President’s Corner
By David Mathias, 2016-17 President

Welcome to August, AAS members! Please join us at our next General Assembly meeting on 8/12. We’ll hear from Special Guest Bob Rose, chief meteorologist for the Lower Colorado River Authority (LCRA). Our own Lauren Gonzalez will speak about Astronomical League Observing programs. It’s been quite a few years since Bob visited us. Please turn out in force to support his and Lauren’s presentations!

Out of the Box Scope Clinic: Our first scope clinic this year for members had a light, but dedicated, turnout on July 9th. Thank you to the members and volunteers who helped put this together. This was one in a series of member-focused events sponsored by your Member Services and Outreach Committees. Look for more on our events calendar.

Bylaws Amendment Ahead: Society Members as of July 2016 received an email informing them of a proposed amendment to the AAS Bylaws, and a copy of an absentee ballot. Please read through the proposed amendment and make sure your ballot is submitted to Andrea Tole before our EC meeting. Or, even better, come to the General Assembly meeting in person to cast your vote. Your Executive Committee appreciates your support.

Annual Budget Presentation and Vote: It’s time again to review and vote on our Society budget. Please attend our 8/12 General Assembly meeting if you would like to be informed and vote on this piece of Society business.

AAS an official member of NASA’s Texas Space Grant Consortium: We received official notification from TSGC on July 12th that AAS has been approved as a nonprofit affiliate member of the Consortium.

Austin Under the Stars a (sweltering) success: Thank you again to Dawn Davies and all the partner organizations and volunteers who helped AAS put on an outstanding AUTS event. Thanks are also in order to Frank Mikan and St. Stephen’s Episcopal School!
New EC Members: Sean Leary has been approved by the EC and General Assembly as AAS Communications Chair. Steven Bingham has been approved by the Executive Committee as our next Texas IDA liaison. Ron Carman will be coming back to the Committee as our Parliamentarian. Thank you all for helping out with Society business. This means all AAS Board positions are now filled, with the prominent exception of Outreach Chair (see below). We are still actively seeking volunteers for committees, including a committee to review and update our Bylaws.

Still Need an Outreach Chair: Dawn Davies went out with a bang with the conclusion of AUTS. Dawn, who had graciously agreed to help out as interim chair through AUTS, is now free from her bonds. Since outreach is a core function of our Society, and most Societies around the country, we will try to keep some level of outreach going by distributing the duties within the Society. If you’ve been on the fence about stepping forward, please let us know of your new-found courage soon!

PayPal and Membership Dues Processing: Our PayPal account had a meltdown at the end of June. While some folks seemed to have no difficulties, many of our members could not successfully pay their dues. A whole raft of AAS EC superstars worked on the problem over several weeks. This past weekend, we decided to kill the old PayPal account and create a brand new account and link it to our Wild Apricot membership system. As of the time of this writing, payments are flowing again; and we are contacting members with invoices in limbo to clear the backlog. Thank you (again) for your patience!

Star Parties Ahead: UBarU has a star party Labor Day Weekend near Kerrville. Our Central Texas Star Party is later in September. Eldorado Star Party is late October.

There’s so many ways to engage fellow AAS members! Hopefully hearing about the scheduled activities will inspire you to join us for GA, Practical Astronomy, members events, our own star parties at EEO, or another Outreach event.

AAS Website: www.austinastro.org
AAS Email: contactaas@austinastro.org
AAS Twitter: @AustinAstro
AAS Yahoo ListServe: aas-members@yahoogroups.com
AAS Flickr: https://www.flickr.com/groups/austinastro/
AAS Facebook: Austin Astronomical Society

Are you missing the best parts of AustinAstro.org? Don’t forget to login! Only logged in AAS members can see the archived issues of Sidereal Times, Canyon of the Eagles Almanac page, forums, and other content.
COME TO THE AUGUST MEETINGS

When: Friday, August 12, 7:30 PM (PA 6:30 PM)
Where: ETC 2.136 - UT Campus
Engineering Teaching Center
Dean Keeton and Speedway

General Assembly
Lauren Gonzalez is the ALCor (Astronomical League Correspondent) for the Austin Astronomical Society. AAS members are automatically members of the AL. The AL sponsors many different observing programs in which members can participate. Lauren will discuss several observing programs, incentives, and how you can participate. Lauren has been an AAS member for 5 years and has completed many of the AL programs. She is a high school science teacher and is currently working on a master’s program in Planetary Science.

Bob Rose, the Chief Meteorologist for the Lower Colorado River Authority (LCRA), will speak on changing conditions at Canyon of the Eagles and how likely they are to affect seeing conditions there. What changes as we go from drought to deluge?. Bob is responsible for the daily forecast of weather conditions and temperature affecting LCRA’s power generation, electrical transmission, flood control and water supply operations. In addition to short term forecasts, Bob provides LCRA operation centers with long-term weather forecasts and updates on the threat for severe weather and extreme temperature.

Practical Astronomy
We’ll discuss how to prepare for a multi-day astronomical party, like Texas Star Party (TSP), ALCon, Eldorado, or our own Central Texas Star Party. We’ll have a moderated panel, including Brian Lippincott, Dawn Davies, Jim Spigelmire, and Tara Kryzwonski, who will answer questions about how to get ready, what to take, and what to expect!

FAST TRACK

Our Fast Track series continues in October with Fast Track 102: Astronomical Challenges! During 101, we focused in EEO field protocol, sunsets and times, AL lists, astronomical catalogs and names, last minute collimations and alignments, using a paper sky map, choosing viewing targets (planets, splitting doubles, messier), working with a partner to achieve goals, and having patience. :)

In Fast Track 102, we’ll move to a few more complex observational challenges and concepts, and we’ll have similar fun for Jr Astronomers, with a focus on solar:

- challenges of solar viewing and how to start
- using more than your pointers: your finder and telrad
- finding our night’s viewing targets
- logging observations and planning your AL challenge list
- more on names and catalogs

Fast Track 102/Jr Astronomers will occur during Members Only Night, October 8th, at EEO. Join us around 6pm - we’ll do classroom portion again first, then follow up after sunset with viewing. Please sign up (http://austinastro.org/index.php/event/fast-track-102-astronomical-challenges-jr-2/?instance_id=172) to let us know that you’re attending, so we can have enough materials for everyone!
EXECUTIVE COMMITTEE MINUTES
By Andrea Tole, Secretary

June 6, 2016

Call to Order – 7:30PM
Present: David Mathias, Carl Lindemann, Dhaval Brahmbatt, Joi Chevalier, Joyce Lynch, Andrea Tole, Domingo Rochin, Terry Phillips, Greg Rohde, Dawn Davies

David asked that officers upload reports prior to meetings for efficiency. Joi will talk to Maurice about making a template/form on the website for EC reports. Joyce asked that content of reports for the newsletter and format be adjusted.

Minutes from prior meeting approved.

Motion to remove Mark Lyon and Tara K. as treasurer and add Dhaval, new treasurer as signatory on the UFCU account. No discussion. None opposed. Motion carried.

Minutes from prior meeting approved.

Motion to remove Mark Lyon and Tara K. as treasurer and add Dhaval, new treasurer as signatory on the UFCU account. No discussion. None opposed. Motion carried.

Caries speaking with Tara regarding the Ealing from EEO. Terry mentioned that reputting new scopes in unless they are willing to make improvements. Terry mentioned that repairs might need to be made to the current Ealing pad. Joyce mentioned stipulations regarding the donation of the Ealing to AAS and the need to transfer the name “Larry Forrest telescope” of the Ealing to a new scope. Motion to amend: Remove the Ealing from the EEO within 90 days and return with a plan to EC within 30 days. Terry mentioned that a storage solution should be in the plan.

Dhaval recommended the amendment include a provision to vote again in 30 days.

Motion amended by Domingo to remove the Ealing from EEO within 90 days pending approval of the plan within 40 days by the EC. Motion seconded, no discussion. Motion carried without opposition.

Joi had nothing to add from her report.

Reviewed the upcoming PA and GA sessions.

Budget upcoming. Expectations to develop a robust program to draw in member participation. Request to take attendance at events and collect data about member abilities, training and experience. This may be a volunteer issue. David tabled mentor vs. volunteer conversation.

David: a list of certified observers needs to be in the membership database. Joi, Dhaval and Domingo should communicate to develop a solution.

Joyce: needs content for newsletter by 6/7/16 morning. Clarified email addresses listed in newsletter for EC.

No discussion from members at large

Old Business

David: 2016-2017 Board - Missing candidates for key roles. Andrea moved to Secretary. Greg Rohde to MAL slot. Maurice needs help as Webmaster. More board spots need to be filled.

David spoke with Cindy EEO repairs – LCRA/PEC grants as an option. We need to make a strategic decision/alternative plans if COE relationship changes. Bylaw amendments – Still need amendment proposals. First concern is permitting electronic presence and voting for EC members.

New Business

David: Board Retreat – June 25th at COTE, 10AM – 3PM (tentative). Looking for alternate location.

Informal appointments – Ron Carman, Parks liaison. Rob Pettengill, Urban Astronomy site search. David and Dawn will get together to discuss the appointment of Ron C.

Motion from Joe for AAS to become a member of Astronomers Without Borders, Greater Austin STEM Ecosystem, NASA’s Texas state grant consortium and Mission Capital for nonprofit partnerships. Motion seconded. Motion carried unanimously.

Motion from Joyce to pay membership fee to join Mission Capital. Motion seconded. Motion carried unanimously.

Recommended date for next EC meeting is Tuesday July 5.

UBArU – SAAA likely to make it their new dark sky site. AAS interest in site for extra member benefit and negotiating with Calibre (COE management). Ron Carman attended SAAA EC meeting.

TO DO:

***Pictures of new EC members needed.

***Joyce: Amendment regarding electronic voting and look at formal affiliation language in bylaws.

These minutes have yet to be approved.

CALL TO ORDER – 7:30PM
PRESIDING: JOYCE LYNCH
ATTENDEES: DAVIN CLYMER, DHAVAL BRAHMBATT, JAI CHEVALIER, JOYCE LYNCH, ANDREA TOLE, DOMINGO ROCHEIN, TERRY PHILLIPS, GREG ROHDE, DAWN DAVIES

MOTION TO REMOVE MARK LYON AND TARA K. AS TREASURER AND ADD DHAVAL, NEW TREASURER AS SIGNATORY TO THE UFCU ACCOUNT. NO DISCUSSION. None opposed. Motion carried.

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General Assembly Minutes
By Andrea Tole, Secretary
June 10, 2016

Call to Order – 7:40PM
David: Welcome and New Member Introductions.
Quorum reached.
Reading and approval of the minutes. Vote approved at 7:43 PM
Welcome to new members and returning members.
Nominations for open officer positions; outreach chair, parliamentarian, communications chair.

Officer Reports
Terry P: Vice president – booking speakers and seeking requests for topics.
Dawn: Interim Outreach Chair demonstrated the flier for Austin Under the Stars and spoke about the event plans. June 24 star party at Santa Rita Ranch, June 25 star party at COE. Discussed plans for new outreach structure. Request for AUTS flier with white background.
Domingo: Training on the observatory telescopes will be from 3:30 until 6:30 on June 25 at COE. Explained the telescope loaner program. Workday on June 4 was cancelled. Work will be spread out among members only star party nights. Expecting work will take 6 – 8 months but spreading the crushed granite will be prioritized. Discussed possible decommissioning of the Ealing telescope. Best option to replace it is a 25 in. Newtonian scope. Received donation of a 10 ft. fiberglass observatory.
Joi: Member services update. Presented the proposed member services calendar and opportunities for members of various levels and ages.

Members-at-Large: Tara, Alan, Terry present.

Joyce: Current issue of Sidereal Times is posted.

Brian L: NASA studying weather patterns of Mars, survival of microbes in space, “super Jupiters” atmospheric properties being studied, counter-rotating helicopter proposed to accompany the next Mars rover mission, 50 year anniversary - Surveyor 1 was pathfinder for Apollo.

David: AAS is going to join/network four organizations: Texas NASA Grant Space Consortium, Greater Austin STEM Ecosystem, Mission Capital. Motion to join Mission Capital by Jim, seconded and approved at 8:46.

8:47 – break
Presentation

David: reconvened at 8:59.

Carl: Introduced Keely Finkelstein, PhD
Keely presented about outreach by the McDonald Observatory and UT Astronomy. Recommended partnering with the Informal Science Education Association of Texas (ISEA).

Dawn announced that the next general assembly meeting will be at TxCMOST.

Meeting adjourned at 9:44 PM.
The summer sky offers plenty of fireworks, even ignoring July 4th celebrations. There are plenty of sparklers in the summer Milky Way, and even with it dominating evening skies, the background universe also manages to show through around its edges. But unlike July 4th, the show never stops as long as you have access to clear evenings. Below are a few examples; as always, enjoy!

**August 2016 Observing Targets**

By Brian Cuthbertson

The second binocular cluster in Vulpecula, Stock 1, is a true open cluster. It lies NE of the Coathanger, closer to the Vulpecula’s northern border with Cygnus. It’s one of a number of sparse open clusters cataloged by German astronomer Jurgen Stock (1923-2004).

In the early 1950s, Stock worked at Case Western Reserve University in Cleveland, Ohio, at the Warner and Swasey Observatory. While there he did a photographic photometry study of open clusters, which led to the discovery of several dozen previously unknown sparse clusters in the northern Milky Way, among them Stock 1. Later, Stock became first director of the Cerro Tololo Inter-American Observatory in Chile. He was instrumental in selecting the observatory site, finally picking Cerro Tololo. Stock oversaw construction of the road to the summit and the first installations of the observatory itself. But he is known to amateur astronomers mainly for his open cluster catalog containing 24 objects, including other notables such as Stock 2 (the Musclemen cluster in Perseus) and Stock 23 (Pazmino’s cluster in Camelopardalis).

Stock 1 itself is a widespread 80’ diameter cluster of bright stars that forms a conspicuous group in binoculars and finder scopes. The cluster breaks into two sections in larger instruments. In a 6-inch scope, the western group appears larger and contains about 20 stars. To its east is a smaller group of half a dozen stars, including a nice pair (ADS 12669). A 10-inch scope provides a similar view, but reveals about twice as many stars.

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**M71 rating MEDIUM**

globular cluster in Sagitta

RA 19h 53.8m Dec +18d 47.0’

(2000)

Magnitude 8.3

Sagitta (Latin for arrow) has always been one of my favorite constellations: for one thing, its key stars actually form an arrow shape. For another, the constellation is nice and compact, and easy to find, comfortably seated just north of Aquila. You can find the arrow by starting at Altair (ALPHA Aquila) and moving due north 10 degrees. That will put you on the arrow’s shaft, defined by the line from GAMMA and DELTA Sge, both 3rd magnitude.

Globular cluster M71, the premier deep sky object in Sagitta, lies midway along this shaft, just to the south. Although Messier recorded it in 1780, he was not the first to see it. He was prompted to find it by fellow Frenchman P. Mechain who had seen it earlier the same year. And records suggest it was first seen by another Frenchman, Philippe de Cheseaux, as early as 1746.

Also known as NGC 6838, M71 is somewhat sparse for a globular cluster, lacking the dense central compression found in many globulars. In addition, spectral studies show that the cluster stars are metal-rich, which is not typical of a globular. For these and

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other reasons it has been listed as a rich open cluster in some catalogs, although most modern authorities now consider it a globular.

Visually, M71 is an easy-to-find misty glow even in a 2-inch scope at 25x. You can begin to get definite hints of resolution at 45x in a 4-inch, and resolve stars all the way across the cluster’s face in a 6-inch at 60x.

M71’s distance of 13,000 light-years puts it closer than all but 6 of the known Milky Way globulars, but for an open cluster it is very distant. Its radial velocity, about 50 miles/second in approach, is consistent with either type of cluster. So take a look and draw your own conclusion; either way, it’s a pretty target!

UGC 11466 rating HARD
galaxy in Cygnus
RA 19h 43.0m Dec +45d 18.0'
(2000)
Magnitude 12.0

Here’s a target for you galaxy hunters who sometimes get frustrated by the summer Milky Way. Aside from being faint, and trying to hide in the edge of the Milky Way, this odd galaxy isn’t difficult to find.

The Northern Cross in Cygnus is marked, at the end of its western arm, by 3rd magnitude Delta Cygni. If you extend the arm beyond Delta just under a degree farther WNW, you’ll reach 5th magnitude star BS 7495 (SAO 48718). Our target sits exactly on the short line connecting Delta to BS 7595 at about the halfway point, perhaps a slight bit closer to Delta.

UGC 11466 can be easily found in a 16-inch Dobsonian at 60x, lurking directly between a pair of 3rd- and 5th-magnitude stars. At 370x the galaxy stands out well from the background sky and has a distinctive arrowhead shape which points from northeast to southwest. Variations in brightness cause the arrow’s tip to appear more conspicuous than its broad head. Not surprisingly, due to its odd shape UGC 11466 has been classified as type “SO? Peculiar” in some catalogs.

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**Image of the Month**

**Congratulations!**

**BOB VAN GULICK**

**M106**

This is M106 in Canis Venatici (the Hunting Dogs), not far from the Big Dipper. This galaxy is around 24 million light years away. There are several other galaxies visible in this image including NGC 4217, NGC 4248, NGC 4226 and several others that are tiny. 2 hours of data here, taken at TSP 2016.
Milky Way
Alto, New Mexico
July 2016

By Michael Schaffer

Canon 6D, 24mm f/1.4L II at f/2.8, 20 Seconds, ISO 6400

A pair of dead pines, likely casualties of 2012’s Little Bear Fire, silhouette the Milky Way core above New Mexico’s Lincoln National Forest. Light pollution from the nearby town of Ruidoso creates a yellowish glow near the horizon, revealing a bed of clouds that hover above the town.

M 22

By Bob Van Gulick

This is M22 in the constellation Sagittarius and contains about 70,000 stars. There are 70 minutes of data in this image, stacked and processed in Photoshop. Taken at COE on August 6, 2016.

Be sure to look at the end of this newsletter for Steven Bingham’s article on making his Itty Bitty Telescope.
VENUS AND JUPITER PREPARE FOR THEIR CLOSE-UP THIS AUGUST
By Ethan Siegel

As Earth speeds along in its annual journey around the Sun, it consistently overtakes the slower-orbiting outer planets, while the inner worlds catch up to and pass Earth periodically. Sometime after an outer world—particularly a slow-moving gas giant—gets passed by Earth, it appears to migrate closer and closer to the Sun, eventually appearing to slip behind it from our perspective. If you’ve been watching Jupiter this year, it’s been doing exactly that, moving consistently from east to west and closer to the Sun ever since May 9th.

On the other hand, the inner worlds pass by Earth. They speed away from us, then slip behind the Sun from west to east, re-emerging in Earth’s evening skies to the east of the Sun. Of all the planets visible from Earth, the two brightest are Venus and Jupiter, which experience a conjunction from our perspective only about once per year. Normally, Venus and Jupiter will appear separated by approximately 0.5º to 3º at closest approach. This is due to the fact that the Solar System’s planets don’t all orbit in the same perfect, two-dimensional plane.

But this summer, as Venus emerges from behind the Sun and begins catching up to Earth, Jupiter falls back toward the Sun, from Earth’s perspective, at the same time. On August 27th, all three planets—Earth, Venus and Jupiter—will make nearly a perfectly straight line.

As a result, Venus and Jupiter, at 9:48 PM Universal time, will appear separated by only 4 arc-minutes, the closest conjunction of naked eye planets since the Venus/Saturn conjunction in 2006. Seen right next to one another, it’s startling how much brighter Venus appears than Jupiter; at magnitude -3.80, Venus appears some eight times brighter than Jupiter, which is at magnitude -1.53.

Look to the western skies immediately after sunset on August 27th, and the two brightest planets of all—brighter than all the stars—will make a dazzling duo in the twilight sky. As soon as the sun is below the horizon, the pair will be about two fists (at arm’s length) to the left of the sun’s disappearance and about one fist above a flat horizon. You may need binoculars to find them initially and to separate them. Through a telescope, a large, gibbous Venus will appear no more distant from Jupiter than Callisto, its farthest Galilean satellite.

As a bonus, Mercury is nearby as well. At just 5º below and left of the Venus/Jupiter pair, Mercury achieved a distant conjunction with Venus less than 24 hours prior. In 2065, Venus will actually occult Jupiter, passing in front of the planet’s disk. Until then, the only comparably close conjunctions between these two worlds occur in 2039 and 2056, meaning this one is worth some special effort—including traveling to get clear skies and a good horizon—to see!

To teach kids more about Venus and Jupiter, visit the NASA Space Place webpages titled “All About Venus” [http://spaceplace.nasa.gov/all-about-venus/en/] and “All About Jupiter” [http://spaceplace.nasa.gov/all-about-jupiter/en/].

This article is provided by NASA Space Place. With articles, activities, crafts, games, and lesson plans, NASA Space Place encourages everyone to get excited about science and technology. Visit spaceplace.nasa.gov to explore space and Earth science!
FarScape - 1 Observatory
By Mark Johnston

I now have my observatory at Stellar Skies complete and operational, and I have named it FarScape -1 Observatory. I first used it in June. I had laid the carpet a few days earlier and trimmed to fit. Then I came out the next week to mount my scope and get my observing adventures under way once more.
July GA Meeting at TXMOST

Rachael Livermore spoke on gravitational lensing and distant galaxies.

Jeffrey Silverman talked about supernovae.

Speakers Jeffrey Silverman and Rachael Livermore were the founders of Astronomy on Tap ATX.

Honorary AAS members Dana and Darin Koch took time out from their travels around the country to attend the meeting. Darin wore his AAS shirt from the past.

Photos by Joyce Lynch
Psalm 19 Astronomy
By Ed Labelle

The skies over downtown Austin were very clear for the inaugural Psalm 19 Astronomy event on Friday, June 10, 2016. What is Psalm 19 Astronomy? It’s a new sidewalk astronomy ministry based on the Bible’s Psalm 19 verses 1-2:

“The heavens declare the glory of God; the skies proclaim the work of his hands. Day after day they pour forth speech; night after night they reveal knowledge.”

This new ministry will be a way to share God’s word while showing people God’s beautiful world through a telescope. The ministry mission is “Sharing the beauty and majesty of God’s universe through astronomy.” See below for our logo with the mission and verses.

I was joined by friends John and Linda for the inaugural event. We set up at the Pfluger Pedestrian Bridge which goes over Lady Bird Lake on the west side of downtown – adjacent to S. Lamar Boulevard (above right). The bridge is part of the extensive Hike and Bike Trail and was chosen because there is a lot of foot and bicycle traffic at night. The bridge is a great location to look at planets and the Moon (but not deep sky objects due to the lights spread out along the span).

We set up a Celestron Nexstar Evolution 8 Schmidt-Cassegrain telescope at 8:30 PM while it was still daylight. We had a small crowd gathered to look at the Moon and Jupiter at twilight before there were visible stars to align the scope. Once the telescope was aligned, we were able to show the passersby Jupiter, Mars, Saturn and the Moon. Many had never seen the planets and were amazed at the detail they could see. A common refrain was “Wow! I’ve never seen the rings of Saturn before!” The waxing Moon overhead was another source of “wows” from the crowd as they were awed by all of the craters visible along the Moon’s terminator.

There was a consistent group of 5-8 people gathered at the telescope for a good part of the evening. We had over 100 passersby take a look and some even came back to see planets they missed on their earlier stop. An integral part of this ministry is to share God’s word. This is accomplished by handing out a Psalm
19 Astronomy card (below) to each person who looks into the telescope. The front of the card has Psalm 19 verses 1-2 and an image of the planets. The back of the card has information about the planets including their distance from the Sun, planet diameter, and number of moons. John and Linda gave a card to each guest in line and pointed out the Psalm 19 verse.

Low clouds started forming around 10:30 PM obscuring the planets and the Moon. I was about to start breaking down my telescope and head home. That’s when an older gentlemen came walking by. “Is that a telescope?” he asked. “Sure is.” I replied. “We were looking at some planets and the Moon. But these clouds have moved in blocking them so I’m going to break down and head home.”

The man said to me “I had a small telescope when I was a kid. I got it for Christmas one year. I never saw much besides the Moon but I remember having so much fun with it.” He then looked over to where the Moon was barely visible through the fast, low moving clouds. “Can I just take one peek at the Moon before you go?” he asked. I said sure and let him have a look. “Wow, wow!” he exclaimed. “Are them craters?” he asked. “There’s so many of them. That’s so cool!”

I asked him his name and he said it was Andre B. He was from Nashville. That’s where he grew up and where he got his telescope. “You said you were looking at planets. Which ones? I’ve never seen the planets before in a telescope.” I pointed at the low clouds in the general direction of Saturn, Mars, and Jupiter. Andre said to me “I really want to see those planets. Can you just wait a few minutes to see if these clouds will go away?” By now it was getting close to 11 PM and I had been on the bridge for nearly 3 hours. I was tired and ready to leave. “Please?” he pleaded with me. I agreed to wait about 15 minutes. Andre wandered off to have a cigarette and chat with a group of street people that were nearby. So I pulled out my smart phone and started looking at e-mails and Facebook.

A short time later I looked up and to my amazement, all the clouds had dissipated! There was Saturn in the east, Mars a little farther to the west, and Jupiter just to the left of the Moon. All four objects were visible and cloud free! This is what author Squire Rushnell calls a “God Wink.” Andre wanted to see the planets and God “winked” and granted his wish. “Hey Andre, Look! The clouds are gone just as you wished.”

Andre broke into a big grin that silently said “told you so.” It was a joy to watch Andre as we moved from planet to planet. He acted like that little kid again back in Nashville looking through the telescope he got for Christmas. He was blown away.
by the details of God’s creation he could see through this telescope: the rings of Saturn, the polar caps of Mars, and the color bands and moons of Jupiter. I ended up staying set up on the bridge until 12:30 AM and showed a dozen or more people the planets and the Moon.

We have had two more of these events at the Pfluger Pedestrian Bridge since the inaugural event (right). The response was very similar for these events too. Plans are in the works for monthly events at the bridge when there is a partial Moon overhead with the next event on August 13.

We are hoping that this ministry spreads to other cities around the country. If you are interested in being a part of this ministry or know someone who would be, then contact me at psalm19astronomy@gmail.com for more details. Or go to the Facebook page Psalm 19 Astronomy and ask to join our group.

MOON RISE GUIDE

By Brian Banicki

Rises After Sun

MOON From NEW MOON to FULL

Rises before Sun

MOON From Full to New MOON

A guild for you to remeber where the Moon is, Based on just Full and new Moon.
Austin Under the Stars - July 23
AUTS (CONTINUED)

Frank Mikan from St. Stephen’s Episcopal School
AUTS (CONTINUED)

Speaker Ron Carman

Speaker Marcha Fox

Speaker David Mathias

Photos by Joyce Lynch
JOINING AAS OR RENEWING MEMBERSHIP

To join or renew your membership to AAS, please visit: http://austinastro.wildapricot.org/JoinAAS

AAS memberships run from 9/1 to 8/31 and there are five membership levels to choose from:

Household $40.00 (USD)
Subscription period: 1 year on September 1st
No recurring payments. For members of a household living at the same address.

Junior $15.00 (USD)
Subscription period: 1 year on September 1st
No recurring payments. For members up to age 18.

Students $15.00 (USD)
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Itty Bitty Telescope

Steven Bingham

Last year I visited the Karl G. Jansky Very Large Array (VLA) in Socorro, New Mexico as part of a “space themed” road trip. The VLA was the highlight of my trip, and it spurred an interest in learning more about radio astronomy.

The Astronomical League’s Radio Astronomy Observing Program has three award levels; Bronze, Silver, and Gold and includes five categories of observation:

1. Space Weather
2. The Sun
3. Jupiter
4. Meteors
5. Galactic Radio Sources

The Bronze Award is intended to serve as an introduction to radio astronomy with minimal cost and effort. I chose to build the Itty Bitty Telescope (IBT) as a starting point. The IBT is easy to build and use, scavenging parts can help to keep the cost relatively low. I was able to build my IBT for under $30.

You can find several IBT designs via an internet search. Some designs use a wooden base with a “lazy Susan” for the azimuth bearing (right), while others use a portable RV mount. To keep cost low I decided to use an old photographic tripod for the base. The tripod is sturdy enough to hold the dish and provides simple elevation and azimuth adjustments.

You’ll need the following parts to build the IBT (minus the base):

1 - DirecTV Satellite Dish with LNB and Mount (free)
1 - T-Type Clip Connector for 9V Battery ($5)
1 - 3’ CL2 Coaxial Cable with F-Type Connectors ($10)
1 - Satellite Finder Meter ($12)
1 - Coax Terminating Resistor ($6)
1 - Battery Holder for (8) AA with Standard Snap Connector: BH383
1 – Rotary Protractor ($9)

With some diligence you should be able to find a free satellite dish on Craigslist. Mine is old and didn’t include the mount, but I was able to make it work with some minor modifications.
I started out by mounting the dish to the tripod. I used two heavy duty steel window blind brackets as a base. The brackets were attached to the altitude mount on the dish using four ¼” screws (left). A single ¼” was drilled into the overlapping section of the brackets to serve as the tripod mounting point.

I didn’t want to make any permanent modifications to the tripod, so I removed the existing ¼” camera mounting screw and replaced it with a longer ¼” grade 8 bolt, fender washers, and nylon locking nut. I went with the higher tensile strength of the grade 8 bolt due to the single mounting point between the dish and tripod.

With the dish mounted, the next step was powering the satellite finder. In normal use the satellite finder is powered by the satellite receiver (15 volts DC); for the IBT you’ll need to provide your own power source. Here’s how:

1. Cut off the end of one Coax cable.
2. Strip off a couple inches of the covering; be careful to not cut through the braided silver wire shielding or solid copper center wire.
3. Pull the braided silver wire to the side and twist together into one large strand.
4. Remove the foil shield and expose the white insulation covering the center wire.
5. Remove 1” of the white insulation; be careful not to cut the center wire.
6. Solder or twist the solid copper center wire to the red positive lead on the 9 volt battery t-clip connector; wrap with electrical tape.
7. Solder or twist the braided silver wire to the black negative lead on the 9 volt connector; wrap with electrical tape (left).

The completed power source will produce 12 volts DC (8 AA x 1.5v = 12v).

8. Attach 9 volt t-clip connector to the AA battery pack.
9. Connect the powered coax cable to the SAT Rx terminal on the satellite finder.

Connect the LNB (Low Noise Block) to the satellite finder (left):

1. Remove the LNB from the satellite dish.
2. Connect the second coax cable to one of the LNB outputs; route the cable through the LNB arm.
3. The unused LNB outputs will need to be terminated; this will help reduce signal loss (most LNBs have two or four outputs).
4. Connect the other end of the coax cable to the LNB terminal on the satellite finder.
That's all it takes to build the Itty Bitty Radio Telescope!

I cleaned up my IBT by mounting the satellite finder to the back of the dish using zip ties (left). I also mounted an old telescope finder bracket to the top of the LNB to serve as a solar finder. To align the IBT all I have to do is align the shadow from the finder over a blue dot placed on the face of the dish (below). It allows me to align the dish while facing away from the sun and only takes a few seconds.