

Highlights of the September Sky...

- - - 7th - - -

Full Moon @ 2:09 pm EDT

- - - 8th - - -

PM: A waning gibbous Moon will be 6° to the left of Saturn when they rise in the east.

- - - 12th - - -

PM: The Moon trails the Pleiades by about 3° when they rise in the east-northeast.

- - - 13th - - -

DUSK: Spica and Mars will be about 2° apart. Use binoculars and look very low in the west-southwest.

- - - 14th - - -

Last Quarter Moon @ 6:33 am EDT.

- - - 16th - - -

AM: A waning crescent Moon forms a near-isosceles triangle with Jupiter and Pollux in Gemini.

- - - 19th - - -

DAWN: The crescent Moon, Venus, and Regulus form a tight trio. Venus and the Moon will be less than 1° apart.

- - - 20th - - -

PM: Saturn is at opposition.

- - - 21st - - -

New Moon @ 3:54 pm EDT

- - - 22nd - - -

EQUINOX: Autumn begins in the Northern Hemisphere at 2:19 pm EDT.

- - - 27th - - -

DUSK: A waxing crescent Moon will be 3° to the left of Antares in Scorpius.

- - - 29th - - -

First Quarter Moon @ 7:54 pm EDT

Prime Focus

A Publication of the Kalamazoo Astronomical Society

★ ★ ★ September 2025 ★ ★ ★

This Month's KAS Events

General Meeting: Friday, September 5 @ 7:00 pm

Kalamazoo Area Math & Science Center • See Page 8 for Details

Observing Session: Saturday, September 13 @ 8:00 pm

Kalamazoo Nature Center • [Visit Observing Page for Details](#)

Board Meeting: Sunday, September 14 @ 5:00 pm

Sunnyside Church • 2800 Gull Road • All Members Welcome

Observing Session: Saturday, September 27 @ 8:00 pm

Kalamazoo Nature Center • [Visit Observing Page for Details](#)

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There are several items I want to cover in this month's column. First and foremost, I hope you all can attend the general meeting on September 5th. I mean, you should always make an effort to attend meetings, but, you know, I am giving the featured presentation this month! As my abstract on page 8 says, the subject will be a talk about human exploration of the Moon. It will not cover robotic missions. This was a talk I first gave for the Battle Creek Kiwanis group and Kingman Museum in 2019, and, as I always do, I put significant effort into it. I think you'll enjoy it, so please attend.

Next, you may be wondering why I've included the image below. It may appear to be just a humble prefab desk, but it served as the KAS headquarters for 30 years. From that desk, I edited 313 issues of *Prime Focus* (including this one), developed all six versions of our website, created numerous displays and hands-on activities, wrote several grants, hosted several meetings and classes at it during the pandemic, and much more. I finally retired it on August 18th. If a KAS museum existed, this desk would undoubtedly be one of its artifacts. I actually purchased it in 1991 and began using it more extensively when I became more involved with KAS in 1995. I purchased a new desk ahead of upgrading to a desktop computer—my first in 25 years!

Conditions at the Perseid Potluck Picnic may have been favorable, but it was downright miserable for the dismantling of the late Fred Dutton's donated 15-foot ProDome observatory on August 9th. I'm pleased to report that, thanks to the large number of volunteers, we completely dismantled and cleaned the observatory in only four or five hours. Most people arrived shortly before 10am, and we were totally done by 5pm. We took several breaks due to the hot and humid conditions. Special thanks to all our volunteers for making the extra effort under less-than-ideal conditions. These include Brian Bachert, Matt Borton, Jim Bradshaw, Mike Dupuis, Chip Johnson, Eric Klein, Paul McKinley, Pete Mumbower, Jack Price, Gordon Scott, Don Stilwell, Philip Wareham, Dave Woolf, and Mark Woolf. Apologies if I missed anyone.

The only significant update for the donated equipment is that PlaneWave informed us that the coating of the CDK20 primary mirror is failing. Due to the mirror's age, there is hazing under the mirror's protective coating. There are also parts of the mirror where the coating is coming off the surface. They estimate the cost of recoating to be between \$2,000 and \$2,500. The board has already approved the expense, but PlaneWave contacted us 10 days later with an offer to do a "trade-in" for the CDK20. We replied that we would be interested in trading for an L-500 Direct-Drive Mount. This is a fork-style mount, so it would eliminate the need for meridian flips. The mount comes standard with absolute encoders on each axis. This would make unguided images up to 10 minutes possible. We're still waiting for a reply, but I doubt they'll do an even trade. We'll keep you posted!

Finally, the conditions for the last Public Observing Session on August 30th were the best of the season so far. The sky was crystal clear with good transparency, and the temperature at the end of the session was 54° F. That means there were no bugs! Attendance was also unusually high. The only black cloud was the low number of telescopes on the field. Yes, it was a holiday weekend, but just another reminder that these sessions are *completely* dependent on member participation. If you were thinking, "I don't need to bring a telescope to share. I'm sure there will be plenty." You were wrong. Let's do better on September 13th and 27th!

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PERSEID POTLUCK PICNIC REPORT

The Kalamazoo Astronomical Society's 31st annual Perseid Potluck Picnic was held on Saturday, August 2nd, starting at 6:00 pm. Flesher Field on 9th Street in Oshtemo Township hosted our summer gathering for the first time, and it proved to be a wonderful location. Special thanks to Phyllis Lubbert for making the arrangements. An estimated 50 members and guests were in attendance. This figure is above the average (39) from the past four years.

Weather conditions for this year's picnic were the other bit of good news. Despite much of June and most of July being unbearably hot and humid, the temperature at start time was a pleasant 76° F with a dew point of 53° F. Skies were clear, but smoke from Canadian wildfires hampered the Solar Imaging Workshop that preceded the picnic. We were able to get decent views of the Sun, though.

Several KAS brought telescopes to share. Richard Bell brought his Lunt 60mm hydrogen-alpha on his new (to him) Sky-Watcher EQM-35 mount. Matt Borton also shared views through a Lunt 60mm telescope, but on a Sky-Watcher Star Adventurer GTi. Matt DePriest had the only telescope equipped with a white-light filter, an 8-inch Orion SkyQuest XT Plus Dobsonian. George Drake showcased his new Seestar S30 smart telescope, displaying live images from his smartphone.

Last year's picnic gained notoriety due to the absence of hamburgers and hot dogs. This was due to Texas Township failing to provide us with access to electricity. We more than made up for it this year! Instead of the usual 0.3-ounce hamburgers, Don Stilwell splurged and purchased 0.5-ounce patties. They may have taken a little longer to cook, but they were extra juicy. To make sure we didn't run into the same issue as last year, Pete Mumbower brought his propane grill (instead of the electric one) and did all the cooking. Kudos to the chef! And special thanks to all those



Matt Borton meticulously examines prominences that are dancing along the solar limb using his Lunt 60mm hydrogen-alpha telescope, which is mounted on a Sky-Watcher Star Adventurer GTi.

members who provided the ample selection of those side dishes and desserts.

Members and guests were treated to some additional entertainment this year. During dinner, at least three hot air balloons were launched from Flesher Field. Based on images shared on Google Maps, this is a regular occurrence during the summer months.

After dinner, Richard made a few announcements in an informal President's Report. The Nature Center has asked the KAS to open Owl Observatory during its Moonlit Migration Walk on Saturday, September 6th, from 9 to 11 pm. Final arrangements were made for the dismantling of the late Fred Dutton's observatory on August 9th. And with that, the Perseid Potluck Picnic concluded at about 8pm.



Pete Mumbower brought his grill for the second year in a row, but he was actually able to cook this year after last year's electricity debacle.



KAS members fill their plates with tasty tender vittles at the 31st annual Perseid Potluck Picnic, held at Flesher Field.

The Walter H. Haas Observers Award

by Gregory T. Shanos

The Association of Lunar and Planetary Observers (ALPO) is a scientific and educational organization founded in March 1947 by Walter H. Haas. KAS member Gregory Shanos joined the ALPO in 2021 and has since submitted over 575 observations of the planets. The 2025 Walter H. Haas Observers Award has been bestowed upon Greg Shanos. Most amateur astronomers gravitate (pun intended) towards deep sky observing and astrophotography. The planets being a mere afterthought. Nothing could be further from the truth. The light from deep sky objects took millions to billions of years to reach our telescopes, whereas reflected light from the planets took only light minutes. In addition, the planets exhibit changes on a daily basis. For example, not only are the phases of Venus of interest, but unbeknownst to many, the upper and middle clouds of Venus are visible in ultraviolet and infrared wavelengths, respectively. Today's CMOS chips are also sensitive in the UV and IR, and by using the proper filters, these wavelengths are enhanced and the clouds become visible on Venus. The clouds appear dark due to an unknown ultraviolet absorber. At 1010 nm (1 micron), the surface features on Venus become visible and are able to be imaged!

Mars exhibits dark albedo features at specific central meridians that rotate with the planet. Syrtis Major, Hellas Basin, and Olympus Mons are examples of such features. Mars exhibits seasons like the Earth. During the Martian winter the seasonal ice caps composed of carbon dioxide form and grow, then shrink again in the spring and summer. Dust storms typically develop and may engulf the planet. During the 2018 apparition of Mars, a global dust storm engulfed the entire planet, and no albedo features were visible from Earth for several months until the dust began to clear. Clouds typically form near the limb and over the volcanoes. These clouds are easily visible from Earth, especially with the use of a blue/violet filter. During the 2022 apparition, Greg was involved in a blue clearing study with ALPO Mars Section Coordinator Roger Venable, MD. Blue clearing is a phenomenon where albedo features not typically visible with a blue/violet filter become visible. Greg submitted 61 images of Mars taken under strict protocols that were analyzed by Dr. Venable and published in the Winter 2025 issue of the *Strolling Astronomer*—the Journal of the Association of Lunar and Planetary Observers.

Jupiter, a gas giant, exhibits atmospheric clouds accompanied by storms such as cyclones, anticyclones, festoons, and the iconic Great Red Spot. The colors of the atmospheric bands, including the Great Red Spot, also vary at unpredictable intervals. The four Galilean moons, Io, Euro-

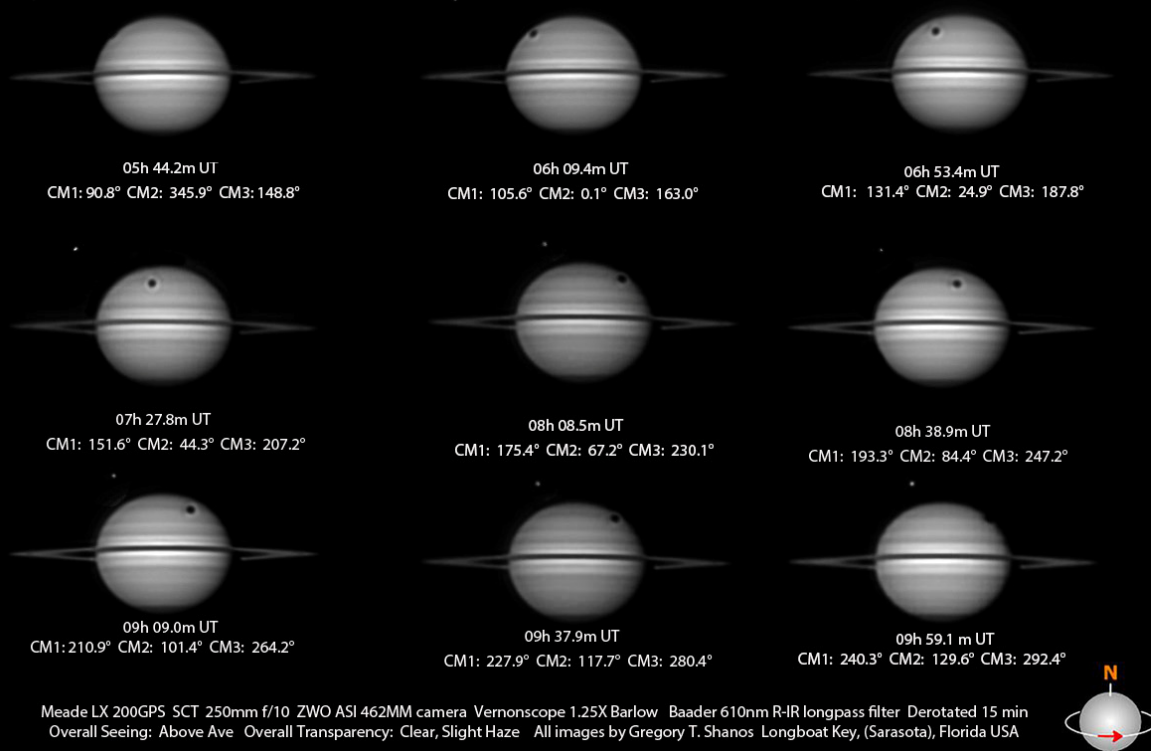
pa, Ganymede, and Callisto, regularly transit the planet and cast their shadows. These shadow transits are predictable, and the free program WinJupos will alert you to which moon and at what time and date the shadow transit will occur.

The "Lord of the Rings" is undoubtedly Saturn. The most obvious feature is the tilt of the rings. Typically, the



The author with the Walter H. Haas Observers Award. The plaque reads, "In recognition of your contributions to the ALPO, specifically in the field of photographing the planets with filters. Greg has become a valuable asset to ALPO, readily sharing his knowledge and experience in photographing the planets in infrared, ultraviolet, and other wavelengths to reveal details not seen in visible wavelengths. His lectures at ALPO conferences and on YouTube webinars have generated great interest. ALPO members have also commented on his one-on-one correspondence to help them become successful in their own photographic pursuits. The ALPO recognizes and values your expertise and commends you and your dedication to our organization."

Shadow Transit of Titan August 19, 2025



A, B, C, and D rings are visible, as are the Enke and Cassini divisions. The rings also cast a shadow on the planet. In reciprocation, Saturn itself also casts a shadow on the rings. Around opposition, the rings appear brighter due to the Seeliger effect, whereas shadows of the individual ring particles temporarily disappear from our view. Every 13.7 to 15.7 years, as Earth's orbit passes through Saturn's ring plane, the rings appear thin and edge-on. We can observe the shadow transits of Titan, Dione, Mimas, and Enceladus during this time. Saturn's disk appears to be yellow-brown in color due to cloud bands with subtle color variations. These cloud bands do not change appearance as rapidly as those on Jupiter. Transient features such as storms, eddies, and bright spots are of particular interest. Saturn's rings and disk are always a delight.

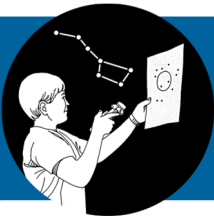
The more difficult planets to image are Mercury, Uranus, and Neptune. Mercury being low on the horizon is always a challenge; however, I have been able to image the larger impact craters on its surface. Mercury is best observed during morning apparitions since it rises higher in the sky instead of setting during the evening. Uranus and Neptune show a disc that is blue-green in color, with the poles appearing white.

As you can see, planetary astrophotography has much to offer. The technique is different from deep-sky astrophotography because the planets are bright objects. The basic technique is to take a short 60- to 90-second uncompressed AVI/SER video of the planet using a dedicated uncooled planetary camera, align and stack the individual frames, sharpen, and you are essentially finished. The software utilized is Firecapture or Sharpcap to acquire the video, Auto-

stakkert or Astrosurface to align and stack the individual frames, Registax or WaveSharp to sharpen the final image, and GIMP for further post-processing. Best of all, these programs are FREE! Derotation of images in WinJupos further reduces noise and increases resolution. For planetary imaging, using a larger telescope is better because it requires a long focal length. Most planetary imagers use at least an 8-to-14-inch Schmidt-Cassegrain telescope with a Barlow lens. You can even be altazimuth mounted since Autostakkert/Astrosurface will eliminate any field rotation during the aligning and stacking process.

The high quality of planetary images by today's amateur astronomers has caught the attention and interest of professional planetary scientists. ALPO serves as a database where amateur astronomers submit their images with pertinent scientific information such as date, universal time, central meridian, telescope, camera, optics utilized, etc. International databases include hstjupitergroups.io, Planetary Virtual Online Library, British Astronomical Association, and ALPO-Japan. I submit my images to all these organizations. I have received alerts on hstjupitergroups.io that the Juno spacecraft will be at a certain position taking photographs of Jupiter during a certain time frame. We need to compare all amateur astronomers' images of Jupiter with those taken by the spacecraft.

In conclusion, amateur astronomers with an interest in astrophotography should pursue the rewarding endeavor of planetary astrophotography. While you're imaging a deep sky object with a refractor, turn your Schmidt-Cassegrain to whatever planet is visible during the observing session. You will be pleased with the results.



September Night Sky

This star map is property of the Kalamazoo Astronomical Society. However, you may make as many copies as needed free-of-charge, so long as it is for non-profit educational purposes and full credit is given to the KAS.

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This map represents the sky at the following local standard times:

- Late August 10 pm
- Early September 9 pm
- Late September Dusk





NORTH

EAST





WEST

SOUTH

This Month's Moon Phases

-  1: Full
-  9: Last Quarter
-  16: New
-  23: First Quarter

Deep Sky Object Key

-  Galaxy
-  Open Cluster
-  Globular Cluster
-  Diffuse Nebula
-  Planetary Nebula

Look toward the eastern sky on the evening of September 8th to see a waning gibbous Moon rise with the ringed planet Saturn about 6° to its right.

The Moon, two days shy of last quarter on September 12th, will follow the Pleiades by some 3° when they rise above the east-northeastern horizon. A pair of binoculars will make the star cluster easier to see.

Virgo's brightest star, Spica, and Mars will be a tad over 2° apart at dusk on September 13th. Use binoculars to enhance the view and look very low in the west-southwest to spot the pair.

Enjoy the tight trio comprising a waning crescent Moon, Venus, and Leo's brightest star, Regulus, shortly before dawn on September 19th. Both Venus and Regulus

will be positioned to the lower right of the Moon, with angular separations of ½° and 1°, respectively.

Saturn will be at opposition on the night of September 20th-21st. This marks its transition into the evening sky.

Catch a waxing crescent Moon 3° to the left of Antares at dusk on September 27th.

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Moon Shot

A Brief History of Lunar Exploration

presented by

Richard S. Bell

Apart from the Sun, the Moon is the most prominent astronomical object visible from Earth's surface and is much safer to observe. As our nearest celestial neighbor, it has intrigued humanity since ancient times. This presentation will explore the human exploration of the Moon, beginning with the invention of the telescope and extending through the dawn of the space age. By featuring historical images and video clips, we invite you to join us on this captivating journey from Galileo's first observations to the iconic Apollo missions.

— About the Speaker —

Richard got bit by the astronomy bug at a very early age. He enjoyed looking at pictures of the planets as early as age 4 and got his first telescope at age 7. Richard has had just about every astronomy-related job one can have in Kalamazoo. He worked at the local planetarium and sold telescopes at a local hobby shop. After receiving degrees in physics and mathematics from Western Michigan University, he taught introductory astronomy courses at most of the surrounding colleges and universities for 20 years. Richard is also an avid observer and astrophotographer. He is one of three lifetime members and the current president of the Kalamazoo Astronomical Society, serving in this position longer than anyone else in its history.

Friday, September 5th @ 7pm EDT

Kalamazoo Area Math & Science Center

Use Dutton St. Entrance • Locked by 7:10 pm

Also held on Zoom • [Click to Register](#)

