

# The ECLIPSE

October  
2018

*The Newsletter of the Barnard-Seyfert Astronomical Society*

**Next Membership Meeting:**  
October 17, 2018, 7:30 pm

Cumberland Valley  
Girl Scout Council Building  
4522 Granny White Pike

*Details on page 10*

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## **From the President**

Greetings,

Many thanks to Keith Rainey, Theo Wellington and other board members who ably performed all of the duties I would normally handle as President of BSAS during the month of August. After thirty-four years of employment with the same organization, I finally took the big step and am now retired. To celebrate, my wife and I were able to vacation in Europe. We sometimes refer to our hobby as “backyard astronomy”, which is understandable given that is where most of us do lots of our observing. While we were thousands of miles from our backyard, I did find plenty of astronomy related sights to enjoy.

The long history of Europe includes amazing astronomical history. Seventeenth century Prague has been called the “center of the astronomical universe”, and for good reason. Two giants in astronomy, Tycho Brache and Johannes Kepler, spent time in Prague. Brache did observing at Benatky Castle, a few miles north of Prague where the two met for the first time. Brache also did observing at the Royal Summer Palace of Queen Anne. Brache’s tomb can be found at the Týn Church near the Prague Old Town Square. Kepler used Brache’s observing data to develop his famous laws of planetary motion. He published the first two in *Astronomia Nova* in 1609, while living in Prague. The Old Town Square is home to one of the most popular sights in Prague, the Astronomical Clock. The oldest portion of the clock date back to 1410. The clock and astronomical dial track the location of the sun, phases of the moon and various astronomical details.

Pisa, Italy is another city in Europe with a rich history in science and astronomy. Galileo was born there and if tradition is to be believed, Galileo conducted his experiments on falling bodies from the famous Leaning Tower of Pisa. In Monumental Cemetery, mathematician Leonardo Fibonacci and physicist Carlo Matteucci are buried. The Galileo Museum in nearby Florence, Italy is absolutely amazing.

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The NASA/ESA Hubble Space Telescope has started a new mission to shed light on the evolution of the earliest galaxies in the Universe. The BUFFALO survey will observe six massive galaxy clusters and their surroundings. The first observations show the galaxy cluster Abell 370 and a host of magnified, gravitationally lensed galaxies around it.

Image credit: NASA, ESA, A. Koekemoer, M. Jauzac, C. Steinhardt, and the BUFFALO team

## Upcoming Star Parties

Saturday 10/6	Private Star Party Natchez Trace Parkway mile marker 412 (Water Valley Overlook)
Friday 10/12 7:00 pm to 9:00 pm	Public Star Party Bells Bend Outdoor Center
Saturday 11/10	Private Star Party Natchez Trace Parkway mile marker 435.3
Saturday 11/17 6:30 pm to 8:30 pm	Public Star Party Edwin Warner Park



Oct 8  
Nov 7



Oct 16  
Nov 15



Oct 24  
Nov 22



Oct 2, 31  
Nov 29

## Happy Birthday Liu Yang by Robin Byrne

This month, we honor another female trailblazer. Liu Yang was born in Zhengzhou, Henan in China on October 6, 1978. To be clear, because this is a Chinese name, Liu is the surname, and Yang would be the equivalent to a first name. Yang's early career choices didn't quite fit her ultimate occupation, with dreams of being a lawyer like the ones she saw on television shows, or a bus conductor so she could ride the bus daily.

What decided Liu's career was a visit to her school by representatives of the People's Liberation Army (PLA). Now she knew what she would become - a pilot. After her public school work was complete in 1997, Liu attended the PLA Air Force Aviation University in Changchun. During her time in the PLA, Liu qualified to become a pilot, training to fly transport planes. During one of her flights, her jet hit a flock of pigeons, which disabled one of the engines. Despite the potentially fatal damage to her plane, Liu remained calm and managed to land safely. Liu rose through the ranks to become a major in the PLA Air Force, and has flown over 1,600 hours. She was eventually named the Deputy Head of a flying unit. Proud of her career, on China's equivalent to Skype, called Tencent QQ, Liu goes by the handle "Little Flying Knight."



In May, 2010, Liu was approached with the offer of being a candidate for the taikonaut (Chinese astronaut) corps. After being accepted as a candidate, she trained for two years before being selected as a taikonaut. Asked if being a woman affected how she was treated, Liu said, "From day one I have been told I am no different from the male astronauts." While in training, Liu's name was placed on the list of finalists for the Shenzhou 9 mission.

On March 12, 2012, the official crew for Shenzhou 9 was announced. Jing Haipeng (commander), Liu Wang (pilot, and no relation to Liu Yang), and Liu Yang (mission specialist) - becoming China's first woman in space. Shenzhou 9 was the fourth manned flight in the Chinese program. Launch occurred on June 16, 2012, exactly 49 years after Valentina Tereshkova became the first woman in space. On June 18, it became the first manned spacecraft to dock with the Chinese space station, Tiangong 1. The docking was remotely controlled by the ground crew. After pressurizing the space station, Jing was able to enter. Later in the mission, they undocked from the station, and Liu Wang performed the first

continued on next page

## Liu Yang, continued

manual docking. Liu Yang performed space medicine experiments throughout the flight. After 13 days in space, they landed by parachute in the Inner Mongolia Autonomous Region.

With this flight, China became the third country, after the Soviet Union and the United States, to send a woman into space using their own space craft. As a result of the flight, Liu found herself repeatedly being interviewed about being the first Chinese woman in space. The tone of the questions, and her answers, definitely reflect a different attitude towards women compared to the United States, with ideas more similar to our nation in the 1960's rather than the 2010's. When asked about the advantages of having a crew with both men and women, Liu replied, "I think both female and male astronauts have their own advantages in the course of the exploration of the universe. For example, men are superior in strength and endurance whereas women are more resilient, soft and approachable. Working in a confined space requires a high level of affinity and integration within a team. Thus, feminine seriousness and delicacy are very helpful in conducting experiments in space." Other questions were about how she balanced work and family, with Liu admitting to feeling guilty over not spending much time with her husband during her training.

Since her flight, Liu has spoken at public events about her flight, while continuing to train in the taikonaut corps. She and her husband did have a child in 2015, but no other information was released, not even the gender. In her spare time, Liu is described as an avid reader, and a lover of cooking, especially "cola chicken wings."

Advances for women in typically male-dominated fields always come slowly and with difficulty. Liu Yang has blazed the trail for other female taikonauts in China. Hopefully, with these advances in careers, we will also see advances in attitudes toward women. Meanwhile, let us all wish Liu Yang a very happy 40th birthday!

## References:

[Liu Yang \(astronaut\) Wikipedia](#)

[Astronaut Liu Yang: Balance Between Family and Career helps Me Fly High by Jane Wang, Women of China](#)

[China's First Woman in Space: Q&A with Astronaut Liu Yang by Rob Coppinger](#)

[Profile of Liu Yang, China's first woman astronaut, BBC News](#)

[Shenzhou 9 Wikipedia](#)

[Liu Yang: China's first female astronaut](#)

**Barnard-Seyfert Astronomical Society  
Minutes of the Monthly Membership Meeting  
Held On Wednesday, September 19, 2018.**

The Barnard-Seyfert Astronomical Society held its monthly meeting at the Girl Scout Center, Nashville, Tennessee, on Wednesday, September 19, 2018, at 7:30 PM. Twenty-one members and guests signed in. Gary Eaton called the meeting to order. Bud Hamblen reported that there was \$5,116.03 in the checking account and \$4,157.28 in the savings account.

Gary announced the following events:

9/13: Full Moon festival at Cheekwood.

10/6: Private star party at the Water Valley Overlook on the Natchez Trace Parkway.

10/12: Public star party at Bells Bend Outdoor Center.

10/12&13: The Hoedown on the Harpeth.

10/13: Fall Astronomy Day, Pickett State Park.

Theo Wellington noted that there would be “Reading under the stars” at a Sumner County public school north of Westmoreland.

Chuck Schlemm reported that there were about 5,000 visitors at the Bowie Nature Park festival in Fairview.

K C Katalbas presented “What’s Up” for the Fall.

The meeting was adjourned at 9 PM.

Respectfully submitted,

Bud Hamblen  
Secretary

**There was no BSAS Board meeting September 2018.**

## Observe the Moon

By Jane Houston Jones and Jessica Stoller-Conrad

This year's International Observe the Moon Night is on Oct. 20. Look for astronomy clubs and science centers in your area inviting you to view the Moon at their star parties that evening!

On Oct. 20, the 11-day-old waxing gibbous Moon will rise in the late afternoon and set before dawn. Sunlight will reveal most of the lunar surface and the Moon will be visible all night long. You can observe the Moon's features whether you're observing with the unaided eye, through binoculars or through a telescope.

Here are a few of the Moon's features you might spot on the evening of October 20:

Sinus Iridum—Latin for “Bay of Rainbows”—is the little half circle visible on the western side of the Moon near the lunar terminator—the line between light and dark. Another feature, the Jura Mountains, ring the Moon's western edge. You can see them catch the morning Sun.

Just south of the Sinus Iridum you can see a large, flat plain called the Mare Imbrium. This feature is called a mare—Latin for “sea”—because early astronomers mistook it for a sea on Moon's surface. Because the Moon will be approaching full, the large craters Copernicus and Tycho will also take center stage.

Copernicus is 58 miles (93 kilometers) across. Although its impact crater rays—seen as lines leading out from the crater—will be much more visible at Full Moon, you will still be able to see them on October 20. Tycho, on the other hand, lies in a field of craters near the southern edge of the visible surface of the Moon. At 53 miles (85 kilometers) across, it's a little smaller than Copernicus. However, its massive ray system spans more than 932 miles (1500 kilometers)!

And if you're very observant on the 20th, you'll be able to check off all six of the Apollo lunar landing site locations, too!

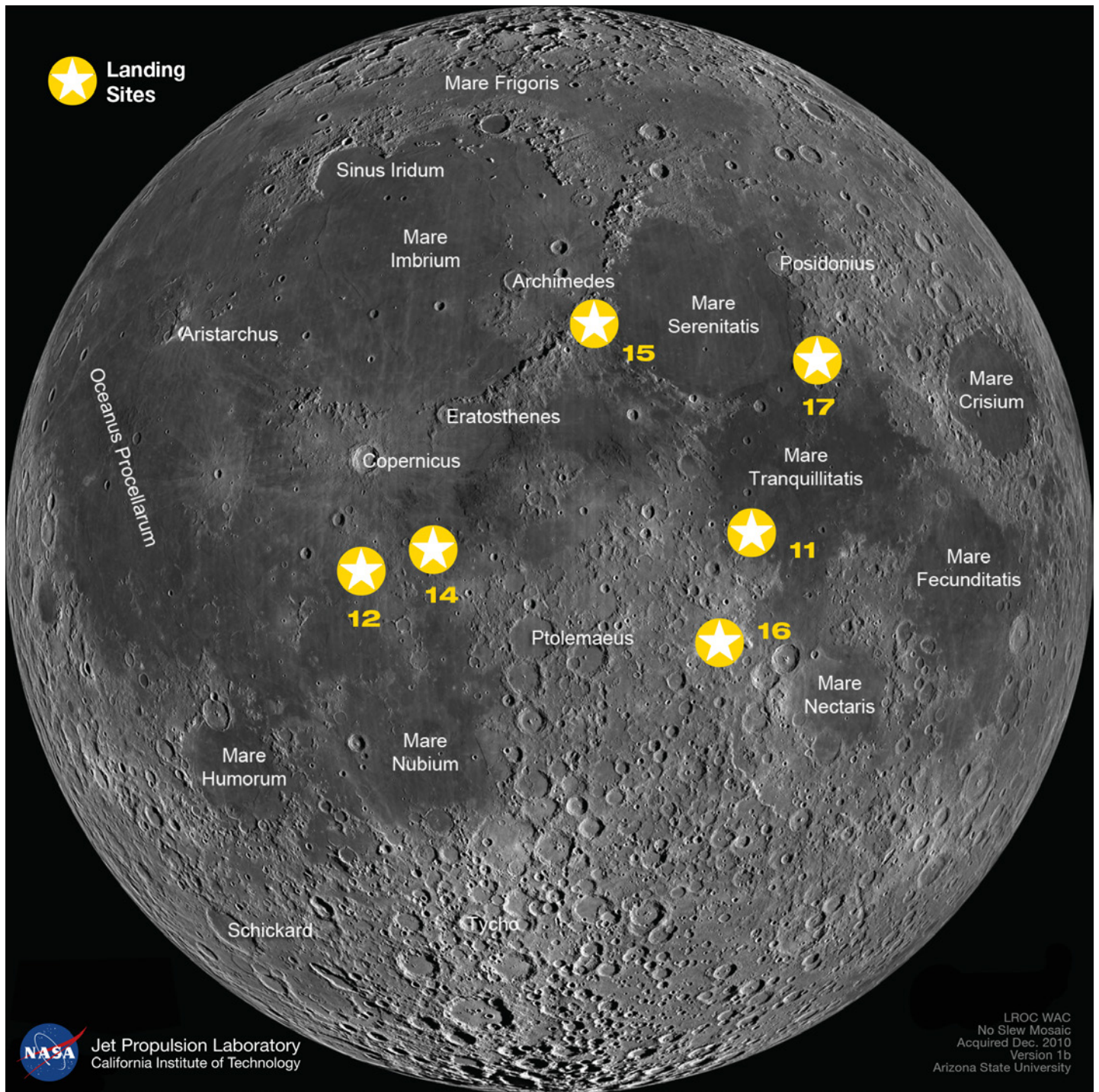
In addition to the Moon, we'll be able to observe two meteor showers this month: the Orionids and the Southern Taurids. Although both will have low rates of meteors, they'll be visible in the same part of the sky.

The Orionids peak on Oct. 21, but they are active from Oct. 16 to Oct. 30. Start looking at about 10 p.m. and you can continue to look until 5 a.m. With the bright moonlight you may see only five to 10 swift and faint Orionids per hour.

If you see a slow, bright meteor, that's from the Taurid meteor shower. The Taurids radiate from the nearby constellation Taurus, the Bull. Taurids are active from Sept. 10 through Nov. 20, so you may see both a slow Taurid and a fast Orionid piercing your sky this month. You'll be lucky to see five Taurids per hour on the peak night of Oct. 10.

You can also still catch the great lineup of bright planets in October, with Jupiter, Saturn and Mars lining up with the Moon again this month. And early birds can even catch Venus just before dawn!

You can find out more about International Observe the Moon Night at <https://moon.nasa.gov/observe>.



Caption: This image shows some of the features you might see if you closely observe the Moon. The stars represent the six Apollo landing sites on the Moon. Credit: NASA/GSFC/Arizona State University (modified by NASA/JPL-Caltech)

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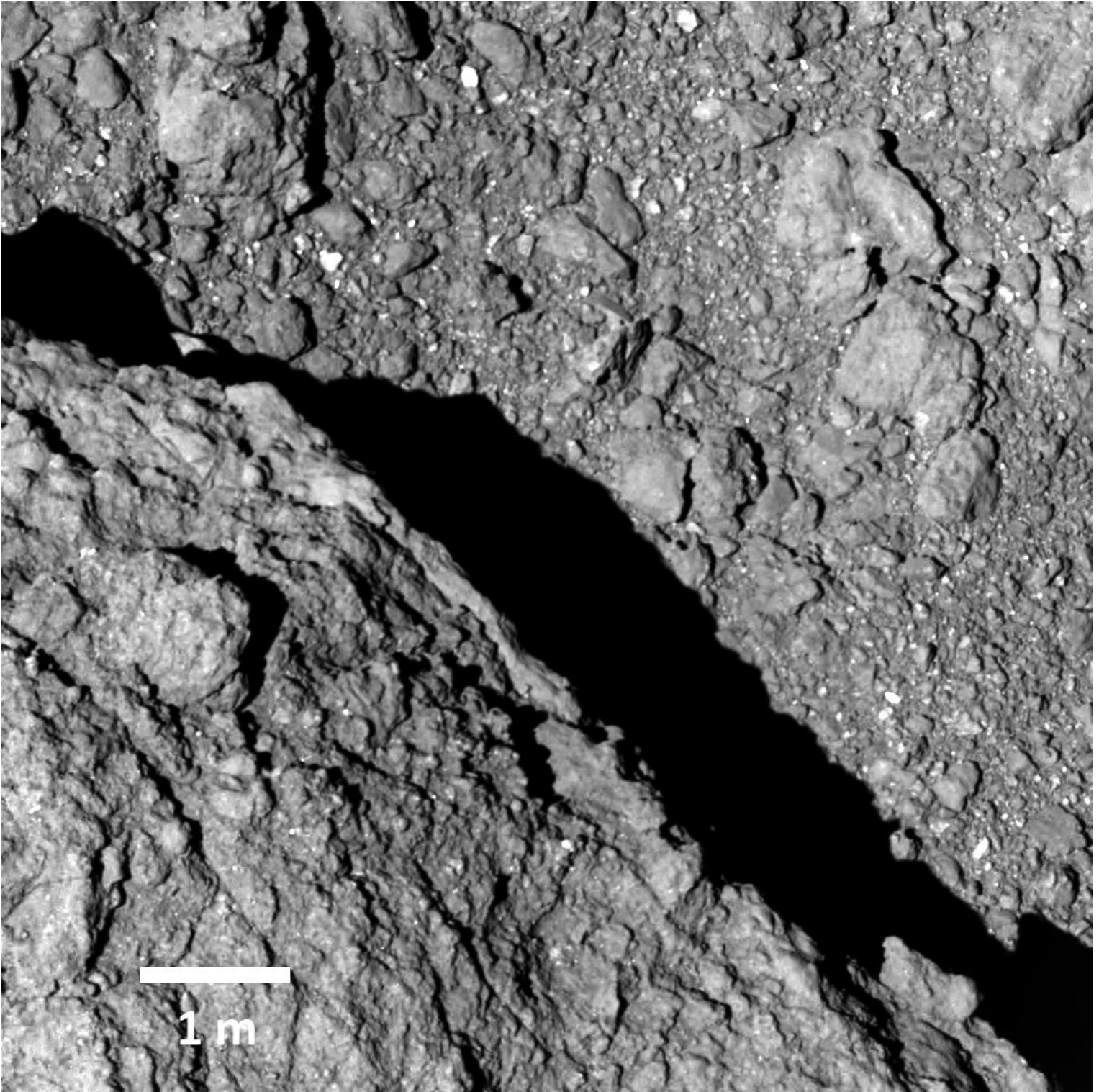
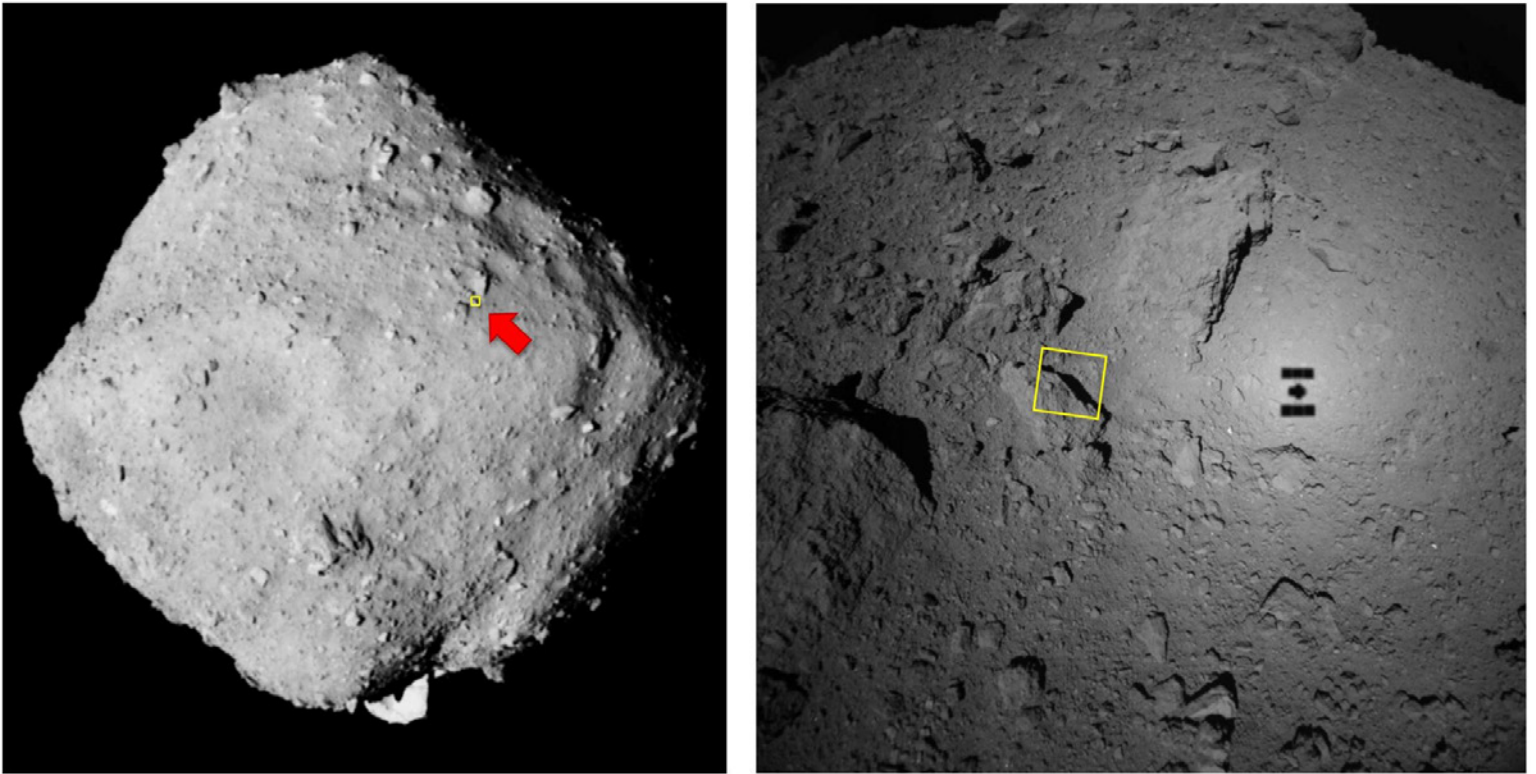


Image of asteroid Ryugu captured by the ONC-T at an altitude of about 64m. Image was taken on September 21, 2018 at around 13:04 JST. This is the highest resolution photograph obtained of the surface of Ryugu. Bottom left is a large boulder.

Image credit: JAXA, University of Tokyo, Kochi University, Rikkyo University, Nagoya University, Chiba Institute of Technology, Meiji University, Aizu University, AIST.





Region of the highest resolution image. Yellow boxes correspond to the region in Figure 1. (Left) The region is shown on the ONC-T global image of Ryugu. (Right) ONC-W1 image, taken at 70 m height. 2018-09-21 13:02(JST).

Image credit: JAXA, University of Tokyo, Kochi University, Rikkyo University, Nagoya University, Chiba Institute of Technology, Meiji University, Aizu University, AIST.

**From the President, continued**

But, you don't have to go to Europe to enjoy great astronomical sights. Our nation is blessed with numerous astronomy and space related treasures. My personal top ten favorites include Lowell Observatory, Mauna Kea, Kitt Peak National Observatory, Meteor Crater, Kennedy Space Center, Johnson Space Center, The Smithsonian's National Air and Space Museum, Adler Planetarium and the dark skies above Craters of the Moon National Monument. Finally, I must include the U.S. Space and Rocket Center just down the road in Huntsville, AL, where I grew up during the Apollo Missions. I encourage you to plan some vacation time visiting these locations and other places that can help bring "backyard astronomy" to life.

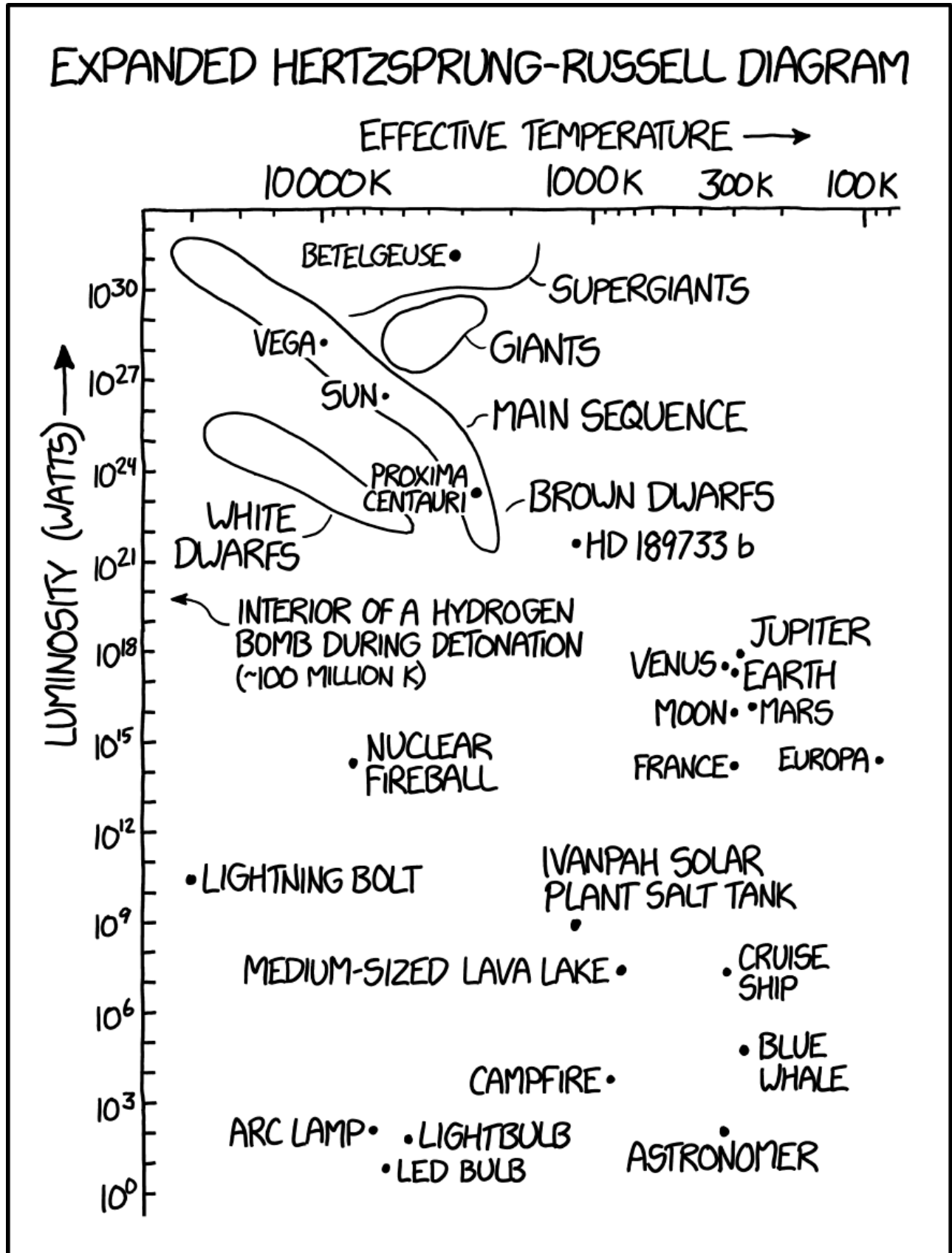
Gary Eaton

**Next BSAS meeting  
October 17, 2018, 7:30 pm**

**Cumberland Valley  
Girl Scout Council Building  
4522 Granny White Pike**

*Dr. Richard Gelderman: Citizen Cate - One Year Anniversary*

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Become a Member of BSAS!  
Visit [bsasnashville.com](http://bsasnashville.com) to join online.

All memberships have a vote in BSAS elections and other membership votes. Also included are subscriptions to the BSAS and Astronomical League newsletters.

Annual dues:

Regular: \$25  
Family: \$35  
Senior/Senior family: \$20  
Student:\* \$15

\* To qualify as a student, you must be enrolled full time in an accredited institution or home schooled.

## About BSAS

Organized in 1928, the Barnard-Seyfert Astronomical Society is an association of amateur and professional astronomers who have joined to share our knowledge and our love of the sky.

The BSAS meets on the third Wednesday of each month at the Cumberland Valley Girl Scout Building at the intersection of Granny White Pike and Harding Place in Nashville. Experienced members or guest speakers talk about some aspect of astronomy or observing. Subjects range from how the universe first formed to how to build your own telescope. The meetings are informal and time is allotted for fellowship. You do not have to be a member to attend the meetings.

Membership entitles you to subscriptions to *Astronomy and Sky & Telescope* at reduced rates; the club's newsletter, the *Eclipse*, is sent to members monthly. BSAS members also receive membership in the Astronomical League, receiving their quarterly newsletter, the *Reflector*, discounts on all astronomical books, and many other benefits.

In addition to the meetings, BSAS also sponsors many public events, such as star parties and Astronomy Day; we go into the schools on occasion to hold star parties for the children and their parents. Often the public star parties are centered on a special astronomical event, such as a lunar eclipse or a planetary opposition.

Most information about BSAS and our activities may be found at [bsasnashville.com](http://bsasnashville.com). If you need more information, write to us at [info@bsasnashville.com](mailto:info@bsasnashville.com).

## Free Telescope Offer!

Did someone say free telescope? Yes, you did read that correctly. The BSAS Equipment & Facilities Committee has free telescopes ranging in size from 2.6" to 8" that current members can actually have to use for up to 60 days at a time. We also have some other items in the loaner program such as a photometer, H-alpha solar telescope, educational CDs, tapes, DVDs, and books. Some restrictions apply. A waiting list is applicable in some cases. The BSAS Equipment Committee will not be held responsible for lost sleep or other problems arising from use of this excellent astronomy gear. For information on what equipment is currently available, contact [info@bsasnashville.com](mailto:info@bsasnashville.com).