What a month! Clouds and floods, more rain than we knew what to do with and slowly sliding into the heat at last. I’d like to share my thoughts, best wishes and concern for our Central Texas neighbors affected by severe weather. Let’s hope the rest of the summer gets us back into more predictable weather patterns, and that we get some skies suitable for stargazing.

July is, of course, the month that we host Austin Under the Stars. If you are a new member to the Society, this is the one event you can’t afford to miss in our yearly calendar of outreach activities. We appreciate St. Stephen’s Episcopal School and the partnership with AAS that puts so many scopes under Austin skies for the benefit of our members and the general public. Please see the AAS website for event particulars, including maps, times, parking and the like. We also have an event on our Facebook page that you can share with your friends and family. Let’s aim for a huge turnout this year both of members and their scopes and the observing public.

And since UT needs its classroom this month, our General Assembly meeting for July will again be held at St. Stephen’s. We’ll be hosting Zay Collier from Phoenix Arising and Tamara Hudgins from Girlstart at the July meeting. They’ll give us insights into how to target STEM activities for kids, which we hope will better inform our outreach to kids and families. After the meeting, Frank Mikan will surely fire up the observatory for a rare opportunity for our members to view through the St. Stephen’s scopes. Don’t miss it!

Your Executive Committee was hard at work during June. We have secured insurance on the scopes at Eagle Eye Observatory, per our agreement with Calibre. We also submitted a grant proposal to the SXSW
Community Grant Fund for $10,000 in support of our Society’s activities. Our Member Services Chair is working on a survey to share with our membership so we have a better sense of your goals and priorities. And our new Executive Committee is hard at work trying to put together their committees. If you find that you have the time to spare, please contact any of our Chairs and ask how you can contribute.

Lastly, many of us had the opportunity to spend an evening with Dr. Neil deGrasse Tyson last month at The Long Center.

Although the weather washed out our original plan to lure out Dr. Tyson with after-show observing, AAS was still represented by our members in the audience. “Shoeless Neil” took us through depictions of astronomers, astrophysicists and other geeks in the movies from the 80’s forward. Great fun to be sure, but he ended the evening with the ever sobering reminder of our collective fragility as a “pale blue dot” as depicted in a photo beneath the shadow of far distant Saturn. The late Carl Sagan’s presence could be felt in these moments, and we felt the continuity in the Cosmos.

President’s Corner continued from page 1

Join us for July’s Meetings

When: Friday, July 10, PA 6:30 PM, GA at 7:30 PM

Where: St. Stephen’s Episcopal School
6500 St. Stephen’s Drive, 78746
Recital Hall

This month we are excited to welcome Zay Collier of Phoenix Arising Aviation Academy, and Tamara Hudgins of Girlstart. Zay and Tamara are leaders of two groups that are working vigorously to promote engagement in STEM activities among our youth in the local community. Zay and Tamara will discuss how their organizations are advancing the cause inclining more youngsters to embrace careers in science and technology and how AAS might partner with them to promote astronomy as a lifelong passion.

Back by popular demand - this month’s Practical Astronomy session will be “Telescopes 101 - A guide to understanding and selecting your first telescope” presented by Mike Krzywowski and Jim Spigelmire. Mike and Jim will reprise their well-received presentation from 2013 to serve as a basis for a more advanced discussion to be given later in the year. Come learn about the different basic types of scopes, eyepieces, and finders, and the pros and cons of each for different types of observing. Questions are encouraged.
2015-16 Executive Committee

Back row: Tim Brown, IDA Rep; Terry Phillips, Vice-President; Brian Lippincott, Member-at-Large; Alan Carruth, Member-at-Large; Dawn Davies, Outreach Chair; Steve Means, Equipment Chair

Middle row: Domingo Rochin, Secretary; Katie Raney, Member-at-Large; Jim Spigelmire, Member Services Chair; Joyce Lynch, Newsletter Editor; Tara Krzywonski, Treasurer

Front: David Mathias, President

Not pictured: David Lynch, Communications Chair; Brian Cuthbertson, Historian; Kelley Knight, Historian; Jim Chandler, Parliamentarian; Lauren Gonzales, ALCor

Tara Krzywonski has been appointed to serve as Treasurer for 2015-16.
The minutes of the June EC meeting will be published next month.

**COLUMN FOR NEW (AND NOT-SO-NEW) MEMBERS**

Do you as a new member, or maybe a not-so-new one, have questions about astronomy, equipment, club business or anything else that you would like to have answered? We would like to have a monthly column to answer such questions. Send them to the editor at joycedelynch@gmail.com

**AUSTIN UNDER THE STARS--SATURDAY, JULY 25, ST. STEPHEN’S EPISCOPAL SCHOOL**

Make plans to be there! And look at the end of this newsletter for a pdf you can download, print, and post wherever you think would be a good place to publicize the event.

**HONORING DAWN DAVIES**

Apologies for the poor quality of the photo, but we don’t want to miss this memory from the June GA meeting when 2015-16 President David Mathias presented Dawn with a plaque to thank her for her service as President from 2013 to 2015.

---

**Calendar of Events**

- **10 July 2015**
  - General Assembly Meeting
  - 7:30 PM (PA @ 6:30 PM)
  - St. Stephen’s Episcopal School Recital Hall

- **11 July 2015**
  - Outreach Opportunity
  - Public Star Party
  - 7:00 PM - 11:00 PM
  - Canyon of the Eagles

- **18 July 2015**
  - Members Only Star Party
  - Canyon of the Eagles

- **23 July 2015**
  - Outreach Opportunity
  - 8:00 PM - 10:00 PM
  - Bee Cave Library

- **25 July 2015**
  - Outreach Opportunity
  - Austin Under the Stars
  - 6:00 PM - Midnight
  - St. Stephen’s Episcopal School

- **30 July 2015**
  - Astronomy Off the Field
  - 7:00 PM - 9:00 PM
  - PoK-e-Jo’s

- **3 August 2015**
  - Executive Committee Meeting

- **14 August 015**
  - General Assembly Meeting
  - 7:30 PM

Please see the AAS Calendar of Events webpage for more details: http://www.austinstars.org/events
The meeting was called to order at 7:39 PM. A quorum was present. The minutes for May were approved.

OFFICER AND CHAIR REPORTS

President  Incoming President David Mathias spoke of his commitment to bring in more revenues to the society and to increase member participation in all areas.

Vice President  July meeting will be at St. Stephen's Episcopal School, and we hope to get a tour of the observatory after the meeting. July presenters will speak on STEM activities with children.

Outreach  Two events in June: Long Center on the 18th, and COE Public Star Party on the 20th. For July we have Liberty Hill Public Library on the 8th, COE Public Star Party on the 11th, and AUTS on the 25th.

Member Services  Members are asked to respond to a survey coming out. Members Only Star Party on the 13th; there will be no observatory training. Next month’s Practical Astronomy will reprise scope basics. Jim will create Special Interest Groups to focus on specific training or tasks, such as learning to use software to process photo slides.

IDA  Advocacy for dark sky certifications is needed.

AWARDS AND PRESENTATIONS  David thanked the outgoing EC members and presented a plaque to Dawn Davies for her service as President.

What’s Happening in Astronomy, Brian Lippincott  NASA’s new cube satellite will go to Mars in 2016; it was built by college students. On Ceres, a planetoid in the Asteroid Belt, the spacecraft Dawn recently revealed white spots on its surface, and everybody’s guessing what they are.

“Astronomy and VJ Day Times Square Kiss” by Don Olson and Russell Doescher of Texas State University

The meeting was adjourned at 9:45 PM.
### May 2015 Treasury Report

*By Mark Lyon, 2014-15 Treasurer*

#### Deposits

*Due payments*

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paypal</td>
<td>$0</td>
</tr>
<tr>
<td><strong>Dues payments totals</strong></td>
<td><strong>$0</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interest earned-checking</td>
<td>$0.17</td>
</tr>
<tr>
<td>Interest earned-CD</td>
<td>$0.25</td>
</tr>
<tr>
<td>Interest earned-CD</td>
<td>$0.25</td>
</tr>
<tr>
<td><strong>Total interest earned</strong></td>
<td><strong>$0.67</strong></td>
</tr>
</tbody>
</table>

**Total other income** $0

**Deposit Totals May 1 - 31, 2015** $0.67

#### Expenses

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>COE Internet</td>
<td>$52.05</td>
</tr>
<tr>
<td>COE operating expenses</td>
<td>$298.37</td>
</tr>
<tr>
<td>CTSP dinner</td>
<td>$600.00</td>
</tr>
<tr>
<td>CTSP expense</td>
<td>$100.65</td>
</tr>
<tr>
<td>Meeting expense</td>
<td>$100.00</td>
</tr>
</tbody>
</table>

**Expense Totals May 1 - 31, 2015** $1,151.07

#### Bank Balances

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>University Federal Credit Union Checking</td>
<td>$19,050.97</td>
</tr>
<tr>
<td>University Federal Credit Union C.D.</td>
<td>$5,806.20</td>
</tr>
<tr>
<td>University Federal Credit Union C.D.</td>
<td>$5,786.96</td>
</tr>
<tr>
<td>University Federal Credit Union Scholarship</td>
<td>$461.78</td>
</tr>
</tbody>
</table>

**Total Cash** $31,105.91

*Total of 380 AAS members as of June 26, 2015*
June proved to be yet another month of few star parties and difficult weather. My hope is that this is only to allow for better weather in the coming weeks.

Last month’s public star party, though cloudy most of the evening and spotted with rain, still turned out well attended by about thirty guests from the Canyon of the Eagle Resort (COE). Folks were kept entertained by an introduction to basic astronomy by on-site astronomy program manager Jim Sheets. Once dark, the skies cleared briefly so that all present could witness the remarkable closeness of the Moon, Venus and Jupiter to one another.

Coming to the rescue of a last minute request, members David Ault and Domingo Rochin provided a night of observing to a group of 80 teenagers and adults at Bastrop State Park. Way to go guys!

A few of us had the pleasure of doing some sidewalk observing following the June Astronomy on Tap in downtown Austin. Terry Phillips and Brian Lippincott pulled out their portable scopes and set up to allow event attendees and passersby a chance to look at the Venus and Jupiter conjunction. Do you pull your scope out for neighbors or participate in impromptu Flash-stronomy? Let us know; we would love to hear about your experiences.

July gets a fair bit busier with four events scheduled including our annual Austin Under the Stars (AUTS). We will be looking for astronomers and their scopes for nights at libraries starting with Liberty Hill at the beginning of the month and Bee Cave at the end. As always we need all hands on deck for our public star party at COE. And if AUTS is not yet on your radar, turn that dial up to eleven and read about it below.

For those of you who want to do a bit more than volunteer at star parties, consider becoming part of the Outreach Committee. Contribute your ideas, help design events, work with others to develop materials and programs and help foster a larger and stronger public astronomical presence here in Texas. E-mail me for more information and stay tuned for the date, time and location of our first meeting set for the next week.

Do you have questions about outreach? Want to know more about how you can play a bigger role in the mission of the Austin Astronomical Society? Call or email me and let’s talk! (dawnmunroedavies@gmail.com or 512.663.2249)

Dawn

**JULY EVENTS**

11 July  Public Star Party at EEO at COE
7:00 PM – 8:00 PM Solar Observing
8:00 PM – 11:00 PM Star Party
16942 RR 2341, Burnet, Texas 78611
Astronomers with telescopes and binoculars are needed as well as observatory operators, welcome table greeters and sky tour guides.

23 July  Star Party at Bee Cave Public Library
8:00 PM – 10:00 PM Star Party
Old Bee Cave School House – 13333 TX-71 Bee Cave, TX 78738
Astronomers with telescopes and binoculars are needed.

25 July  Austin Under the Stars
6:00 PM – 8:00 PM Solar Observing, Public Telescope Clinic, Micro Talks…
8:00 PM – 12:00 AM Star Party
6500 St. Stephens Drive, Austin, Texas 78746
Astronomers with telescopes, binoculars and solar scopes
Welcome table volunteers
Youth activity leaders
Set up and break down support
Sky tour guides
Telescope clinic teachers
And much much more.
**July 2015 Observing Targets**

By Brian Cuthbertson

During summer months the Milky Way reigns supreme, so it makes no sense to do anything other than dive in and immerse yourself its flow of stars. Our diving board here is just off to the side, where a proper diving board should be, in Lyra. Then it’s on to Aquila to visit a pair of open clusters and finally into the really deep water with globular M70 down in Sagittarius. But there’s plenty more fish in this sea, so cast a wide net. Just remember to come up for air occasionally. Enjoy!

---

**Delta Lyra cluster rating EASY**

open cluster in Lyra  
RA 18h 53.7m Dec +36d 57.8'  
(2000)  
Magnitude 5.5

The stellar pair Delta-1 and Delta-2 Lyrae marks the NE corner of the small parallelogram defining Lyra. You can find them just over 4 degrees SE of Vega. Delta-1 (mag. 5.1 and spectrum B3) and Delta-2 (mag. 4.5 and spectrum M4 II) are separated by 10.5'. The pair is an easy double for hand-held 7x50 binoculars. A steady view will show Delta-1 as a blue-white star, contrasting with brighter Delta-2 which appears reddish orange.

Delta-1 is also a spectroscopic binary consisting of a bluish-white B2.5 main sequence star and an orange K2III giant star.

A small scope will show additional stars in the same field, scattered mostly to the south of Delta-1 and Delta-2. Roughly 15 stars can be seen, ranging from magnitude 7.5 to 10. The entire group has the appearance of a sparse and scattered cluster about 16' across. Named Stephenson 1, the group has been studied only enough to make its reality fairly certain. Studies suggest a fairly young cluster comparable in age to the Pleiades. Its estimated distance is about 1000 light years, which puts it among the nearest star clusters. Delta-1 seems to be a physical member of the cluster. But Delta-2 appears to be a foreground star, lying about 200 light years closer to us, at a distance of 800 LY.

---

**NGC 6755 rating MEDIUM**

open cluster in Aquila  
RA 19h 07.8m Dec +4d 13.7'  
(2000)  
Magnitude 7.5

Aquila is not a constellation most amateurs consider when it comes to observing open clusters; most lie to the south, scattered through Scutum, Serpens and Sagittarius. But Aquila does host a few open clusters, two of which sit right next to each other about half a degree apart. The brighter of the two is NGC 6755.

Look for it very roughly halfway in between 3rd magnitude Delta Aquila, to the east, and 4th magnitude Theta Serpens, to the west.

NGC 6755 is fairly conspicuous in a 6-inch scope. It is distinctively split into two parts by a dark lane passing through it from NE to SW, with the brighter stars favoring the SE half. Overall, the cluster contains about 40 stars magnitude 10 and fainter in a 15’ diameter field.

The fainter 10th companion cluster, NGC 6756, lies half a degree NE of NGC 6755. Faintly visible in a 6-inch, this cluster is about 3’ in diameter. At 125x it is partially resolved, with about ten stars magnitude 12 and brighter. The brightest star, at magnitude 11.5, is next to a compact central clot of unresolved stars. This clot will remain unresolved in a 10-inch scope, which can otherwise resolve about 20 stars. But if you have a 12-inch or larger, you can begin to resolve the clot, which contains about 10 stars ranging from magnitude 13 to 14.

Both these clusters are located in a region where the Milky Way background stars are fairly dense, and there is some reddening of both due to intervening galactic dust. As you might expect, NGC 6755 is a bit closer, at about 4700 light years, while fainter NGC 6756 is about 4900 light years away. And if you have a science fiction bent, an interesting future history of cluster NGC 6755 can be found at orionsarm.com - just enter “Enigma cluster” in the search box once you get there.
Globular cluster M70, aka NGC 6681, sits in the center of the base of the Sagittarius teapot, almost exactly halfway between the 2nd magnitude stars Epsilon and Zeta Sgr, which mark the two ends of the teapot’s base. Discovered by Charles Messier in August 1780, the cluster is far enough south to be a difficult object from Paris, where Messier observed it. And even ignoring its declination, M70 is one of the less bright and conspicuous globulars in Messier’s catalog.

Appearing roughly as bright and big as neighboring globular M69, M70 is just a bit more luminous and little bigger. At almost the same distance (29,300 light years), both globulars are very close to the galactic center, and so both are subject to strong gravitational tidal forces. The cluster is rapidly receding from us, at about 200 km/sec, in its orbit about the galactic center. It contains just 2 known variables.

The core of M70 is extremely dense, the result of a core collapse sometime in its history. In this sense it is similar to at least 21 and perhaps up to 29 of the 150 known Milky Way globulars, including M15, M30, and possibly M62 and M79.

Visually, M70 is 8’ in diameter, which at its distance corresponds to about 70 light years. Its bright visual core is only about 4’. In binoculars, M70 appears almost stellar and very faint - like a hairy star that won’t quite resolve. In a small scope it looks cometary, and only starts to resolve in 8-inch scopes and larger. It requires dark, transparent skies and isn’t well suited to moonlight or urban lighting situations.

M70 became famous in 1995 when the comet Hale-Bopp was discovered near it by Alan Hale and Thomas Bopp as they were observing the globular.

---

Image of the Month

Congratulations!

Michael Schaffer

Stars and Fireflies Over Frio River, Garner State Park, Texas

Canon 6D, 24mm lens at f/2.8, ISO 6400, 20 seconds
Members’ Gallery

Image by Lisa Farmer

This is our satellite dish telling Jupiter and Venus to “Come at me bros!” Taken with iPhone 6, June 26, 2015

Image by Rob Pettengill

Jupiter and Venus, a father-daughter dance in HDR. Wednesday July 1 had much better seeing in Austin than Tuesday, although the planets were not quite as close. Questar 3.5” with a Sony NEX-5N at prime focus. 33 of 111 total images stacked and deconvolved in Lynkeos with HDR stacking and exposure adjustment in Photoshop. Three exposures with 9.5 stops of exposure range were used in making this image. The background image shows the planet positions to scale; the full resolution insets show the two planets in the full detail captured.
Sidereal Times • July 2015 • 11

Members’ Gallery (continued)

Image by Rob Pettengill

Saturn with 6 moons 2015-06-05 04:45 UT. Titan, Rhea, Mimas, Tethys, Enceladus, and Dione top to bottom. Questar 3.5” with 2x2X Dakin Barlows, Sony NEX-5N. Saturn the best 100 of 300 1/2 sec ISO 400 images stacked and deconvolved in Lynkeos. RGB alignment in Nebulosity. Moons 20 3.2 sec ISO 6400 images with 10 darks. Final stack composition and exposure adjustment in Photoshop.
Put more mass beneath your feet and feel the downward acceleration due to gravity increase. Newton’s law of universal gravitation may have been superseded by Einstein’s, but it still describes the gravitational force and acceleration here on Earth to remarkable precision. The acceleration you experience is directly proportional to the amount of mass you “see,” but inversely proportional to the distance from you to that mass squared.

The denser the mass beneath your feet, the stronger the gravitational force, and when you are closer to such a mass, the force is even greater. At higher elevations or even higher altitudes, you’d expect your gravitational force to drop as you move farther from Earth’s center. You’d probably also expect that downward acceleration to be greater if you stood atop a large mountain than if you flew tens of thousands of feet above a flat ocean, with nothing but ultra-light air and liquid water beneath you for all those miles. In fact this is true, but not just due to the mountain’s extra mass!

Earth is built like a layer-cake, with the less dense atmosphere, ocean, and crust floating atop the denser mantle, which in turn floats atop the outer and inner cores of our planet. An iceberg’s buoyancy is enough to lift only about one-tenth of it above the sea, with the other nine-tenths below the surface. Similarly, each and every mountain range has a corresponding “invisible mountain” that dips deep into the mantle. Beneath the ocean floor, Earth’s crust might be only three to six miles thick, but it can exceed 40 miles in thickness around major mountain ranges like the Himalayas and the Andes. It’s where one of Earth’s tectonic plates subducts beneath another that we see the largest gravitational anomalies: another confirmation of the theory of continental drift.

A combination of instruments aboard NASA’s Gravity Recovery and Climate Experiment (GRACE) satellites, including the SuperSTAR accelerometer, the K-band ranging system and the onboard GPS receiver, have enabled the construction of the most accurate map of Earth’s gravitational field ever: to accelerations of nanometers per second squared. While the mountaintops may be farther from Earth’s center than any other point, the extra mass of the mountains and their roots – minus the mass of the displaced mantle – accounts for the true gravitational accelerations we actually see. It’s only by the grace of these satellites that we can measure this to such accuracy and confirm what was first conjectured in the 1800s: that the full layer-cake structure of Earth must be accounted for to explain the gravity we experience on our world!

Seeing Mars through your telescope is always edifying. Imagine holding a piece of Mars… or Luna… or Vesta… You can, if you collect meteorites. Fortunately, for most of us, “collecting meteorites” does not mean going to Kansas, Mexico, Siberia, or the Antarctic to search for craters, but merely buying them from people who did that for us.

First, the Bad News

Argentina, Egypt, and other nations have declared meteorites to be their “cultural patrimony.” Some academic scientists support them. The New York Times carried a feature, “Black Market Trinkets from Space” (April 4, 2011). That article asserted:

“…chunks of meteorites, bits of asteroids that have fallen from the sky and are as prized by scientists as they are by collectors. As more meteorites have been discovered in recent years, interest in them has flourished and an illegal sales market has boomed—much to the dismay of the people who want to study them and the countries that consider them national treasures. ‘It’s a black market,’ said Ralph P. Harvey, a geologist at Case Western Reserve University who directs the federal search for meteorites in Antarctica. “It’s as organized as any drug trade and just as illegal.”

Then the Good News

Unaffiliated astronomers who pursue tangible artifacts of the early solar system do have allies in the academic community. The NYT article about meteorites provided this bon mot: “We have a co-operative relationship with the collectors,” said Monica Grady, a leading meteorite scientist at Britain’s Open University. “We can’t afford to go out and collect, but this small army of dealers will do it.”

Also on the asset side of the ledger, in 2012, the U.S. federal Bureau of Land Management created three licenses for people who want to hunt for meteorites on federally-held lands. 1) Casual collection of small quantities without a permit 2) Scientific and educational use by permit under the authority of the Antiquities Act 3) Commercial collection of meteorites through the issuance of land-use permits

Finding Dealers and Other Collectors

Like other collecting hobbies, meteoritics has its own governing councils. The International Meteorite Collectors Association (http://imca.cc) was created by dealers. The IMCA also serves collectors. Both are bound by the same code of ethics. In order to join, you must have two letters of recommendation from current members. That means that you must first establish a commercial relationship with them. When they learn to trust you, they can recommend you to the club.

Professional and amateur scientists founded the Meteoritical Society http://meteoriticalsociety.org/ in 1933. Their mission is to co-ordinate the study of meteorites and planets.

The Lunar and Planetary Institute is a subset of the Universities Space Research Association, an independent, not-for-profit association in Houston. The LPI sponsors eleven analysis groups, including one for meteoritics that is dedicated to the Antarctic finds. (See http://www.lpi.usra.edu.)

In addition, the LPI webpages provide a redirected link to the IMCA, www.lpi.usra.edu/meteor/. That page lets you query a database of over 60,000 known meteor falls, including two from Travis County. In 1889, at least 175 kg. of stones struck about four miles northeast of town. Close analysis later revealed these to be two distinct parent objects. All 52 recovered specimens are in the Oscar Monning Collection at Texas Christian University in Fort Worth.
The Meteorite Exchange (www.meteorite.com/) is a dealer site that also supports a ring of 36 dealers who validate each other. The Meteorite Exchange publishes a monthly newsletter, Meteorite Times Magazine. They are members of the ICMA, of course.

Russ Finney lives here in Austin. He built a website to provide background information for new collectors: http://www.meteoritecollector.org/

Aerolite Meteorites (www.aerolite.org) is one of several science enterprises run by Geoff Notkin, who hosted the “Meteorite Men” show that ran on the Science Channel. (Although the website is in the Dot.Org domain, the firm is incorporated as a for-profit enterprise. Notkin has several irons in the fire.)

I bought my first meteorite back in the days of print. I received nice catalogs from New England Meteoritical Services, Bethany Sciences, and Robert A. Haag. All are still in business today.

**Building Your Collection**

Meteorites are broadly classified as iron, stony-iron, and stony, typically corresponding to the core, mantle and crust of their parent bodies.

Stony meteorites are chondrites or achondrite. A chondrule is a small, sometimes near-microscopic, spheroid of mineral, typically periodot (olivine). Other inclusions are semi-precious minerals. Very rare examples contain diamonds that were created on impact.

Chemically, some achondrites closely display the proportions of elements found in the Sun. Another class is labeled SNC for Shergotty (India), Nakhla (Egypt), and Chassigny (France). Despite their distribution here on Earth, they were long suspected of being fragments of the same body. Spectroscopic data suggested Mars. Rover missions in recent years confirmed that hypothesis. Other achondrites have been identified with Luna and Vesta.

Some chondrites contain carbon compounds, including amino acids. Meteor hunter Robert A. Haag examined one of the carbonaceous chondrites that fell near Murchison, Victoria, in southeastern Australia, on September 28, 1969, and found that after twenty years, it still smelled of alcohol and ether. Chemical analysis revealed that the rocks contained 15 different amino acids, and to be up to 12% water.

Carbonaceous chondrites that fell near the town of Allende in Chihuahua, Mexico, on February 8, 1969, massed over two tons. Physical analysis revealed them to be 5 billion years old, antedating Earth and the other planets.

If you own more than two telescopes, then you understand the fatal attraction of collecting meteorites.

All collecting hobbies, whether coins, stamps, Hummels, or meteorites, tend to follow the same folkways. Collectors pursue completeness and rarity, and while collectors become knowledgeable specialists, dealers are forced to be generalists. Also, demand, not supply, ultimately determines the price. Seeming rarities can be had cheaply, while common but popular items command high prices.

Furthermore, the distinction between dealers and collectors can be blurred, as collectors firm up their displays by selling unwanted duplicates. Generally, both formal dealers and admitted collectors know two axioms: 1) Knowledge is king. 2) If you do not know your material, then know your seller.

**Third Rock from the Sun**

Although Diogenes of Apollonia and Anaxagoras of Clazomenae (both c. 400 BCE) correctly guessed the nature of meteorites, the phenomenon of stones falling from the sky was an unsolved mystery until the 19th century. The spectroscope finally confirmed that heavenly bodies—stars, planets, asteroids, comets, and meteors—are all pretty much made of the same stuff as Earth. If you stop and think about it, Earth is just another rock in space. Any stone on the sidewalk is a meteorite—except that it is not.

We still chart heaven using mythological images, and gaze at planets named for gods. The very fact that we care about those lights in the night sky explains why meteorites are interesting.
Eldorado Star Party—Save the Date

From Linda Cartwright:

The dates this year are October 5th through October 10th. The website will be updated soon and registration will open at least by mid-August.

AstroCon 2017

The Astronomical League is pleased to announce the AstroCon 2017 to be held in Casper, Wyoming to in conjunction with the total Solar eclipse to occur on August 21, 2017. Casper, Wyoming is located directly on the centerline of the eclipse path, has the Natrona County International Airport, is positioned along I-80 and has excellent convention facilities. This is an event that any amateur astronomer will not want to miss. The AstroCon 2017 will be from Wednesday, August 16 through Saturday, August 19, 2017.

A review was made of weather patterns in mid August throughout the western United States. This review showed that eastern Wyoming had nearly more clear skies during this time period than anywhere else along the eclipse centerline. If at the time of the event, it appeared that cloudy weather might prevail, the proximity to both the international airport and I-80 make last minute relocation to a more favorable location feasible.

http://astrocon2017.astroleague.org

Astronomical League

By Lauren Gonzalez, ALCOR

Congratulations to Jim Linn for completing his Messier observing program list! Jim will be receiving the pin and honorary certificate, meaning he observed all 110 Messier objects and completed the required documentation. He’s been working on this since 2009, so it’s been a long time in coming. Well done, Jim!

Be sure to check out the Astronomical League website at astroleague.org for information about the requirements for different awards. Remember, there are all sorts of different observing projects, including programs for naked eye, binocular, and telescopic observing. Several can be done with astrophotography. Whatever you like to observe, there’s a list for that! For those of you just getting started in outreach, remember, you only need 5 events of two hours each to qualify for the outreach level award. Happy observing!
To join or renew your membership to AAS, please visit: http://www.austinastro.org/JoinAAS

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

Household $40.00 (USD)
Bundle (up to 6 members)
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)
Subscription period: 1 year on September 1st
No recurring payments. For members age 18 and older.

Regular $25.00 (USD)
Subscription period: 1 year on September 1st
No recurring payments. For individual members.

Seniors $15.00 (USD)
Subscription period: 1 year on September 1st
No recurring payments. For members 65 years of age or older.

The Society’s elected officers for June 2015 through May 2016

President	David Mathias
dmathias@mygrande.net
Vice-President	Terry Phillips
terjo@TaoSETI.com
Secretary	Domingo Rochin
sonicwaverochin@outlook.com
Treasurer	Tara Krzywonski
fafb1@yahoo.com
Communications Chair	David Lynch
djlynch@gmail.com
Outreach Chair	Dawn Davies
dawnmunroedavies@gmail.com
Equipment Chair	Steve Means
texasmedic@mac.com
Member Services Chair	Jim Spigelmire
jspigelmire@yahoo.com
Member-at-Large	Alan Carruth
alan-quasar@snkmail.com
com Member-at-Large	Katie Raney
katie.raney@gmail.com
Member-at-Large	Brian Lippincott
brlippincott@yahoo.com

Appointed positions

Historians	Brian Cuthbertson
b_cuthbertson@yahoo.com
Kelley Knight
kelleyknighth@yahoo.com
Parliamentarian	Jim Chandler
jimchandler@isp.com
ALCor (Astronomical League) Laurent Gonzalez
lsrogers16@gmail.com
IDA Rep (Dark Skies) Tim Brown
tbrown@timobrown.com
Newsletter Editor	Joyce Lynch
joycedelymich@gmail.com

Monthly deadline for Sidereal Times submissions is the 25th. Please send submissions to joycedelymich@gmail.com