San Diego Astronomy Association

Celebrating Over 50 Years of Astronomical Outreach

https://www.sdaa.org/
A Non-Profit Educational Association
P.O. Box 23215, San Diego, CA 92193-3215

Next SDAA Business Meeting
August 9th at 7:00pm
10070 Willow Creek Rd
San Diego, CA 92131
Via Zoom

Next Program Meeting
August 17th at 7:00pm
Live Stream

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August 2022, Vol LX, Issue 8
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San Diego Astronomy Association
Incorporated in California in 1963

Newsletter Deadline
The deadline to submit articles for publication is the **15th** of each month.

August 2022

SDAA Update

SDAA is now actively using online facilities like Zoom and YouTube to provide access to club meetings and special events. While our public outreach events have restarted in some San Diego County facilities, most events in city owned facilities are still undergoing review.

Public outreach events have restarted at The Lipp telescope. The Lipp hosts will limit the amount of people inside the observatory when the telescope is operational. Please observe masking and social distancing guidelines if you are unvaccinated.

As the pandemic remains a part of our lives, please continue to observe safe practice guidelines while at TDS.

Program Meeting August 17th

Speaker: Dr. Robert Quimby, the Director of MLO and professor of astronomy at SDSU
Topic: update on the science and facilities at San Diego State University (SDSU) Mount Laguna Observatory (MLO)

Dr. Quimby earned his BS degree in astrophysics from UC Berkeley and his masters and PhD in astronomy from the University of Texas, Austin. For his research contributions, he has received the Trumpler Award from the Astronomical Society of the Pacific, the Hyer Award of the American Physical Society and a share of the 2015 Breakthrough Prize in Fundamental Physics.

You can register in advance for the meeting at the following link. After registering, you will receive a confirmation email containing information about joining the meeting. You may be required to log in with a Zoom login and password in order to attend the meeting.

https://us02web.zoom.us/j/89298162225?pwd=TVZsTTg3dzRXcERDY0tXeHErVXArQT09

Link to SDAA Merchandise Store https://sdaa28.wildapricot.org/SDAA-Store

Link to Outreach Calendar https://calendar.google.com/calendar/embed?src=g-calendar@sdaa.org&ctz=America/Los_

San Diego Astronomy Association

San Diego Astronomy Association Board of Directors Meeting
July 12, 2022 – Unapproved and subject to revision

1. **Call to Order**
   The meeting was held via Zoom and was called to order at 7:00pm with the following board members in attendance: Dave Wood, President; Kin Searcy, Vice President; Melany Biendara, Treasurer; Gene Burch, Recording Secretary; Dave Decker, Director; Mike Chasin, Director; Gracie Schutze, Director; Dan Kiser, JSF Committee Chairperson.

2. **Approval of Last Meeting Minutes**
   The June meeting minutes were approved.

3. **Treasurers & Membership Report**
   The treasurer's report was approved. Mel reported that we ended the last fiscal year in the "black". She is still working to recover the $5,000 we lost when a Chase Bank in Montana cashed a counterfeit check against our account. She is in contact with an attorney who has offered to help on a pro bono basis, at least for now. Dave Decker is going to speak with the attorney and see what he can do to help as well, possibly filing a police report. Mike Chasin has looked at several credit unions and it looks like San Diego County Credit Union would be a good fit for us and could provide us with the services we need as a non-profit club. We still need an audit committee and Kin will try to find three volunteers to sit on the audit committee.

4. **Standard Reports**
   a. <u>Site Maintenance Report:</u>
      No report.

   b. <u>Observatory:</u>
      All is going well. Star parties continue to be staffed and well attended. Equipment is in great condition. Ben has coordinated with me regarding the wall/drainage repairs and I expect no complications.

   c. <u>Loaner Scope Report:</u>
      Loaner scope status:
      Coulter 10" was returned without incident June 8
      3 scopes likely to be loaned out this month:
      SDAA-027 (beginner astrophotography rig) in late July or early August
      SDAA-029 (iOptron sky tracker) this month
      SDAA-030 (AWB OneSky) this month
      Inventory updates:
      Bushnell Voyager 8" Dob (SDAA 028) still needs some TLC before it can be loaned out, I plan to get that done when I'm next at TDS late July.
      90mm Meade achromat is still TBD, need to get tube rings.
      Tested the donated eyepiece projection kit. Seems to be a reasonable optional add-on for somebody loaning a scope (perhaps an 8" SCT) for the purposes of planetary photography. But not worth enough to try selling.

Equipment donations and sales:

Delivered:
Move-Shoot-Move star tracker (reduced)
Still for sale:
Celestron C5 and iOptron Cube Pro mount w/tripod and case
USB 3.0 fiber extender

Pending donation:
Orion glass solar filter (useful for outreach?)

d. Private Pad Report:
We have 9 free pads and 8 people on the waiting list. One of those people is looking to upgrade and we are working on a lease for one of the pads. There are two upgrade requests that are being considered.

e. Program Meetings Report:
This month's speaker is Kevin Schindler from the Lowell Observatory. Nothing clarified on when meetings may resume at MTRP.

f. AISIG Report:
No report

g. Newsletter Report:
As always, the newsletter looks great – Thanks, Andrea!

h. Website Report:
No Report

i. Social Media:
No report

j. Outreach Report:
Below is a summary of outreach event participation with numbers for June and for YTD:

2022	June	YTD
Events Completed	7	28
Events Cancelled	1	13
Total Attendance	370	2648

Also of note for June, we had 8 SDAA members participating in the Grand Canyon Star Party for 8 consecutive nights and several days of solar observing. The event is coordinated by the Tucson Amateur Astronomy Association but depends heavily upon participation by many other astronomy clubs. The event had an overall attendance of at least 4000 patrons from the park.

k. TARO Report:
TARO is operational and accepting Astro-imaging and Exo Target requests.

l. Cruzen Report:
Brian reports that he has fixed the RA encoder on the big Cassegrain. A few people have used the observatory but there still seems to be a problem with the go-to feature on the Losmandy G-11. Gene sent out a survey to all Contributing members to gauge interest in using the observatory. 53 people responded yes and Gene is working on a contact list for Cruzen. He's also talked with Jeff Stevens who has set up a calendar (not visible to the public yet) so people can check on the availability of the observatory and contact Gene to reserve time on it.

m. Merchandise Report:
Quiet month with no sales.

n. Astronomical League Report:
No report.

o. JSF Report:
Dan Kiser reported that planning for JSF continues. We are still working on getting donations, but sales are good and we still have a little over a month before the event. Because Cal-Tech still hasn't decided on whether they will be open for tours, we've had to switch gears and will now offer a tour of the SDSU Observatory at Mount Laguna. This is an exciting opportunity for our members to visit a seldom seen observatory and see their three major research instruments: a 50" Phillips Claud reflector, a 40" reflector with UICU and the Clifford Smith 24" reflector.

p. Primary Grid Reconstruction Report:
The Board will be moving forward in contacting a third-party electrical engineering firm. Our current design documentation will be forwarded to the engineering firm for review. The Board has decided to set up a design and project review committee. The committee will:
1. Set expectations for any third-party electrical engineering firms that we contact.
2. Answer electrical grid design questions generated by the third-party engineering firms.

5. Old Business:

Bank Fraud Update – See Treasurer Report	Biendara
SDGE Billing Update – Still trying to see why our bills are so high. We're trying to keep the water heater off as much as possible to see if that could be part of the problem. We may see about adding a timer to automatically turn it off after a certain length of time.	Biendara
Electrical Grid Update – See Primary Grid Reconstruction Report	Wood
Lipp Warming Room repair – Ben and Ed are working on this	Grunbaum
Other Old Business – none	Wood

6. **New Business**:

Pad 55 - has requested to put bark ground cover on much of the pad, but the board expressed concern that the bark may blow or wash away during extreme weather conditions at TDS. Dave Wood will pass this information along to Mark Smith.	Smith
Fall Barbecue – a tentative date of September 24th has been set for our annual fall barbecue	Wood
Banquet Committee – it's time to start planning for the annual Banquet, and Mike C and Gene will try to form a committee to get things started.	Wood

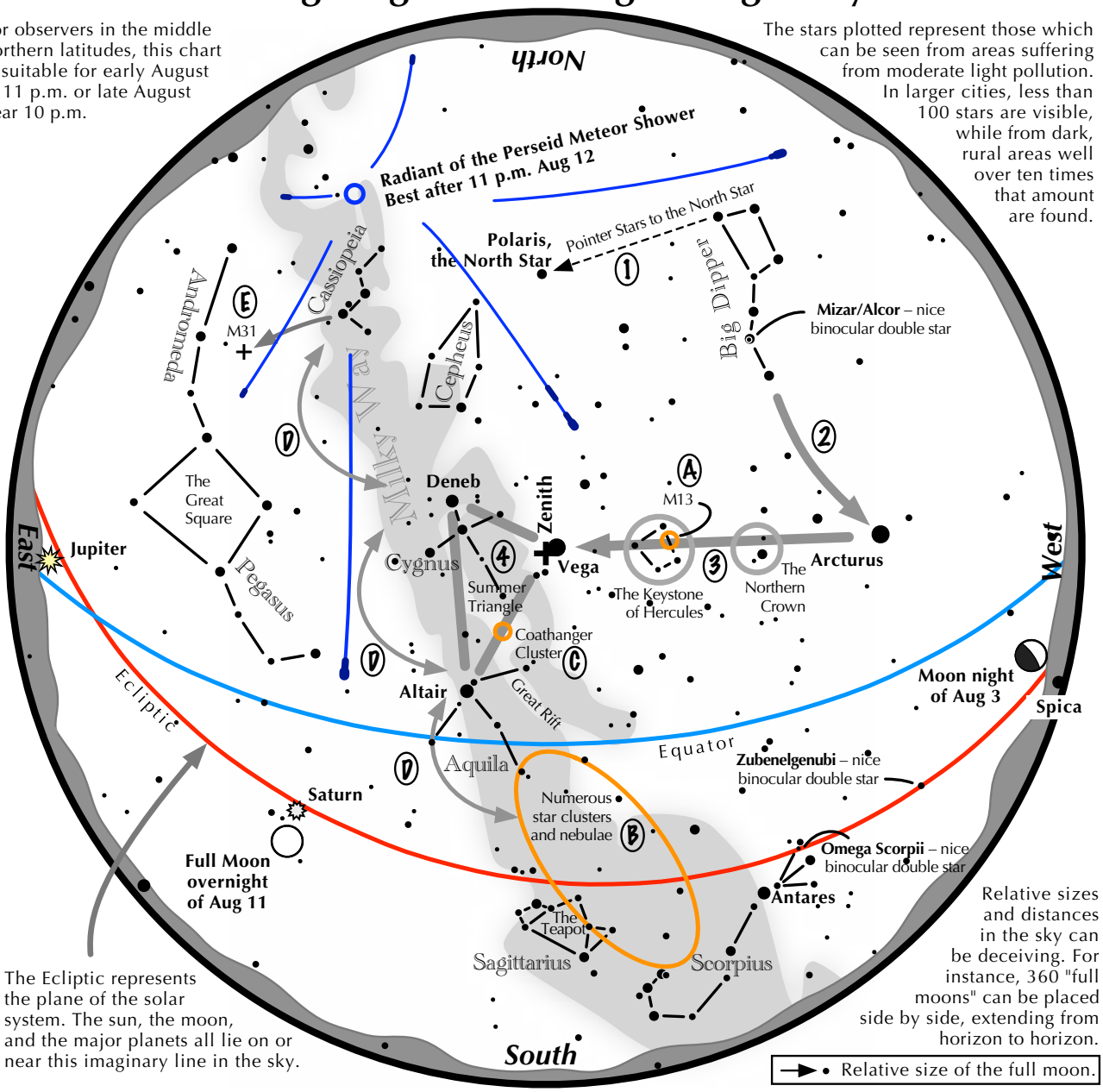
7. **Adjournment:** The meeting was adjourned at 8:04pm.

San Diego Astronomy Association

Navigating the mid August Night Sky

For observers in the middle northern latitudes, this chart is suitable for early August at 11 p.m. or late August near 10 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 mid August 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. Follow the arc of the Dipper's handle. It intersects Arcturus, the brightest star in the June evening sky.
3. 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.
4. High in the East lies the summer triangle stars of Vega, Altair, and Deneb.

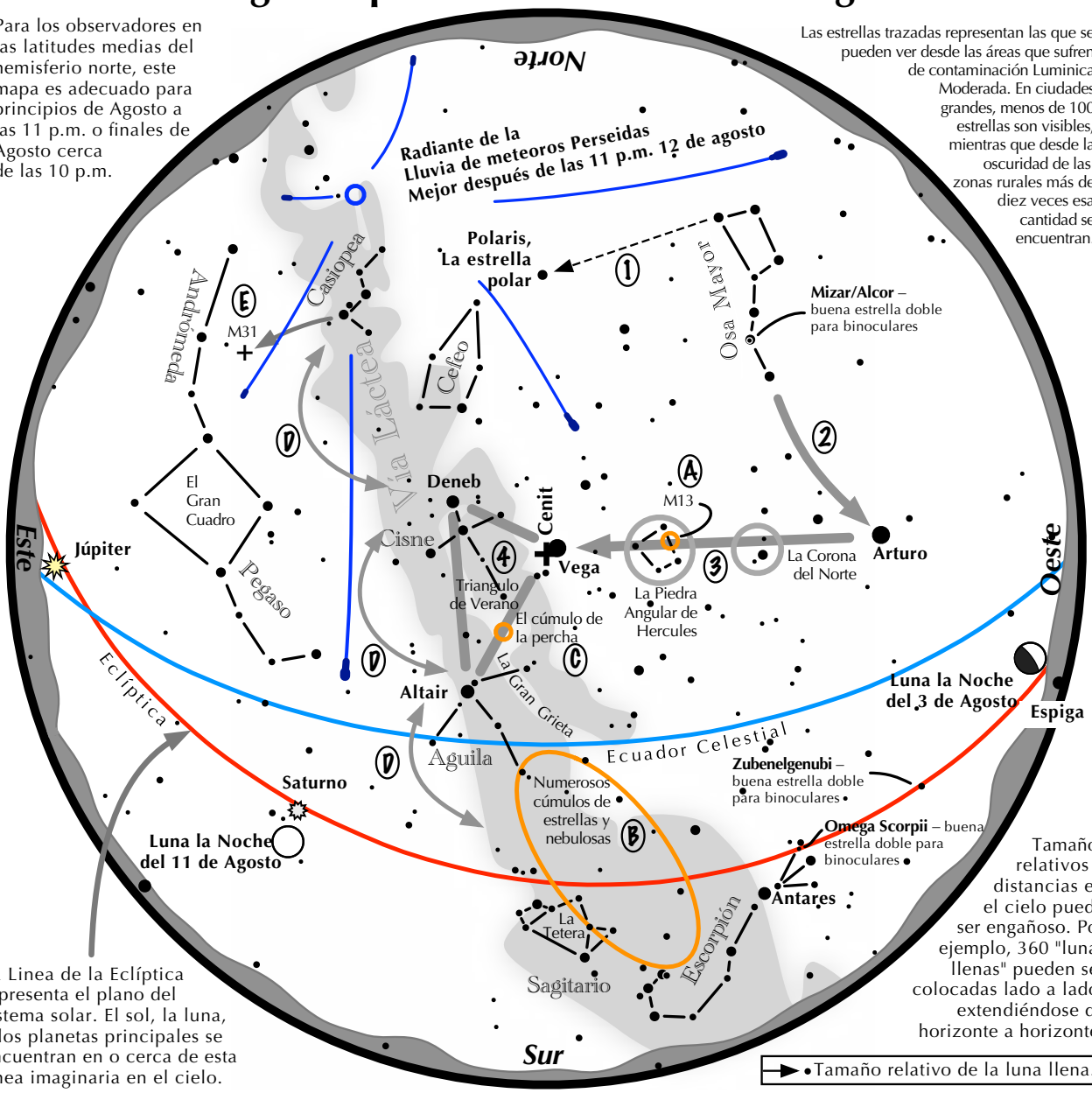
Binocular Highlights

A: On the western side of the Keystone glows the Great Hercules Cluster.
B: Between the bright stars 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, including the Great Rift.
E: The three westernmost stars of Cassiopeia's "W" point south to M31, the Andromeda Galaxy, a "fuzzy" oval.

Navegando por el cielo nocturno de Agosto

Para los observadores en las latitudes medias del hemisferio norte, este mapa es adecuado para principios de Agosto a las 11 p.m. o finales de Agosto cerca de las 10 p.m.

Las estrellas trazadas representan las que se pueden ver desde las áreas que sufren de contaminación Luminica Moderada. En ciudades grandes, menos de 100 estrellas son visibles, mientras que desde la oscuridad de las zonas rurales más de diez veces esa cantidad se encuentran.



La Linea de la Eclíptica representa el plano del sistema solar. El sol, la luna, y los planetas principales se encuentran en o cerca de esta línea imaginaria en el cielo.

Tamaños relativos y distancias en el cielo puede ser engañoso. Por ejemplo, 360 "lunas llenas" pueden ser colocadas lado a lado, extendiéndose de horizonte a horizonte.

Navegando por el cielo nocturno: simplemente comience con lo que sabe o con lo que puede encontrar fácilmente.

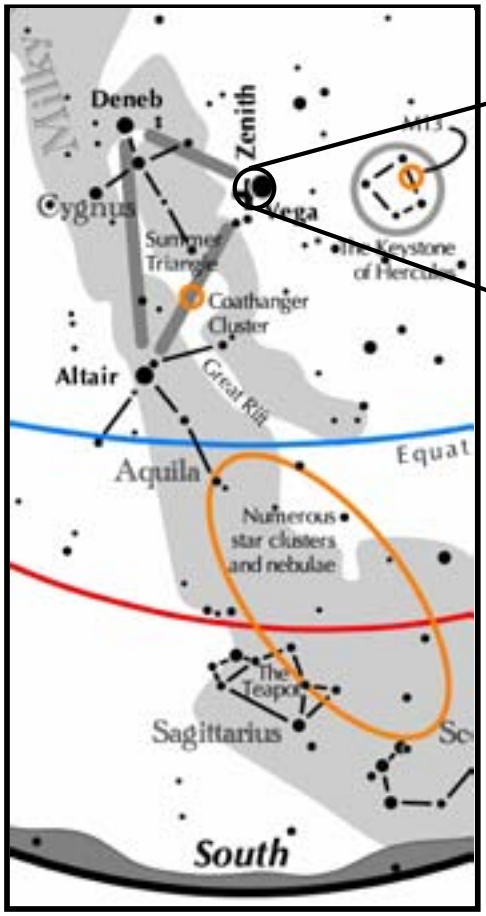
1. Haz una línea hacia el norte desde las dos estrellas en la punta de la Osa Mayor. Pasa por Polaris, la estrella polar.
2. Siga el arco del mango del tazón de la Osa Mayor, continúa hacia Arturo, luego continúa hacia Espiga.
3. Dibuja una línea desde Arturo a Vega. Un tercio del camino se encuentra "La Corona del Norte". Dos tercios de esa distancia llevan a la "piedra angular de Hércules." Se necesita un cielo oscuro para ver estas dos configuraciones estelares tenues.
4. En lo alto del este se encuentran las tres estrellas brillantes del Triángulo de verano: Vega, Altair y Deneb.

Puntos destacados con binoculares

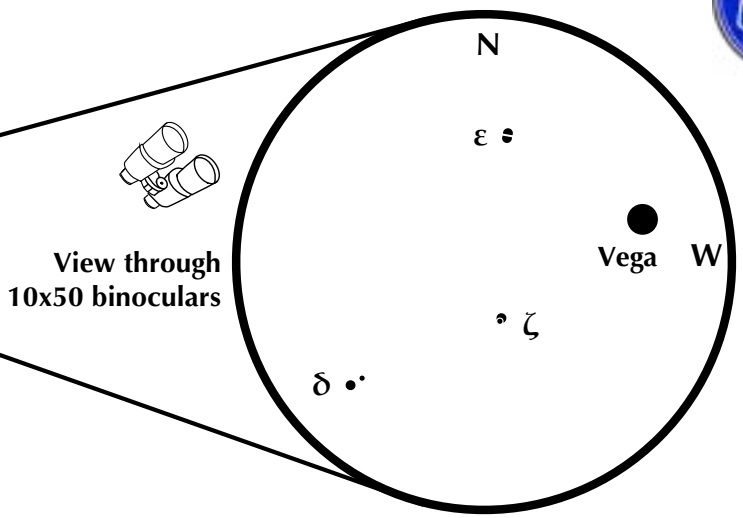
A: En el lado occidental de la Piedra Angular brilla el Gran Cúmulo de Hércules. **B:** Entre las brillantes estrellas Antares y Altair, se esconde un área que contiene muchos cúmulos de estrellas y nebulosas. **C:** Casi a la mitad de la distancia entre Altair y Vega, Brilla la "Percha," un grupo de estrellas que describe un perchero. **D:** Recorre la Vía Láctea en busca de un número asombroso de destellos tenues y bahías oscuras, incluido La Gran Grieta. **E:** Las tres estrellas más occidentales de las "W" de Casiopea apuntan hacia el sur hasta M31, la Galaxia de Andromeda, un óvalo "borroso."

Traducción al español por Dr. Salvador Aguirre *www.astroleague.org/outreach;* Duplicación permitida y fomentada para toda distribución gratuita. **Liga Astronómica**

If you can observe one evening celestial scene this month, consider this one:



Facing south 90 minutes after sunset



3 amazing double plays

Face directly south and look overhead 90 minutes after sunset. (Bright moonlight may interfere August 4 - 14.)

- Lie on your back and look directly overhead at the bright blue-white star Vega.
- Aim a pair of binoculars at Vega, and place it near the western edge of the field.
- In the field's northern half lies Epsilon Lyrae. Hold the glasses steady and its two similarly bright stars can be seen next to each other.
- Look just below the center of the field for Zeta Lyrae. Keen eyed binocular users can discern two stars, one brighter than the other.
- On the southeastern section of the binocular field shines Zeta. Again, steadily held binoculars reveal two stars.

Carpe Lunam

Observing the Moon:
A Guide for the Astronomical League's Lunar Observing Programs

John Jardine Goss

A Publication of the
ASTRONOMICAL LEAGUE

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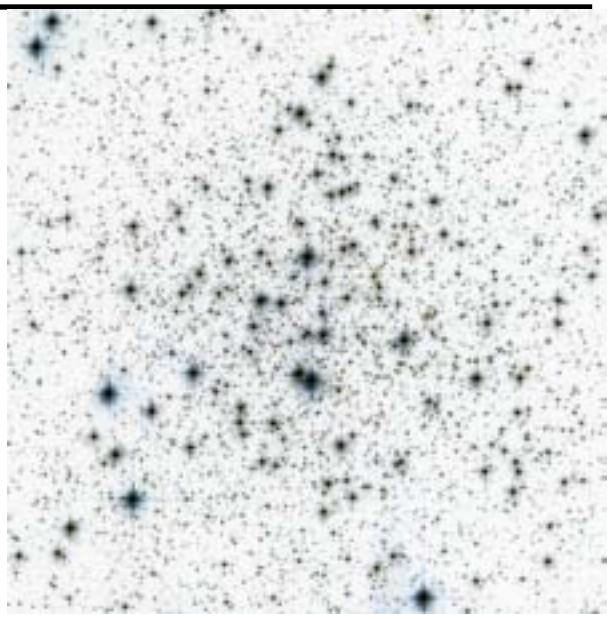
Available NOW at League Sales:
https://store.astroleague.org/index.php

Carpe Lunam!
75+ pages packed with descriptions, drawings, sketches, and images – all helping you explore and understand our nearest neighbor in space.



Another Look
2022 August
Dave Phelps
July 28 new moon, August 12 Full Moon,
August 27 New Moon
August: **Sturgeon Moon,** green corn moon, grain moon, and the red moon for the reddish hue it often takes on in the summer haze.

Astronomical Twilight 2052 PDT 08/27/22

High above us on warm summer evenings is one of the linchpins of first year astronomy courses...the Summer Triangle. Made by connecting Vega, Deneb and Altair we help our star party visitors by fixing their eyes on a high, visible, bright star grouping. The triangle includes the constellations of Lyra, Aquila and Cygnus in addition to Sagitta and Vulpecula. I also include Delphinus in with the group, lest it be forgotten.

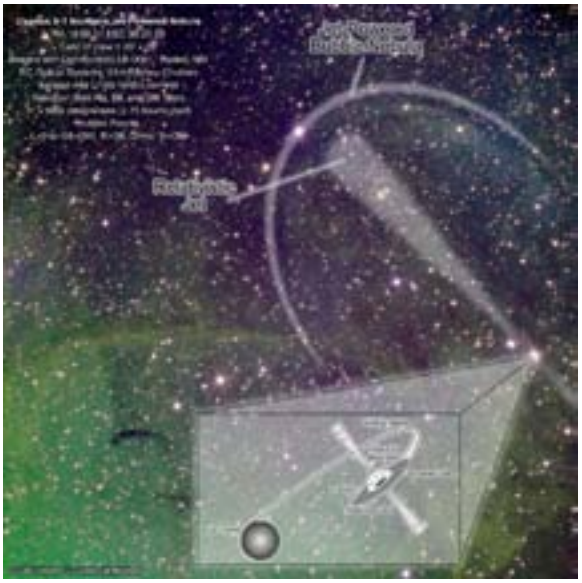
Delphinus has an interesting history and is also one of the original 48 by Ptolemy. In reference, the Greeks attributed two myths and an Italian gentleman may have been guilty of overweening egotism or, perhaps, a practical joke. The Greeks are easy. In one the Dolphin saves a poet and in the other Poseidon searches for his reluctant fiancée.
In reference to our Italian gentleman, we have Alpha α Delphini whose name is Sualocin and Beta β Delphini whose name is Rotanev. The names have no meaning. Italian astronomer Niccolò Cacciatore turned his family name, Venator, backward and gave Beta his family name. He did the same thing to Alpha. He turned his first name, Nicholas around and named it Sualocin. Somehow it stuck.
Beta is also interesting as a double star. Very close in separation, about 44" and magnitude a slightly variable 4.1 to 5.0 magnitude.

https://en.wikipedia.org/wiki/File:Sidney_Hall_-_Urania%27s_Mirror_-_Delphinus,_Sagitta,_Aquila,_and_Antinous.jpg

We also have two Caldwell globulars and two planetaries worth looking for in Delphinus. Caldwell 42, NGC 7006 is a 10th magnitude, rather pretty, globular and Caldwell 47 is a brighter 8th magnitude globular, also rather pretty. Neither NGC 6891, a rather nice planetary or NGC 6805, the Blue Flash planetary, are particularly bright but should be easily seen. N6891 is 10.5 and N6805 is 10.9. Your backyard telescope should find a smallish blueish or blue-greenish blob. An interesting note is that the four-star rhombus, Sualocin, Rotanev, Delta δ and Gamma γ Delphini are named Job's Coffin, no one seems to know why.

https://ar.wikipedia.org/wiki/NGC_6891

Vulpecula is the home of the first Pulsar discovered in 1967 by PhD student Jocelyn Bell and her advisor Dr. Anthony Hewish. You won't see it, but its near Brocchi's Cluster and, if you wish, you can stare at its place in the sky. It's given the prosaic name PSR B1919+21. You can check the Sinbad registry and you will find no optical component to the Pulsar.
APOD: 2009 June 8 – Possible Jet Blown Shells Near Microquasar Cygnus X1 (nasa.gov)



By the way there were those who claimed that Ms. Bell should have been given equal credit for the discovery. Even she disputes that:
Dr. Bell Burnell has had a very vibrant career in science and is honored by her discoveries and her generosity. She was awarded the Special Breakthrough Prize in Fundamental Physics which included a $2.8 million dollar prize. She donated the award to support women, ethnic minorities, and aid refugee students in physics research. ***(Jocelyn Bell Burnell and the Discovery of Pulsars – SciHi BlogSciHi Blog).***

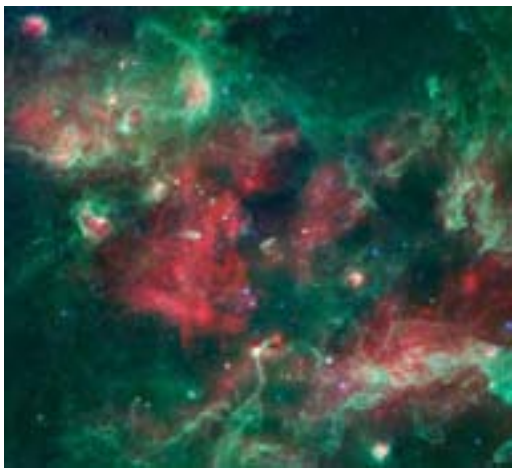
If you are interested in supermassive black holes, and who isn't, look for 13th magnitude NGC 7052 near the border of Vulpecula and Pegasus. I massaged this 1998 Hubble image to show more detail.
https://apod.nasa.gov/apod/ap980622.html

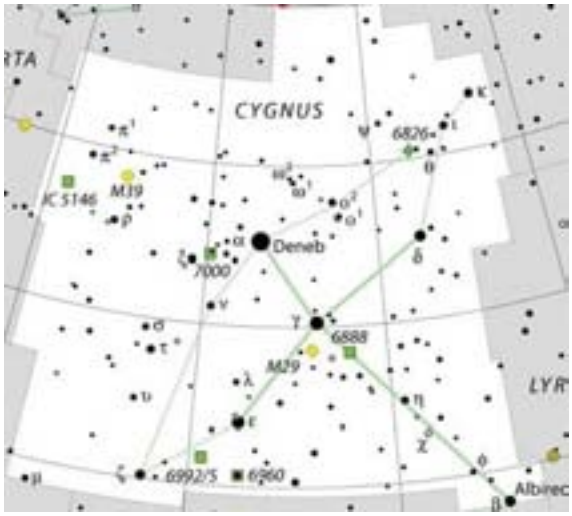
Another awesome discovery was Cygnus X-1, a distant X-ray binary containing a supergiant and unseen massive companion that was the first object we think is a black hole.
If you would like to see for yourself, Cyg X-1 is close to Eta η Cygni, (an inner Telrad circle) the middle star in the Neck and is 9th magnitude.
(Credit:AstronomyMagazine Https://astronomy.com/magazine/weirdest-objects/2015/04/37-black-hole-cygnus-x1)

A third major discovery was Cygnus A, the first radio galaxy discovered at a distance of 730 million light-years from Earth, it is the closest powerful radio galaxy but, alas, it shines at only 16th magnitude so you will have to be satisfied with this image.
APOD: 2015 January 24 – Light from Cygnus A (nasa.gov)

Cyg A's location is along the left wing of the Swan, not too far from Delta δ. While there, be sure to look more closely at δ. It is a triple star system that is together brighter than 3rd magnitude. Interestingly enough, Delta's proper name is Farwaris, from the Arabic for rider, nothing at all to do with the various Greek myths of the Swan.

Cygnus X (confusing, isn't it) is the largest star-forming region nearby and includes not only some of the brightest and most massive stars known (such as Cygnus OB2-12), but also Cygnus OB2, a massive stellar association thought by some to be a young globular cluster. The nebulosity around Sadr, Gamma Cygni γ is a part of the association. The Spitzer Space Telescope image shows a region of complex and frenetic activity, quite beautiful to the eye. **https://www.spitzer.caltech.edu/image/ssc2012-02a-stars-brewing-in-cygnus-x**





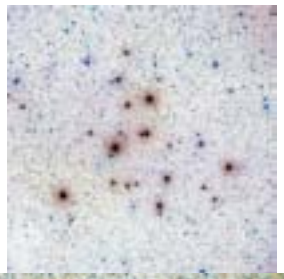
If you go to **https://skyandtelescope.org/observing/a-trip-down-the-great-rift/** you see where they point out the Cygnus Rift and the Northern Coalsack. Cyg X is partially hidden behind it. It explains why we need the Spitzer.

Cygnus has seven Caldwell objects. Caldwell 12 is known as the Fireworks galaxy, though, at least one list puts it into Cepheus. The Fireworks galaxy, NGC 6946 is notable for 10 supernovae but is rather small and 9th magnitude. You will it by searching among the stars of the Milky Way.

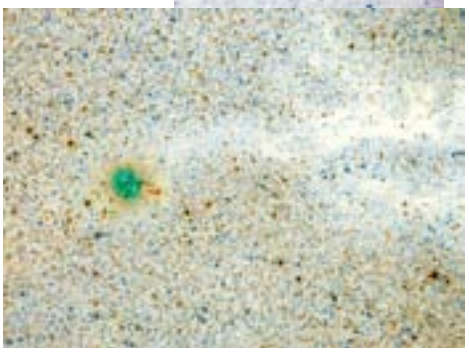
There is an abundance of deep-sky objects, with many open clusters, nebulae of various types and supernova remnants found in Cygnus because it sits right on top of the Milky Way.
https://www.constellation-guide.com/constellation-list/cygnus-constellation

When you look, be aware that some open clusters can be difficult to make out from such a rich background of stars.

M39 (NGC 7092) is an open cluster 950 light-years from Earth that is visible to the unaided eye under dark skies. It is loose, with about 30 stars spread out. You can see that it has a rather triangular outline, something to confirm visually.
https://freestarcharts.com/messier-39



Caldwell 15, NGC 6826, was discovered by Herschel way back in 1793. It is in a way a perfect example of visual astronomy. C15 is called the Blinking Planetary. Its bright 8th magnitude central white dwarf takes over the eyepiece. When you use averted vision, the planetary seems to "blink" into view. The 1997 APOD image by J. Balick **(APOD: December 19, 1997 - NGC 6826: The Blinking Eye (nasa.gov)** was also featured in 2001. C15 is located 3 or 4 degrees from Theta θ and can be found easily in your atlas and the chart above.

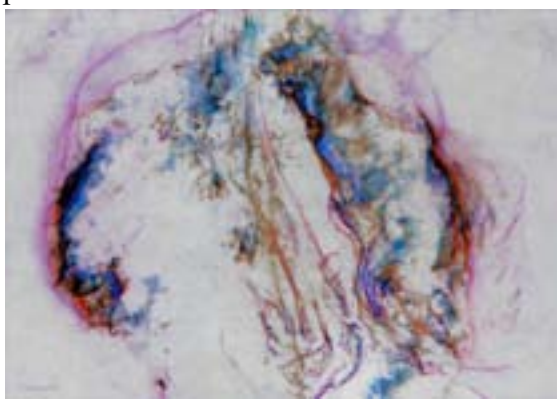


Look for the Open Cluster M39, NGC 7092. It's part of the tour you take with your telescope when you scan the North American

and Pelican nebulae. It is a Messier, so you go to it and its not bad, a bright sprinkling of stars 4th or 5th magnitude and rather pretty to look at. So, there you are and you decide to move your telescope a little westward and Wow! You discover a really great dark nebula: B168, a long cylindrical darkness that leads you right to another two really great objects; Caldwell 19, IC 5146 and Sharpless 2-125. C19 is a mottled light and dark nebula with an open cluster embedded. **APOD: 2011 September 29 – Cocoon Nebula Wide Field (nasa.gov)** The Cocoon is a great name for everything put together.
This 2011 wide field by none other than Tony Hallas is a job well done.

Caldwell 20, NGC 7000, the North American Nebula is not as good, I think, in photographs as visually. The camera blows everything out. Visually, with a nebular or pollution filter, you will be able to trace the outlines of the continent and maybe even pick up a little Alaska. Hudson Bay will also be readily visible.
One of the great objects to search for in Cygnus is the Crescent Nebula. It's on the line from Deneb to Sadr to Eta η. Start at Sadr, the center star in the cross and try to find traces of the nebulousity that Sadr is immersed in, Cygnus X. I remember one year a Phoenix, Arizona amateur showed us a black and white image of the whole region between Deneb, Delta and Eta including the northeastern part of Cygnus. It was a spiderweb of nebulousity that I have not seen before or since. It was an amazing piece of work for 30 years ago.

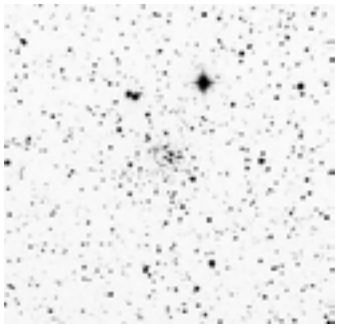
If you start at Sadr and scan down less than a Telrad and you will find the Crescent, Caldwell 27, NGC 6888. Be sure to study it well, with and without filters. It is possible to fill in the area inside the crescent.



Recently, a fellow amateur, was talking about filters fitted onto his binoculars and how the Veil was tremendous. Still, I remember how pleased I was with myself the first time I found the Veil. I was soon able to move my telescope between the individual pieces and look at the lace-like structure of the east and the west lit up by its embedded star, Caldwell's 33 and 34, while there be sure to find the little triangular notch between the two.
There is so much to see in Cygnus, it is worthy of a marathon of its own. **Image Credit & Copyright: Craig Stocks (Utah Desert Remote Observatories) https://commons.wikimedia.org/wiki/File:Johann_Bayer_-_Cygnus.jpg#/media/File:Johann_Bayer_-_Cygnus.jpg**

One night I was trekking up through Scutum looking for dark nebula. The area is full of nebula and clusters so there is plenty to find. There are a ton of dark nebulae in the area, B-111 B-117 and B-119a are prominent dark nebulae just across the border into Scutum, but I wanted to try to stay in Aquila. Specifically I wanted to find a triple Barnard's, B-130 B-129 and B-127, a grouping of dark nebulae at the tail of Aquila. Eta η Aquilae is a 3 to 4th magnitude variable at the tail of the Eagle. Close by and between Eta and Lambda is 4th magnitude 12 Aquila, finder star for our Barnard's. They are not all that easy to see except for the dense Milky Way background. While there I noticed that 12 was a part of a

hook of stars that led directly to the deepest red star I had seen. V Aquilae is a genuine carbon star, variable from 6.5 to 8.5 magnitudes and a wonderful surprise in your eyepiece.
While on the subject of Red Stars up between Delta δ and Zeta ζ Aquilae you will find R Aquilae, an older orange giant with a wild variable range of between 5th and 12th magnitude. The dimmer R gets, the deeper red it gets. It's a good star on which to hone your AAVSO chops. In that same area are four 11th and 12th magnitude planetaries NGC 6804, 6805, 6807 and M1- 70. These you can use to hone your star hopping skills.
Lastly in Aquila is Palomar 11. It's a difficult star-hop. You will need to find Kappa κ, about 4 degrees south of Theta θ, the left wingtip of Aquila. Pal 11 will be close to the outside circle on your Telrad. Once you are in the right position, then comes the hard part, finding it. Pal 11 is fairly big at 10' and fairly bright at 10th magnitude but it is the loosest class IX globular I have ever seen.



Find it at: Palomar 11 (seds.org)
Dark Skies
Dave Phelps

Register Now for
2022 Julian StarFest

Summer is heating up - and the 2022 Julian StarFest is fast approaching! Mark your calendars to attend the 2022 JSF. The event starts on Friday afternoon, August 26, 2022, and ends on Sunday morning, August 28, 2022. The JSF Committee has been working hard to make this event special, after a two-year absence due to the COVID pandemic.

To register, please visit the Julian StarFest web page: www.julianstarfest.com

This year, we will be joined by Celestron who has donated door prizes and will have multiple representatives on site to demonstrate equipment and answer questions. Door prizes have also been donated from Tele Vue and Woodland Hills Telescopes. A special "Thank You" to the Menghini Winery and all of our Sponsors and Donors. This year, JSF activities will include:

- Woody's Mobile Observatory
- "I Won The Prize" Astronomy Games
- Astronomy Crafts for Kids
- Mount Laguna Observatory Tour
- Free Public Star Party

StarFest is one of the premier events in Southern California for astronomy. Julian has dark, steady, skies and at 4,300 feet in elevation, offers superb astronomical viewing. Each year many of the SDAA's 800 active members meet in August on the grounds of the Menghini Winery (think fine wine, fresh baked hot apple pie, and some of the best star viewing around). During the event we are typically joined by over 1000 guests who will attend the free public star party at 8PM on Saturday, August 27.

The San Diego Astronomy Association (SDAA) is a non-profit educational organization established and incorporated in 1963. The purpose of the SDAA is to further the education and enjoyment of its members and the general public in the subjects of astronomy, space, and physical science. Please show your support for SDAA by registering now for JSF. All JSF proceeds will be used to fund SDAA activities.

To register, please visit the Julian StarFest web page: www.julianstarfest.com

For more information, please email us at info@julianstarfest.com

Special Thanks to the 2022 Julian StarFest Committee: Dan & Sandy Kiser, Mark & Jennifer Elliott, Eric & Nicole Davies, Arlene Smith, John Heglin, Alex Humberto Buisan, and Observatory Laison - Kin Searcy.


JULIAN STARFEST
WINERY

Mount Laguna Observatory

In the shadow of Palomar, many people are not aware of the other world class observatory located in our local mountains.

The Mount Laguna Observatory is operated by San Diego State University as the primary research, teaching, and training facility of its Department of Astronomy. It is operated under Special Use Permit from the United States Department of Agriculture Forest Service. Current institutional partners include the University of Illinois at Urbana-Champaign (UIUC) and the University of Kansas (KU).

The Observatory is located forty-five miles east of downtown San Diego on the eastern edge of the Cleveland National Forest at an altitude of 6100 feet (1859 meters). Just to the east is the Anza-Borrego State Park, which is the largest state park in the nation. This remote location remains one of the darker major observatory sites in the continental United States.

Mount Laguna is part of the Southern California Coastal Range, and as such benefits from smooth laminar air flow directly off of the Pacific Ocean, which results in steady atmospheric conditions (or "seeing"). When combined with its dark skies, Mount Laguna Observatory remains one of the truly excellent astronomical sites remaining in North America.

The Observatory is home to three major research instruments:

- 50-inch (1.25-meter) Phillips Claud reflector with KU
- 40-inch (1.0-meter) reflector with UIUC
- Clifford Smith 24-inch (0.6-meter) reflector

The Reginald Buller 21-inch (0.5-meter) visitors' telescope is used for instructional support and for special SDSU public outreach programs. This classic telescope has superb optics for visual astronomy. The Awona Harrington Visitors' Center, a five-bedroom apartment building, four-bedroom dormitory, and large shop building are also located on site. Observatory support staff includes a resident astronomer, an engineer, and the observatory superintendent.

More information on the Mount Laguna Observatory can be found at Department of Astronomy - San Diego State University (sdsu.edu)

A special tour is also available on August 27, 2022, through the 2022 Julian StarFest. Please register for this tour by following the links at Julian StarFest

2022: https://astronomy.sdsu.edu/mount-laguna-observatory-facilities/

Nightfall / Borrego Springs Coming October 27, 2022

NIGHTFALL will be back in Borrego Springs on October 27-30.

Riverside Astronomical Society is planning to have all the regular events once again, including the Scorpion Hunt, the Ice Cream Social, the Star Be Cue, Swap Meet, and Reception, as well as a full Imaging Conference by premier astroimager—Ron Brecher.

They are planning a collection of presentations on Astro topics and other activities. Although not finalized yet, programs include:

Bruce Herwig---Imaging the Borrego Monsters

Dennis Mammana---Sky Tour

Ken Graun---Messier's Objects

Richard Eisenberg—Astronomy and the Aging Eye

And, they are working on others.

So, make your plans by calling the Palm Canyon. Be sure to tell them that you are coming for Nightfall, or they will tell you they are full (and they may be!) ((760) 767-5341 (800) 242-0044)

You can find out more on the website: Intro – Nightfall Star Party & Imaging Conference

Note that there is no registration for Nightfall itself. The events are free and open to all comers. BUT, there is a fee and registration for the Ron Brecher workshop. You can register for that at Workshops & Presentations – Nightfall Star Party & Imaging Conference

San Diego Astronomy Association

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Have a great new piece of gear? Read an astronomy-related book that you think others should know about? How about a photograph of an SDAA Member in action? Or are you simply tired of seeing these Boxes in the Newsletter rather than something, well, interesting?

Join the campaign to rid the Newsletter of little boxes by sharing them with the membership. In return for your efforts, you will get your very own byline or photograph credit in addition to the undying gratitude of the Newsletter Editor. Just send your article or picture to Newsletter@SDAA.Org.

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!

Artemis 1: A Trip Around the Moon – and Back!

David Prosper

We are returning to the Moon - and beyond! Later this summer, NASA's Artemis 1 mission will launch the first uncrewed flight test of both the Space Launch System (SLS) and Orion spacecraft on a multi-week mission. Orion will journey thousands of miles beyond the Moon, briefly entering a retrograde lunar orbit before heading back to a splashdown on Earth.

The massive rocket will launch from Launch Complex 39B at the Kennedy Space Center in Florida. The location's technical capabilities, along with its storied history, mark it as a perfect spot to launch our return to the Moon. The complex's first mission was Apollo 10 in 1968, which appropriately also served as a test for a heavy-lift launch vehicle (the Saturn V rocket) and lunar spacecraft: the Apollo Command and Service Modules joined with the Lunar Module. The Apollo 10 mission profile included testing the Lunar Module while in orbit around the Moon before returning to the Earth. In its "Block-1" configuration, Artemis 1's SLS rocket will take off with 8.8 million pounds of maximum thrust, even greater than the 7.6 millions pounds of thrust generated by the legendary Saturn V, making it the most powerful rocket in the world!

Artemis 1 will serve not only as a test of the SLS and the Orion hardware, but also as a test of the integration of ground systems and support personnel that will ensure the success of this and future Artemis missions. While uncrewed, Artemis-1 will still have passengers of a sort: two human torso models designed to test radiation levels during the mission, and "Commander Moonikin Campos," a mannequin named by the public. The specialized mannequin will also monitor radiation levels, along with vibration and acceleration data from inside its mission uniform: the Orion Crew Survival Suit, the spacesuit that future Artemis astronauts will wear. The "Moonikin" is named after Arturo Campos, a NASA electrical engineer who played an essential role in bringing Apollo 13's crew back to Earth after a near-fatal disaster in space.

The mission also contains other valuable cargo for its journey around the Moon and back, including CubeSats, several space science badges from the Girl Scouts, and microchips etched with 30,000 names of workers who made the Artemis-1 mission possible. A total of 10 CubeSats will be deployed from the Orion Stage Adapter, the ring that connects the Orion spacecraft to the SLS, at several segments along the mission's path to the Moon. The power of SLS allows engineers to attach many secondary "ride-along" mission hardware like these CubeSats, whose various missions will study plasma propulsion, radiation effects on microorganisms, solar sails, Earth's radiation environment, space weather, and of course, missions to study the Moon and even the Orion spacecraft and its Interim Cryogenic Propulsion Stage (ICPS)!

If you want to explore more of the science and stories behind both our Moon and our history of lunar exploration, the Night Sky Network's **Apollo 11 at 50 Toolkit** covers a ton of regolith: bit.ly/nsnmoon! NASA also works with people and organizations around the world coordinating **International Observe the Moon Night**, with 2022's edition scheduled for Saturday, October 1: moon.nasa.gov/observe. Of course, you can follow the latest news and updates on Artemis 1 and our return to the Moon at nasa.gov/artemis-1

Follow along as Artemis 1 journeys to the Moon and back! A larger version of this infographic is available from NASA at: nasa.gov/image-feature/artemis-i-map

Full Moon over Artemis-1 on July 14, 2022, as the integrated Space Launch System and Orion spacecraft await testing.

Photo credit: NASA/Cory Huston Source: https://www.nasa.gov/image-feature/a-full-moon-over-artemis/

San Diego Astronomy Association

2022 TDS Star Party Schedule

Date	Type	Sunset	Astro. Twi.	Moonrise(set)	Illumination†	Notes
Aug-20	Public	7:27 PM	8:55 PM	1:01 AM	37%	Saturn at Opposition on Aug 14
Aug-27	Member	7:19 PM	8:45 PM	7:30 AM	0%	Mercury Greatest Eastern Elongation - Aug 27 (PM)
Sep-17	Public	6:51 PM	8:14 PM	11:40 PM	54%	Neptune at Opposition on Sep 16
Sep-24	Member	6:42 PM	8:04 PM	6:20 AM	2%	Jupiter at Opposition on Sep 26
Oct-15	Public	6:15 PM	7:37 PM	10:21 PM	71%	Mercury at Greatest Western Elongation - Oct 8 (AM)
Oct-22	Member	6:07 PM	7:29 PM	5:06 AM	8%	Orionids peak night of Oct 20-21 (ZHR†† 20)
Nov-19	Public	4:45 PM	6:11 PM	2:50 AM	21%	Leonids peak night of Nov 17-18 (ZHR†† 15)
Nov-26	Member	4:43 PM	6:09 PM	(7:31 PM)	12%	Thanksgiving Weekend
Dec-17	Public	4:44 PM	6:13 PM	1:34 AM	38%	Geminids peak night of Dec 13-14 (ZHR†† 150)
Dec-24	Member	4:48 PM	6:16 PM	(6:21:PM)	3%	Ursids peak night of Dec 21-22 (ZHR†† 10)

† Illumination at meridian crossing.

†† Published *zenithal hourly rate(s)* ZHR vary widely between sources.

AmazonSmile Donations

The SDAA board wants to thank members for using the AmazonSmile donation link as you've helped us raise over $300 in 2020 at no cost to you. This is three times the amount we received in 2019. Our URL is smile.amazon.com/ch/51-0183640 and, if you are an Amazon user, we hope you will encourage your family to use this option.

MEMBERSHIP INFORMATION

Send dues and renewals to P.O. Box 23215, San Diego, CA 92193-3215 or renew on-line. The notice that your membership in SDAA will expire is sent by email. Dues are $60 for Contributing Memberships; $35 for Basic Membership; $60 for Private Pads; $5 for each Family membership.