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DECEMBER 2019

Austin Astronomical Society

SIDEREAL TIMES

keeping astronomy weird since 1969

HOLIDAY PARTY

Friday, Dec 13, 2019
7:30 PM

@Austin Gem and
Mineral Society clubhouse
6719 Burnet Lane, Austin TX 78757

Join us for the AAS Holiday Party, PotLuck dinner, and Image of the Year Award!

Bring drinks (alcohol is okay) and a dish to share.

Parking is available in the fenced lot next to the building.

President's Notes

By Jim Spigelmire

Reflection and Anticipation

Season's Greetings to AAS members old and new! This is the time of year when like many of you, I like to reflect on the last 12 months, taking stock of where I was at the start compared to where I am now, and look forward with anticipation to the next 12 months and think about where I could be.

As we began 2019, we didn't have a home for our member-only star parties. Today, thanks to the generosity of Alan and Carolina Carruth, and the hard-work of several of our members; we have access to a wonderful, dark-sky site with tons of potential.

A year ago, we began talking about formalizing a partnership with Pedernales Falls State Park and establishing semi-permanent storage there. Today, our cargo container is purchased and being customized to our specifications, and our agreement with the park is nearly complete with the expectation it will be executed in January. Looking ahead to 2020, Joyce Lynch (our Public Outreach chair) has completed the schedule for the public parties we'll host there, and demand is already such that the park has had to implement a reservation system to manage attendance. In 2019, we partied on the 50th anniversary of the first steps mankind took on alien soil and celebrated the 50th anniversary of the first meeting of our beloved AAS. We said hello to many new members and bid a sad final farewell to dear friends and fellow astronomers.

In the opportunity category; we began 2019 with the goal to identify po-

Banner: Nov. 2019 Image of the Month: Dawn Davies, The Horsehead Nebula

Austin Astronomical Society

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Sidereal Times is the official monthly publication of the Austin Astronomical Society.

tential new locations for our monthly General Assembly meetings, and we haven't made much progress with this one. We've approached the leadership at a centrally located high school, and they're considering our proposal, but there's still a lot of work to do with this one. We're renewing this goal for 2020 as lack of parking and ease of access has been called-out several times as a key reason behind the decline in monthly attendance.

So, as we anticipate the year ahead, I challenge each of you to think about what we can do together to make AAS a thriving, active society. What can we do to promote the idea that we're a welcoming, diverse group of folks that share a common enthusiasm of astronomy – a gathering of friends that have fun getting together to learn about, "cuss and discuss" what's happening in the world of space exploration, show-off our new gear, and teach others how to appreciate the field we all love so much.

HOLIDAY PARTY

December 13

7:30 p.m.

Austin Gem and Mineral Society clubhouse

6719 Burnet Lane, Austin Texas 78757

Bring drinks (alcohol is okay) and a dish to share.

Parking is available in the fenced lot next to the building.

We'll have voting for Image of the Year.

In closing – I want to quote my friend and predecessor, Tim Brown by reminding you that our future depends on the time and talents of volunteers to keep the lights on (or off if you will). We'll seen be sending out the call for candidates for our EC election in April, and I hope that you'll consider how you might serve in 2020.

Thanks, and Clear Skies,

Jim

Inside This Issue

AAS Affiliations

http://darksky.org/

https://nightsky.jpl.nasa.gov

https://www.astroleague.org/

http://www.tsgc.utexas.edu/

The Orion Nebula: Window Into a Stellar Nursery

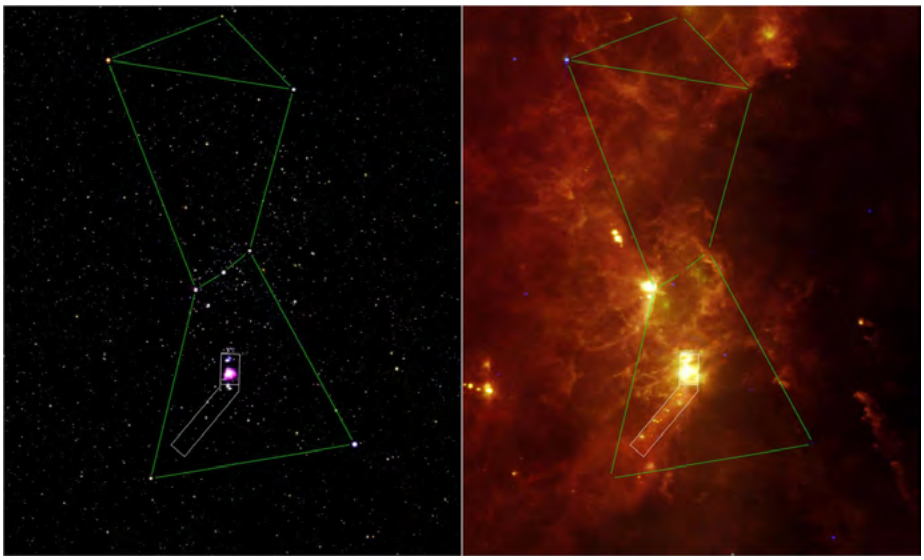
By David Prosper

Winter begins in December for observers in the Northern Hemisphere, bringing cold nights and the return of one of the most famous constellations to our early evening skies: Orion the Hunter!

Orion is a striking pattern of stars and is one of the few constellations whose pattern is repeated almost unchanged in the star stories of cultures around the world. Below the three bright stars of Orion's Belt lies his sword, where you can find the famous Orion Nebula, also known as M42. The nebula is visible to our unaided eyes in even moderately light-polluted skies as a fuzzy "star" in the middle of Orion's Sword. M42 is about 20 light years across, which helps with its visibility since it's roughly 1,344 light years away! Baby stars, including the famous "Trapezium" cluster, are found inside the nebula's whirling gas clouds. These gas clouds also hide "protostars" from view: objects in the process of becoming stars, but that have not yet achieved fusion at their core.

The Orion Nebula is a small window into a vastly larger area of star formation centered around the constellation of Orion itself. NASA's Great Observatories, space telescopes like Hubble, Spitzer, Compton, and Chandra, studied this area in wavelengths we can't see with our earthbound eyes, revealing the entire constellation alight with star birth, not just the comparatively tiny area of the nebula. Why then can we only see the nebula? M42 contains hot young stars whose stellar winds blew away their cocoons of gas after their "birth," the moment when they begin to fuse hydrogen into helium. Those gas clouds, which block visible light, were cleared away just enough to give us a peek inside at these young stars. The rest of the complex remains hidden to human eyes, but not to advanced space-based telescopes.

We put telescopes in orbit to get above the interference of our atmosphere, which absorbs many wavelengths of light. Infrared space telescopes, such as Spitzer and the upcoming James Webb Space Telescope, detect longer wavelengths of light that allow them to see through the dust clouds in Orion, revealing hidden stars and cloud structures. It's similar to the infrared goggles firefighters wear to see through smoke from burning buildings and wildfires.



Caption: This image from NASA's Spitzer missions shows Orion in a different light – quite literally! Note the small outline of the Orion Nebula region in the visible light image on the left, versus the massive amount of activity shown in the infrared image of the same region on the right. Image Credit: NASA/JPL-Caltech/IRAS /H. McCallon. From bit.ly/SpitzerOrion

Learn more about how astronomers combine observations made at different wavelengths with the Night Sky Network activity, 'The Universe in a Different Light," downloadable from bit.ly/different-light-nsn. You can find more stunning science and images from NASA's Great Observatories at nasa.gov.

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.org to find local clubs, events, and more!

The Women of Harvard and the Horsehead Nebula

By **Michael E. Marotta**

The November 2019 Sidereal Times "Image of the Month" was Dawn Davies's beautiful and inspirational image of the Horsehead Nebula (Barnard 33), a feature of the greater Orion Molecular Cloud Complex, that she made with a 25-inch reflector, a night vision eyepiece, and an iPhone 11.

The Horsehead Nebula was first identified by Williamina Fleming in 1888. A new immigrant to Boston from Scotland, Fleming was either pregnant or with a newborn when her husband abandoned her. She had worked briefly as a teacher before meeting her husband. So, she clearly had some "social capital" when she was left to her own resources. Fleming's good fortune was to be hired as a housekeeper in the home of Edward Charles Pickering of the Harvard Observatory. The story is variously told and sometimes it is Mrs. Pickering who gets the credit. The detail that biographers agree on is that Pickering often ranted at his staff that their work was sloppy and his Scottish maid could do better. And, indeed, she did.

Fleming was the first of a group of women known as the Harvard Computers. Among them were Annie Jump Cannon, Henrietta Leavitt, Antonia Maury, Florence Cushman, and, eventually, Cecilia Payne-Gosposchkin. Typically educated at Eastern women's colleges, they did the hard analytical classification and detailed cataloguing of data. Those who were paid at all received salaries closer to day laborers than to business clerks and nowhere near the pay of male academics. In 1900, Fleming was paid $1500 per year compared to $2500 for a male assistant. More to the point, Fleming worked a double shift and ran her own household. (She put her son, Edward, through MIT.)

Caption: ***"Harvard Computers (1925)"***
Margaret Harwood sat on the floor for this posed tableau on May 19, 1925. Harvia Wilson is at far left, sharing a table with Annie Cannon (too busy to look up) and Antonia Maury (left foreground). The woman at the drafting table is Cecilia Payne." Glass Photo 29-605, Harvard University Archives.

Fleming's primary work in identifying and categorizing stellar spectra with the new tool of dry plate photography was among many contributions, few of which were published under her own name. One aspect of that work was that the photographic plates could be studied anywhere. It was no longer necessary to actually be in an observatory. That work was left to men. The gendered narratives of that time also included the supposition that all men are hale and hearty hunters who love winter nights in unheated observatories in the mountains.

Here and now—where arctic gear comes in all shapes and sizes, and everyone has electronic computers—Viviana Guzmán and Karin Öberg of the Harvard Center for Astrophysics joined Maryvonne Gerin, Evelyne Roue, and other astronomers at the IRAM 30-meter diameter millimeter wavelength radio telescope, situated at 2850 meters at Pico Veleta in Andalusia, Spain, to map the Orion Nebula. (See "The Anatomy of the Orion B

Giant Molecular Cloud: A Local Template for Studies of Nearby Galaxies," Jérôme Pety, et al., Astronomy & Astrophysics 599, 98, 2017.)

The Horsehead Nebula is a feature of the giant molecular cloud (GMC) designated Orion-B. GMC Orion-A includes M43, the eponymous "Orion" Nebula in the Sword. Orion-B has been measured at over one degree in angular size, twice that of Earth's moon as we see it. Its true diameter is 25 light years. It is considered an ideal laboratory for "observing a wide range of conditions … to obtain a statistically significant breakdown" of the processes involved in the formation of new stars. Guzmán, Öberg, Gerin, Roue, and the team sought to establish baselines that can be used to validate the claims made by others who observed similar structures in galaxies.

In addition to the mechanics of gravity, the Horsehead Nebula contains clues about the origins of life. Many papers have been published about the hydrocarbon molecules detected there including propynyl (C3H2), ethynyl (C2H), and butadinyl (C4H). Even more interesting is the evidence that these short hydrocarbons are the result of ultraviolet radiation breaking down more complex polyaromatic hydrocarbons (PAHs) such as naphthalene (C10H8) and anthracene (C14H10), which we now know

Caption: ***"Pickering's Harem"***
Photograph of the Harvard Computers (unflatteringly known as "Pickering's Harem"), a group of women who worked under Edward Charles Pickering at the Harvard College Observatory. The photograph was taken on 13 May 1913 in front of Building C, which was then the newest building at the Observatory. The image was discovered in an album which had once belonged to Annie Jump Cannon. Image courtesy of the Harvard-Smithsonian Center for Astrophysics. Back row (L to R): Margaret Harwood (far left), Mollie O'Reilly, Edward C. Pickering, Edith Gill, Annie Jump Cannon, Evelyn Leland (behind Cannon), Florence Cushman, Marion Whyte (behind Cushman), Grace Brooks. Front row: Arville Walker, unknown (possibly Johanna Mackie), Alta Carpenter, Mabel Gill, Ida Woods. www.wikimedia.com

Further reading

"The Horsehead Nebula: A beautiful case," Emilie Habart, et al., ESO Messenger, No. 120, June 2005.
'Simulating star formation in molecular cloud cores: IV. The role of turbulence and thermodynamics," Rhianne Elizabeth Attwood, et al., Astronomy & Astrophysics, Volume 495, Number 1, February III, 2009.
"SCUBA observations of the Horsehead nebula – what did the horse swallow?" D. Ward-Thompson, D. Nutter, S. Bontemps, A. Whitworth, R. Attwood, Monthly Notices of the Royal Astronomical Society, Volume 369, Issue 3, July 2006, Pages 1201–1210.
The Madam Curie Complex: The Hidden History of Women in Science, Julie Des Jardins. New York: Feminist Press, 2010.
"The Women Who Mapped the Universe and Still Couldn't Get Any Respect," Natasha Geiling, Smithsonian.com, September 18, 2013.

Observing Targets December 2019

By Brian Cuthbertson

December is a time of lights, for multiple reasons. As amateur observers, we see this in the winter Milky Way, which stretches from Cepheus in the north, through Cassiopeia, Perseus and Auriga, down through Gemini, Orion, Canis Major, Puppis, and on to realms farther south. Lights above and below, all reflecting the season. Enjoy.

Melotte 20 rating: EASY

Perseus OB3 Association
RA 3h 30m Dec +49d 20' (2000)
Diameter 3 degrees

Easily located and highlighted by its brightest member, 3rd magnitude Mirfak (ALPHA Persei), Melotte 20 is not a true open cluster. Instead it is a huge, loose association of young stars scattered across some 3 degrees. It is also known as the Perseus OB3 Association and the Alpha Persei Moving Cluster.

Cataloged by Melotte in 1915, the association was described as a stellar group by Eddington in 1910, and probably first cataloged as a nebulous object by Giovanni Hodierna (1597-1660), astronomer at the court of the Duke of Montechiaro in Sicily. Largely forgotten now, Hodiernia did his observations using a simple Galilean refractor of magnification 20. He is known, among other things, as the first observer to have made a drawing of the Orion Nebula M42. His M42 drawing, made prior to 1564, can be seen at www.messier.seds.org/more/m042_hodierna.html

Associations like Melotte 20 differ from open clusters in being much larger - up to several hundred light-years across instead of 10 or 20 for open clusters - and only weakly bound by gravity. The Melotte 20 association is 550 light-years distant, 50 light-years across, and very young at only 50 million years. All its members are main sequence stars except for Alpha Persei itself, which is an F5 supergiant. Sunlike stars here are about magnitude 11. Melotte 20 contains some 50 members 10th magnitude or brighter, and about 100 true members brighter than magnitude 11.

Melotte 20 is plain to the naked eye, but is best seen through finderscopes or low-power binoculars. Which also goes to show that, like Hodierna, you don't need to spend fortunes on monster telescopes to see interesting sights out there.

NGC 1097 rating MEDIUM

barred spiral in Fornax
RA 2h 46.3m Dec -30d 16.4' (2000)
Magnitude 9.3

NGC 1097 sits almost at the center of Fornax, the Furnace, a small rectangular constellation about 40 degrees SW of Orion, nestled in the western edge of Eridanus. This is deep sky country; bright stars are few, and galaxies are the main targets.

A face-on two-armed barred spiral, NGC 1097 is fairly easy even in a 2.4-inch refractor: you'll see a 4x1.5 spot elongated SE-NW with a bright nonstellar center. A 6-inch reflector should show its elongated form and extensions, and significant detail is visible in 8-inch and 10-inch scopes.

NGC 1097 is an example of a Seyfert galaxy - a class of galaxies with an active nucleus, surrounded in this case by a circumnuclear ring a few thousand light-years in diameter. Such rings are strong sources of hydrogen-alpha emission, indicating active formation of hot young stars. The rings apparently result when bars transport infalling material toward a galaxy's core. In the case of NGC 1097, this core contains a supermassive black hole about 140 million times the mass of the Sun.

NGC 1097 has two satellite galaxies, NGC 1097A & NGC 1097B. Dwarf elliptical galaxy NGC 1097A is the larger of the two. It's

a peculiar elliptical galaxy that orbits 42,000 light-years from the center of NGC 1097. Dwarf galaxy NGC 1097B (5 x 106 solar masses), the outermost one, was discovered by its HI emission, and appears to be a typical dwarf irregular. Little else is known about it. For the life of me, I couldn't find magnitudes for either of these satellites. Which means that although they make interesting fact fodder, looking for them with your typical amateur scope is probably a futile effort.

Stock 8 rating HARD

open cluster in Auriga
RA 5h 27.6m Dec +34d 25.6' (2000)
Magnitude 12.0

Here's an interesting challenge in a relatively easy-to-find location. Stock 8 is an inconspicuous cluster surrounding 5th magnitude PHI Auriga. PHI itself lies 1.5 degrees due south of better-known open cluster M38, inside the big pentagon of Auriga. In a 10-inch scope at low power, the cluster is discernable as a slight concentration of stars around PHI, extending out maybe 5'. Stock 8 is a young cluster containing about 40 O-class stars.

Both PHI and Stock 8 are at the heart of nebula IC 417, which isn't easy visually, but can be picked up in astro images. IC 417, also known as Sharpless 2-234, forms a pair with the nebula around nearby cluster NGC 1931. IC 417 is fairly expansive - almost 100 light-years across - with obvious tendrils in images. The NGC 1931 nebula is fairly diminutive, only about 10 light-years in diameter. This has led the nebula pair to be dubbed the Spider and the Fly. The two nebulae and their embedded clusters are all about 7000 to 7500 light years away, and appear to be surrounded by the enormous diffuse HII region Sharpless 2-230. They are probably part of the Aur OB1 association.

Successful Outreach at Akin Elementary, Leander

By **Michael E. Marotta**

Tom, Gordon, Deanna, and Mike joined Joyce and Jim Lynch at Monta Akin Elementary School in Leander, northwest of Austin on Wednesday, December 4 for two hours of community engagement. They met well over 100 people that night because the school was hosting events including a music recital. They set up before 5:30 and at 7:00 PM the lines were still growing longer. The viewing was limited because the sky was partly cloudy. Jupiter was difficult and Saturn impossible. However, the Moon was close to first quarter, and they all focused on that. The viewing public seemed more than pleased. Deanna brought two computerized telescopes, a Celestron NexStar130 SLT Newtonian and a NexStar 90 SLT Maksutov-Cassegrain. In addition to a 70 mm refractor, Mike had two pairs of binoculars to keep everyone as busy as possible. Jim brought his computer with Stellarium loaded for demonstration.

Caption: Gordon helps one of our first guests get lined up on the Moon.

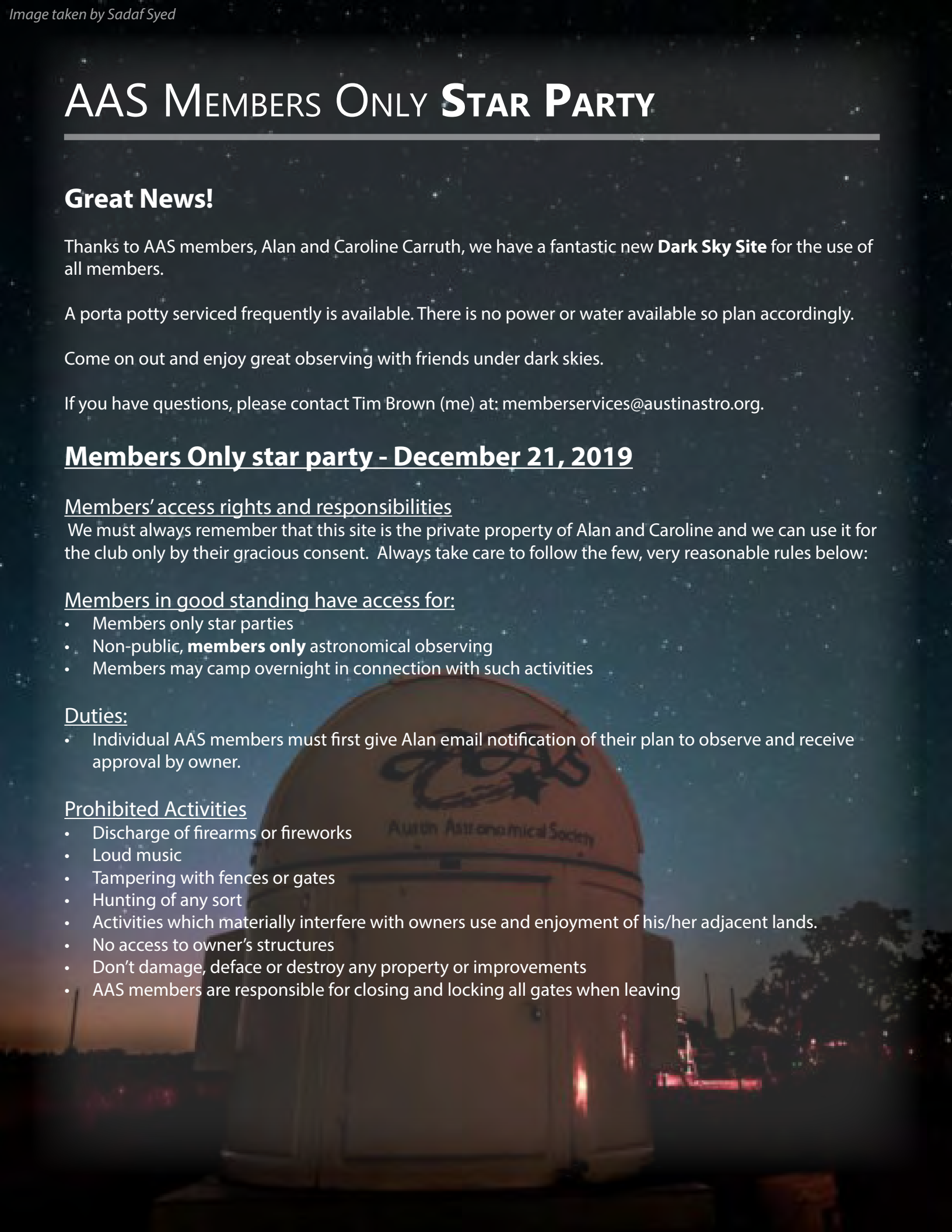


Image taken by Sadaf Syed

AAS Members Only **Star Party**

Great News!

Thanks to AAS members, Alan and Caroline Carruth, we have a fantastic new **Dark Sky Site** for the use of all members.

A porta potty serviced frequently is available. There is no power or water available so plan accordingly.

Come on out and enjoy great observing with friends under dark skies.

If you have questions, please contact Tim Brown (me) at: memberservices@austinastro.org.

Members Only star party - December 21, 2019

Members' access rights and responsibilities

We must always remember that this site is the private property of Alan and Caroline and we can use it for the club only by their gracious consent. Always take care to follow the few, very reasonable rules below:

Members in good standing have access for:

- Members only star parties
- Non-public, **members only** astronomical observing
- Members may camp overnight in connection with such activities

Duties:

- Individual AAS members must first give Alan email notification of their plan to observe and receive approval by owner.

Prohibited Activities

- Discharge of firearms or fireworks
- Loud music
- Tampering with fences or gates
- Hunting of any sort
- Activities which materially interfere with owners use and enjoyment of his/her adjacent lands.
- No access to owner's structures
- Don't damage, deface or destroy any property or improvements
- AAS members are responsible for closing and locking all gates when leaving

Outreach Report **December 2019**

By Joyce Lynch, Outreach Chair

On November 9 a group of us went to an observing session at Balcones Canyonlands National Wildlife Refuge. In spite of an almost-full moon, we were able to show about 45 guests some planets and more. Besides myself, the AAS members in attendance were Steven Bingham, Gordon Schaefering, Tom Campbell, Tom Richter, Terry Phillips, Mary Phillips, Darcy Phillips, Ramon Salvania, Christine White, and Jim Lynch.

Akin Elementary School invited us to a star party on December 4. Clouds came and went, but Jim Moyle, Tom Campbell, Gordon Schaefering, Mike Marotta, Deanna Bressie, Jim Lynch, and I helped at least 200 kids and adults look at the moon, planets and a few other objects. I heard from the organizer that the next day the kids were still talking about their experiences.

We had a very late request from a Cub Scout Pack for observing on December 6, and I wasn't sure I could get volunteers on such short notice. But Tom Richter, Tom Campbell, Tommy Simmons, and Jim Moyle stepped up and helped out the Cubs. Thanks! Tom Richter reported that the evening went fine, and the hosts seemed appreciative. "Lots of high clouds made the observing difficult but the moon, Saturn and Alberio were featured with glimpses of the Pleiades. I got a request for a "galaxy" and was able to hunt up the core of the Andromeda galaxy for a family."

There are 2 upcoming events in December: the public star party at Pedernales Falls State Park on the 14th, and an evening of observing on the 19th at Manchaca Public Library. Email outreach@austinastro.org if you can help.

I'm looking for members who are willing, even eager, to learn how to organize outreach events. The number of such events is increasing, and I need some help, especially since I don't plan to be Outreach Chair forever! If you would like more information about this, please email me at outreach@austinastro.org and we can chat. Thanks for your consideration.

Calendar of Events

13 Dec. 2019
AAS Holiday Party PotLuck dinner
7:30 PM - 11:30 PM
@ Austin Gem and Mineral Society

21 Dec. 2019
Members Only Star Party
5:30 PM - 11:00 PM
@ Bad Wolf Ranch

10 Jan. 2020
No Practical Astronomy
General Assembly Meeting
7:30 PM
@ ETC 2.136 - UT Campus Engineering Teaching Center
Dean Keeton and Speedway

25 Jan. 2020
Members Only Star Party Test
6:00 PM - 11:00 PM
@ Bad Wolf Ranch

22 Feb. 2020
Members Only Star Party
6:30 PM - 11:00 PM
@ Bad Wolf Ranch

Image of the Month

December 2019

Congratulations to
Rathijit Banerjee

The Helix Nebula (a.k.a. The Eye of God)

Telescope: Celestron EdgeHD 1100 with 0.7x Reducer
Camera: ZWO ASI1600MM-Pro
Mount: Losmandy G-11GFT Gemini 2
Software: AstroPixel Processor, Adobe Photoshop CC
Filters:
> Astrodon Ha 36mm 5nm: 60x300"
> Astrodon Oiii 36mm 3nm: 36x300"
Total Integration: 8 hours

Members' Gallery

by William Czaja
M31

Imaging telescope or lens:Takahashi FSQ-106N

Imaging camera:QHY163M

Guiding camera:QHYCCD QHY5-II-M

Software:PixInsight 1.8, Seqence Generator Pro, PHD Lab PHD2 Guiding

Filters:Astrodon 3nm Ha, Astrodon LRGB 36mm Tru-Balance E-Series

Frames: 840x120″

Integration: 28.0 hours

by Rathijit Banerjee
Rosette Nebula

This is an image of Rosette Nebula, shot in SHO color palette.

Details:

Imaging telescope: Stellarvue SVR102T with 0.8x Reducer

Imaging camera: ZWO ASI1600MM-P

Mount: Astro-Physics 1100GTO-AE

Filters:

> Astrodon Ha 36mm 5nm (8 hours)

> Astrodon Oiii 36mm 3nm (8 hours)

> Astrodon SII 36mm 3nm (8 hours)

Total Integration time: 24 hours

Processed in AstroPixel Processor and Photoshop CS.

by Laurie Allai
Messier 33

OTA: Celestron Edge 11 F/2 Hyperstar

Mount: Celestron CGX

Camera: Canon T2i, modified by Hap Griffin, IDAS D1 filter

Guided by: Stellarvue SV60EDS and Starshoot Autoguider, PHD2.6

34 frames of 240 Sec at ISO800

11 frames of 360 Sec at ISO400

Captured with Images Plus Camera Control 6.0

Processed with Images Plus 6.5, Photoshop CS6.1

Members' Gallery

by Chris Foster
B33 and the flame nebula

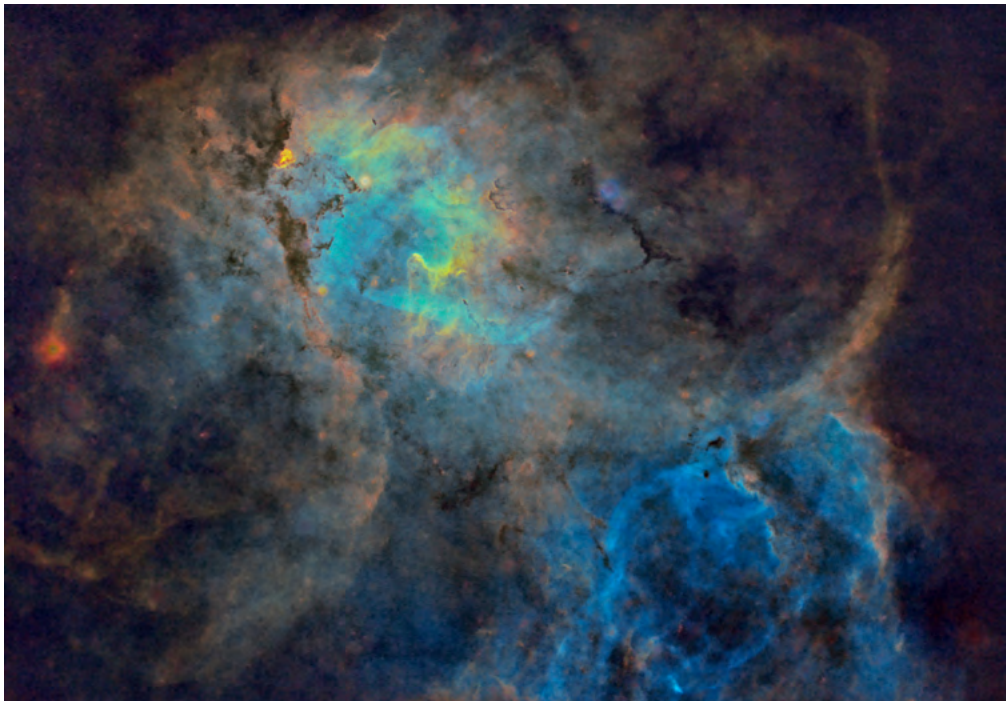
This is a three panel Mosaic of B33 and the flame nebula using a HA filter

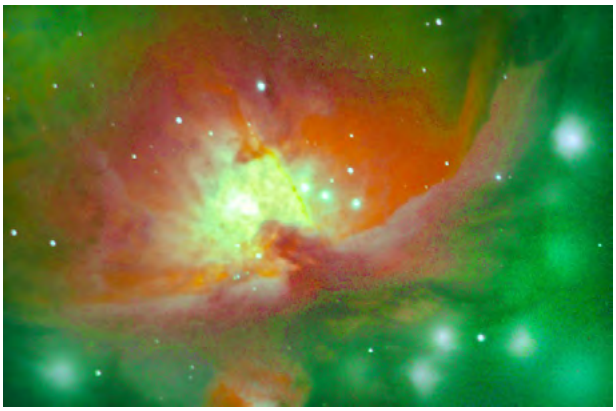
by Chris Foster
The Heart Nebula

This is the Heart Nebula using LUM HA RED OIII GREEN OIII BLUE filters.

by Chris Foster
Lion Nebula (SH2-132) Starless

This is the lion Nebula (SH2-132) is SHO with a starless version.





by Tom Campbell
Christmas Nebula M42

My submission is a joint effort with my friend Nello Armstrong (artistic touches). Image was taken with a Celestron 6SE first attempt at monochrome imaging H alpha, LRGB composite.

Treasurer's Report December 2019

By John Cassidy, Treasurer

Balances:

Donations Acct	$2168.50
Scholarship Acct	$2.60
Checking	$10,689.45
CD #1	$5,933.56
CD#2	$5,901.27

EC Minutes October 2019

By Terry Phillips, Secretary

October 7th 2019

Attending: Jim Spigelmire, John Cassidy, Brian Lippincott, Joyce Lynch, Mike Marotta, Greg Rohde, Terry Phillips, Tim Brown, Domingo Rochin, Bill Gammerdinger

Call to order 7PM. President Jim Spigelmire presiding.

Minutes of the previous EC meeting, 25th Aug were approved.

Request made to the Terry to publish meeting minutes week of the meeting rather than days before current meeting.

John – Treasurer

- Bank accounts currently $35,753.
- Discussed equipment insurance. Estimated club coverage is $50K at rate of $2 per $100 valuation per year works out to $1K/year. Queries were made about alternate rates.
- Motion was made and approved to authorize $1K this year for equipment insurance, John to determine best policy to obtain for that$1K.
- Astronomical League dues budgeted was $1,895. For current 476 members, dues to AL would be $2,400. Bylaws check indicate John has authority to pay the increase amount to AL. EC authorized John to upload membership data to AL.
- We were reminded that Wild Apricot rates will increase 20% in December if we elect to keep PayPal payment processing. EC has determined that we do want to stay with PayPal.
- Discussion about frequency of checking our downtown snail mailbox. Tim offered to check the mailbox weekly

Brian – Equipment

Joyce – Outreach

- 120 attended Inks star part on 28th September. We are working with a new ranger at Inks, Monica who has experience holding star parties in other parks. Inks is looking at a darker location to hold their parties and is open to accommodating a small equipment storage.
- AAS helped out with Ed Labelle's Psalm 19 international observer the moon event on Congress Avenue.
- Finalizing plans for AUTS. Food trucks ruled out this year. Planetarium, IDA, Girl Start, and scouts expected to participate. Tim handling insurance certificate. Holding a scope give-away limited to 12yr and younger attendees. Terry authorized to procure scope for up to $200.
- Joyce to arrange speakers for 15 minute sessions on astro topics.

Tim – Member Services

- Per request, Tim will put out an email on process for accessing Bad Wolf Ranch on nights other than official member star parties.
- Planning to provide a Practical Astronomy session prior to the November GA meeting.
- Christmas meeting/party is set for Austin Gem and Mineral location on December 14th.

Greg, Brian – Equipment

- Reviewed the latest specs and installation plans for the CONEX storage unit at Pedernales Falls. Coordinated with the park on the precise location, orientation, and foundation for the unit at the end of the equestrian barn. Greg has been authorized to acquire the CONEX when the park is ready to receive it.

Domingo – MAL Jim appointed Domingo to take the MAL chair recently vacated by Jessica Cofrancesco.

- All 8" DOB loaner packages are in the field, An 11" SCT has been returned. An 8" SCT is available, Discussed obtaining additional 8" packages.

• Discussed committee to handle our storage requirements with goal of reducing current paid storage needs as new storage is fielded at Pedernales. Domingo, Brian, Greg, and Terry signed on for the committee.

Mike – MAL has taken up the task of supplying monthly AAS sponsored PowerPoint slide(s) for Astronomy on Tap. October slide to promote Austin under the Stars.
Bill – Introduced himself as new member with a long history of working with other astronomical societies and is looking for way to contribute. Welcome Bill.
New Business
• Terry authorized to acquire two telescopes
o New 8" DOB loaner package, Max $800
o Table Top 4" scope to be given away at AUTS, Max 200
Meeting was adjourned shortly after 9PM

General Assembly Minutes August 2019

By Terry Phillips, Secretary

Call to order: 7:30
pm at UT campus, ETC II 2.136
President Jim Spigelmire presiding
Quorum was met. (27 in attendance)
A motion to approve June GA minutes was made and approved.

Tim Brown (Member Services) welcomed new members and guests.
Announced new officers: Dawn Davies as ALCOR liaison.

Brian Lippincott (Equipment) announced the we have approval to place the shipping container storage unit at Pedernales Falls State Park. Greg Rhody will coordinate the acquisition of the unit and delivery to the park.

Joyce Lynch (Outreach) mentioned request to help with star party at Lockhart State Park.
AAS Public Star Party set for 24th August at Pedernales Falls
Next Austin Under the Stars (AUTS) set for 26th October at St. Stephen's Episcopal School.

Tim Brown announced next private star party on 31st August at Alan's Carruth's ranch henceforth to be designated Bad Wolf Ranch.

Dawn announced that the next Astronomy on Tap meeting 20th August would be held in honor of the AAS 50th anniversary and that AAS members would be making the three presentations at that meeting.

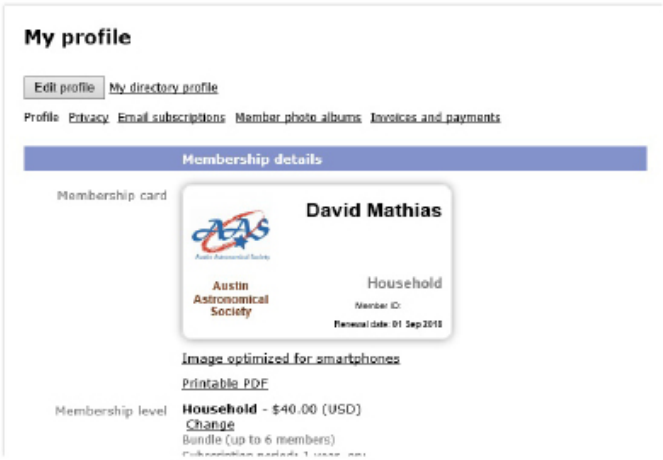
John Cassidy (Treasurer) presented the next annual budget with new line items to cover
1) Astronomy on Tap sponsorship $1,200
2) Bad Wolf Ranch operating expenses $1,000
3) Pedernales operating expenses $1,000
AAS current bank balance stood at just over $35,000.
A motion was made to approve the budged, was seconded and approved.

Terry Phillips and Greg Rhody each gave previews of their presentations to the upcoming Astronomy on Tap meeting.

Meeting adjourned at approximately 9:40

Membership Cards Now in Your Profiles

At last, Wild Apricot, our membership database vendor, has made available to its customers membership card templates. Now, under your AAS membership profile you will see a mockup of a card with your name, Membership ID and membership expiration date. You are offered two options for displaying your card: one which is suitable for displaying from a smartphone, and another printable PDF which you can cut and laminate to your heart's delight.



NIGHT SKY NETWORK

The Night Sky Network is a nationwide coalition of amateur astronomy clubs bringing the science, technology, and inspiration of NASA's missions to the general public. AAS members can register with NSN and receive the NSN newsletter and email about upcoming webinars and any additional information or announcements created by the NSN for members. They will be able to search for resources, view all of the toolkits and the files, and access the downloads in each kit.

If you are interested in registering, here is the procedure.

Go to https://nightsky.jpl.nasa.gov/index.cfm
Enter your zip code in the upper right box for CURRENT LOCATION.
Scroll down to CLUBS NEAR YOU and click on AAS.
Click on Register in the toolbar on our page.
Fill out the form and submit.

Your form will be sent to the club for approval.

If you have any questions, email outreach@austinastro.org

Joining AAS or Renewing Membership

To join or renew your membership to AAS, please visit: http://austinastro.org/index.php/why-should-you-be-a-member/ There are six membership levels to choose from:

Household Bundle (up to 6 members) $40.00 (USD)
Renewal: Every one year, starting from join date
No recurring payments. For members of a household living at the same address.

Household With Senior (up to 6 members) $28.00 (USD)
Renewal: Every one year, starting from join date
No recurring payments.
For members of a household living at the same address and at least one member is over 65 years of age.

Junior $15.00 (USD)
Renewal: Every one year, starting from join date
No recurring payments. For members up to age 18.

Students $15.00 (USD)
Renewal: Every one year, starting from join date
No recurring payments. For members age 18 and older.

Regular $25.00 (USD)
Renewal: Every one year, starting from join date
No recurring payments. For individual members.

Seniors $15.00 (USD)
Renewal: Every one year, starting from join date
No recurring payments. For members 65 years of age or older.

Visit Dawn Davies' *Earthbound Astronomer* website at https://www.earthboundastronomer.com/

Amy Jackson's website is http://www.starryskyaustin.com/. Learn more about her children's book about astronomy at http://www.starryskyaustin.com/childrens-book-project/

Rob Pettengill's site can be found at http://astronomy.robpettengill.org/. Rob's material shared per CC BY-NC-SA 4.0 license.

Celestial Teapot's product catalog can be found at http://messierplanisphere.com/

Joseph Macry writes a weekly column for Manor Community News: "This Week in Astronomy". You can read the online edition here: http://manorcommunitynews.com/

Officers of The Society **2019-2020**

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