

SIDEREAL TIMES

Austin Astronomical Society
keeping astronomy weird since 1969

MONTHLY MEETING

Friday, September 14, 2018
ETC 2.136 - UT Campus
Engineering Teaching Center
Dean Keeton and Speedway

NO PRACTICAL ASTRONOMY

7:30 PM
GENERAL ASSEMBLY

Featured Speaker
Bill Ambrose

Unusual Lunar Craters: Observations and
Origins
(More info page 12)



PRESIDENT'S NOTES

By Tim Brown, President

Now that we've left COE and Eagle Eye Observatory behind we're holding the club's star parties at Inks Lake, September 22 at Pedernales Falls on October 13 at Inks Lake.

The September star party is primarily an opportunity for outreach, unless you're fond of observing the full Moon or our beautiful array of planets. Contact Dawn Davies to volunteer. The October Star Party, on the other hand, will feature the 5-day-old Moon, planets and deep sky observing as well as outreach opportunities. Be sure to give our new dark-sky sites a try.

Pedernales Falls Home Base

Dawn Davies and her crew are coordinating with the State Park management to move ahead with the purchase and setup of the storage facility authorized at August's General Assembly meeting. Exciting times are ahead for us at Pedernales and Inks Lake.

Central Texas Star Party

Our move from CEO has complicated arrangements for our annual members' star party – CTSP. Vanessa Perez, our Member Services Chair will circulate information when the



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Banner: Aug. 2018 Image of the Month: Rathijit Banerjee - Total Solar Eclipse Of 2017



PRESIDENT'S NOTES CONTINUED

date and place are set. Keep checking the website and remember to login so you can read members-only announcements.

General Assembly Speaker

Our Speaker this Friday is Bill Ambrose, a research scientist at the Bureau of Economic Geology. Bill is an expert on geologic processes affecting the Moon – among many other research subjects. Check out the more complete description of Bill's talk on the AAS website.

The subject for Friday night is **"Unusual Lunar Craters: Observations and Origins"**. Bill is a skilled geologist and a great speaker. I highly recommend that you be sure to join us for an interesting and enlightening evening.

See you Friday Night.

Clear Skies,
Tim

*"For my part I know nothing with certainty, but the sight of stars makes me dream".
(Vincent Van Gogh)*

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AAS AFFILIATIONS



<http://darksky.org/>



<https://www.astroleague.org/>



<https://nightsky.jpl.nasa.gov>



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



EXECUTIVE COMMITTEE MINUTES, JULY 2018

By John Cassidy, Secretary

Executive Committee Minutes

July 11, 2018

The meeting was call to order by Tim Brown at 7:00 PM at the Frisco Restaurant.

Present were:

- Tim Brown
- Terry Phillips
- John Cassidy
- Tara Krzywonski
- Dana Leary
- Sean Leary
- Joyce Lynch
- Brian Lippincott
- Vanessa Perez
- Greg Rohde
- Jim Spigelmire
- Dawn Davies
- Frank Mikan

Main topics on the Agenda handout are:

1. 2018-2019 Budget
2. An update on COTE and storage facilities
3. Reports on arrangements for Pedernales State Park and Inks Lake State Park
4. Officer's reports

Officer Reports

President. Tim

1. COTE status –See below.

Vice-President. Terry

1. We are set for General Assembly speakers through January 2019.
2. We are talking to UT regarding access to the building. No resolution at this time.

CALENDAR OF EVENTS

14 Sept. 2018
No Practical Astronomy

General Assembly Meeting
7:30 PM
ETC 2.136 - UT Campus
Engineering Teaching Center
Dean Keeton and Speedway

22 Sept. 2018
Star Party
7:00 PM - 10:30 PM
Inks Lake State Park

1 Oct. 2018
Executive Committee Meeting
7:00 PM - 8:30 PM
TBD.

4 Oct 2018
"Starry Nights"
5:30 PM - 7:00 PM
Girlstart
1400 W. Anderson Lane

EXECUTIVE COMMITTEE MINUTES, CONTINUED

Communication. Sean

1. The EC voted to have members opt in rather than opt out if they want their information (other than email addresses) shown on the website. Display of email addresses will remain on an opt out basis.

Treasurer. Dana

1. The proposed budget for 2018-2019 was discussed and approved.
2. Our current cash balance is \$35,851.85.
3. Dana has shredded checks from the 70's.

Outreach. Joyce

1. There will be public star party at Pedernales Falls State Park on 8/11/18.

Member Services. Vanessa

1. There will be no Practical Astronomy for the July 13 General Assembly meeting.

Equipment. Brian & Dawn

1. We are planning on permanent storage at Pedernales and will likely store the 25" Forest scope there. We are pricing a large storage container with added DIY ventilation and lighting. Total cost will be in the \$4000 range. Action to authorize the expenditure was deferred to the next Executive Committee meeting to allow the General Assembly to hear the plan.
2. Pedernales Park staff will likely need approval from TPWD for any permanent installation, but they should get that approval within the month.
3. All AAS equipment other than buildings will be removed from COTE by the end of the month. The shed will be left behind.

Meeting was adjourned at 8:45 PM

John Cassidy, Secretary



COMMUNICATIONS REPORT, SEPT. 2018

By Sean Leary, Communications Chair

For the Executive Committee meeting in September 2018

Updated website:

Posted proposed 2018-2019 budget

Updated GA event for August featured speaker, added post.

Image of the Month banner and link

Sidereal Times August banner, link, page, slider

Removed COE member star parties for Sept, Nov 2018

Obtained August backup of website, including database

Manually downloaded all static pages from website

Created Wiki page for page updates, reached out to EC members.

Removed Galleries from menu

Added 'open in new tab' option for profiles, membership list, bylaws, and donate now link.

Added Sept GA speaker event, post, and Facebook post.

Removal of addresses/phone numbers from member list is deferred until after renewal season in September.

Website traffic for the past month



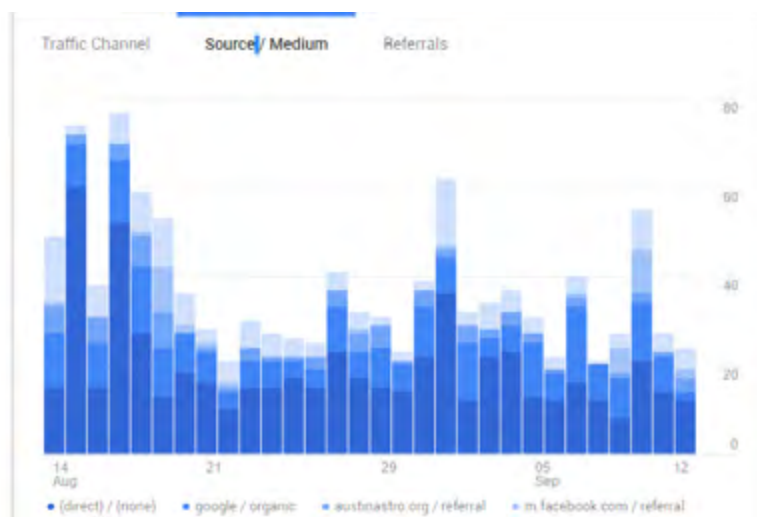
COMMUNICATIONS REPORT CONTINUED

How many people are visiting the site?

Page	Pageviews	Page Value
/	1,110	\$0.00
/Sys/Profile	209	\$0.00
/JoinAAS	180	\$0.00
/Sys/MembershipRenewal	160	\$0.00
/index.php/events/	76	\$0.00
/Sys/AddBundleMember	74	\$0.00
/index.php/events/aa...anyon-of-the-eagles/	60	\$0.00
/index.php/membership/	48	\$0.00
/index.php/about-aas-2/	41	\$0.00
/index.php/monthly-meeting/	37	\$0.00

Last 28 days ▼ [PAGES REPORT >](#)

What pages do they visit? & Who is sending us traffic?





GENERAL ASSEMBLY MINUTES, JULY 2018

By John Cassidy ,Secretary

General Assembly Minutes

July 13, 2018

St. Stephens School

The meeting was call to order by Tim Brown at 7:30 PM.

Frank Mikan welcomed the attendees to St. Stephens School.

There will be a public star party at the Bee Cave Library.

Vanessa reported that there will be a final COTE Star Party July 28.

Terry brought the GA up to date regarding the move out of COTE and a possible deal to put the equipment at Pedernales Fall State Park.

The featured speaker was Tim Kenyon, AAS member and longtime member of the Association of Lunar & Planetary Observers (ALPO). Tim shared his experiences and show his drawings of Mars from the past two closest apparitions of Mars in 1988 and 2003.

The meeting was adjourned.

John Cassidy, Secretary



TREASURER'S REPORT, AUG. 2018

By Dana Leary, Treasurer

Aug. 2018 Treasurer's Report

Deposits:

Dues payments		
Checks	\$100.00	
Paypal	\$3,000.00	
Dues payments in checking acct.		\$3,100.00
interest earned - scholarship	\$0.30	
Interest earned-checking	\$1.00	
interest earned - donations	\$0.00	
Interest earned - CD - A	\$5.42	
Interest earned - CD - B	\$6.37	
Total interest earned		\$13.09
Other income - cash donations from the COE box	\$57.03	\$57.03

Deposit Totals Aug. 2018

\$3,170.12

Expenses:

Frontier - phone at COE	\$76.67
Life Storage - telescope storage	\$65.00
Administrative expense - storage containers for treasurer records	\$17.26
Speaker expense	\$200.00

Expenses Total August 2018

\$ 358.93

Bank Balances:

UFCU savings	\$5.00
UFCU scholarship special	\$465.91
UFCU checking	\$24,853.79
UFCU donations savings	\$844.89
UFCU CD - A	\$5,828.83
UFCU CD - B	\$5,802.89
Paypal account	\$536.66

Total Cash

\$38,337.97

Active AAS mbrs as of Sept 2, 2018 585

Total AAS memberships as of Sept 2, 2018 419



OUTREACH REPORT, SEPT. 2018

By Joyce Lynch, Outreach Chair

OUTREACH REPORT by Joyce Lynch, Outreach Chair

The only outreach event in the last month was Starry Nights at Girlstart on September 7. My husband Jim and I helped visitors construct model solar systems.

On September 22 we'll have our public star party at Inks Lake State Park, 7:00-10:30pm. Come on out and join the fun!

Mark your calendars for our fall Austin Under the Stars on Saturday, October 20, at St. Stephen's Episcopal School. More details will be available soon.

Upcoming Outreach Opportunities

22nd Sept. 7:00pm - 10:30pm

Public star party at Inks Lake State Park

ASTRONOMY FOR PAY

Recently we have received several requests for star parties from commercial entities. Since we focus on non-profits such as schools and libraries, we offered these groups the option of paying astronomers to conduct the event. There could be similar requests in the future, so we are compiling a list of members who might be interested in participating. If you would like to have your name on the list of people interested in doing events for pay, please send an email to outreach@austinastro.org Include your name, contact information, where in Central Texas you are willing to go, any specific areas of astronomy that interest you, and a little bit about your experience with observing.



A TRIP THROUGH THE MILKY WAY

By Jane Houston Jones and Jessica Stoller-Conrad

Feeling like you missed out on planning a last vacation of summer? Don't worry—you can still take a late summertime road trip along the Milky Way!

The waning days of summer are upon us, and that means the Sun is setting earlier now.

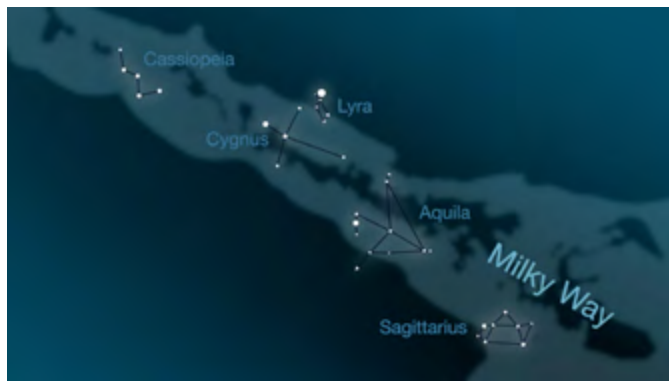
These earlier sunsets reveal a starry sky bisected by the Milky Way. Want to see this view of our home galaxy? Head out to your favorite dark sky getaway or to the darkest city park or urban open space you can find.

While you're out there waiting for a peek at the Milky Way, you'll also have a great view of the planets in our solar system. Keep an eye out right after sunset and you can catch a look at Venus. If you have binoculars or a telescope, you'll see Venus's phase change dramatically during September—from nearly half phase to a larger, thinner crescent.

Jupiter, Saturn and reddish Mars are next in the sky, as they continue their brilliant appearances this month. To see them, look southwest after sunset. If you're in

a dark sky and you look above and below Saturn, you can't miss the summer Milky Way spanning the sky from southwest to northeast.

You can also use the summer constellations to help you trace a path across the Milky Way. For example,



Caption: This illustration shows how the summer constellations trace a path across the Milky Way. To get the best views, head out to the darkest sky you can find. Credit: NASA/JPL-Caltech

there's Sagittarius, where stars and some brighter clumps appear as steam from a teapot. Then there is Aquila, where the Eagle's bright Star Altair combined with Cygnus's Deneb and Lyra's Vega mark what's called the "summer triangle." The familiar W-shaped constellation Cassiopeia completes the constellation trail through the summer Milky Way. Binoculars will reveal double stars, clusters and nebulae all along the Milky Way.

Between Sept. 12 and 20, watch the Moon pass from near Venus, above Jupiter, to the left of Saturn and finally above Mars!

This month, both Neptune and brighter Uranus can also be spotted with some help from a telescope. To see them, look in the southeastern sky at 1 a.m. or later. If you stay awake, you can also find Mercury just above Earth's eastern horizon shortly before sunrise. Use the Moon as a guide on Sept. 7 and 8.

Although there are no major meteor showers in September, cometary dust appears in another late summer sight, the morning zodiacal light. Zodiacal light looks like a cone of soft light in the night sky. It is produced when sunlight is scattered by dust in our solar system. Try looking for it in the east right before sunrise on the moonless mornings of Sept. 8 through Sept 23.

You can catch up on all of NASA's current—and future—missions at www.nasa.gov

This article is distributed by NASA Space Place.

With articles, activities and games NASA Space Place encourages everyone to get excited about science and technology. Visit spaceplace.nasa.gov to explore space and Earth science!

AAS GUEST SPEAKER IN SEPTEMBER

Our featured speaker will be: Bill Ambrose

Bill is a research scientist with the Bureau of Economic Geology, University of Texas at Austin. He is a principal investigator for the STARR project (State of Texas Advanced Oil and GAS Resource Recovery). He has also been past co-chair of the Astrogeology Committee, American Association of Petroleum Geologists. It is from his particular interest in astrogeology, that Bill will present his talk:

“Unusual Lunar Craters: Observations and Origins”

Description: Although the majority of lunar craters are the result of impacts, they display significant variations in size and morphology. These variations are the result of several factors that include (1) impactor size, (2) angle of impact, (3) nature of the lunar substrate, and (4) post-impact modification processes such as igneous activity and gravitational-induced slumping. Unusual craters such as crater chains and rimless craters also occur on the Moon, and appear to be caused by pre-impact, tidal disruption of comets and volcanic exhalative deposits in rift zones, respectively. All of these features are observable in modest-size telescopes with apertures of 4 inches or less.

Meets in room 2.136 of the Mechanical Engineering Building (the Engineering Teaching Center) on the NW corner of Dean Keeton and San Jacinto, on the UT campus. Parking is free after 6:00 pm on nearby streets. Garage parking (not free) is also available at the Speedway Garage.



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



SEPT. OBSERVING TARGETS

By Brian Cuthbertson

With the advent of fall, the summer Milky Way starts to yield to other parts of the night sky, which offer up their own cast of eccentric characters for observing. Assuming cool fronts and hurricanes don't get in the way, this evolving cast is equally as interesting as summer's globular clusters and rich star fields. A few are highlighted below; enjoy!

Beta Cephei (Alfirk) rating: EASY Triple and variable star
RA 21h 28.7m Dec +70d 33.7' (2000)
Magnitudes 3.2, 7.8 separation 13"

Located 690 light-years away on the edge of the outer northern Milky Way, Beta Cephei is an ideal example of a high brightness-contrasting pair. The secondary is pleasingly close without being difficult, contrasting greatly in brightness and also somewhat in perceived color.

Alfirk, Beta's primary, is a rapidly pulsating giant, varying by about 0.1 magnitude over a period of 4.6 hours. It's also the prototype of the Beta Cephei variable class, composed of blue giant stars (spectral types B0-B3) which all pulsate slightly with periods of a few hours. The optical companion is a 7.8-magnitude A2 main sequence star 13.6" away.

The minimum recommended viewing aperture for the BETA Cephei system is 2.4-inches; ie,

anything more than binoculars will do. In a 6-inch at 46x, it is a beautiful unequal double.

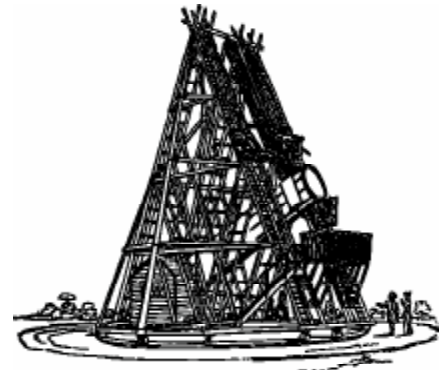
A third system component, a spectroscopic companion to the primary, was discovered by means of speckle interferometry. It orbits the primary with a period of 85-years. Don't bother looking for this one though: it lies just 0.25" from the primary and is 4 magnitudes fainter. A possible circumstellar disk is also suggested by the observations.

Compared to the Sun, the primary is 3000 times more luminous and the secondary 40 times as luminous. So sun block 15 probably wouldn't help at a typical Earth-style 1-AU distance from either star.

Starting around 5200AD, both Beta Cephei and Iota Cephei will be within 5 degrees of Earth's celestial pole due to precession, so both stars will then be contenders for Earth's pole star, if anyone cares by then.

NGC 7331 rating MEDIUM rating: MEDIUM spiral galaxy in Pegasus
RA 22h 37.1m Dec +34d 25' (2000)
Magnitude 9.5, 11x4'

Located in northern Pegasus just south of the Lacerta border, NGC 7331 was discovered by William Herschel in 1784. It's the brightest galaxy in Pegasus, and also a guidepost for the nearby



William Herschel's telescope. From a drawing in 'The Imperial History of England, comprising the entire work of D. Hume,' David Hume, 1891. Credit: openclipart.org

interesting compact galaxy group known as Stephan's Quintet.

To find NGC 7331, start at 3rd magnitude Eta Pegasi, otherwise known as Matar, otherwise known as "The Fortunate Rain" (I love this name!). From Matar, hop 4.5 degrees north and a degree west to our target. NGC 7331 is a highly tilted type Sb spiral (just 20 degrees from edge-on) and more than 60,000 LY across with heavy dust lanes. It has about the same structure and inclination toward us as the Andromeda Galaxy, M31. But since it's roughly 23 times farther away at 49 million light years, we see it as a much smaller and dimmer equivalent. One interesting quirk of NGC 7331 is that its central bulge rotates in the opposite direction to the rest of its disk.

The galaxy is visible even in 70mm binoculars. In a 2.4-inch refractor it's bright and easy, appearing as a concentrated

glowing lens containing a stellar nucleus, elongated roughly North-South. It starts to get grainy in a 6-inch, and a 12-inch will pick up some of the dust lanes that cross it. Larger scopes can also detect several of its small companion galaxies, mostly on its east side. The brightest of these companions is NGC 7335, 3.5' NE, which can be seen in a 10-inch scope as a 40x25" glow. Another companion, NGC 7337, lies 5.2' SE and looks like a double star because its paired with a real star just 9" SE of its center. There are at least 4 more small companion galaxies (NGC 7325, 7326, 7335 and 7340) which are not easily accessible to amateur instruments.

NGC 7331 is worth keeping an occasional eye on because a 12th magnitude supernova appeared there in 1959, located in the most prominent spiral arm on the west side of the nucleus. Since then two other supernovae have appeared, in 2013 and 2014. NGC 7331's numerous companion galaxies no

doubt keep things churned up and make it prime real estate for more supernovae in the future.

Campbell's Star rating: HARD planetary nebula in Cygnus RA 19h 34.8m Dec +30d 31' (2000) Magnitude 11.4

Located in southern Cygnus about 2.5 degrees NNW of Albireo, Campbell's Star is an interesting example of a bright object that's hard to see. Also known as PK 64+5.1 (a designation from the Catalogue of Galactic Planetary Nebulae) the planetary was discovered in 1893 at Lick Observatory by W. Campbell using a visual spectroscope. The villain in this case is the planetary's bright central star, 10.1-magnitude BD +30 3639, which interferes with identification of the 2" diameter nebula in small telescopes, making it appear like just another field star at low powers.

In a 6-inch scope at 175x you can just begin to see the planetary as the southernmost of 3 "stars" of similar magnitude that are aligned NE-SW. Even with a 12-inch class instrument, the nebula is very small, with a stellar nucleus and nearly imperceptible halo.

Filter users do have a marginal advantage. The planetary has weak OIII lines and so is difficult even through an OIII filter. But an alternate approach is to use a UHC filter and the "flicker" technique: If you move the UHC filter rapidly in and out of the light path between the eyepiece and your eye, the filter will cause all the stars to dim except the planetary. This can almost make finding the nebula Campbell's duck soup. Pass the crackers.

Astronomers Needed for Music Festival in November

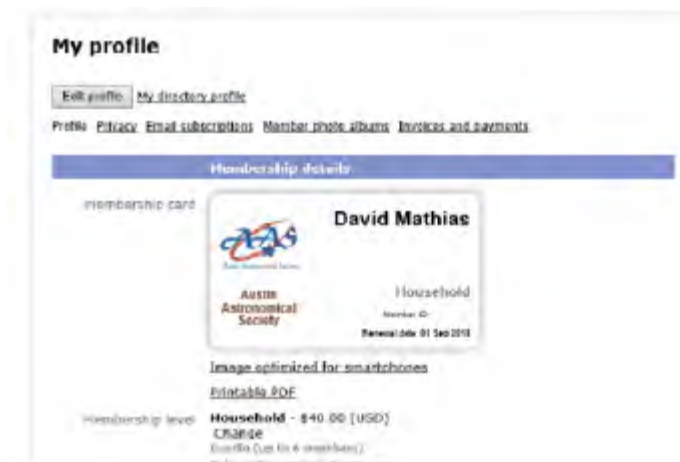
UtopiaFest is a music festival that will be held in Burnet County November 2-4. The organizers would like to offer some astronomers free admission in exchange for doing a star party.

If you are interested, contact Amanda Shaftel, amanda@utopiafest.com

The festival website is <https://www.utopiafest.com/>

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.



WELCOME NEW MEMBERS!

Chandler, Jim
Copeland, Clay
Farrell, John
Farrell, Susan Marie
Forkner, Mary
Forkner, William
Negri, James

O'Keefe, Jackie
Reyes, Melissa
Roye, Julian
Springen, Andy
Springen, Erika
Springen, Robyn
White, Christine

IMAGE OF THE MONTH

September 2018

Congratulations to
STEPHEN HILL, NGC6544, M8, M20, M21



by Stephen Hill
NGC6544, M8, M20, M21

It is the Lagoon and Trifid Nebulas.

Used the Skywatcher Star Adventurer camera tracker, a DSLR with a 300mm lens, and a Raspberry Pi camera running LinGuider software for guiding.

50 exposures of 80 seconds each, also with darks, flats, and bias frames.

Used Deep Sky Stacker and then StarTools processing.

MEMBERS' GALLERY



by Laurie Allai

IC4604 in Rho Complex

OTA: Stellarvue SVQ100 F-5.8

Mount: Celestron CGX

Camera: Canon 5D MkII, modified by Hap Griffin

Guided by: Stellarvue SV60 EDS and Starshoot Auto-guider, PHD2.6

16 frames of 600 Sec at ISO1600

Captured with Images Plus Camera Control 6.0

Processed with Images Plus 6.5, Photoshop CS 6.0



by Rathijit Banerjee

The Crescent Nebula.

It took over 16 hours to produce this image because the light from this beautiful cosmic plasma bubble is so faint! The light captured in this image started its journey towards us about 5000 years ago, when humanity was just inventing the wheel. The bubble is being blown by winds from the massive, centrally located, dying red star. The image was captured using special narrowband filters that only isolate the blue light emitted by ionized oxygen, and the red light emitted by ionized hydrogen within this region (making this a bi-color image). As it appears to us today, the bubble is so large that light from one end of it takes about 25 years to reach the other end. This was captured using a Celestron EdgeHD 11" and a ZWO ASI1600MM Pro camera with Astrodon narrowband filters on a Losmandy G-11 mount from my backyard."The totality photo is an HDR stack with exposures ranging between 2 seconds @ ISO800 and 1/500s @ ISO100.



by Laurie Allai

Messier 8

OTA: Celestron Edge 9.25 F/2.3 Hyperstar

Mount: CGX

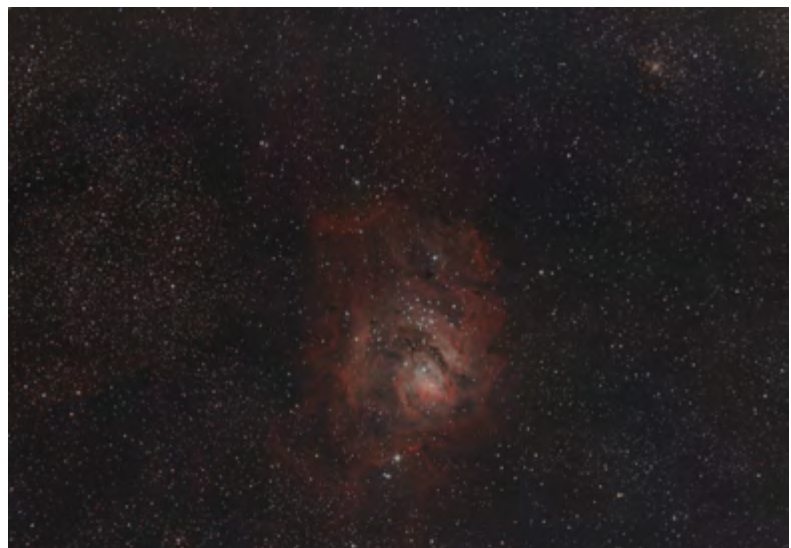
Camera: Canon 5D modified by Hap Griffin

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

26 frames of 120 Sec at ISO800

Captured with Images Plus Camera Control 6.0

Processed with Images Plus 6.5, Photoshop CS6.1

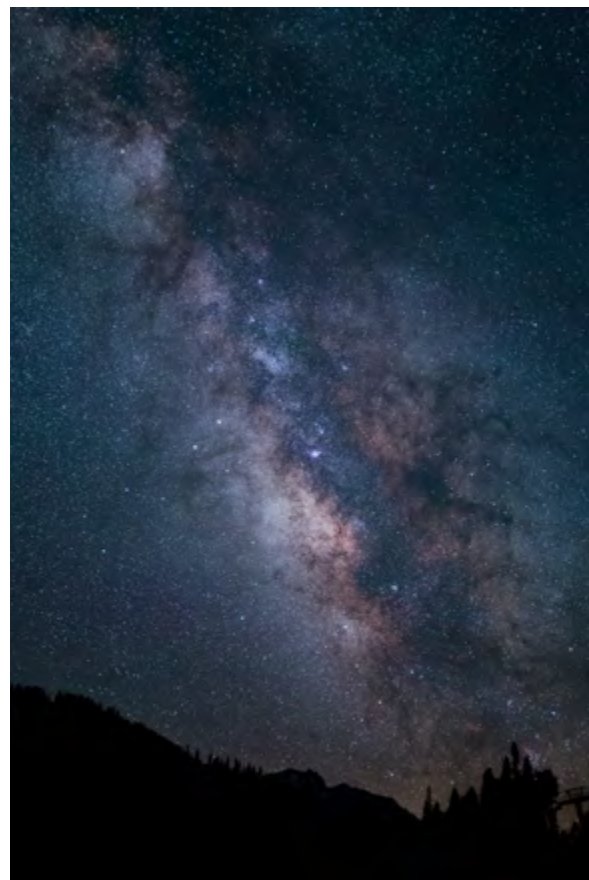


MEMBERS' GALLERY

by Chris Foster

M51

HaSLUM-HaRGB



by Mike Schaffer

Summer Milky Way, Telluride CO

June 9, 2018

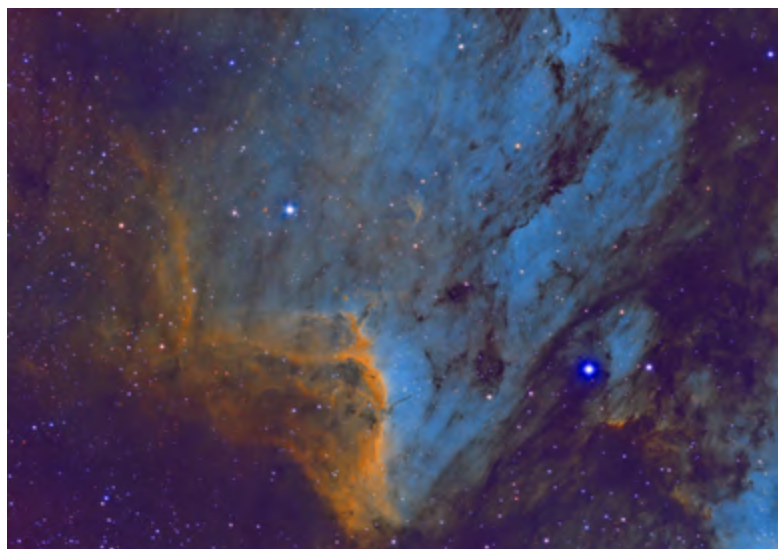
Canon 6D, Canon 35mm f/1.4 L II at f/1.4 and ISO 6400
Five subs, each five seconds long untracked, stacked in
Photoshop and processed in Lightroom Guided by: Stellar-
vue SV60 EDS and Starshoot Autoguider, PHD2.6
16 frames of 600 Sec at ISO1600



by Chris Foster

Pelican Nebula

Processed in LSHO palette



JOINING AAS OR RENEWING MEMBERSHIP

To join or renew your membership to AAS, please visit: <http://austinaastro.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.



Register Now!

Come join other amateur astronomers at one of the best Dark Sky Star Parties in Texas!

Eldorado
STAR PARTY

X-Bar Ranch, Eldorado, Texas
November 5-10, 2018
WWW.ELDORADOSTARPARTY.ORG

OFFICERS OF THE SOCIETY, 2018-2019

President	Tim Brown	president@austinastro.org
Vice-President	Terry Phillips	vicepresident@austinastro.org
Secretary	John Cassidy	secretary@austinastro.org
Treasurer	Dana Leary	treasurer@austinastro.org
Communications Chair	Sean Leary	communications@austinastro.org
Outreach Chair	Joyce Lynch	outreach@austinastro.org
Equipment Chair	Brian Lippincott	equipment@austinastro.org
Member Services Chair	Vanessa Perez	memberservices@austinastro.org
Member-at-Large	Pamela Castillo	membersatlarge@austinastro.org
Member-at-Large	Greg Rohde	membersatlarge@austinastro.org
Member-at-Large	Jessica Cofrancesco	membersatlarge@austinastro.org
Member-at-Large	Frank Mikan	membersatlarge@austinastro.org
Member-at-Large	Domingo Rochin	membersatlarge@austinastro.org
Member-at-Large	Vacant	membersatlarge@austinastro.org
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Historian*	Kelley Knight	historian@austinastro.org
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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/>