## San Diego <br> 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

December 12th at 7:00pm 10070 Willow Creek Rd
San Diego, CA 92131
Via Zoom
Next Program Meeting
Annual Banquet January 27th

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## January 27, 2024 SDAA Banquet

Topic: "New Eyes - New Universe" - the celestial surprises of the James Webb Space Telescope
Speaker: Steve Murray
Steve is a graduate of the University of Wisconsin-Madison with a PhD in Industrial and Systems Engineering. He's currently a freelance science writer and NASA/JPL
$7-8 \mathrm{pm}$ - Guest speaker
8-9:30 - Auction and raffle
Banquet tickets will be $\$ 85$.

Solar System Ambassador, following careers in naval aviation at MCAS Miramar, human performance research at Point Loma, and teaching at the University of San Diego. Steve has been a space enthusiast his entire life and counts several astronauts as friends. Through the years, he's also kept an eye on the skies - literally - as an amateur astronomer. Steve has been to Iceland and Alaska in search of the Aurora Borealis, and to Chile and France to visit some of the world's biggest telescopes.


Handlery Hotel on Saturday, January 27, 2024. The tentative schedule of events is as follows:
5-6pm - Self-hosted cocktail hour
$6-7 \mathrm{pm}$ - Buffet dinner and club annual meeting

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

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## San Diego Astronomy Association Board of Directors Meeting

December 12, 2023 - Unapproved and subject to revision

## 1. Call to Order

The meeting was held via Zoom and was called to order at 7:09pm with the following board members in attendance: Dave Decker, President; Kin Searcy, Vice President; Mike Chasin, Treasurer; Gene Burch, Recording Secretary; Alicia Linder, Corresponding Secretary; Gracie Schutze, Director; Bee Pagarigan, Director; David Wood, Director; Steve Myers, TDS site maintenance committee.

## 2. Approval of Last Meeting Minutes

The November meeting minutes were approved.

## 3. Treasurers \& Membership Report

The November Treasurer's report was approved. Mike said that membership has dropped a bit, but part of that is he has purged some of the student members. Dues are a little ahead of projections and expenses are in line, except the utilities are a little higher than expected. Mike also reported the following:

- Chase account funds transferred; accounts closed
- $\$ 33,000$ deposited with CFG Bank at $4.37 \%$
- CPA paid $\$ 880$ for tax return prep
- Reimburse Ed Rumsey $\$ 318$ for TDS expenses, Jeff Stevens $\$ 88$ for JSF site renewal, Bee Pagarigan \$149 for Cruzen expenses, Gene Burch \$852 merchandise expenses


## 4. Standard Reports

## a. Site Maintenance Report

LIPP/Warming Room Building Inspection - Steve reported that he has inspected the warming room and is concerned that there is water coming in from somewhere. There appears to be mold and the siding probably needs to be replaced. We also need to be sure that the integrity of the weight bearing walls is good since it carries the weight of the LIPP roof when it is rolled back. Steve has obtained several bids and the Board approved $\$ 15,000$ for any necessary repairs.

Bathroom Building Inspection - the bathroom building appears to have water intrusion also and will need repair as well. Steve is obtaining bids.

We need to demo and remove the existing patio covering and plan to replace it next year.
b. Observatory:

Nothing new to report at this time
c. Loaner Scope Report:

We've had something of a run on the loaner scopes this month. The Dec 9 (or Dec 16) exchange will result in all but two of the loaners being checked out!

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Two new donations have come in.

First is a vintage 8" Meade SCT (unsure what model). I'll be picking that one up on my way out to TDS in December. If it's an LX90 or LX200 with GOTO I'll probably keep it for the loaner program. Otherwise, it's likely to end up in the banquet auction.

Second is a 16" Meade Lightbridge Dobsonian. Ed picked this one up and he and I inspected it. It's in pretty rough shape. It was stored outdoors for years with nothing but a trash bag protecting it. Fortunately, the optics appear to be serviceable. It needs quite a bit of TLC to get into working order: new secondary holder, a fresh set of nuts and bolts to replace rusty ones, the Teflon pads on the altitude and probably the azimuth axis are missing, and the focuser needs attention. However, nothing catastrophic. If I'm able to get the scope into working order it will be a fantastic loaner scope (but only for lessees that have already demonstrated competency with a smaller Dobsonian and have a large enough vehicle to transport the scope). This model's ground board does not have the ability to disassemble in the field, which means lessees with vehicles without a large hatch (rear hatch or side sliding door) will not be able to loan it out.
d. Private Pad Report:

It looks like we are going to be leasing 4 new pads over the next week and knock 5 people off the waiting list (one is a relocation). That will leave 4 unleased pads and 9 people on the waiting list.
e. Program Meetings Report:

Banquet Speaker update, Jan 27, 2024:
Topic: "New Eyes - New Universe" - the celestial surprises of the James Webb Space Telescope Speaker: Steve Murray
We need to add details on both calendars, reservations etc.
f. AISIG Report:

There are no AISIG meetings scheduled until the end of January. Until that point, I'll be hitting up the ASISG members for ideas on topics. Some of the members have expressed an interest in having more hands-on meetings, similar to what we had a few months ago I plan on scheduling at least two of those over the next 12 months.
g. Newsletter Report:

All looks great, Added additional details regarding the Banquet!
h. Website Report:

I updated the website after the banquet. I will need a picture and email address for any new Board members or committee chairs.
i. Social Media:

No report

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j. Outreach Report:

November wasn't the best month for sharing the sky with the public, as both Sycamore Canyon West and East were cancelled. On the other side of the coin was Saturn and Jupiter, visible all month and providing a lot of "oohs" and "ahhs". On November 1st, we had a lot of people coming out of the Fleet Science Center's two planetarium shows, "The Sky Tonight" at Stars-in-the-Park to see our two featured planets. Kumeyaay Lake Campground and K.Q. Ranch brought in the usual number of observers, with K.Q. Ranch giving us the best view of the heavens that month. We took a chance on Northmont Elementary School with a 'partly cloudy' forecast, and it turned out to be a mostly cloudy forecast, disappointing a lot of students, school staff, and us. We did give them a quick glimpse of Jupiter and Saturn...

The next day, Dennis Ammann went solo with Cub Scout Pack 643 at Rancho Peñasquitos, providing them with a 30 -minute PowerPoint 'How Telescopes Work' and a 40 minute viewing of Saturn and Jupiter with the help of a parent who brought a 10" SCT.

On Sat, the 11th, we had major conflicts, with OakOasis, the SDAA Annual BBQ at TDS, and the wonderful Riverside Astronomy Association event, NightFall all scheduled. We managed to host OakOasis with a few members, and the BBQ was a smashing success with record attendance. Crestridge Ecological Reserve was a major success, as it was forecasted for 'partly cloudy' skies, but half way through the viewing, the clouds departed and we had clear skies. At this event, Simon Breen, our host, provided cookies and hot chocolate, and a wonderful violinist who played space related music like Star Wars, Star Trek, 2001 Space Odyssey, etc.

The next night we were at Our Lady of Grace Catholic School, supporting their science night. They had a UCSD professor giving an astronomy presentation at their athletic field and lake the rest of the night gave them Saturn and Jupiter. What a night for children to learn about astronomy and two planets! Finally, 'Prince William' (William Oliver) lived up to his nickname and saved SDAA's reputation, by volunteering to attend Solana Ranch Elementary School's Science Night, even though it was the same night as SDAA's Program Meeting (Gadget Night). He shared the night sky with the children, then packed up his scope, and headed for MTRP to attend Gadget Night, defying physics, almost being at two places at one time!
Here are the numbers for our November Outreach activities:

| 2023 | Previous Total | November | YTD |
| ---: | ---: | ---: | ---: |
| Completed | $\mathbf{7 4}$ | $\mathbf{1 0}$ | 84 |
| Canceled | 35 | 2 | 37 |
| Total Attendance | $\mathbf{7 9 9 2}$ | $\mathbf{8 1 1}$ | $\mathbf{8 8 0 3}$ |

k. TARO Report:

TARO is active and accepting request for imaging and other citizen science projects. There has also been increased requests for access to the image archives.

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I. Cruzen Report:

Cruzen has been reserved one night in November.
The DK+Schaefer is still having the problem with tracking objects near the meridian. I tried tightening the RA clutch but according to the last member who used the facility, that did not correct the problem. I will try biasing the counterweights next, and will advise members to view objects near the meridian from a predefined side of the mount, to take advantage of the counterweight bias to ensure tracking.
m. Merchandise Report:

We sold a few items last month and have a decent selection of T-shirts, hats and license plate frames for the banquet.
n. Astronomical League Report:

Nothing new at this time.
o. JSF Report:

Nothing new at this time.
p. Primary Grid Reconstruction Report:

A scope of work package has been created and has been distributed to two additional electrical contractors, Baker Electric and Morrow-Meadows. Both companies have expressed interest in the project and the project manager from Baker Electric has suggested a site walk happen in the next few weeks.

## 5. Old Business:

a. Bee reported that the initial batch of 5 different "test" stickers were received and look great. She's working on an additional 5 designs and we should have them in time for the banquet.
b. Gene called for a vote to approve the new slate of officers. The Board Burch voted unanimously to approve.
c. A draft proposal for an ethics policy was presented by Mike Chasin Chasin and a committee was formed to review and modify it as needed.
d. We have a tentative Small Claims Court date set for $1 / 24 / 24$ in our Chasin continuing attempt to recover the $\$ 5,000$ from Chase Bank.
6. New Business:
a. Website Updates Suggested - Bee noted that there are some outdated

Pagarigan items on the website. Dave Decker will send out an email to all committee chairpersons asking them to review the website and update Jeff Stevens with any changes.

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b. Miscellaneous Club Assets - Container Storage

Dave reported that the club has a number of assets that are stored in the Conex box at TDS as well as in a number of members' houses. These facilities are full and we need to do some housecleaning. A committee consisting of Dave Decker, Dave Wood, Ed Rumsey and Paul Krizak is looking for solutions, one of which is to donate some of the items for the banquet.
c. Other New business - Here are some things that we need to start

Decker

Decker working on in the near future:

- Updating the pad lease agreement, including how we handle improvements, what to do with items/structures left on a pad when the lease is over, grid connections, etc.
- Review our insurance for liability, D\&O and outreach

7. Adjournment: The meeting was adjourned at $8: 55 \mathrm{pm}$.

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Navigating the winter night sky: Simply start with what you know or with what you can easily find.
1 Above the northeast horizon rises the Big Dipper. Draw a line from its two end bowl stars upwards to the North Star.
2 Face south. Overhead twinkles the bright star Capella in Auriga. Jump northwestward along the Milky Way first to Perseus, then to the "W" of Cassiopeia. Next Jump southeastward from Capella to the twin stars Castor and Pollux of Gemini.
3 Directly south of Capella stands the constellation of Orion with its three Belt Stars, its bright red star Betelgeuse, and its bright blue-white star, Rigel.
4 Use Orion's three Belt stars to point to the red star Aldebaran, then to the Hyades, and the Pleiades star clusters. Travel southeast from the Belt stars to the brightest star in the night sky, Sirius.

## Binocular Highlights

A: Examine the stars of the Pleiades and Hyades, two naked eye star clusters. B: Between the "W" of Cassiopeia and Perseus lies the Double Cluster. C: The three westernmost stars of Cassiopeia's "W" point south to M31, the Andromeda Galaxy, a "fuzzy" oval. D: M42 in Orion is a star forming nebula. E: Look south of Sirius for the star cluster M41. F: M44, a star cluster barely visible to the naked eye, lies to the southeast of Pollux.

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## ASTRONOMICAL LEAGUE Double Star Activity



## Other Suns: Delta Orionis (Mintaka)

How to find Delta Orionis on a January evening
Face southeast. Look at Orion above Sirius. Orion's Belt is the three stars of equal brightness between bright Rigel and Betelgeuse. Delta Orionis is the western star of the Belt.

## Delta Orionis

A-C separation: 53 sec
A magnitude: 2.4
C magnitude: 6.8
Position Angle: $0^{\circ}$ Colors:
yellow-white blue-white Component $B$ is a 14 th magnitude star, not visible in most small telescopes.


## Otros Soles: Delta Orionis (Mintaka)

Cómo encontrar a Delta Orionis en una tarde de Enero
Mira al Sureste. Mire a Orión sobre Sirio. El cinturón de Orión son las tres estrellas de igual brillo entre las brillantes Rigel y Betelgeuse. Delta Orionis es la estrella occidental del Cinturón.

## Delta Orionis

A-C separación: 53 sec
A magnitud: 2.4
C magnitud: 6.8
PA: $0^{\circ}$
Colores:
amarilla-blanca azul-blanca

El componente B es una estrella de magnitud 14, no visible con telescopios pequeños.


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## If you can observe only one celestial event this month, see this one:



January 8 and 9, 2024: Mercury, Venus, and the moon forty minutes before sunrise


## in the southeast



View through 10x50 binoculars on January 8


## The Scene:

The crescent moon, Antares, Venus, and Mercury in the morning twilight

On January 8, the crescent moon approaches Antares low in the southeast 90 minutes before sunrise.

- The moon occults Antares for viewers living in the southwestern portion of the US. (NM, UT, AZ, and So CA.)
- The event begins at 6:39AM MST, location dependent.
- Use common household binoculars to watch the occultation and begin viewing at 6:35 MST.
* The very bright object to the moon's left is Venus.
- 40 minutes before sunrise, look for Mercury low in the southeast to the far lower left of Venus.

On January 9, an even thinner crescent moon lies right of Mercury and below brilliant Venus.

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Another Look
January 2024
The new moon in January is on the $11^{\text {th }}$ at 0657. The Full Moon is on Thursday, January 25, at 1254. January's Full Moon is the Wolf Moon. Other Native american names are the Goose Moon, Center Moon, Cold Moon, Freeze Up Moon, Hard Moon and Spirit Moon. Anglo Saxon names are Moon after Yule and Snow Moon. In Spanish its Luna Nueva de Enero, in Greek its Néa $\Sigma \varepsilon \lambda \grave{i v \eta}$ Iavouapióo - Néa Selíni Ianouaríou, in French its Nouvelle Lune de Janvier, in Ukrainian its Січневий Молодик - Richness Molodyk.

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

Perseus - seek for by her feet Which ever at his shoulder are revolving.
Tallest of all his compeers at the North
He towers. His right hand stretches toward the chair Of his bride's mother.

Frothingham's Aratos


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

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

In prehistory, men and woman began to combine the stars into individual groupings and give those groupings identity and meaning. There is Sirius the Dog star rising at the beginning of summer heat. Water carriers and wheat carriers rising as the rivers begin to flood and bring back life. Many of these myths abound from the era of Gilgamesh and even earlier, from Homer and the later Greeks and finally to Ptolemy who codified the star shapes for the cartographers and globe makers that followed.

If we go back even before the "modern" civilizations of the Nile, Jordan, Tigris, Ganges, Mekong, and Yangtze, there are mud walled civilizations growing around these river banks determined to understand their place in the world.
 meaning, help and understanding.
Andromeda is one story in the chapter of human sacrifice, one saved by a hero who killed not only the Sea Monster but
also a Gorgon whose gaze turned men to stone.
The story of Andromeda and Perseus
marked the end of an eon where the sacrifice of a child could abate the humor of a god.

Perseus is also member of a different community of constellations. Constellations that portrayed winning against the direst adversaries. Hercules against the fetid swamp, portrayed by Hydra, Ophiuchus fighting death, represented by a snake's bite, Sagittarius, a


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man and a horse, aiming his arrow at the Scorpion. There is Orion, fearless against the stampeding bull and Sagitta, the arrow that killed the Eagle tormenting Prometheus and maybe of most important is Centaurus, the Centaur Chiron, whose weapon was education - to kill ignorance.

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

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

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

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


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

No less a person than Serviss, in his "Astronomy with an Opera Glass" said: "With a telescope of medium power, it is one of the most marvelously beautiful object in the sky - a double swarm of stars, bright enough to be clearly distinguishable from one another and yet so numerous as to dazzle the eye with their lively beams." Wow, there's some writing for you. Don Lynn double cluster https://ocastronomers.org/wp-content/uploads/2018/12/2.34557.1_00466-78_LRGB_90secPCrsm.jpg https://ocastronomers.org/wp-content/uploads/2019/01/calif01.jpg

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

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

Berehynia is the Ukrainian goddess of nature, representing the strength, resilience and

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artist Polina Skurykhina. The planet Tryzub, is Ukrainian for Trident. It comes from the coat of arms of a Ukrainian royal house and its image is still prevalent across Ukraine today.

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

In the midst of this clash and din the heavens are rent in twain, and the sons of Muspell come riding through the opening.
Surt rides first, and before him and after him flames burning fire.
He as a very good sword, which shines brighter than the sun.
As they ride over Bifrost it breaks to pieces, as has before been stated.
The sons of Muspel direct their course to the plain which is called Vigrid...
The sons of Muspel have there effulgent bands alone by themselves. Ragnarok "Edda"
Alpha $\boldsymbol{\alpha}$ Persei is Mirfak, meaning elbow, Atik, o Omicron - shoulder, Menkhib, $\xi X i$ - shoulder and Miram $\boldsymbol{\eta}$ eta, Misam $\mathbf{k}$ kappa Persei - his wrist and Seif $\varphi$ Phi Persei - sword. Of some interest are the stars of Medusa's head. $\boldsymbol{\rho}$ Rho Persei is Gorgonia Tertia, $\boldsymbol{\omega}$ Omega Persei is Gorgonia Quarta and $\boldsymbol{\pi}$ Pi Persei is Gorgonia Secunda. Not named as such, also in the head is $2^{\text {nd }}$ magnitude Algol, $\boldsymbol{\beta}$ Beta Persei, the demon star.
"Its horror and its beauty are divine.
Upon its lips and eyelids seem to lie
Loveliness like a shadow, from which shine,
Fiery and lurid, struggling underneath,
The agonies of anguish and of death.." Shelly
Other stars in Perseus with a Bayer designation are $\zeta$ Persei, y Persei and $\boldsymbol{\delta}$ Persei. An interesting star is $X$ Persei, near $\zeta$, at the foot. $X$ Per is a $6^{\text {th }}$ magnitude main-sequence(?) star with a neutron star companion. $X$ Per is slightly variable, probably because of the rise and fall of expelled material.

A Persei is a $1^{\text {st }}$ magnitude star and noticeable as the brightest member of open cluster, Melotte 20. Melotte 20 has about a dozen members $6^{\text {th }}$ magnitude and brighter and includes $\boldsymbol{\alpha}$, $\boldsymbol{\sigma}, \boldsymbol{\psi}$ and $\boldsymbol{\delta}$. Melotte 20 also goes by the name " $\alpha$ Perseus" cluster and Collinder 39. Volker Wiedhoff https://www.astrobin.com/us7wq1/?q=melotte 20

to our neutron star X Persei.
https://www.astrobin.com/g6msx3/?q=ic 348 \& NGC1333
It is an invisible M42, a stellar birthplace with a mass of 10,000 stars. The image to the right was taken by Jim Windlinger of the OCA. It is centered


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The two Messier's in Perseus are M76 and M34. M76 is $10^{\text {th }}$ mag., a fuzzy spot in your binoculars. Of the two, M34 is the brighter at $5^{\text {th }}$ magnitude. Once you look at M76 in your telescope, however, you will understand some of the issues with which early astronomers had to deal. M76 has two NGC \#'s, 650 and 651 . You will easily see the double lobe of the planetary that confused our earlier brethren.
Dave Radosevich \& Don Lynn ,
M76https://ocastronomers.org/wp-content/uploads/2018/1 2/M76.2-6LRGBP2sm.jpg
https://ocastronomers.org/wp-content/uploads/ 2019/01/m034


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


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

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


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The majority share of private Observatory $F$ (third from the top) is for sale. SDAA TDS observatories are especially great for members who like comfortable observing with large and permanent telescopes at TDS. Observatory $F$ is also set up for remote access photometry/photography. A 16" LX200 classic with equatorial mount, cameras, spares and more is included. Although equipment has depreciated, costs of building have appreciated. If seriously interested, send an email to tds_obs_f@yahoo.com for a complete description and spreadsheet.


Open House at Observatory F will be held Saturday January 13, 2024 from 3-10 PM for interested buyers.
Check it out and if it's good weather, look through the 16" LX200.

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Vice President
Recording Secretary
Treasurer
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Director Delta
Director Gamma

SDAA Contacts

## Club Officers and Directors

Dave Decker<br>Kin Searcy<br>Gene Burch<br>Mike Chasin<br>Alicia Linder<br>Dave Wood<br>Hiro Hakozaki<br>Gracie Schutze<br>Bee Pagarigan

Committee
Ed Rumsey
Mark Smith
Dennis Ammann

- Vacant-
- Vacant-

Dave Decker
Dennis Ammann
-Vacant-
Dennis Ammann
Andrea Kuhl
Dan Kiser
Jeff Stevens
Dave Wood
-Vacant-
-Vacant-

- Vacant-

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Jeff Flynn
Paul Krizak
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Dave Wood TBD
Dave Wood
-Vacant-

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Outreach
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S. County Star Parties
E. County Star Parties

Central County Star Parties
Camp with the Stars
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(619) 247-2457
(858) 547-9887
(858) 922-0592
(858) 566-2261
(858) 926-9610
(619) 806-6505
(858) 735-8808
(619) 972-1003

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.

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This article is distributed by NASA's Night Sky Network (NSN).
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Connecting the 'Dots' with Asterisms
By Kat Troche

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

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

Asterisms Through the Seasons


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Try looking for these asterisms this season and beyond:

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


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

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

## How to Spot Asterisms

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

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

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## 2024 TDS Star Party Schedule

| Date | Type | Sunset | Astro. Twi. | Moonrise(set) | Closing | Illumination |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Jan-06-24 | Public | $4: 57 \mathrm{PM}$ | $6: 24 \mathrm{PM}$ | $3: 07 \mathrm{AM}$ | $9: 30 \mathrm{PM}$ | $26.5 \%$ |
| Jan-13-24 | Member | $5: 03 \mathrm{PM}$ | $6: 30 \mathrm{PM}$ | $(7: 50 \mathrm{PM})$ | $9: 30 \mathrm{PM}$ | $8.5 \%$ |
| Feb-03-24 | Public | $5: 22 \mathrm{PM}$ | $6: 47 \mathrm{PM}$ | $1: 55 \mathrm{AM}$ | $9: 30 \mathrm{PM}$ | $44.0 \%$ |
| Feb-10-24 | Member | $5: 29 \mathrm{PM}$ | $6: 52 \mathrm{PM}$ | $(6: 39 \mathrm{PM})$ | $9: 30 \mathrm{PM}$ | $1.4 \%$ |
| Mar-02-24 | Public | $5: 47 \mathrm{PM}$ | $7: 09 \mathrm{PM}$ | $12: 46 \mathrm{AM}$ | $10: 00 \mathrm{PM}$ | $61.4 \%$ |
| Mar-09-24 | Member | $5: 52 \mathrm{PM}$ | $7: 14 \mathrm{PM}$ | $5: 52 \mathrm{AM}$ | $10: 00 \mathrm{PM}$ | $0.6 \%$ |
| Apr-06-24 | Member | $7: 12 \mathrm{PM}$ | $8: 37 \mathrm{PM}$ | $5: 20 \mathrm{AM}$ | $11: 00 \mathrm{PM}$ | $6.0 \%$ |
| Apr-27-24 | Public | $7: 27 \mathrm{PM}$ | $8: 57 \mathrm{PM}$ | $11: 36 \mathrm{PM}$ | $11: 00 \mathrm{PM}$ | $88.3 \%$ |
| May-04-24 | Member | $7: 33 \mathrm{PM}$ | $9: 04 \mathrm{PM}$ | $4: 20 \mathrm{AM}$ | $11: 30 \mathrm{PM}$ | $16.0 \%$ |
| May-11-24 | Public | $7: 38 \mathrm{PM}$ | $9: 12 \mathrm{PM}$ | $(11: 53 \mathrm{PM})$ | $11: 30 \mathrm{PM}$ | $17.7 \%$ |
| Jun-01-24 | Public | $7: 51 \mathrm{PM}$ | $9: 31 \mathrm{PM}$ | $2: 50 \mathrm{AM}$ | $11: 30 \mathrm{PM}$ | $28.5 \%$ |
| Jun-08-24 | Member | $7: 55 \mathrm{PM}$ | $9: 36 \mathrm{PM}$ | $(10: 31 \mathrm{PM})$ | $11: 30 \mathrm{PM}$ | $6.8 \%$ |
| Jul-06-24 | Member | $7: 59 \mathrm{PM}$ | $9: 40 \mathrm{PM}$ | $(9: 07 \mathrm{PM})$ | $11: 30 \mathrm{PM}$ | $1.1 \%$ |
| Jul-27-24 | Public | $7: 50 \mathrm{PM}$ | $9: 24 \mathrm{PM}$ | $11: 58 \mathrm{PM}$ | $11: 30 \mathrm{PM}$ | $56.6 \%$ |
| Aug-03-24 | Member | $7: 44 \mathrm{PM}$ | $9: 17 \mathrm{PM}$ | $(7: 44 \mathrm{PM})$ | $11: 30 \mathrm{PM}$ | $0.6 \%$ |
| Aug-31-24 | Public | $7: 13 \mathrm{PM}$ | $8: 38 \mathrm{PM}$ | $4: 59 \mathrm{AM}$ | $11: 00 \mathrm{PM}$ | $5.2 \%$ |
| Sep-07-24 | Public | $7: 04 \mathrm{PM}$ | $8: 28 \mathrm{PM}$ | $(9: 20 \mathrm{PM})$ | $11: 00 \mathrm{PM}$ | $20.0 \%$ |
| Sep-28-24 | Member | $6: 36 \mathrm{PM}$ | $7: 58 \mathrm{PM}$ | $3: 52 \mathrm{AM}$ | $10: 30 \mathrm{PM}$ | $14.5 \%$ |
| Oct-05-24 | Member | $6: 27 \mathrm{PM}$ | $7: 48 \mathrm{PM}$ | $(7: 54 \mathrm{PM})$ | $10: 30 \mathrm{PM}$ | $8.6 \%$ |
| Oct-26-24 | Public | $6: 02 \mathrm{PM}$ | $7: 25 \mathrm{PM}$ | $2: 42 \mathrm{AM}$ | $10: 30 \mathrm{PM}$ | $28.1 \%$ |
| Nov-02-24 | Public | $5: 56 \mathrm{PM}$ | $7: 19 \mathrm{PM}$ | $(6: 30 \mathrm{PM})$ | $10: 00 \mathrm{PM}$ | $1.7 \%$ |
| Nov-30-24 | Member | $4: 42 \mathrm{PM}$ | $6: 09 \mathrm{PM}$ | $7: 11 \mathrm{AM}$ | $9: 30 \mathrm{PM}$ | $0.4 \%$ |
| Dec-21-24 | Public | $4: 47 \mathrm{PM}$ | $6: 15 \mathrm{PM}$ | $11: 15 \mathrm{PM}$ | $9: 30 \mathrm{PM}$ | $63.2 \%$ |
| Dec-28-24 | Member | $4: 51 \mathrm{PM}$ | $6: 19 \mathrm{PM}$ | $6: 00 \mathrm{AM}$ | $9: 30 \mathrm{PM}$ | $5.2 \%$ |

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