'	6.5	16:42	21:49	02:57
IC4725	Open	Sgr	18h 31m 48s	-19° 06.7'	4.6	16:42	21:49	02:57
NGC6642	Globular	Sgr	18h 31m 54s	-23° 28.5'	8.8	16:56	21:49	02:43
NGC6644	P Neb	Sgr	18h 32m 35s	-25° 07.7'	12.0	17:02	21:50	02:38
NGC6647	Open	Sgr	18h 32m 49s	-17° 13.6'	8.0	16:37	21:50	03:04
IC4732	P Neb	Sgr	18h 33m 55s	-22° 38.6'	13.0	16:55	21:51	02:47
NGC6656	Globular	Sgr	18h 36m 24s	-23° 54.2'	5.1	17:02	21:54	02:46
IC4756	Open	Ser	18h 38m 54s	+05° 27.0'	5.0	15:38	21:56	04:14
NGC6681	Globular	Sgr	18h 43m 12s	-32° 17.4'	8.1	17:41	22:01	02:21
NGC6694	Open	Sct	18h 45m 18s	-09° 23.0'	8.0	16:26	22:03	03:39
IC4776	P Neb	Sgr	18h 45m 51s	-33° 20.5'	12.0	17:48	22:03	02:19
Barnard318	DkNeb	Sct	18h 49m 42s	-06° 23.0'		16:22	22:07	03:52
M11	Open	Sct	18h 51m 05s	-06° 16.1'	7.0	16:23	22:08	03:54
M57	P Neb	Lyr	18h 53m 35s	+33° 01.7'	9.5	14:21	22:11	06:01
Barnard117	DkNeb	Sct	18h 53m 43s	-07° 24.0'		16:29	22:11	03:53
NGC6715	Globular	Sgr	18h 55m 03s	-30° 28.7'	7.7	17:45	22:12	02:40
NGC6717	Globular	Sgr	18h 55m 06s	-22° 42.0'	9.2	17:17	22:13	03:08
Barnard122	DkNeb	Sct	18h 56m 48s	-04° 45.0'		16:25	22:14	04:04
Barnard123	DkNeb	Sct	18h 57m 39s	-04° 43.0'		16:25	22:15	04:05
NGC6723	Globular	Sgr	18h 59m 33s	-36° 37.9'	7.3	18:17	22:17	02:17
Barnard128	DkNeb	Aql	19h 01m 40s	-04° 34.0'		16:29	22:19	04:09
NGC6729	BrNeb	CrA	19h 01m 54s	-36° 57.0'		18:21	22:19	02:18
Barnard326	DkNeb	Aql	19h 03m 00s	-00° 23.0'		16:19	22:20	04:22
NGC6749	Globular	Aql	19h 05m 15s	+01° 54.0'	11.1	16:15	22:23	04:31
Barnard329	DkNeb	Aql	19h 06m 59s	+03° 11.0'		16:13	22:24	04:36
NGC6760	Globular	Aql	19h 11m 12s	+01° 01.8'	9.1	16:23	22:29	04:34
Abell56	P Neb	Aql	19h 13m 07s	+02° 52.8'	12.4	16:20	22:31	04:41
NGC6772	P Neb	Aql	19h 14m 36s	-02° 42.4'	14.0	16:37	22:32	04:27
Barnard138	DkNeb	Aql	19h 16m 00s	+00° 13.0'		16:30	22:33	04:37
M56	Globular	Lyr	19h 16m 36s	+30° 11.0'	9.5	14:56	22:34	06:12
NGC6778	P Neb	Aql	19h 18m 25s	-01° 35.7'	13.0	16:37	22:36	04:34

Our Sponsors

Cosmos Level Sponsors



5348 Topanga Canyon Blvd., Woodland Hills

888-427-427-8766 www.telescopes.net

Universe Level Sponsors



Galaxy Level Sponsors



Al's Vacuum and Sewing

904 West Lancaster Blvd., Lancaster

(661) 948-1521